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>> Your Technology Navigator

It's your call

22

Cell Phones Tested

Is Photoshop7 worth the Upgrade?

Protect your PC from prying eyes

A close look at Mandrake 8.2

Dot com Survivors of the Tumble

PLUS

Build your **dream Web site**
Napster's Dead: Now What?
Creating your first **GAME**

Publisher's Note

Maulik Jasubhai

We believe in technology. That it is the digital manifestation of the human spirit. This is THE fundamental philosophy behind all that we at Jasubhai Digital Media do. And Digit is our soul.

We believe that the true power of technology is unleashed when it is in the hands of its users. Technology is not and should not be the domain of a few firms or individuals. This dictum has often made us lock horns with many of our most valued clients. And yet it has only further strengthened our resolve to 'protect' and enhance the power of its users. It is and will continue to be our stated and explicit direction to evaluate, analyse, criticise and praise technology to better the user's life. Further, in a country like India where more than 50 per cent of the population lives in villages, it is our promise to take technology to the people. Today Digit reaches more than 300 towns and cities across the country.

Design does matter!

As information becomes ubiquitous it is only the visual and the auditory signals that will enable you to better process, store, retrieve, and yes, even enjoy information. It has been our continuing endeavour to provide you with the most 'immersive' experience. According to one of the independent studies that we conducted, to our most pleasant surprise, our readers spend almost 3 hours reading, 'viewing', and 'playing' our magazine.

We believe that the microchip is a miracle. And this microchip expands its magic beyond just the PC! Technology today is expansive and it will continue to touch, improve and enhance all facets of our lives as we continue along this path of 'evolution'. At Digit, we promise to keep you at the forefront of this evolution.

Best Wishes
Maulik Jasubhai
Publisher and Executive Director, Jasubhai Digital Media

Free for all

The powers that be have announced that anyone using illegal software can be prosecuted for piracy and be sentenced to five years in prison.

Scared?

We need not be, for there is no such law. At least not yet!

Over the past decade we've been trying hard to computerise our businesses, increase PC penetration into our homes and generally create greater awareness about the benefits of IT. But the biggest stumbling block has always been the cost of technology.

Add the cost of legal software to a brand new PC and it would exceed most people's budgets. Or so goes the conventional 'wisdom'. Would we be willing to pay Rs 5,000 more for an operating system to power our new PC that cost us Rs 40,000 in the first place? No, we're used to getting it for 'free'.

This habit of getting and using 'free' software has made us turn a blind eye towards the legal and ethical issues involved with using pirated software. We've tasted blood. There is no way that we would now be willing to pay for software—it's just something we take for granted.

Think about the Internet boom and bust for a moment. Dotcoms tried to reinvent the wheel by offering their products and services for free. That was their biggest mistake. Would users pay for these same services after they were used to getting them for free? A majority of Hotmail.com's subscribers would look for other (read free) alternatives if Microsoft decided to charge a nominal amount for e-mail access.

But software companies have been attaching a price to their products from the very onset. It's just that we have not attached a value to them as we've never been paying up in the first place.

Reducing the cost of software is not really the answer either. How many of us have paid for that cool shareware utility we can't do without? If we are not ready to pay a couple of hundred rupees to register shareware software we use everyday, would lowering the prices of commercial software to any level help?

The burning issue is that we have a choice, the choice of using 'really free' software. But are we even willing to consider it?

Or do we wait till anti-piracy laws become so stringent that getting hold of a copy of the latest Microsoft Operating System will become next to impossible.

vinit_aggarwal@jasubhai.com

Vinit Aggarwal
Assistant Editor

"We've tasted blood. There is no way that we would now be willing to pay for software—it's just something we take for granted"

index ◼◼ magazine

◀◀ **96**

▶▶ **140**

▲ **52**

The Future of the PC ■ Battle of the Titans: Pentium 4 vs Athlon XP

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REGULARS

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Reviewed this month

www.thinkdigit.com

taste technology at **http://www.thinkdigit.com**

Web Special

Fantasies embedded in real time

Embedded systems are the unsung heroes of much of the technology we use today—video games, CD players and even the washing machine we use at home. Read more about how this technology impacts our life.

Features

Firsthand

What good is technology if it is beyond the grasp of the people it was meant for? Our firsthand stories are based on experiences of other end users showcasing how technology affects us.

Arcade

Games

Satisfy your gaming needs with feature stories, game reviews and tips & tactics on popular games.
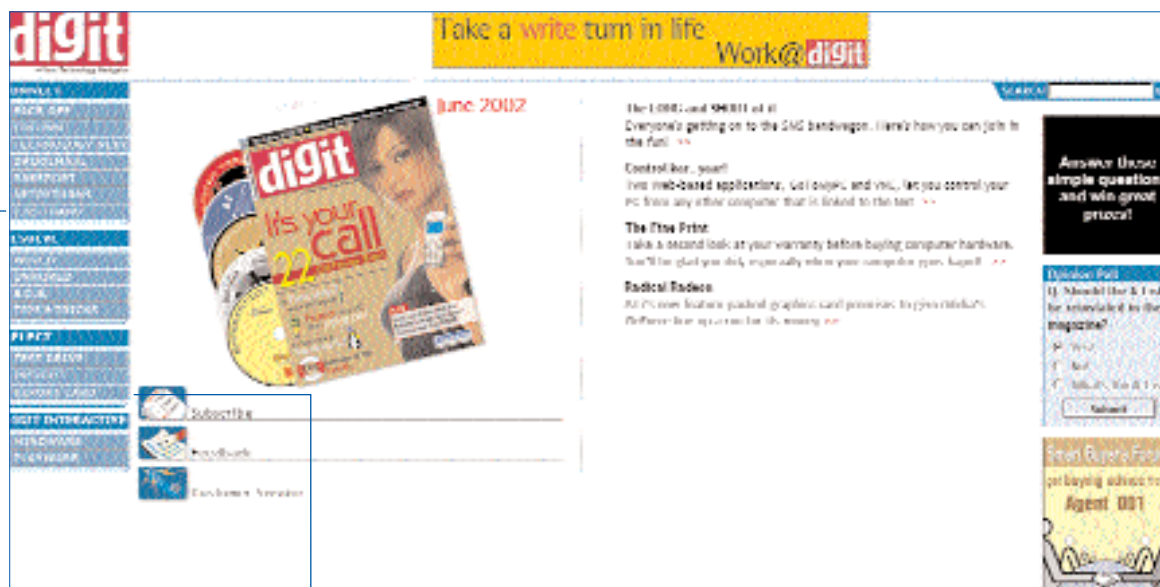
Web Special
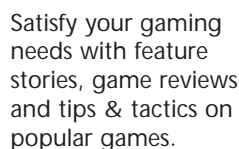
10 free downloads for every PC user

Some handy downloads that will smoothen your computing experience.

Digit

SYSTEM TOOLS

Powerdesk Utilities 4.0

Powerdesk Utilities takes the functionality of Windows Explorer a step further with a host of its own features. You can now keep track of the files and folders on your system with features such as single or dual pane file management windows, a powerful file finder, as well as zip and unzip features, a dialog helper and a whole lot more. If you have Quick View or Quick View Plus you can view various file types directly in the integrated Powerdesk viewer pane.

Ranish Partition Manager

Ranish Partition Manager lets you create, resize and delete partitions on your

Free trial version

hard disk without losing any of your valuable data. The software also lets you copy partitions and clone disks. You can also install multiple operating systems on one hard disk with its boot manager.

For Enterprise-wide accounting solutions

Ashampoo WinOptimiser Suite

Been having problems with your Windows OS recently? This software will help you optimise Windows' performance by finding redundant files, cleaning up your registry, recovering hard disk space and more. With its comprehensive undo database you can restore any changes you make even after a week.

Quick Heal 6.06

This anti-virus software boasts of a new tracing system that can detect the very latest viruses. It includes features such as a Eudora plug-in for real time e-mail scanning.

Quick Heal X GEN

...and a whole lot more!

MaxSplitter Free Edition, WinRAR 3.00 beta 7, Drive Rescue 1.9b, Add/Remove Plus 2002 3.0, Encryption Plus Folders Freeware 5.0, Windows Security Officer 5.4, Desklock Security System 2.4.1d, BootIt Next Generation 1.29e, WindowBlinds 3.3, RegCleaner 4.30.780, Drive Rescue 1.9b

AQURA Financial Accounting Software
Free software

MULTIMEDIA

360° Xtreme Soundtraxx

Making your own cool music isn't enough. With Xtreme Soundtraxx you can also add your own video clippings! The software includes an archive of video clips, which you can edit using its precise editing features.

The Gimp 12.26

Get your creative juices flowing with this image editor. This program features a free floating interface, which lets you access the desktop environment to create or edit images. The software also supports all the major graphic file types including GIF, JPEG and PNG.

Strata 3Dbase 3.5

This advanced 3D modelling tool boasts many features that were used in creating the game, Myst. The software features fully customisable shapes for any modelling design, as well as several rendering options. It has an easy-to-use interface and includes advanced functions as well as beginner level tools.

Ulead VideoStudio 6.0

This full featured program boasts of a wide range of tools meant for capturing,

Droolmaal Sponsored by
PROFX
Drool of the month

editing, and authoring video files. This software lets you import videos directly from a DV camcorder into high quality MPEG-1 and MPEG-2 formats.

Sound Forge v5

Edit and record your own audio and video, and save them in various file formats. It also has built-in support for video and CD burning.

Experience to the max...

Dance eJay 4.0, Cool Edit 2000, GoldWave 4.26, SnagIt 6.0.2, DVDCutter Stream and Mp3CDWav Converter 3.0

Adobe **InDesign 2.0**
Exclusive free trial version

INTERNET SOLUTIONS

Eudora 5.1
This e-mail client features, among others, multiple address book formatting options and the ability to filter, redirect, and forward mail. Eudora also features a filter that 'speaks' the name and subject of incoming mails.

CoffeeCup Firestarter 4.5
Create the best Flash effects for your

Web site with Firestarter's 50+ built-in effects, a collection of MP3 sounds, built-in sound editor and more.

Sygate Personal Firewall Pro
Aside from standard firewall tasks, this firewall also includes security features for protecting operating systems, networks, and applications. The firewall protects users from denial of service attacks and Trojans.

FlashGet 1.2
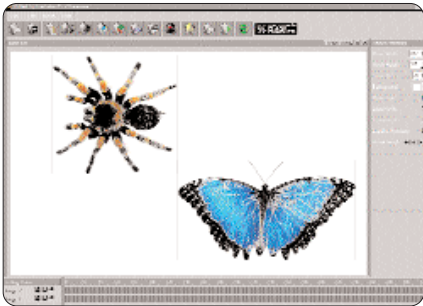Let FlashGet take care of all your download hassles. This software is aimed at speedy downloads and management of downloaded files. The software can automatically split files into sections and download each section separately.

Power Surfing...
ZetaFax 7.5, MediaRing Talk 7.3, NewsBin Pro 3.3, Download Accelerator Plus 5.0, NetAnts 1.25, AcqURL 5.2, ZoneAlarm Pro 3.0, Mail Bomber 7.0, SWiSH 2.0, HoTMetaL Pro 6.0, Beatnik 2.2, Active Email Monitor 2.7, PC Spy 2.4, CoffeeCup Image Mapper 3

Free Internet based software
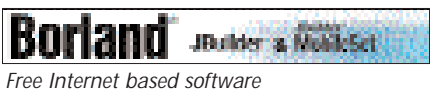
MANDRAKE LINUX 8.2

We present the most user-friendly Linux operating system. Check out page 74 for a hands-on review and installation guide.
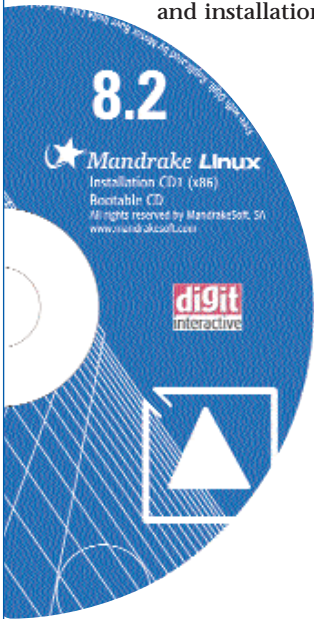
GAMESTATION

Soldier of Fortune II
Step into the shoes of mercenary John Mullins and prevent a bio-terrorist organisation from releasing the deadly Gemini Virus into the world in this most realistic, covert operative FPS experience ever.

Bejeweled for Windows

This is the downloadable home version of the popular Web puzzle game. The game features enhanced graphics and sound coupled with some very addictive gameplay.

Counter-Strike 1.4 Updater
Get the update for your older version of the most happening multiplayer game today, Counter-Strike, right here!

DarkBasic
Create your own games, demos, and slideshows with this game development kit based on the easy-to-understand programming language, BASIC.

Play on...
Freedom Force, NOLF Editing Tools (v001), Blitz 3D, Kali II 2.4, 123 Free Memory 3.0, Rebound, SortSport 1.0, ColorBreak 1.0, Hallow Meenies 1.0, Q3Radiant

index ■ colophon

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Hacking your mobile phone

Have you ever lost your mobile phone? If you know your mobile's unique IMEI (International Mobile Equipment Identity) number, you can effectively block your phone from being used on GSM networks. At least that used to be the case until recently. You can find the IMEI number by typing *#06# on your phone. Trust evildoers to find a way around that as well. There is a whole load of software available on the Net, which makes changing the mobile's IMEI as easy as pie.
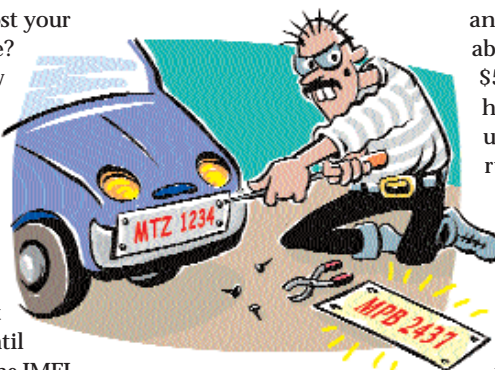
'Chipping' kits with cables and software are now available on the Net for around $50 (approx Rs 2,500). All a hacker has to do is to hook up the phone to a PC and run the software. IMEI is very much like a credit card number wherein only certain combinations of numbers work. The software tries out various combinations till it comes up with one that works. It takes just a few seconds to change the IMEI number. This only proves that no technology is 'crack'-proof.

BBC's ad-free, porn-free search engine

Gone are the days when you could simply search for a term in a search engine and come up with relevant results. Most search engines these days allow advertisers to pay in order to obtain a higher ranking in search results.

BBC's recently launched BBCi search engine tries to put an end to all this. This all-new search engine does not use any advertising and uses screening to remove pornography, racist material and offensive sites. The search engine makes use of a mix of Google's and BBC's in-house technology.

However, there's a catch in BBCi's search engine. Although it finds sites from around the world, preferential ranking is given to British sites. This happened as a result of BBC's survey of Net users which revealed that they are tired of search results showing predominantly US sites. Only time will tell how good the quality of the results are.

Check it out for yourself at www.bbc.co.uk.

Future home

Microsoft is investing heavily in the eHome concept wherein every device in the home will be interconnected. To promote this, Microsoft has tied up with Israel-based Itran Communications and will release a hardware and software developer kit by the year-end.

Microsoft is banking on SCP (Simple Control Protocol) for eHome. SCP will help devices find and control each other. This protocol doesn't need a PC, but Longhorn, the next version of Windows XP, will have support for SCP. SCP is an extension of Microsoft's UPnP (Universal Plug and Play), supported by Windows Me and XP. But unlike UPnP, SCP does not depend upon TCP/IP.

➜

Thou shalt see!

People who are completely blind will now be able to see—thanks to technology, which has made artificial retinas possible. Optobionics, based in Illinois, USA, is the company behind the Artificial Silicon Retina (ASR). These solar powered microchips are smaller than a pin's head and are less than half the thickness of a sheet of paper. The chips are surgically implanted behind the patient's retina. It functions by converting the light coming into the eye into electrical impulses, which are then used to stimulate the nerve fibre layers to provide vision. This is very much like the actual operation of the human retina.

ASRs are helpful in treating untreatable forms of blindness such as retinitis pigmentosa and macular degeneration. During clinical trials, doctors were able to restore the eyesight of six patients, who've gained partial vision without any side effects.

A wrap-around PDA

This one is specially for all you PDA users. Fossil's Wrist PDA is a wrist watch that can hook up to your Palm PDA (the Pocket PC version is coming out later this year) via the IR port and carry information such as appointments, to do lists, contacts, and so on in addition to displaying the time and date. It can also receive up to 20 business cards from other Wrist PDAs and regular PDAs. The Wrist PDA has 190 KB of main memory and is water resistant to a depth of 30 metres. But at $145 (approx Rs 7,250), it's priced on the higher side. Given the price and its dependence on a handheld, it remains to be seen if the Wrist PDA can become a success.

PlayStation 3, anyone?

Trust Sony to not rest on their laurels with the runaway success of the PlayStation 2. They've already started work on the third generation PlayStation keeping the future in mind. This next generation PlayStation, which is scheduled for launch in 2005, will be powered by an MPU (Microprocessing Unit), which will be around 200 times faster than current processors used in PCs and game consoles. Sony will partner with Toshiba and IBM, and plans to spend $400 million to develop this MPU.

Sony is betting heavily on the widespread usage of high-speed fibre-optic networks, as the new machine will have integrated support for such networks.

This is a radical design change that could eliminate the use of storage devices such as DVD drives.

Sony will also try and exploit the vast potential of online gaming and if they play their cards rights, they can further secure their position as the number one console maker.

statattack

Worldwide mobile revenues (in billions)

Worldwide	$306	$535
Western Europe	$97.8	$125
North America	$55	$99.6
Asia-Pacific	$62	$98

■ 2001 ■ 2006

Source: www.ovum.com
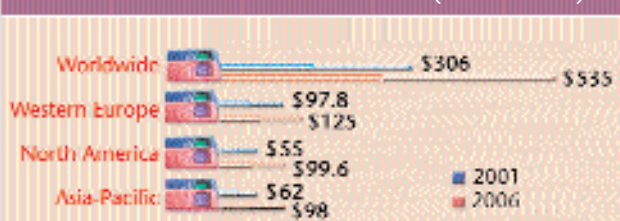
Mobile usage in Asia-Pacific countries

China	64
Taiwan	20
Australia	9.87
India	5.725
Philippines	5.1
Malaysia	1.5

As of February 2002 in millions

Source: www.cellular.co.za
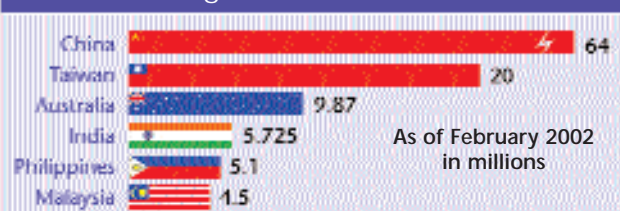
INFOGRAPHICS: Jaya Shetty

snapshot

7,092,260
Internet users in India

Number of Indian Internet servers is
65,960
(May 2002)

Source: www.netsizer.com1

prices by over 10 per cent ■ Apple I computer sells for $14,000 ■ Segway scooter inventor wins MIT prize ■ id Software officially announces *Doom III*

digit 22

JUNE 2002

Siphoning money virtually

We'd mentioned about the security hazards that plague WiFi (802.11b) networks in our September 2001 issue. Apparently the industry takes a while to wake up to security threats.

The latest casualty of hacker troubles is *Bestbuy.com*. It had to suspend the use of wireless cash registers after an anonymous user on *Securityfocus.com*'s e-mail list claimed to have obtained a credit card number from Bestbuy's wireless system.

Although these networks are the latest must-haves, there are several issues to be ironed out—security being foremost.

As we had mentioned in the story, a hacker with basic equipment such as a laptop with wireless transceivers and packet sniffing software can easily gain access to these networks. Bestbuy's case is no different.

Outside, yet inside

Nothing beats the thrill of being at the cricket stadium and watching the match firsthand. But at the stadium, you end up wishing you were sitting in front of a TV while trying to figure out whether Sachin Tendulkar was run out or not.

This is where a new wireless gizmo featured at baseball stadiums in the US comes to your aid. Christened 'The Insider', it offers personal instant replays from multiple cameras. If you are bored with the game, you can use the other three of the four channels to see the news or other programs. It looks like a pair of binoculars and comes along with earphones and has a battery powered receiver at the belt. The Insider is rented out for $20 (approx Rs 1,000) per game.
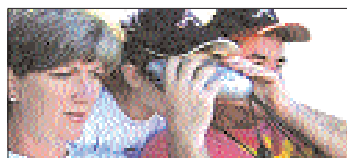
Remote-controlled rats

Rats that do what we command them to? That's what John Chapin, Professor of Physiology and Pharmacology at the State University of New York in Brooklyn has achieved.

He, along with a team of researchers, implanted five rats with electrodes in their brain and provided them with battery backpacks. These electrodes provide pulses generated by a laptop computer to the rats' brains so that they can be remotely controlled to go wherever one wants them to go. Whenever researchers want the rats to move in a particular direction, pulses are provided to specific locations of the brain. They are then rewarded by stimulating a pleasure centre in their brain. These rats are intended to help search for survivors trapped in collapsed buildings. Although such experiments sound exciting, there are ethical concerns too. Imagine remote-controlled human beings!
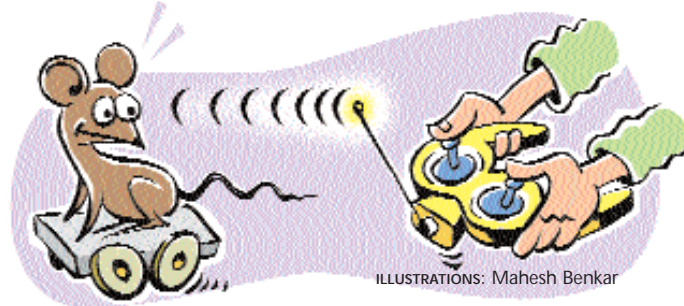
ILLUSTRATIONS: Mahesh Benkar

Mera wala LCD paint

Imagine watches and pagers that can be painted onto your shirt! Or wall papers that change shades when you press a button. Sounds like something out of a sci-fi movie? All this is possible with paint-on Liquid Crystal Display (LCD) technology. This technology has been developed by Dirk Broer of Philips, Netherlands. Liquid crystals are usually sandwiched between two glass plates. When electricity is applied to these crystals, they change colour and become dark. This technology is expensive and does not allow screen sizes of more than one square metre.

However, Broer and his team have come up with a way to deposit liquid crystal layers on single sheets. They have already succeeded in making prototypes by depositing liquid crystal layers on glass and plastic. Cloth is next on their agenda. If this technology succeeds, it could help create cheap lightweight laptops, giant display walls that change colour, and so on. Way to go, Broer and team!

snapshot

115 Dotcom shutdowns between Jan and Feb 2001

37 shutdowns between Jan and Feb 2002

Source: www.webmergers.com

Xbox creator quits

All's not well with the Xbox. Its sales have been dropping and the last thing Microsoft needed at this point was for Seamus Blackley, co-creator of the Xbox, to resign. Blackley was the public face to fans and game developers for the Xbox. His influence helped Microsoft bag major game developers to develop titles for the Xbox. According to insider sources, Blackley apparently wants to move on to other projects.

Although Xbox remains the number two console in the US, the scene's not so pretty in Japan and Europe. Microsoft is biting the dust in Japan with Nintendo and Sony leading in sales and in Europe it's faring no better. As a last ditch attempt to push sales, Microsoft has cut Xbox prices from $425 to $265 in Europe.

If this trend continues, Microsoft will have a hard time recovering costs. So is this the writing on the wall for the Xbox?

Intel launches 533 MHz P4 processors

The new Pentium 4 stallions from the Intel stables are out and they go on to prove that Intel still firmly believes in the age-old adage that 'Speed is everything'. The lead runner amongst these CPUs is the P4 2.53 GHz that is almost 800 MHz faster than AMD's speediest offering. There's also the Pentium 2.26 GHz and the Pentium 2.4B GHz. Additionally, Intel launched the new i850E chipset that offers a faster 533 MHz front side bus (FSB) as compared to the previous speed of 400 MHz. The 850E chipset will also support the newer and faster 1066 MHz RDRAM.

These new processors have widened the frequency gap between the P4 and the AMD Athlon XP, and the 533 MHz FSB gives the P4 an additional edge. AMD now needs to catch up and fast. Their only real hope is their new Athlon Thoroughbred CPUs that will use a 0.13 micron manufacturing technology, allowing them to ramp up their CPU speeds.

New cat OS from Apple

Apple always does things with élan. The unveiling of OS X 10.2 was no different. Christened the 'Jaguar', OS X 10.2's launch started off with a burial. Yes, Steve Jobs started off with a mock funeral complete with a large silver coffin of the arcane but trusty OS 9.

Jaguar has several improvements and many additional features over the current OS X. The most prominent among them are iChat and Rendezvous.

iChat is a chat program with AOL compatibility and several additional features. It has a local buddy list for networks. This feature allows the messenger to automatically add all the users available on a network. Rendezvous is a networking feature that makes it possible for Macs to connect automatically to each other without any intervention from the user. It even allows for connection between Macs with wireless capabilities. Another feature is Quartz Extreme, which gives the Macs greater graphics capabilities with the addition of next-generation video cards.

snapshot

91% of Fortune 500 companies use their corporate Web sites for recruiting purposes

Source: iLogos Research

out ■ RedHat 7.3 released ■ Xbox emulator floating on the Net is a Trojan horse ■ AMD announces improvement in flash-memory design

IBM's grid games

Grid computing is still in the conceptual state, but IBM is all set to do wonders with it. It has tied up with *Butterfly.net* to build a worldwide network for online video games to be rented out to major game publishers. This network can support more than a million

players. 'Butterfly Grid' is one of the first commercial applications of grid computing.

The advantages of this network when compared to present day online interactive games lie in the lower costs of deployment, support for more simultaneous users and the reduction in the number of interruptions owing to Net congestion. This will enable game studios to release games with massive multi-player support at reduced production costs and speedier development cycles.

IBM is providing the hardware while *Butterfly.net* takes care of the software aspect. *Butterfly.net* is also providing software developer kits for PC and console game makers to enable support in their games for the Butterfly Grid.

snapshot

367 million
PCs will be in use in the Asia-Pacific region by **2007**

Source: cyberatlas.internet.com

Who runs your life?

This seems to be the question that MSN's online reality show, modelled after the *Big Brother* reality TV show, asks its participants. This show has five participants whose daily decisions are made by netizens. Every day, partici-

pants have to submit a decision they need to make. Web surfers can vote and decide what the participants should do. Contestants have to follow the majority's decision.

The experiment received 300,000 votes cast over the 15 days it ran and saw the emergence of John Duncanson from Scotland as the winner. This 36-year-old engineer had to give up his career in Scotland and move to Spain. But he did pocket a handsome £10,000 in prize money. Other life changing decisions included 25-year-old stockbroker Nik Jones dyeing her hair pink, selling her house and car. Clare Perkins, 27, was made to take part in a nude modelling session! In today's modern society where children don't listen to their parents, blindly following the advice of a group of unknowns seems rather foolhardy, doesn't it?

tomorrow'stechnology

Light and fast

Extreme Ultraviolet Lithography (EUVL) is a new technology for making microprocessors faster by a hundred fold. This could make processors with speeds in excess of 10 GHz a reality in the not so distant future.

EUVL is vying to replace the current optical lithography technology that is used to make microcircuits. It works by burning intense beams of reflected UV light into a silicon wafer. Microchips made using EUVL will have etched circuit lines smaller than 0.1 micron in width as compared to today's circuits that generally have a width of 0.13 microns or greater.

Intel will be the first chipmaker to get hold of a beta version of the tool in 2005. Other chip manufacturers such as AMD, IBM, Motorola, Infineon and Micron Technologies will also get their hands on these tools as they're part of the EUVL LLC. EUVL LLC is a consortium of the big shots from the microprocessor industry to conduct research and development in this field.

Although the alpha version of the tool has been around since 2001, the beta version is only expected in the year 2005.

Commercial production of chips using this new technology is expected five years from now.

■ US government to monitor foreign students via the Net ■ Bootleg copies of latest *Star Wars* film available on the Net even before its launch ■

'Digit'al music

Dear Vinit,

The programming of your Mindware and Playware CDs is amazing. The graphics are superb, but what I like most about them is the music that plays in the background. It's usually of the trance/techno or drums & bass genre and as an avid listener of this kind of music, I must say that your DJs are pretty good! Is it possible for you to release a separate Audio CD compilation containing the best tracks from the Digit CDs?

Arefin Mohiuddin
Via e-mail

Dear Arefin,
The music on the CDs is provided by Joann, who apart from being our multimedia designer is also the resident musician and drummer at Digit. She's now considering moonlighting as a DJ, and with fans like you, she's sure to be a show stealer!

Lost and found

Dear Sir,
I've been eagerly looking forward to a new version of the Digit CD archive browser, but sadly it's nowhere to be found since the past few months. The archive browser is really useful as it helps me find the software I need instantaneously rather than reading through the CD covers. Please start including this on your CDs once again.

Jatin Soni
Via e-mail

Dear Jatin,
We've dropped the archive browser as we now provide a variety of content on the Digit CDs—e-books, music, movie videos, screensavers, newsletters, whitepapers, FAQs, tips & tricks, product reviews, etc. If you still want the software archive back, log on to **www.thinkdigit.com** and let us know.

Seedy CDs

Hi!
I have a gripe with the quality of your Playware CDs. The featured games in the last few issues have not been working, as the setup files are corrupt. These games are: *Serious Sam* (March 2002), *Medal of Honor* (April 2002), and *Freedom Force* (May 2002). I fear it has turned into a habit for you to not check your CDs thoroughly. Please try and avoid this, as it's very frustrating to find corrupt software on Digit CDs.

Shiraz Ahmad Khan
Via e-mail

Hi Shiraz,
We're aware of this and have carried working installations for all these games in subsequent months so that you don't miss out on any of the fun. Be assured that we're working hard to track down the cause of these problems and are even shifting our CD manufacturing to a new replication plant, apart from making the testing process of the CDs more stringent. Please understand that this is something that we want resolved as urgently as you do.

Too demanding

Dear Vinit,
Every month you give a lot of high-end games on the Playware CDs such as *Return to Castle Wolfenstein*, *Max Payne*, *Medal of Honor* and *Freedom Force*. But not everybody owns a GeForce3 graphics card. I have a SiS620 video card and demand that you start including games that have lower system requirements!

Divya
Via e-mail

Dear Divya,
You're in luck! Starting this month, we've launched a new section called Funzone, found on the Gamestation CD, which includes a bunch of fun arcade games that play fine on just about any computer. But if you like playing games so much, do consider an upgrade that will allow you to experience the latest games in all their visual splendour.

---

digit READERPOLLS

Your vote counts

Q. Should the A-List be reinstated in the magazine?

Yes	No	Huh?
75%	**6%**	**19%**

An overwhelming majority of Digit readers want the A-List back. What can we say, except 'You got it'!

This month's question

"Should we bring back the **Software Archive** on the CD?"

*Log on to **www.thinkdigit.com** and vote on it*

Greed for speed

Hi Guys,

I have been using a Pentium II 350 MHz, 64 MB RAM PC with a SiS6326 video card for the past two years and it's feeling quite outdated. Even the cheapest Celeron PCs available today are faster than my computer. After seeing your Tips & Tricks article in the April 2002 issue, I downloaded both SoftFSB and CPUFSB. Using these programs, I overclocked my PC to 467 MHz! I got a kick out of it especially when I ran SiSoft Sandra's CPU benchmark—my system, which used to lag behind the Pentium II 400 MHz, now overtook it with ease. Thanks to you my old computer can chug along for a little while more.

Manoj Kumar
Via e-mail

Hi Manoj,
We're always trying to provide articles that help our readers get the maximum from their PCs, but try not to get too greedy by overclocking your CPU too high. As you've pumped up your processor speed to 467 MHz, your motherboard's FSB is now running at a rather high 85 MHz (up from the default 66 MHz). This means that your entire system is running in an overclocked state. The biggest concern with this is that your PCI devices are running at 42.5 MHz (your PCI bus runs at half your FSB speed) and this might cause problems with your hard drive. I suggest you lower your FSB speed to around 75 MHz, which will bring down your PCI bus to an acceptable 37.5 MHz.

Playing favourites?

Dear Editor,
The motherboard comparison test in May 2002 did not mention the speed of the Pentium 4 processor used for testing. I know that you used the Athlon XP 2000+, and can only assume that you used the Pentium 4 2.4 GHz as the test process stated that you were testing the boards with the fastest available processors. Hence the benchmarks heavily favour the Pentium 4. I'm not suggesting that you're partial to Intel, but a person looking for a new top-of-the-line CPU might use the benchmarks provided in the test and choose a Pentium 4.

Saurabh Barua
Via e-mail

Dear Saurabh,
The processor used during the motherboard comparison test was the Intel Pentium 4 2.2 GHz. The test provided you with the information needed to choose the best motherboard for your needs. It cannot be used for a head to head comparison between the Intel and AMD processors. For this you need to check out our 'Battle of the Titans' story in this issue, which will settle the current Intel vs AMD dispute.

Wishlist

Hi,
For the last three months I've been requesting you to provide some 3D modelling software such as Poser, Softimage and LightWave, but to no avail. I'm sorry to say this, but if you're not bothered by what your readers want then there is a definite problem. Please improve!

Pravinder
Via e-mail

Hi Pravinder,
We try to meet most reader requests for particular software on the Digit CDs. But the 3D modelling software you want have no trial or shareware versions and are only available commercially, which we definitely cannot provide on our CDs.

Lean and mean

Dear Vinit,

I have been reading your magazine for over two years and have an interesting observation: April 2000—254 pages with two free CDs; May 2002—126 pages with two free CDs. Probable scene in Q4 2002-two CDs with a 50-page magazine. Give me a break! Why don't you do a reader survey to find out whether we want free CDs or more pages in the magazine!

Pritam S. Haobam
Via e-mail

Dear Pritam,
And how would you factor in our current offer of five CDs with a regular 150-page magazine ;-)?

Short Bytes

Illustrious heroes

Hi Vinit,
I simply love the illustrations depicted in the articles (cartoons, images, etc). It takes a lot of imagination and creativity to come up with such catchy visuals. They have always delighted me and I must say they get my attention everytime! Kudos to the 'unsung heroes' of Digit—the artists!
Karthik Sundar

Congratulations!

Hello!
Happy Anniversary to Digit! I have been a regular reader of Digit from December 2001. I enjoy reading every page of the magazine. Thanks for bringing out such a great magazine.
Sharadkumar R. Bhatt

Goof Ups

■ On page 76 of our May issue, we misquoted the price of the Neotech NKC-9999A wireless keyboard as Rs 335. Its correct price is Rs 1,475.

■ The story 'Good things in life are free' incorrectly mentioned a couple of Web sites: **www.retro-spec.co.uk** is a dead link and **http://retroremakes.emuun-lim.com** is actually **http://retro-remakes.emuunlim.com**.

■ In the table on page 52 (motherboard comparison test) we have incorrectly mentioned the Intel 845WN, Intel 845BG, Intel 845D, Intel 850GB and the Intel 850MD as chipsets. These are in fact motherboards based on the 845 and 850 chipset series. The table should have only mentioned Intel 845 (DDR SDRAM) and Intel 850 (RDRAM).

Notice any goof-ups? Write to goof@jasubhai.com

Future of the PC

Time and Technology wait for no one. Come take a peek into our magic crystal ball as we show you what the future holds for the PC in the coming year

No more fat beige boxes, no more clutter with wires and cords, ample desk space without bulky CRTs. Is this what lies ahead?

Super powerful PCs, small and sexy form factors, thin and crisp looking TFTs, hands-free computing and wireless freedom is what we've always been promised. Now the time has come for these promises to deliver what we've always desired—a richer computing experience.

Right now we are staring straight into the end of an era in computing. Technologies and products that we are used to are almost at the end of their life-cycles and emerging technologies that are on the bleeding edge will become more common place.

By the beginning of next year we'll be ready to abandon the tried and tested interface for IDE drives. Also, most of the legacy ports that we see today at the back of our PC would be dead and buried. The PC, both internally and externally, is going to get a steroid shot in the arm that will put it firmly on the entertainment super highway. By the beginning of next year we will officially operate in multi-GHz territory and almost every device will transition to a faster and improved standard. But with this much-required facelift and makeover, the PC scene will become a little chaotic and the situation will only stabilise by mid-2003.

Inside the box

Power packed processors

In the past few months the processor manufacturing companies have only managed to get a foot in the door when it comes to GHz+ speeds. The pace has been rather slow with a lot of hiccups along the way. Starting next year, both AMD and Intel will churn out faster processors at shorter intervals, and the speeds will rise like nobody's business—imagine processors containing upwards of a billion transistors and running at speeds of over 4 GHz! Current generation CPUs are already being manufactured at an amazing 0.13 micron fabrication process and with the transition to 0.09 micron imminent, a billion transistor CPU isn't too far off—chances are you will find one in your PC next year. These GHz guzzling beasts will be powerful enough to provide as-real-as-it-gets 3D graphics, real-time capture of full-motion MPEG-2 video, and accurate voice recognition.

Bandwidth busters

New and emerging memory technologies will be quenching the thirst for continuous data. Bandwidth will double with DDR II and QBM (Quad Band Memory) taking over from the existing standards. DDR II is the next evolution of the DDR standard. It will offer double the bandwidth of standard 200 MHz DDR (PC1600) by sampling at 4-bits per cycle compared to the current 2-bits. DDR II will debut at 400 MHz (100 MHz quad-pumped) and will offer a whopping 6.4 GBps of bandwidth under dual-channel configurations. It's expected to be widely available by the beginning of next year.

Some say that even with this insane amount of bandwidth, the next generation of CPUs could face some bottlenecks. In steps QBM or Quad Band Memory that offers twice the bandwidth of DDR. But the beauty of QBM is that it can be implemented with any of today's standard DDR modules. With a QBM memory controller, a current generation DDR266 memory module (PC2100) will deliver 4.2 GBps, which is double its theoretical bandwidth. Compared to DDR II, QBM can scale faster, reaching PC5400 levels with existing DDR333 modules. Whatever the memory technology, processors won't have a reason to complain next year.

Ga-Ga graphics

With bandwidth-consuming texture-rich games becoming more and more common, the current graphics platform will have to go through a serious upgrade to keep up. Also, every graphics card that will be released next year from nVidia and ATi will have integrated TnL (Transform and Lighting) along with programmable shaders support. The technology of shaders is being used in almost all new games that are being developed, which can cause the video memory bandwidth to become a severe bottleneck. This would be alleviated to a large degree with the introduction of AGP 8x.

The official name for AGP 8x is now

'AGP 3.0'. This is a 32-bit-wide parallel bus clocked at a whopping 533 MHz, offering a total bandwidth of about 2.1 GBps, doubling the currently available 1 GBps provided by AGP 4x. Sadly, AGP 8x isn't truly backwards compatible and in its current implementation doesn't support either AGP 1x or 2x signals, meaning older AGP 1x or 2x cards simply won't function in an AGP 8x system.

Super storage

By the beginning of the coming year you'll find 200 GB drives as widespread as you find 40 GB drives today. We are already approaching the technical limitations of the current ATA standard; today's controllers cannot recognise drives larger than 137.4 GB as they use a 28-bit addressing system. New standards will adopt a 48-bit addressing system, raising the maximum drive capacity a million fold to 144 petabytes (a petabyte equals a million gigabytes). But some drive manufacturers want to take storage to almost unrealistic heights. IBM is using a new disk material, nicknamed 'pixie dust'. Placed between two layers of magnetic material, it helps data remain stable at very high densities and IBM is aiming for 500 GB to 600 GB four-platter desktop drives by 2003!

The only way to support such large and fast drives will be to transition from the existing Parallel ATA standard to Serial ATA (SATA). Serial ATA starts at a data transfer rate of 150 MBps and will soon migrate to 300 MBps and then to a whopping 600 MBps. It uses a thinner, more flexible cable that improves airflow and thereby facilitates the development of smaller form factor systems with better thermal designs. Also, 5,400-rpm drives will start their slow and inevitable march into hard drive history, while 7,200-rpm drives will become the standard and will ensure that the SATA interface will be pushed to its limits. By the end of this year you will see third-party chipset solutions supporting SATA and by the beginning of next year SATA will be integrated into most mainstream motherboard chipsets.

Perfect portability

It's time to throw away your 700 MB CD-Rs! The price of DVD-Rs has dropped as low as Rs 300 per disc and DVD-Writers have already started appearing in the market. Beginning next year DVD-Writers will cost as low as Rs 15,000 and DVD-Rs as a storage medium will start replacing CD-Rs.

The best part is that by the middle of next year we'll see the adoption of DVD's successor—the Blu-ray disc. This 12-cm disc will be the same size as its DVD counterpart but will have a maximum capacity of 27 GB per side (compared with 4.7 GB for DVD discs) and a data transfer rate of 36 Mbps to accommodate high-definition content recording. The format would allow a disc to store more than 2 hours of High Definition video content and 13 hours of standard television broadcasts! To top it all, a double layer disc with up to 50 GB of storage capacity is also in the pipeline.

The final nail in the coffin for floppies is being hammered in by the new USB micro drives. These tiny Flash drives fit in the palm of your hand and store up to 1 GB of data! Just plug it into a USB port and begin using it. These drives work seamlessly with any operating system, be it Macintosh, Linux or Windows and they don't even need any special device drivers.

Idiot-proof interfaces

In a year's time the PC will no longer support legacy I/O ports. You will not find any PS/2, serial or parallel ports residing on the back plate of your PC. These will be replaced by high-speed USB 2.0 and IEEE-1394 (FireWire) ports that are nearly 40 times faster than USB 1.0 and over 500 times faster than parallel ports. You will no longer face problems interfacing cutting-edge digicams, MP3 players, digital video recorders and external storage devices with your PC. Scanners and printers too will join the faster USB revolution and will shed their old and rather slow parallel interfaces, allowing for faster

On the desk

Delightful displays

Thin Film Transistor (TFT) LCDs are here to stay but currently they lack the knockout punch to throw out CRT monitors. That knockout punch can only be delivered by price. Today, you can buy a decent 15-inch TFT screen for about Rs 35,000. This is way beyond most people's budgets, but with TFT manufacturing yields improving rapidly, by 2003, you will be able to buy a 15-inch TFT for as low as Rs 20,000 and a 17-inch TFT for around Rs 30,000!

It's a no-brainer that in one year these displays will become quite widespread and more and more PCs will be built using them. In the coming year, TFTs will truly come of age and will feature ultra fast response times. This means that there will be no smear or blurring in fast moving images, and games and movies will look crystal clear. Also, as the technology improves, it will solve most of the angle viewing limitations of today's TFTs and the next generation displays won't experience any image or contrast degradation when viewed from any angle.

Worry-free wiring

True liberation and freedom from the clutter of wires that plagues all computer users will occur only when the PC sheds off its rather tangled backside. One of the few areas where the PC has advanced considerably has been the speedy introduction (and adoption) of wireless input devices. Wireless keyboards have taken us to the next level of typing freedom. These are relatively expensive and out of reach for most users, but with more manufacturers jumping onto this bandwagon, with newer and more innovative designs

Storage in the new
millennium
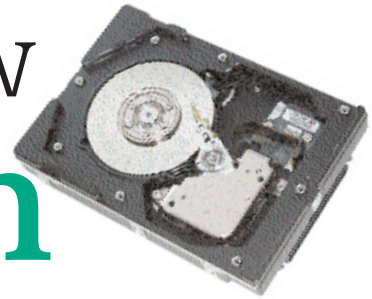
Higher areal density, faster spindle speeds, larger internal buffers, and lower failure rates all contribute to make hard drives faster and more reliable than ever before

The PC has made rapid advancements over the years and hard disk technology has improved steadily. Today's applications, be it games, multimedia, Internet or operating systems, all require fast, reliable and increasing storage solutions. Also the price of hard drives continues to decline and the cost per MB is at an all time low. The manufacturing technology has improved, leading to lower production costs, but so have market pressures and competition. Traditionally, product performance and quality determined which company captured an OEM's customers' business, but now performance and quality are a given and price is key. Drive prices have fallen to an all-time low in the personal computing end of the market with the advent of the sub Rs 30,000 personal computers. And more competition in the high-end enterprise sector is pressuring profit margins there too. Storage solutions for the new millennium are only going to get better.

Games

Gaming has been redefined with the invention of monstrous graphics processors that give you the ultimate 3D experiences. These games require large amounts of storage space, either for installation or for playing. Games that were produced in the last decade did not require much space, being mostly 2D games with limited image textures, and required very little graphics processing. The trailing edge of the last decade saw tremendous software and hardware development that lead rapid progress in game development. This, in effect, means that gaming evolved into a new entertainment segment where realistic and life-like experiences are the key aspects catered to.

Games demand space!

If you are a *Wolfenstein* fanatic then you can relate to the space requirements that the game demanded as it stepped from one version to another. The latest version, *Return to Castle Wolfenstein*, requires no less than 700 MB of space for a full install. Forced by these requirements you as a user need to upgrade your storage to load these games. The latest gaming engines have terrific space requirements as heavy graphics data is to be processed. Storage space is required to store and

Speedy Solutions for Gamers

Seagate's Barracuda ATA IV disc drives deliver 7,200-rpm performance for desktops and entry-level ATA servers, with capacities up to 80 GB. The products feature all FDB motors for the quietest acoustics in the industry, superior reliability and the Ultra ATA/100 interface. These drives include Seagate's exclusive 3D Defense System and a three-year limited warranty.

Features and benefits
- SoftSonic(TM) FDB motor on every drive—Quietest operation ever for a desktop 7,200-rpm drive
- 7,200-rpm desktop performance—High performance for PCs and entry-level ATA servers
- Ultra ATA/100 interface—Up to 100 MBps burst transfer rate
- 350 Gs non-operating shock—Toughness and robustness
- 3D Defense System—Best reliability and handling damage protection
- 2 MB cache buffer—Fast data transfer rates
- DiscWizard software—Eases installation and maximises drive performance

Distinctions
- Best combination of performance, acoustics and robustness
- 3D Defense System to protect users' data and increase reliability
- 2.4 bels idle acoustics—industry's best
- DiscWizard software for easy installation
- Best-in-class non-operating shock for excellent reliability

swap the graphics data as and when required. Today, games are packed in two, three, four or even more CDs. You as a player would always prefer to play games without any interruption. But

New games like RTCW, demand over 700 MB of install space

what if you are constrained by storage? You would have to shift between CDs during the game, which no avid gamer likes. Since storage cost per MB has plummeted, buying a large capacity hard drive is not a costly affair.

Downloads and Demos!

Game developers release trial versions of the games before the actual release of the product. These evaluation copies are available for download on the Internet or on CDs that accompany computing magazines. Every gaming enthusiast would prefer to try out such games before actually shelling out hard cash for a retail game. Typically the trial versions of the 3D games that are released will occupy a whopping 100 to 200 MB of storage space. Trying out such games that are available for free also requires enormous storage space.

Performance

Game data processing involves swapping of data at high speeds. If data transfer rates are high and the hard disk has a high rpm, the latency would be less. This improves the sifting of data from the graphics processor to the storage device (and vice versa) at extremely fast rates

that in effect will drastically improve the performance of the game. We have hard disks of 5,400, 7,200, 10,000 and 15,000 rpm. Choose the best drive with a large capacity and high rpm that will answer both your storage requirements for games as well as performance issues.

Game consoles

Gaming consoles today are packed with hard drives for the same purpose as mentioned above—to store gaming data (levels, characters, etc). You will be able to download game evaluations on to these drives for testing. Though these are fixed drives, the future will bring in more changes where you will have removable hard drives for such consoles, which will make gameplay easier. Storage device requirements will be ever growing in the gaming segment as we keep evolving in bringing more life into next generation games.

Operating Systems

Take a look at any current generation operating system and you will find that not a single one has an install size of less than 1 GB. To top it all, Windows XP recommends a minimum install footprint of over 1.5 GB! Add general purpose programs, Office suites, along with the clutter of desktop utilities and you are struggling for free space on your 20 GB drive.

Today, personal computers have more than one operating system installed. These OSes are becoming increasingly sophisticated, as software vendors add features to their products. Likewise, the workload demand on these operating systems is growing, while users continue to demand that they be able to do more work in a shorter amount of time on their PCs. A multi-boot system would fill up a 20 GB drive in no time and for a true multi-boot system you would require multiple hard drives.

A hard drive can have as big an impact on your operating system's performance as your processor's speed. A 7,200-rpm hard drive outperforms an

Interfacing with the Future

The only way to support large and fast hard drives will be to transition from the existing Parallel ATA standard to Serial ATA (SATA). Serial ATA starts at a data transfer rate of 150 MBps and will soon migrate to 300 MBps and then to a whopping 600 MBps. It uses a thinner, more flexible cable that improves airflow and thereby facilitates the development of smaller form factor systems with better thermal designs. The evolutionary Serial ATA interface is expected to be fully adopted throughout the rest of the hard drive industry by the end of 2003. Seagate has allied closely with top innovators like LSI Logic to develop the first design-ready SATA hard drive, and to lead the SATA standards effort. The result is a hard-drive interface built for the future from the ground up, which also ensures Parallel ATA software compatibility for an easy industry transition.
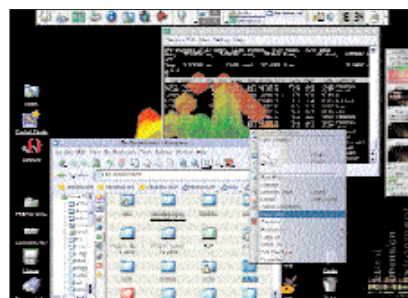
With a large drive you can multi-boot between multiple Operating Systems

equivalent 5,400-rpm drive by as much as 33 per cent in system-level tests. That means the core applications of the operating system function much faster and the response time is much improved. A general way to recommend a drive capacity for your system would be to use the following formula depending on your operating

system, (size of your operating system + the applications you use) x 4.

Linux on the desktop

This free operating system has stirred up a hornet's nest in the world of computing. Starting out as an operating system for the hardcore techie, Linux has made rapid strides in its ease of usability and is now accepted as a viable replacement to the dominance of Windows. From large corporations to first-time users, Linux is flexible enough to meet the needs of almost everyone. And people have woken up to this fact and are being tempted by the thousands to 'try' out this system. Obviously the easiest way to experience something new is when you're sure that you can revert back to your tried and tested path in case everything doesn't go according to plan. This is where a large hard disc can make a difference—as operating systems move on from single floppy setups to gigabyte installations it's imperative to have a large enough storage solution to accommodate multiple OSes. Linux now comes in a seven CD installation kit along with a plethora of bundled applications requiring more disk space than ever before!

Internet

Windows rewrote the PC story, while the Internet revolutionised the access and sharing of information and data management. Assimilating and accumulating information from all over, the Internet has grown into a huge repository of data. The Internet is a central repository of information, ranging from text to high-end graphics and video—with servers that have petabytes of storage space to host and serve this information. This means larger and more reliable storage. The storage needs for such a distributed and diversified knowledgebase is quite obviously enormous.

Information available on the Internet is distributed across servers over the globe. These servers are powered by the latest storage technologies to serve faster and reliable information to their customers. Storage is very important in mission critical applications where customer data has to be secured, stored, and delivered reliably. From large corporate servers to desktop computers the hard disc is responsible for facilitating the storage and exchange of information and data over this network. Without these storage mediums there would be no Internet so to speak. For example, servers running Web services cannot suffer a downtime. Such businesses need to have a reliable data storage device that must be rugged and robust, work under any conditions, and have a large MTBF (Mean Time Between Failure).

With large-scale enterprises and e-businesses growing exponentially, customers have started demanding faster and more reliable storage facilities in relatively higher capacities. This has led to a new business segment called 'Storage Service providers'. Storage space is rented for personal, commercial, and enterprise usage across the world. This requires faster hard drives that provide worthy

The largest repository of information would not be as accessible if it weren't for search engines like google.com

service to a majority of customers without any failure or disruption of service.

Multimedia

Multimedia, non-linear video editing, and audio editing have had a long-standing relationship with the storage subsystem. Hard disk drives are a critical component to large multimedia design houses, editing workstations and video servers. Advances in drive technology have significantly boosted capacity, performance and reliability and at the same time these larger and speedier drives have become truly affordable. There is no doubt that digital video production and multimedia content creation are amongst the most challenging applications for hard disk drives. The sheer size of digital video files creates unparalleled storage requirements. A half-hour television show digitised for delivery and for broadcast can require up to 45 GB of storage! Through the years, with sustained and continuous incremental improvements, drives have become more and more an integral part of these systems.

Solving just the storage requirements of these applications isn't enough. This is primarily because digital video is a real time format, and the inability to store and retrieve video in real time causes loss of quality due to dropped frames or audio breaks and this is simply unacceptable to digital video producers. There is no way any multimedia content generating producer will tolerate glitches, spikes or audio breaks and the only way to solve

this to a degree is by increasing throughput. Part of this can be solved by increasing the areal density but a great deal depends on the speed at which the drives rotate. Increasing the rpm to 7,200 rpm, 10,000 and as high as 15,000 rpm brings forth some physical limitations and hence higher buffers with ECC are required.

Without the advancements made in

Non-linear video editing apps like Adobe Premiere gobble up disk space faster than you can say 'ouch'!

the field of storage, multimedia on the desktop would not have evolved this rapidly. As the computer moves from a productivity tool to become an entertainment appliance, even the commonest of home users demands a multimedia capable computer. This means that all PCs must now ship with obscenely large hard drives to meet the needs of users, be it for digital music or video.

Conclusion

Of course, all these advancements in speed and storage capacities are inconsequential if the drives don't operate reliably in actual real world operation. With such large files and expensive data, a disk crash can be financially disastrous. Drive manufacturers therefore aggressively pursue reliability during drive design and manufacturing. Each new hard disk drive is designed to achieve specific reliability goals before shipping—each drive must pass performance

and stress tests at the extreme parameters of the drive's specifications, including tests for shock, temperature and operating environment. At the same time are constantly working on ways to reduce the number of moving components in the drive, thereby reducing the risk of failure substantially. This dual focus on producing more reliable drives and monitoring critical operating parameters have combined to allow hard drives to meet the stringent uptime requirements of today's applications.

digital dreams

Arouse your senses with these fantasy-inducing gadgets and experience pure digital bliss

Audiovox Thera PDA-2032 ▶▶
Super Combo

Powered by a 206 MHz Intel StrongARM Processor, 32 MB RAM and 32 MB ROM, the Audiovox Thera is a potent combination of a Pocket PC 2002 handheld with a built-in CDMA2000 1X compatible cell phone. In addition to making phone calls, this device will let users send instant messages, check e-mail, and browse the Web using the faster 1xRTT CDMA200 networks that should be coming online soon.
Web site: www.audiovox.com

SiPix SP-1300 and ▶▶
PocketColor 200
Shoot and Share

This camera and printer package is just the thing that can make Polaroid cameras seem like yesterday's news. The SP-1300 is a 1.3 Mega pixel digital camera with a 2x digital zoom and a 1.8-inch colour LCD viewer, and comes with an 8 MB CompactFlash card that stores up to 110 images. When combined with the portable PocketColor 200 printer, you can produce radiant and durable photos without the use of a computer. Simply plug the SP-1300 to the PocketColor 200 with a USB cable and get instant prints!
Web site: www.sipixdigital.com
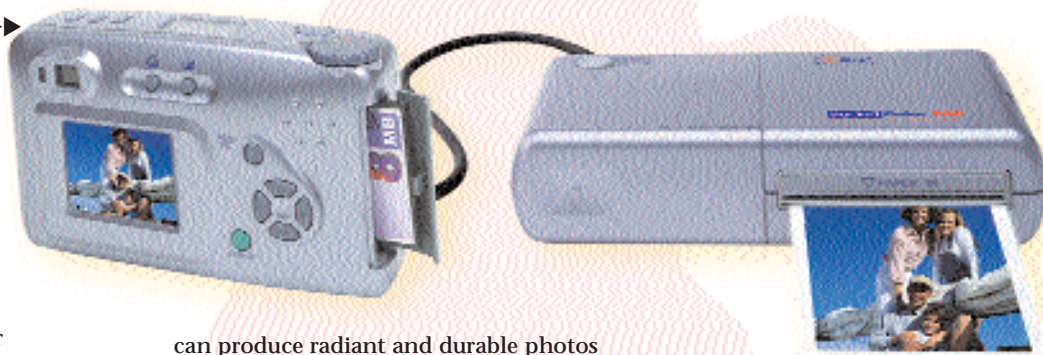
Casio GV-10 ▶▶
Splish. Splash.
The GV-10 is a totally new type of digital camera whose water-resistant, dust-resistant, and shock-resistant design revolutionises the concept of a camera as a delicate device that requires special handling. Of course, the GV-10 is also packed with powerful digital imaging features and functions—it's a 1.23 Mega pixel (1,600x960) digital camera with 2x digital zoom, 8 MB CompactFlash storage, USB connectivity and a 1.6-inch TFT colour display.
Web site: www.casio.com

▼ Panasonic SL-MP35
Non-stop music
Using just two AA alkaline batteries, the SL-MP35 can deliver up to 40 hours of MP3 playback and up to 30 hours of CD music before requiring a battery change. In addition to playing audio CDs, you can enjoy MP3 music that has been recorded on CD-R or CD-RW disks. The SL-MP35 features Panasonic's `No Skip' Anti-Skip System with a 48-second memory buffer for skip-free music along with a large, easy-to-read dot matrix LCD that's located at the top of the player.
Web site: www.panasonic.com

▲ Kodak mc3
Pocket-sized entertainment
Measuring a scant 2.6x4.1 inches, the Kodak mc3 is a cool pocket player that lets you shoot digital video or still pictures and even allows you to play your favourite MP3s. The mc3 can record more than 20 minutes of non-stop video in QuickTime format on a 64 MB CompactFlash card and can hold over 600 still images in VGA resolution. The mc3 is a fully functional MP3 player and is upgradeable for future Internet music formats.
Web site: www.kodak.com

Stayin' Alive

Let's find out what the Dotcoms that survived did right!

Dotcoms. Venture Capitalists. Content. Eyeballs. 'Click-throughs'. Portals. Vortals. Brick-and-mortar. Clicks-and-mortar. B2C. B2B. C2C. E-commerce. E-tailing. Multi-crore valuations. IPO. NASDAQ. Stock options. Dotcom bust. Layoffs. Streamlining. Business models. Revenue models.

We've sure come a long way since the early days of the Dotcom frenzy with hype and hoardings dotting city skylines. The Dotcom bubble was mostly a creation of perceived low barriers to entry as the Internet promised infinite possibilities. There was a phase when everybody believed that brands and core competence were old concepts and that anybody could become an Internet media publisher and make money as advertisers move to the Net.

'Eyeballs' was the magic word and in a bid to attract them, many Dotcoms spent their valuable venture capital money on advertising heavily in traditional and new media. Thus began the meltdown.

In the battle to 'make it big' and get a grip on a business that was entirely new, many perished. However, some emerged from the wild roller coaster ride, stronger and ready to take on the future, online.

This list includes portals and Web sites from areas as diverse as travel to online shopping to personal finance. But all of them have one thing in common: they're survivors who started out as 'Dotcoms', but built profitable businesses.

Their formula for success: good old business sense and the flexibility to take advantage of emerging opportunities and adapt to changing scenarios. Here are the secrets that helped these Dotcoms not only survive the downslide but also thrive.

1. Show me the money!

What's common between survivors such as *Traveljini*, *Naukri* and *C2W*? Nothing, except the fact that they started out with a business concept and a revenue model from the very outset.

Naukri followed a 'pay-to-list' model for job listings at prices that ranged from Rs 475 to Rs 6 lakh. *Apnaloan's* revenues came from various avenues: fees from banks for sourcing credit card applications, licensing their technology, and prospecting insurance. At *Traveljini*, online traffic is translated into sales. Leisure holidays are the main revenue generators followed by travel related services and then the usual advertising and listing fees.

C2W"'s business model was first based on creating content for companies and
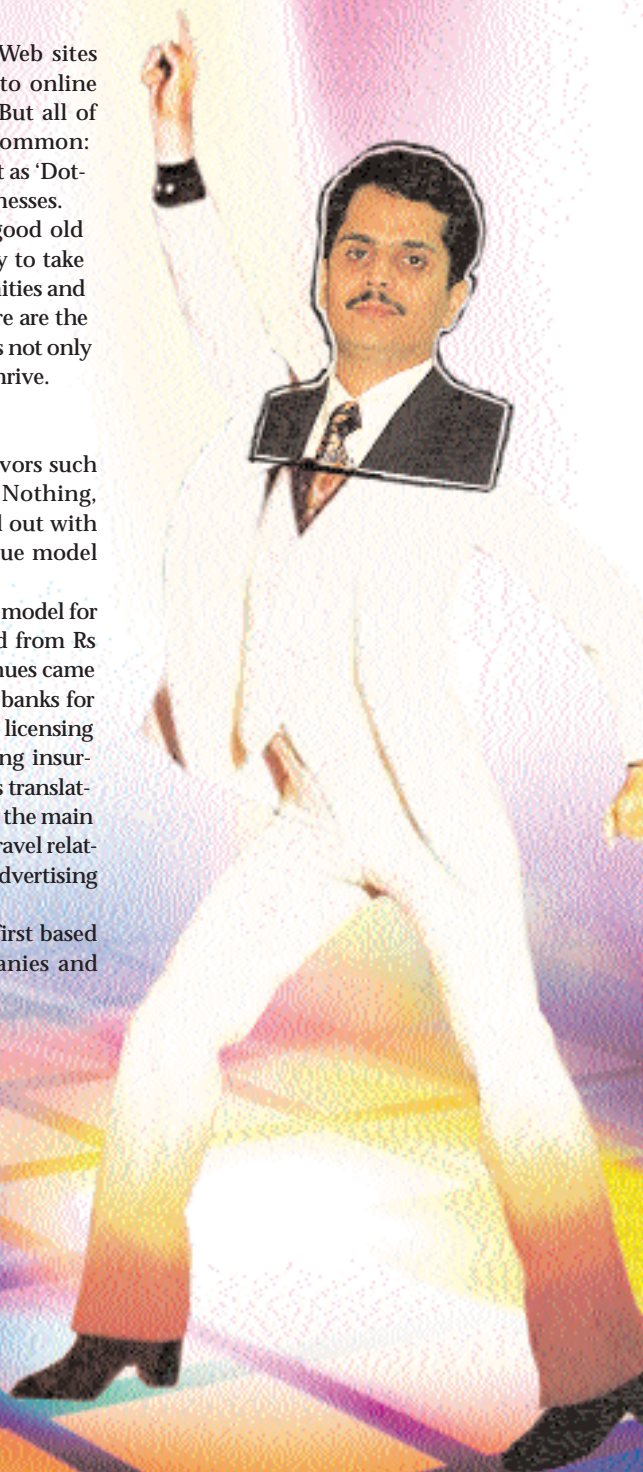
getting 'surrogate' advertising from them in return. Says Alok Kejriwal, CEO of C2W.com, "We were the first company to be on Kellogg's packaging and on Hindustan Lever's thematic advertising! MTV VJs screamed our name non-stop. In the first year, we got Rs 13 crore worth of advertising"!

Indiatimes focused on creating an Internet platform that was not just a source of great content, but also served as a cross-platform vehicle for reaching potential consumers irrespective of the medium—newspapers, magazines, radio, Internet, music or events. "The crux of the model was to use our resources efficiently to identify and increase the number of revenue streams, be they traditional banner ads, events, transaction based (e-commerce revenue) or for lead generation," adds Mahendra Swarup, CEO, *Indiatimes.*

Sanjeev Bhikchandani of *Naukri.com* reckons that his site was helped by the fact that they were the first in the business. This enabled them to build their brand without spending too much money. Being pioneers, good press during the Internet boom certainly helped. Cost saving media alliances with major newspapers like Hindustan Times, Business Today and Deccan Chronicle helped them get ahead.

2. Overcoming inertia

Having a sound business model wasn't enough. Just doing business online was a challenge they had to face and overcome.

Fabmart's biggest obstacle was that of inertia. "Customers coming online are still trying to get comfortable with this medium. They start with e-mail and then progress to browsing, then chat. Only later do they actually start transacting, and to get 'browsers' or window shoppers to complete their first transaction takes time. This is where our strategy is focused—to get browsers to make their first transaction

and overcome their inertia," says K. Vaitheeshwaran, CEO of *Fabmart.*

For *Apnaloan*, getting banks to change their mind-set about trusting an online channel for dispersion of banking products was a major obstacle. Accessing the Internet and acceptance of the idea of payment over the Net were the main obstacles faced by *Traveljini*. To counter this, they created a brick-and-mortar model since their research showed that people were comfortable coming to the office and closing the transaction.

Kejriwal recalls the time when he used to make 200 phone calls a day to brand managers and would get through to just two. His solution: even the most 'intelligent' of buyers hate change, so you have to coax, cajole and make them bend. "VCs told me, 'we will give you money ONLY if you spend it, not to create bank accounts. We will talk about revenues later'. I turned many of them down. A 'business' cannot change interpretations as per the times. Its mission is to make money from day one", says Kejriwal.

According to Vaitheeswaran, *Fabmart's* strategy since the start has been quite simple: changing habits and buyer behaviour. "We realised that pure awareness and brand building will not really help us. Hence, our entire growth strategy has been based on getting customers to try out online shopping at *Fabmart* just once. We were very confident that once a customer has tried us, we would be able to retain him or her, leveraging on the positive experience they have with our store".

Initially *Baazee* went about building their seller base through direct contact followed by a plan to get more buyers online through alliances and TV campaigns. According to Avnish Bajaj, CEO, *Baazee*, "The biggest challenge was to maintain a balance between buyers and sellers on *Baazee*. After achieving a significant base

of buyers and sellers we shifted focus from quantity to quality. Today, tradings (auctions closed successfully) on *Baazee* are in the range of 7 to 9 crore a month"!

3. Innovation

Even before you build a good business model, you need an innovative idea that will earn revenue.

Kejriwal has an interesting perspective: "How many billboards have you seen of *Hotmail* or *ICQ* or *Napster*? Yet they became so successful! Simply because they serve very 'viral' content. Like a common cold doesn't need to be injected into people, it spreads. That's the strategy I have used to grow the 1.8 million strong *C2W* community. For the first year, the content was free to clients. In return, I got barter advertisement. I gave the brands the 'excitement' of the Internet in exchange for them launching me in the real world"!

Among *Fabmart's* several firsts are India's first MP3 music download (with Remo Fernandes), India's first e-book download (a short story by R. K. Narayan), India's first e-payment mechanism (FabMoney), India's first online Gift Certificates, India's first online payment gateway (with Citibank), the Fabmart Affiliate Program, and the list goes on.

According to Bikhchandani, *Naukri's* innovative mind set', which constantly encourages people to take risks and do things differently and better themselves, is the secret of their success. Innovations at *Naukri* include HR Headlines (the weekly HR E-zine), E-apps (the response management software), Resdex (the resume database access product), and the Resume Zapper (sends your resume to 800 software companies automatically). This, combined with a technology engine that works 30 per cent faster and 50 per cent cheaper than other comparable solutions available in the market, leads to a greater value proposition for the customer. "Some of these are not even noticed by people who visit the site but continuous innovation is what keeps us ahead of competition", says Bikhchandani.
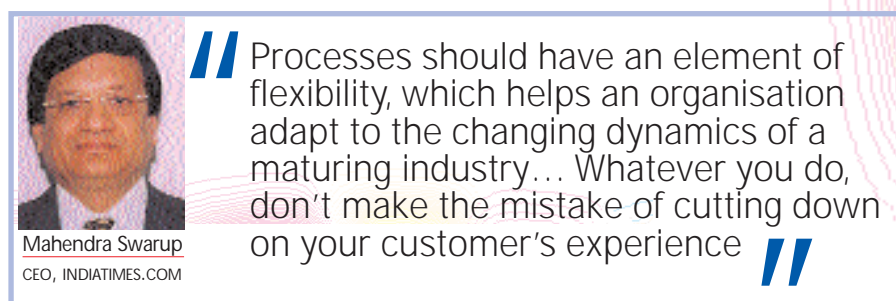
LANDMARKS

1996
rediff.com

Rediff.com was one of the first Indian B2C portals to offer localised content spanning several channels such as news, travel, money, etc., catering to the needs of users in India as well as the US. Rediff today is more than just a dotcom. It's an Internet, communications, and media company serving Indians worldwide.

1997
naukri.com
India's No.1 Job Site

Formed on the foundation of a business in databases and reports, Naukri ran for the first three years without venture capital. After they made profits for two years in a row, they took funding for growth.

1998
contests2win.com

For years, contests in India were conducted using 'competition' postcards which had to be sourced from a post office and sent to post box numbers. C2W's idea was to serve contests to the consumer through the Web, so that they are available anytime, anywhere to anyone in a single click!

1999
FAB MART

Fabmart started off as a music store, but steadily increased its offerings to include books, computers, groceries, jewellery, music, movies, toys, and watches. It wasn't long before Fabmart, with its strong internal processes for logistics and a robust back-end supply chain system, built a base of over 1,60,000 shoppers worldwide.

2000
baaZee

Baazee set the e-commerce fraternity on fire with an online auction model that concentrated on creating a trusting environment, where the best buyers could buy from the best sellers.

The 'next generation' dotcoms like Baazee, Traveljini, Apnaloan, and Mouthshut had one thing in their favour: they'd seen plenty of dotcoms fall by the wayside and knew what not to do.

Alok Kejriwal
c2w.COM

" Every employee at C2W eats, sleeps, walks and talks about the brand! Business development team members know brand baselines, positioning, and the core promise by heart! We play 'Brand Antakshari' at work "

Swarup attributes *Indiatimes'* success to a good business idea that translated well to the unique characteristics of the Internet. "Strategic pruning and re-mapping our goals based on the changing dynamics of the digital revolution has also played a key role in our success," says he. *Indiatimes'* innovations include the 8888 SMS service, which enables mobile phone users across India to access all information and interactive services on the site.

4. Online growth strategies

The secret of continuing success is to never allow yourself to rest on your laurels. It's imperative to always have a clear growth strategy in place.

Baazee recently acquired rival auction site *Bidorbuy.com*. "This has resulted in a lot of synergy between the two brands. Our combined buyer and seller base will have multiplicative effects in terms of sales on the site," says Bajaj. "It has also resulted in greater synergy in terms of revenue. We don't need to spend on marketing against each other. In addition, we also acquired their technology base".

"The real reason for *Naukri's* growth is that we have mastered the 'virtuous circle'. We've got the most jobs, so we get the most traffic, so we get the most response, so we get the most clients, again the most jobs and so on," says Bikhchandani. "Crucial to mastering this virtuous circle

Harsh Roongta
CEO, APNALOAN.COM

" One must always adapt to one's business needs and continuously innovate and do new things "

is our pricing strategy ranging from the cheapest (Rs 475) to the most expensive at Rs 6 lakh. This enables us to be present at

all price points and to aggregate the most 'need to know' content, creating a powerful magnet that draws traffic without having to spend money on advertising". In order to grow and add a bricks-and-mortar element to their business, *Naukri* acquired Executive Search firm Quadrangle.

5. People are the key

People are your most valuable assets and are crucial to building a strong organisation. "Our people are extremely passionate." says Bajaj. "*Baazee* is firmly anchored around values and it's the people at *Baazee* that drive execution of ideas. We're a bottom-up organisation".

Bhikchandani concurs that a key learning has been that if we get the right people in the right jobs and motivate and empower them then the business will take care of itself. "This sounds simple and obvious but it isn't," he adds.

Bajaj agrees: "Execution comes from people. They need to feel elated about what they're doing. One should never lose touch with people working in the organisation".

The future

From many fingers in a small pie, the pie's now getting larger with a few players who understand how the cookie crumbles. Innovative ideas, a head for business and relentless focus on customers are some of the things that saw these Dotcoms through. With Nasscom estimating the Internet subscriber figures in India (by December 2003) to be a whopping 50 million, it only gets better. If you add to this Indian Internet users who are more comfortable with transacting online and have increased trust in Internet companies, the future certainly looks promising. 🗗

AVINA LOBO

(Funk + Functional) = < 5k

You don't need bucket loads of money to have a computer system with all the cool peripherals in the market. Here are some handy accompaniments to your desktop that won't burn a hole in your pocket

Wheel deal!
Saitek R100 Steering Wheel

Given a chance you could take the fight to Michael Schumacher, but the only thing holding you back was the high prices of steering wheels!

Built to withstand and sustain severe jerks, the Saitek R100 fits neatly onto any desk with a rather heavy clamping mechanism, and is one of the cheapest steering wheels you can get. It comes with standard foot pedals that are strong enough to endure regular punishment. The buttons are easy to configure and their placement is fairly comfortable. The wheel requires no drivers and is detected without any trouble.

Contact: Origin Marketing (022-8835886)

Rs 2,250

TV on your PC
ADCOM SAA7130HL TV Tuner Card

Sure you can watch VCDs and listen to digital music on your PC. Now all that's missing is TV reception and your PC would become a total home entertainment system.

Well, here's something that should fill in the gaps just right. The ADCOM TV Tuner card is based on the CA8208 chip and is a 'tuner only' daughter card, which lets you tune-in to cable channels on your PC. Apart from the necessary port for connecting the TV antenna cable, it also provides you with Audio IN, Audio OUT, Video IN, and SVHS IN ports. The package includes a quick reference manual and the all-important remote control. You can also connect devices such as a camcorder and save your recorded videos on the PC. The card is fairly decent in terms of reception quality but its price is simply irresistible.

Contact: Advantage Computers Pvt Ltd (011-6485384)

Rs 2,400

Floppy drive for James Bond
Frontech Genius GD1032 Flash Drive

Sick of that stupid old floppy drive? It's too cumbersome to use, has too little space, and most importantly, it is never reliable!

Here's an ultra portable 32 MB storage device that is cheap and easy to use. Using a hot-pluggable USB interface, the Frontech Genius GD1032 USB Flash Drive is probably the best replacement for your legacy floppy drive. The driver installation is as simple as it can get and the device shows up and works like any other drive in Windows Explorer, with a drive letter assigned to it. And best of all, it looks like something straight out of a James Bond movie!

Contact: Jupiter Infosys (022-2001211)

Rs 5,000

Burn baby burn!
Samsung SW-224 (24/10/40x)

With the launch of 32x and 40x CD-Writers, prices of the older 24x writers have simply nose dived! 24x writing speeds are fast enough and if you burn CDs only occasionally, you will never notice the difference between a 24x and a 32x writer.
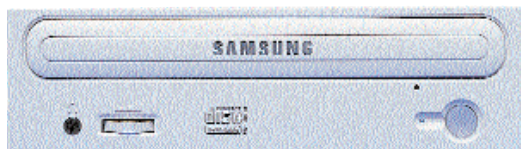
The Samsung SW-224 24x CD-Writer is one of the fastest CD-Writers as far as writing assorted data on a CD-RW is concerned.

This drive comes with a standard 2 MB buffer and incorporates buffer under-run technology. Keeping the drive company is a bundled manual, IDE/audio cables, multi-speed CD-R and a 10x CD-RW disk. Also bundled is Nero v5.5.

Contact: Samsung India (011-6322517)

Rs 4,500

Wireless for the masses
Odyssey 5113RF Remote Keyboard

If you equate wireless keyboards with the insanely rich then we have just the one that hits the sweet spot when it comes to pricing.

This keyboard uses RF (Radio Frequency) to communicate and is able to detect keystrokes accurately even when it is not within the line-of-sight of the receiver. Its onboard pointing device will take some getting used to though.

There is no way you could enjoy playing a game with this, but you sure can sit back, relax and enjoy the pleasures of a clutter-free desktop and leisurely surfing!

Contact: Compuage (022-8305500)

DVD Magic
BenQ DVP 1648A

The price difference between a CD-ROM and a DVD-ROM drive used to be substantial, with a 16x top-of-the-line DVD-ROM drive costing you nothing less than Rs 6,000, right? Wrong!

The BenQ DVP 1648A is a 16x DVD-ROM with a maximum read speed of 48x—and it retails for Rs 3,850 flat! The drive's firmware is capable of C2 error reporting and correction, which in layman terms means it's much more effective at reading scratched CDs and DVDs. The BenQ drive has a pretty decent sequential read speed and it handles DVD movies adequately well. It comes bundled with the popular DVD playback software WinDVD v3.0 for that lazy afternoon DVD-movie marathon!

Contact: BenQ (022-5705230)

Be ready to be seen
Logitech QuickCam Express

Your multimedia PC at home won't be complete until you get a Web cam. After all, where's the fun in Net conversations if that cute chat friend can't see what you look like?

The Logitech QuickCam Express has a maximum video capture resolution of 640x480 and can capture images up to 352x288 pixels. The camera uses a USB interface and has a CMOS type sensor. Simply plug it in, install the easy-to-use software, and you are ready to go! You can record videos, click photos, and even add live images to your instant messages. The Logitech QuickCam Express is one of the most inexpensive Web cams around and you also get some good bundled software such as the one-click video e-mail software, Web cam compatible Yahoo! Messenger, Microsoft NetMeeting video chat software, SpotLife Personal Video Broadcasting, SpotLife Web Album Creator and the SpotLife Web Cam Software.

Contact: Rashi Peripherals (022-8260258)

Precision mice
Logitech Optical Mouse

A mouse is a mouse, is a mouse, is a mouse. You see one, you've seen them all! So what's so special about this one, you ask?
To begin with, you get optical precision and performance in one inexpensive package. It's a simple, no-frills, optical mouse that gets the job done without burning a hole in your pocket. With its ambidextrous design, the Logitech Optical Mouse is sure to be a hit with left-handed users. This mouse gives you maximum control over the pointer, and the absence of a track ball means no mouse pad woes or roller cleaning sessions. Plus, a scroll wheel makes scrolling easy and the WebWheel software puts Web commands at your fingertips.
Contact: Rashi Peripherals (022-8260258)

(S)canned delights
Microtek ScanMaker 3630

This 42-bit rated, 1200 dpi scanner is no pushover and will reproduce pretty decent quality and accurate scans. The scanner comes with an 8.5x11.7 inch scan area, along with a 5100 element specified CCD. This ensures that everything is captured the way it is, be it glossy photographs or smooth overlays, giving some of the more expensive scanners a serious run for their money. It's easy to install and with the TextBridge Pro OCR software and MGI Photosuite III there is little else that Microtek could've bundled with this gem!
Contact: Rashi Peripherals (022-8260258)

How we Test

It looks good and the technology is glitzy, but does it do the job?

The Digital Media Test & Research Centre (DMTRC) conducts a series of elaborate tests to evaluate the merit of each hardware and software product. To ensure that our readers have all the information they need to make an informed buying decision, engineers at DMTRC evaluate and review the latest hardware, software and technology services in accordance with the most up-to-date evaluation processes and methodologies used around the world.

Comparison Tests

We use a dual rating system, the first of which is applied to the Comparison Tests in which we compare the performance of products within a particular category.

Each product is evaluated under different parameters such as performance, value for money, features, warranty and support, etc.

Weightages are then applied to the various test parameters according to their importance for that particular category of products.

These weightages are then used to arrive at an overall grade for each individual product. An overall grade of A+, therefore, indicates that the product is close to perfection.

The Awards

Digit awards outstanding products by selecting a Best Performance and Best Value winner in each comparison test. The winner of the Best Performance Award will be the product that scored the highest in the performance segment of our tests. This award represents the best performing product in our tests and doesn't factor in any other parameter such as value for money, features, support, etc. The winner of the Best Value Award will be the product that scores the highest in our value for money parameter which is derived taking into account the ratio of a product's performance and features to its price. The product winning this award offers good performance at a great price.

In Bazaar

The second part of the rating system is used to evaluate individual hardware and software products in the Bazaar section. The evaluation covers parameters such as performance, ease of use, value for money and the build quality/features of the product in question and then arrives at an overall rating.

Here each of these parameters is given a weightage of 25 per cent and is rated on a scale of 5, which is represented by arrows (▶).

The greater the number of arrows, the better the product. This simple five-point rating system is designed to give you an easy-to-interpret assessment of a product. For example, a product that receives an overall score of five arrows signifies an outstanding buy!

Overall Grades

20 - 19.5	A+
19 - 17.5	A
17 - 15.5	A-
15 - 13.5	B+
13 - 11.5	B
11 - 9.5	B-
9 - 7.5	C+
7 - 5.5	C
<5	C-

The 5-point Rating System used in Bazaar

▶▶▶▶▶	**Excellent:** a brilliant combination of price, performance and features—far beyond expectations
▶▶▶▶▷	**Good:** a good buy, better than most products in its category
▶▶▶▷▷	**Average:** reasonably competent but nothing spectacular about the product
▶▶▷▷▷	**Mediocre:** does not live up to expectations, needs improvement in many areas
▶▷▷▷▷	**Poor:** has serious drawbacks and needs improvement before it can be used for its target application

Make right

the call

The airwaves have undergone a renaissance of sorts with the explosive advancement in everything 'cellular'. Mobile phones have evolved from basic communication tools into all-in-one devices that keep you 'connected' anytime, anywhere. All that's left is to arm yourself with the right one…

Anytime, anywhere communication has changed our lives drastically and permanently. Ever since the debut of the first brick-sized cellular phone, there's been a breathtaking spiral in cellular technology.

Cellular phones have become increasingly compact and have simultaneously managed to incorporate an array of features and capabilities, ranging from Internet access to the ability to transfer video and even maintain your entire year's schedule!

Back in the 1990s, handsets were big, ungainly devices and were primarily used just for what they were made for—voice communication. Period. Over the last decade, this technology has metamorphosed to usher in a web of applications and services that have spawned a whole new range of functionality. Cell phones now have the ability to store extensive contact details and reminders, exchange voice and text messages and

even tune in to your favourite FM station or play your favourite digital music. At the higher end of the spectrum, there are devices that far exceed the specifications of simple cell phones to attain the status of full-blown communication and computing devices.

One factor that has driven the design and the implementation of cellular devices is the fact that they are now no longer just utilitarian devices—they have become an integral part of a person's lifestyle, reflecting the user's character and status. This is probably the largest driver of cell phone design where styling, form factor, colours, personalisation and just pure funk value have taken priority in the process of buying a cell phone. Interchangeable faceplates, fluorescent multicoloured screens and keypad lights, polyphonic ring tones that could give a dozen canaries a run for their money—you name it and the feature is there on today's cellular devices.

As cellular phones have expanded in

terms of functionality to incorporate all these cool features, their basic job as a communication device has also seen tremendous advancements in terms of sheer technology. While GSM is still the most widely used standard, there are many consortiums that are working towards taking mobile communication to the next level. Think permanent Internet connectivity, full-motion video, CD-quality audio and crystal clear voice reception—all this is now becoming a reality with the development and acceptance of new communications standards like GPRS and 3G. Like all new technologies, there is a gestation period where they mature and where costs of implementation get lowered so that they eventually become accessible to the common user. These bleeding-edge standards have made inroads only in very select regions in the world where they are being tested for feasibility, reliability and cost of implementation. However, we are not really too far away from the day when your cellular phone will

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Digit Test Process

Qualification criteria
In this, the first and the largest cellular phone test in the country, we tested 22 phones over a range of categories. We only evaluated phones that support the GSM and/or the GPRS standard. We categorised the phones into three price ranges: phones up to Rs 10,000, phones between Rs 10,001 and Rs 18,000 and phones priced greater than Rs 18,000. These are the end-user prices as provided by the companies. These price categorisations were decided on the basis of the various features of the phone and the target audience. We tested only box-packed units that come with all the pertinent accessories—no grey market phones were taken into consideration.

Test Methodology
The cell phones were evaluated on various parameters using a series of tests. The overall score was arrived at by putting together the scores in each of these areas.
Features: Here we awarded points depending on the features and capabilities of the phone. These included the type of battery used, the presence of PIM features such as reminders and To-do
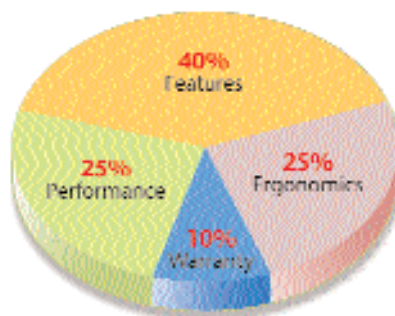
lists, the availability of predictive text input, ring tones support, screensavers, operator logos, games, support for newer standards like GPRS, the type of the display used, etc. We also checked the number of accessories that were bundled with the phone and for special features such as MP3 functionality, an integrated PDA, etc.
Ergonomics: We evaluated the weight and size of the phones along with the build quality, the overall design, shape and layout of the phone, and its ease of navigation.
Performance: The phones were tested for voice quality, charging time, standby

time and talk time, and storage capacity. The talk time scores are only indicative—they could vary depending upon the area of usage, signal strength, the service provider used, time of day, etc. In order to maintain the constancy of the network, we used a single service provider while testing the cellular phones. The voice quality tests were performed by dialling an automated voice response number of the service provider from a fixed location from where signal strength was high. Here, we graded the phones for volume, clarity and timbre of the voice. For the signal strength tests, we took the phones to four specific locations with varying signal strengths and in each of these areas, we logged the ability of the phone to receive the signal and reliably make and receive calls. These zones included areas like stairwells, basements, open outdoor areas, etc.
Warranty: We took into account the warranty period, the number of authorised service centres appointed by the company, the number of cities in which authorised service centres are present and whether users are provided a standby cell phone while the original one was being repaired.

plug you into a pervasive information system, where you will never be far from the latest video replay of Sachin's match-winning six, the latest sci-fi movie trailer or even the day's weather report.

Ergonomics

A cell phone should have a small form factor, a design that feels comfortable and is easy to work with and features that are simple and quick to access. Here, the phone that really shone was the Nokia 8310. At 84 grams, this phone was one of the smallest and lightest devices in this comparison test. It is designed with the user in mind and everything from the placement of the buttons to the screen size and the navigation through the various menu options is such that it takes virtually no time for even a new user to get used to it. True to the Nokia tradition, the phone's menu structure, look and feel is carried forward from its predecessors with some new functionalities added, making it one of the easiest phones to navigate through. The shortcut key combinations make it very simple to reach

Nokia 3350

The 3350 is built along the lines of Nokia's popular 3-series of cell phones. It is characterised by a slightly modified casing where the duotone band around the screen is done away with, even though it remains the same size as its predecessors. The absence of this familiar band does, however, tend to give a blocky feel to the phone. The standard faceplate with the phone features an airbrushed colour scheme that sets it apart from other phones which usually have solid colours. After switching it on, you immediately notice the high-resolution monochrome screen due to which more information can be packed onto one screen with enhanced logo animations and screen graphics. All enhancements to this phone are geared towards packing more fun into the device, from the picture editor that lets you draw your own logos and send them to friends, to the addition of three new games and its ability to download game packs, logos and screensavers. Internet connectivity is also provided through WAP. Like all other Nokia phones, navigation is intuitive with shortcut keys that let you reach settings by pressing the numbers in a certain sequence. A Li-Ion battery pack is standard with the phone and it features a standby time of up to 10 days and a talk time of over 2 hours. The phone has an impressive 150-entry storage capacity for the address book. With a range of newer features and fun additions, this phone is an unbeatable choice for users who need a good phone with plenty of options to keep them occupied. And all this comes at a great price.

Price: Rs 9,250

Nokia 3350		A-
Ergonomics	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▷	
Performance	▶ ▶ ▶ ▶ ▷	
Warranty	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

+ Higher resolution screen, more games, picture editor
− Slightly blocky look

Cell phone users in India
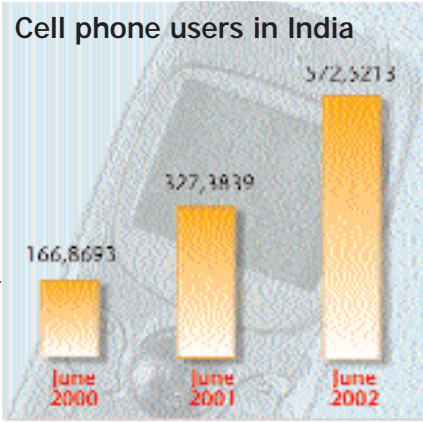
Source: Cellular Operators Association of India

166,8693 — June 2000
327,1839 — June 2001
572,5213 — June 2002

Battery Logic

Nickel Cadmium (NiCd): These batteries are the least expensive of rechargeable batteries available but they suffer from inherent shortcomings. For instance, the memory effect. Here, if the battery is not fully drained before you recharge it, the unused portion eventually crystalises and hence, the complete capacity of the battery is not fully utilised.

Nickel Metal Hydride (NiMH): This technology offers between 30 and 40 per cent longer operation as compared to NiCd batteries but is susceptible to loss in performance at higher temperatures. These

are also prone to the memory effect but to a significantly less extent compared to NiCd batteries.

Lithium Ion (Li-Ion): The prime advantage that these batteries have over the older NiMH batteries is that they hold more energy for the same weight and volume. Therefore, you can get the same amount of power from much smaller and thinner batteries. Also, they do not have the inherent memory effect disadvantage of NiMH batteries. The only disadvantage with these batteries is that they cost more than other types of batteries.

often-used functions on the phone such as message composing, the address book, etc without having to navigate though the entire menu.

Another phone that did well in this test was the Panasonic EB-GD75. It weighs just 82 grams and incorporates some really innovative features that make using the phone a snap. This phone is characterised by the tiny five-directional joystick that makes navigating through the clear and visually intuitive menu system immensely simple. This little joystick is used to control the on-screen selection box and to scroll through and select the various features and sections in the menu—all this

in a compact form factor that is just 4.1 inches long.

The Samsung SGH-A400 deserves special mention here, as it would really appeal to users who need a very small and light phone, especially female users. Based on a flip-type construction, this mobile phone collapses into a package that has almost the same length and breadth as a matchbox or a woman's makeup compact! This WAP-enabled cellular device weighs just 80 grams. However, its menu access capability is not as

simple to learn and use as that of the Nokia phones.

One phone that did not do too well in this category was the Siemens A35. Weighing in at a 'heavy' 122 grams, this phone was also much longer than the others (5.2 inches). There is no special functionality offered in terms of intuitive control of the menu system—one has to press many buttons to reach a particular function or feature. However, considering that this is also the most inexpensive phone in this roundup, it wouldn't be a bad choice if price were a major consideration for you.

The Nokia 5510, an otherwise feature-rich phone with plenty of added functionality, lost ground when it came

Samsung SGH-R220

The Samsung SGH-R220 stands out for its sturdy and neat design with a tasteful use of metallic and solid colours. The protruding antenna, however, makes the effective length of the phone greater than some other phones in its category.

With a comparatively large and high-resolution mono-chrome display, this phone features clear graphics when it comes to screensavers and logos. A distinctive characteristic of this phone is its deep blue backlight. However, it takes some time to get a hang of the navigation since there is no dedicated button for navigation—you have to press a combination of buttons to reach the different features in the menu. A feature that is very well implemented in this phone is the superior scheduling and calendaring options where you can set To-do lists along with reminders. Another interesting and unusual feature is the ability to change the colour of the service LED on the phone to any one of six available colours. The phone also has support for WAP.

The SGH-R220 was one of the loudest and clearest phones we tested. With very good network performance and build quality, it hits many sweet spots.

Samsung SGH-R220	B+
Ergonomics	▶▶▶▶▷
Features	▶▶▶▷▷
Performance	▶▶▶▶▷
Warranty	▶▶▶▶▷
OVERALL	▶▶▶▷▷

Price: Rs 9,000

+ Outstanding voice clarity and volume, high-resolution display, blue backlight
− Slightly bigger than some of the phones in its category

Ever wondered how Bluetooth was so-named? There was a Danish Viking king, Harald Blatand (his surname means Blue tooth in English), who lived in the latter part of the 10th century. Harald Blatand united and controlled Denmark and Norway (hence the inspiration for the name: uniting devices through Bluetooth). Legend has it that old Harald had an inclination towards eating Blueberries, so much so that his teeth became stained with the colour, leaving him with a rather unique set of dentures!

5 Steps for Longer Battery Life

🔋 Let NiCd and NiMH batteries get discharged completely before you recharge them. If you don't follow this practice, then the part of the battery that is not used would become dead and the overall capacity of the battery would be reduced.

🔋 Check if your cell phone has a discharge feature. Utilise this feature to maximise the lifespan of NiMH and NiCd batteries.

🔋 Check that your phone's battery contacts are clean. If not, clean them with alcohol.

🔋 Keep the batteries in a cool, dry place, away from heat and magnetic objects.

🔋 Don't leave batteries dormant over an extended period of time.

to ergonomics—at 155 grams and 5.32 inches long, it is simply too large and heavy.

Features

Cellular phones are not just phones anymore. Today, almost all of them go way beyond being just a communications device and offer PIM functionality, Internet access through a range of standards and even plug you into the world of digital audio through MP3 and FM tuning capabilities. The phone that really stood out in this category was the Sony Ericsson T68i. The only phone in this comparison with a brilliant 256-colour display, this little device packs an astounding number of features and functionality. Take for example the support for GPRS that lets you connect the phone (and through it, even other devices) to the Internet at speeds comparable to your desktop modem. There is also integrated support for Bluetooth that gives the phone the capability to communicate with other capable devices within a range of 10 metres.

On the PIM front, this phone lets you keep track of schedules, set reminders and provides full-fledged calendaring capabilities. There are even themes on the phone, much like you see in Windows, where you can modify the look and feel of the interface by changing the wallpaper on the phone or the colour schemes of the menu, scroll bars and other elements of the phone's GUI. Change this to 'Winter' and you get a blue theme with snowflakes as your wallpaper! For those who like to play games while on the road, this phone features eight! Among the best is the popular board game-based Battleships. In full colour, this game features graphics that have never before been seen on a cellular device. The Multimedia Messaging Service (MMS) capability of this phone extends the functionality of text messaging, allowing you to send colour pictures and even animations to other users whose phone supports this. The only shortcoming with this phone is the fact that it features standard ring tones that do not support polyphony, which makes this exceptionally feature-packed phone sound just like any other!

The Nokia 8310 did well in this category as well. With support for GPRS, Infrared, Reminders, and To-do lists, this phone offers plenty of features in a very small and light package. A salient feature with this phone is the inclusion of an FM tuner—although you get only mono reception, the bundled hands-free

Siemens M35i

This phone sports a grey-black duotone design and features some very thoughtful touches. For example, the battery bay is lined with rubber, which increases the phone's resistance to moisture and dust. At 125 grams, this is not a light phone. Its weight can be attributed to the NiMH battery pack that it uses. There's a battery discharge feature built into the phone for completely draining the battery before recharging it. The buttons on the phone are rather rubbery but they offer a good grip and are easy to operate. Even the rear battery cover of the phone is rubber coated and this significantly improves grip and makes the phone impervious to rough usage. The layout of the buttons is, however, slightly cramped and you need to press many buttons while navigating through the menu—you often have to use both hands. There are four games included in the phone. You can set reminders, but there is no support for calendaring. This phone also supports WAP. For first-time users, there is a quick start guide that visually indicates common processes such as loading your SIM card, changing your battery, etc. One salient feature with this phone is the 200-entry phonebook memory. With a very robust construction, this phone is a good choice for people who are constantly on the road.

Siemens M35i		B+
Ergonomics	▶▶▶▶▶	
Features	▶▶▶▶▶	
Performance	▶▶▶▶▶	
Warranty	▶▶▶▶▶	
OVERALL	▶▶▶▶▶	

Price: Rs 9,995

+ Very tough construction, large phonebook memory, WAP support

− NiMH battery, cramped button layout; you often need to use both hands

Phone Care

■ Never keep your cell phone near heat and magnetic sources (gas stove, direct sunlight, audio speakers, etc).

■ Avoid dropping it as it could damage the delicate circuits inside the phone. Use a wrist strap or a belt clip. Covering your phone (and possibly making it look less attractive) is a more prudent choice than damaging it because you dropped it.

■ Switch the device off if its not going to be used for a long period of time.

■ Keep the device away from moisture and liquids. Avoid taking the phone into areas like kitchens or washrooms.

■ While charging the device, do not pull the adapter cord out from the device until the main electricity supply is switched off.

■ Switch off the phone before removing the battery or changing your SIM card.

■ Always use the rated and factory specified accessories for your phone. If, for example, you use a higher power rating for charging your phone, it could get charged faster but will lower the life of the battery or even damage the phone.

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kit lets you tune in to and listen to your favourite FM channel with absolute ease.

Other phones that exhibited very good features were the Nokia 5510 and the Samsung SGH-M100 with their support for MP3 playback through their integrated memory (64 MB in the former and 32 MB in the latter). The Samsung SGH-M100 features headphones that have an in-line controller that lets you control the MP3 playback. You can even switch over to receive a phone call while you're listening to MP3 audio. The Nokia 5510 bundles the necessary audio encoding and transfer software. In the package we received, there was also an audio CD. The distinguishing feature of the Nokia 5510 is the full QWERTY keypad that is built into the phone. This makes it very simple to create SMS messages as you have the letters of the alphabet and numbers on individual keys. And yes, this phone also integrates an FM tuner.

The Siemens ME45 is another feature-rich phone with support for GPRS, full-fledged PIM functionality through reminders, To-do lists and calendaring. This phone also bundles a serial cable that can be used to connect the phone to a computer where its functionality can be controlled through the software that is supplied on an 8-cm CD.

Another phone that incorporated the

Cutting through the Hype

Should I go for GPRS?
Buy a cellular phone that supports GPRS only if your network supports it. Some service providers in India have upgraded their networks to GPRS. Check the network coverage of the service providers in your city so that the signal is at a useable level in the places you are going to use your phone. The best way to check this is to find out from other users if they get good signal strength in the areas you would normally be using your phone in.

What about those cool features?
While phones might incorporate features like Bluetooth support, MMS (Multimedia Messaging Service) and other standards, you should check whether your service provider supports these features and whether you have other devices that you can use the phone with. Some of the coolest features are those that do not depend on any external factors. Opt for phones with features such as predictive text entry for faster creation of SMS messages, robust PIM features, polyphony and a good amount of storage for contacts and messages. Other features to look for are whether you can download screensavers, operator logos and games. Internet connectivity via WAP/GPRS will depend on your network operator's support for it. Find out if this is available in your region before buying such a phone.

According to CNET and Strand Consulting, ring tone sales have already touched a whopping $1.5 billion in Europe and $300 million in Japan!
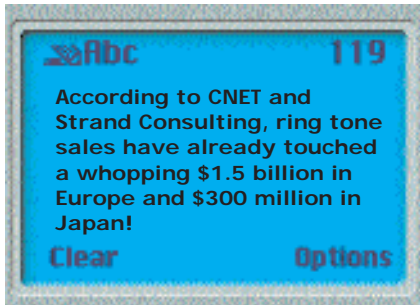
best of communications technology through WAP, Bluetooth and Infrared was the elegant Nokia 6210. This phone has very good PIM functionality and also supports HSCSD (*see Jargon Buster*) for fast download of data and access to the Internet.

One phone that was pretty disappointing in terms of features supported was the Siemens A35. Though it is the lowest priced cell phone in this roundup, it had no integrated memory for phone numbers and had a very primitive two-line display due to which you cannot use any personalised screensavers or operator logos. It also did not have any PIM functionality in the form of To-do lists or reminders. Probably the most missed feature was the absence of any games!

Another phone that did not do too well was the Motorola T190. This one also had no provision for any kind of PIM functionality or the capability for composing your own ring tones. But as a saving grace, the phone had three games and also supported predictive text input, unlike the Siemens A35.

Performance

Coming down to the actual functionality of the phone, the performance of the phones was measured over a wide variety of parameters such as voice clarity, charging time, standby time and talk time, its storage capacity and

Ericsson A3618s

The Ericsson A3618 is a very elegant phone that immediately appeals with its solid, yet tasteful design. This GSM phone has the conventional features such as calendar, screensavers and predictive text entry for SMS. One cool feature is the screen backlight—you can choose from deep blue, red, green or yellow. You can even assign a particular colour to specific callers in the address book. The 19 preset ringers are very loud and unusually clear compared to the other phones. This phone also packs a Li-Ion battery pack, which gives it an edge in the standby time and talk time tests. Navigation is different—all the phone functions are grouped into 'folders'. Other features such as the calendar are grouped into an 'extras' folder. While accessing a particular feature might take some getting used to, there is a 'Shortcuts' folder where hotkeys can be assigned to the keypad buttons—this does simplify navigation. Like the Nokia 6-series, this one is also on the longer side (it measures 5 inches). This would prevent it from comfortably fitting into your shirt pocket. While there is no facility for downloading new screensavers from the Internet or changing the faceplates, the phone does a decent job of being a communications device. With a 99-entry phonebook, a Li-Ion battery and a sturdy construction, it is a good device for users who do not bother much about customisation and who don't mind a cell phone that is slightly on the longer side.

Price: Rs 8,495

Ericson A3618s	B+
Ergonomics	
Features	
Performance	
Warranty	
OVERALL	

+ Li-Ion battery pack, four colour options for the backlight
− Long form factor

Nokia 5210

Radical in design and construction, this is one of the few phones that is resilient to dust and moisture. With a robust two-part shell, the rubberised body increases the phone's resistance to physical shock and looks very unconventional. The entire shell of the phone can be changed according to your preference and its construction is such that changing it is especially simple. There are loads of features besides the Reminder, To-do lists and calendar—for instance, an integrated thermometer which could be used for whatever you see fit! The key layout of the phone is very intuitive and like all other Nokia phones, so is the menu navigation. At 1.29 inches, the LCD screen is noticeably smaller than most other phones but the screen has a higher resolution than the Nokia 3310, for example, and therefore readability is not compromised. The phone also features WAP and there are five games included. Another impressive feature is the 250-entry phonebook memory. One shortcoming is the phone's on/off switch—you have to press down with all your might. The 5210 exhibited excellent audio quality. The phone uses a Li-Ion battery pack and the talk time for the phone was logged at a commendable 115 minutes. This phone is a good choice for people who need a rugged phone.

Price: Rs 11,500

Nokia 5210	B+
Ergonomics	▶▶▶▶▷
Features	▶▶▶▶▷
Performance	▶▶▶▶▷
Warranty	▶▶▶▶▷
OVERALL	▶▶▶▶▷

+ Robust construction, WAP, large phonebook memory
− The on/off switch is difficult to operate

its sensitivity to the network at various locations. The best of class here was once again the Sony Ericsson T68i. With an enormous storage capacity (it allows you to store up to 510 contacts in the phone book) and separate areas for storing SMS and MMS messages, you will find it very difficult to run out of memory on this phone. With a powerful Li-Ion battery pack, this phone boasts a rated standby time of up to 16 days and a talk time of about 6 hours! This is amongst the highest talk times offered in the industry.

A number of phones came in a close second, such as the Nokia 5510 with its exceptional voice loudness—one of the loudest in this roundup. This phone also boasts of good storage capabilities with a 100-entry address book on the phone along with the capability to store up to 100 SMS messages. The standby time is rated at a very commendable 10 days. Another impressive factor in this phone is its ability to pick up a reliable network signal across the various zones that were used to test for network sensitivity. It registered full network signal strength in the stairwell zone, a place where most phones registered considerably lower signal strengths.

Then there is the Panasonic EB-GD75 with its 200-entry phonebook memory and a very good talk time logged at 3 hours with a six-day standby time. An outstanding feature of this phone is that when we charged the completely drained battery, it was able to recharge to maximum capacity in just one hour! This phone also registered very good network sensitivity and logged a good signal even in areas where other phones

Choose the Right Talk Plan

Understand your talk patterns
Do you plan to use your cell phone as an extension of your landline or do you plan to use it infrequently or in case of emergencies? In the former case, it would make more sense to go in for a billing talk plan that offers free phone calls with extras like night time reduced rates and free calls to numbers of your choice. Most billing plans available today include just the bare minimum services and features and everything else that you would want (caller ID, ISD/STD facility, etc) comes at an extra price. Be careful how you choose these features as they could add up to a significant amount on your monthly bill. Prepaid cards are suitable for users who do not use their phone very often and who want to keep a close check on their usage without the risk of being over-billed.

Keep an eye on the clock
Speak only as much as you have to. Long-winded conversations are expensive. Most phones have a feature that causes it to beep at the end of every minute of talk time. Use this feature to keep a check on how long your calls are. Most plans have a pulse time of 1 minute and therefore you should keep your calls such that conversations do not (as far as possible) overflow into the next minute.

Talk only when you have to
Use your cellular phone only when you do not have access to a landline. If you need to get a small amount of information to people, opt for sending an SMS message—this works out much cheaper than making a call.

Beware of SMS overload
This is the most elusive of them all. Since it is very simple and convenient to hit the 'forward' button and send that SMS joke to a friend, most people don't even give it a second thought. The cumulative costs of sending SMS messages can comprise of a sizeable chunk of your phone bills every month. As far as possible, use SMS only to send useful information and only the very good jokes!

Sharing your phone
Beware of friends and strangers who need to use your phone for making calls. Get into the habit of politely telling them that your phone bill is especially high this month and tell them to keep it short.

Nokia 6210

This elegant handset supports a range of wireless technologies and packages them in a highly functional and slim form factor. The Nokia 6210 is a GSM handset that also features HSCSD (*see 'Jargon Buster'*) support, which allows Internet connectivity of up to 43.2 Kbps. It also features Infrared and Bluetooth support. The navigation is akin to all other Nokia phones, with a very similar menu structure and control. It is therefore very simple for users who have previously used a Nokia handset to get used to this one. One of the most impressive features with this phone, however, is its enormous memory—this little device can store up to 500 contacts, 150 SMS messages and 30 call registrations. Like all Nokia phones, the shortcut key combinations allow the various features of this phone to be accessed quickly. It can also be customised through the interchangeable faceplates, downloadable ring tones, screensavers and operator logos. The phone did very well in the network sensitivity tests where it was one of the few to pick up a signal in one of our more demanding test zones. Voice reception was clear, but seemed to be slightly soft, even when the volume was set to the maximum. The only downside with this phone is the fact that it is much longer than most other phones—at 5.18 inches, it is certainly larger than most people's palms and would just about fit in your shirt pocket. With support for many wireless technologies and excellent storage capacity, this phone is a good buy for people who want access to all their contacts and the Internet at their fingertips.

Price: Rs 10,999

Nokia 6210		B+
Ergonomics	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▶	
Performance	▶ ▶ ▶ ▶ ▶	
Warranty	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

+ Loads of memory for storing contacts and messages, HSCSD, Bluetooth, IR and WAP support
− Long form factor, speaker volume could be louder

were straining to pick up the signal reliably. The Nokia 3350 was also an impressive performer. Priced very affordably, this phone exhibited good voice loudness. It can store up to 150 phone numbers with a rated standby time of up to 10 days. Following in the tradition of the 3-series of Nokia phones, this one also has an internal antenna and the phone displayed excellent sensitivity to the network in all the zones except in the basement where all phones failed to pick up any signal reliably.

The phones that disappointed in the talk time test and standby time test were the Samsung SGH-M100 and the Samsung SGH-A400. Even though the Samsung M100 exhibited good voice loudness and clarity, the talk time was logged at a very low 75 minutes. The standby time was about two days depending upon usage and the network characteristics. Similarly, the A400 features a standby time of just three days. This was the only characteristic that went against an otherwise good pair of phones, since they both performed well in the network sensitivity tests.

Samsung SGH-A400

This phone has a very small form factor and weighs just 79.88 grams. It is aimed at the fairer sex and incorporates a host of features and functionality for women. In fact, at first glance it looks a lot like a woman's makeup compact! Featuring a flip-type construction, the 128x96 pixel four-greyscale screen measures just 1.34-inches diagonally but features some of the crispest and clearest graphics we have seen on a monochrome phone display. The animated screensavers here were especially impressive. Navigation is controlled through a circular button that takes some time getting used to and one has to press many buttons to reach a given setting. However, the screen icons and menu structure make it simple to understand the navigation after working with the phone for a while. There are a host of features such as reminders, To-do lists and a calendar that can be used to schedule appointments and meetings. The phone has a 99-entry phonebook and there is also support for T9 predictive text entry for SMS. If you need to pass time, there are seven games included. However, the highlight of this phone is the added functionality for women. There is a separate section called 'Life' which contains functions that can be used to monitor and remind the user of various aspects pertaining to women's health. This includes a calorie monitor with entries that let you calculate how much energy you've burnt up while shopping, washing, jogging or even chattering!

Samsung SGH-A400	B+
Ergonomics	▶▶▶▶▶
Features	▶▶▶▶▷
Performance	▶▶▶▷▷
Warranty	▶▶▶▶▷
OVERALL	▶▶▶▶▷

Price: Rs 17,000

+ Compact and light, impressive display, special features for women
− Takes many key presses to reach a given setting, flip-type construction is prone to breakage

Warranty and support

What happens when your cell phone goes on the blink? Cell phones have become an inseparable part of our lives and living without your cell phone can, indeed, prove to be very difficult. It is therefore important that you get adequate and timely support from the vendor. Some of the indicative parameters that can assure you of good service are the number of service centres your phone manufacturer has around the country and the number of cities in which these service centres are present. This means that you will always have access to technical assistance, even though you're on the road and on the move. The best option is if your vendor provides you with a standby phone while yours is being repaired.

Of all the phones we tested, the most service and warranty-friendly brand is Nokia. With a network of 56 authorised service centres in 41 cities across India, chances are that you are never going to be too far from help in case something happens to your Nokia phone while travelling. Nokia also provides a standby phone while your phone is being repaired so that you're always connected, and all their phones come with a one-year warranty.

Samsung holds the distinction of having the second largest network of authorised service centres with 50 authorised service centres in 28 cities across the country. Samsung also offers a one-year warranty on all its phones. Siemens follows close behind with 28 service centres in 28 cities across the country and it also offers a one-year warranty on all its phones.

And the winners are…

There's a wide range of cellular devices available in the market. Some stand out in terms of sheer performance while others offer tremendous functionality—there is something for everyone. Today's cellular phones far exceed the capabilities

Sony Ericsson T68i

The Sony Ericsson T68i is a marriage of bleeding-edge technology, highly intuitive usability and truly breathtaking looks. With its 1.63-inch, 256-colour screen and support for GPRS, Bluetooth and Infrared, this phone almost has it all. And all this in a package that weighs just 84.98 grams! This phone is very well styled and is very comfortable to hold. Navigation is made very simple by way of the tiny joystick that serves as both a navigation control as well as a select key. The most striking aspect of this device is the colour screen and the wealth of content that it allows, from static GIF images to animated MMS messages, screensavers and even Web content. The phone even has themes that change the look and feel of the interface such as the background image, and the colour schemes of the icons and menu bars. The Bluetooth functionality lets it communicate with any such devices within a radius of 10 metres, allowing you to exchange data, surf the Internet or even take a printout without grappling with wires.

However, there are few downsides too—the present set of ring tones are exceedingly drab and really don't go with the phone's personality! Also, the GUI is rather heavy and some operations have a slight lag associated with them during navigation.

However, with unbeatable multimedia support, a brilliant display and support for a host of wireless technologies, this phone is the undisputed leader of the pack.

Sony Ericsson T68i	A
Ergonomics	▶▶▶▶▷
Features	▶▶▶▶▶
Performance	▶▶▶▶▶
Warranty	▶▶▶▷▷
OVERALL	▶▶▶▶▷

Price: Rs 28,000

+ 256-colour screen; support for GPRS, Infrared and Bluetooth; intuitive control
− Drab ring tones, heavy (sometimes slow) GUI

Panasonic EB-GD75

Light and elegant, feature-packed and great sounding—that's the Panasonic GD75 in a nutshell. This matt silver phone uses a Li-Ion battery pack and is surprisingly lightweight at just 81.86 grams. Its features include an impressive phonebook memory of 200 entries, and a high-resolution 1.5-inch monochrome screen that displays good-looking graphics and clear text. Navigation through the menu system is enabled through a very intuitive, small and easy-to-use five-direction joystick. Another distinguishing aspect of this phone is its support for polyphonic ring tones. With the ability to play more than one note simultaneously, this phone's ring tones sound richer. The phone also includes a ring tone composer. Internet connectivity is enabled through support for WAP and the integrated WAP browser. There are other nifty features such as a currency converter and the ability to copy and paste sections of SMS messages into new ones, in addition to its support for T9 predictive text entry. However, one downside to this phone is that there are just two games bundled. In the tests, the phone took a quick 1 hour to recharge completely from a drained condition and the talk time was logged at a respectable 180 minutes. This phone makes a very good choice for users who need plenty of features in a small form factor with intuitive navigation and good battery performance to last you while on the road.

Price: Rs 10,290

Panasonic EB-GD75		B+
Ergonomics		
Features		
Performance		
Warranty		
OVERALL		

+ Polyphonic ring tones, large phonebook memory, good standby time, impressive display
− Few games

and even the sheer style of their predecessors.

Budget: Truly embodying fun and ease of use, the **Nokia 3350** bagged the Best Performance Award among the budget phones. It incorporates a lot of features at a very good price. While the body has changed slightly compared to the other 3-series phones, the screen offers a higher resolution, which makes WAP browsing a much more enjoyable experience. In our tests, it showed a quick charging time, good voice clarity and excellent standby time.

The phone that won the Best Value Award in this category was the trusty **Nokia 3310**. This phone is priced very well and for those who need a good cellular device that is relatively small with a good set of features and who don't

Nokia 8310

Embodying a good combination of looks, functionality and leading edge wireless technology, the Nokia 8310 is one of the smallest phones around. Capable of download speeds of up to 40.2 Kbps, this phone is capable of Internet access through GPRS and HSCSD as well as WAP. This funky tri-colour device features an integrated FM tuner, which is used through the hands-free set that also serves as an antenna. The phone also incorporates the ability to record voice for up to 180 seconds. Like all other Nokia phones, navigation through the menu system is very simple and there are shortcuts that can take you to any feature in the menu through key combi-nations. Through the integrated IR interface, you can also exchange data or print on devices that support the standard. You can download ring tones from the Internet along with screensavers and operator logos. This phone has enough memory to hold up to 500 phone numbers and calendar entries, which work in tandem with the To-do lists through which they can be correlated to each other. We found that the voice reception on the phone was quite clear. It performed satisfactorily in the signal strength tests where it registered the network in three of the four zones.

Price: Rs 21,699

Nokia 8310		A-
Ergonomics		
Features		
Performance		
Warranty		
OVERALL		

+ GPRS and HSCSD Internet connectivity, FM tuner, small form factor
− No ring tone composer

mind forfeiting Internet functionality or greater storage capacity for address book entries and messages, this phone is a great choice.

Mid-range: The **Nokia 5210**, with its excellent voice clarity, quick charging times and very good standby time, won the Best Performance Award in the mid-range category of cellular phones. It is resistent to dust and moisture and is capable of withstanding a reasonable amount of rough usage. It also features a good display and this goes very well with the WAP functionality incorporated into the phone.

Nokia 3310

The phone that won the Best Value Award was the **Nokia 6210**. Even though this phone is longer than most others, it makes up for that by including plenty of advanced features such as Bluetooth, an enormous phone book and

Siemens ME45

This GPRS-capable phone features very radical styling and is characterised by a large orange backlit monochrome LCD display. The phone has good PIM functionality such as a reminder, To-do list, and a calendar for scheduling meetings and appointments. The package contains a serial cable that can be used to connect the phone to a computer. Also included is an 8-cm CD that includes the software used for transferring ring tones, logos and other data to the phone. Navigation is relatively simple and there are large screen icons associated with each item on the menu, which make it easy to understand the functionality of the phone. There are shortcuts for accessing the various sublevels of the menus in the phone. The phone has an enormous 500-entry phone book memory—one of the largest in this test. You can also use this phone as a Dictaphone to record 3-minute voice clips. In the benchmarks, the phone exhibited a very commendable talk time of just under 3 hours. The rated standby time of the phone was specified at 12.5 days. The voice clarity and loudness of the phone was very impressive and was among the loudest in this comparison. This phone did, however, take a rather long time to charge from a completely drained condition (134 minutes).

Price: Rs 19,995

Siemens ME45		A-
Ergonomics	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▶	
Performance	▶ ▶ ▶ ▶ ▶	
Warranty	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

+ Large phone book, clear LCD, sharp voice clarity and loudness
– Takes a rather long time to charge

Jargon Buster

3G: This is the third generation of mobile communications technology promising full-blown multimedia (video, audio, data, etc), cross-platform applications (cellular telephone, fax, e-mail, paging, videoconferencing, Web browsing), broadband Internet access (up to 2 Mbps) and global roaming.
Bluetooth: A low power radio technology that connects electronic devices without the need of wires. Data and voice can be exchanged in ranges of up to 10 metres at speeds of 800 KBps.
Dual Band: Dual Band mobile phones work with both the GSM 900 and the GSM 1800 standard.
Enhanced Full Rate Coding (EFR): Some newer mobile phones have EFR, which can deliver audibly better sound quality if supported by the mobile network.
Enhanced Data GSM Environment (EDGE): An evolutionary step in the GSM standard that delivers up to 384 Kbps of bandwidth. This will enable a plethora of true multimedia applications for mobile devices. The prime advantage is that since it is built on the GSM standard, the cost of upgrading communications equipment for service providers will be incremental.

General Packet Radio System (GPRS): Also built upon the GSM standard, GPRS is a packet-based wireless communication standard that can deliver data rates between 56 Kbps to 114 Kbps. This opens up a whole new set of possibilities for mobile users such as videoconferencing, streaming audio and video and continuous connectivity to the Internet.
Global System for Mobile Communication (GSM): Was the first and is still the most popular cellular network standard in use. The GSM standard transmits data on one of three frequency bands: 900 MHz, 1800 MHz and 1900 MHz. The GSM 900 standard is used in India.
High-Speed Circuit-Switched Data (HSCSD): Built on the GSM standard, it allows for higher speed data transmission. With a 43.2 Kbps data transfer rate, its speed is comparable to that of PSTN modems.
Infrared (irDA): Many of the latest mobile devices incorporate an irDA port for cable-free data transmission via infrared light.
Multimedia Messaging Service (MMS): Enables users to send messages comprising of text, sounds, images and video to other

MMS capable handsets.
Personal Identity Number (PIN): Is a number that is present on all handsets through which you can lock it or prevent unauthorised usage.
Subscriber Identity Module (SIM) card: This is a tiny card that fits into your cellular phone and holds information regarding your network provider, subscription, contact addresses, etc.
Universal Mobile Telecommunications Service (UMTS): The first incarnation of 3G, UMTS will provide speeds of up to 2 Mbps, allowing for true multimedia access on mobile communications devices. Once implemented, it will allow users to be connected to computers and other mobile devices no matter where they are as UMTS devices will be capable of switching to existing standards like GSM 900 or GSM 1800 when needed.
Wireless Application Protocol (WAP): Designed to bring the Internet to current generation mobile phones. Users access sites written in a watered down version of HTML and can enjoy services like news reports, weather updates, horoscopes, stock prices, etc.

SCORE BOARD

CATEGORY				BUDGET			
MODEL	**Ericsson A3618s**	**Ericsson T29s**	**Motorola T190**	**Nokia 3310**	**Nokia 3350**	**Philips Fisio 120**	**Samsung SGH-R220**
ERGONOMY							
Weight (grams)	85	105	101	133	108	95	99
Dimensions (LxWxD in cm)	11.1 x 4.7 x 2.2	10.1 x 4.9 x 2	10.6 x 4 x 1.6	11.3 x 4.8 x 2.2	11.3 x 4.9 x 2.3	10.6 x 4.9 x 2.2	11 x 4.6 x 2.35
Design (scale of 5)	4	4	3.5	4.5	4	3	4
Layout of phone elements (scale of 5)	3.5	3	3	4	4	3	3.5
Ease of user interface (scale of 4)	2.4	1.87	2.56	2.33	2.4	1.65	2.53
Keys to read a message	2	3	2	3	3	5	3
Keys to increase/decrease the volume	1	1	1	1	1	1	1
Keys to search a name in address book	2	3	1	1	1	3	2
Keys to add new name in address book	2	3	5	4	3	3	1
Keys to get to 'compose message' screen	2	3	2	2	3	5	3
Display size (in inches)	1.45	1.4	1.4	1.53	1.45	1.45	1.45
FEATURES							
Battery type (Ni-MH, Li-Ion)	Ni-MH	Li-Ion	Ni-MH	Ni-MH	Li-Ion	Ni-MH	Li-Ion
PIM features (Reminders, To-do, Calendaring)	✗ ✗ ✔	✗ ✗ ✗	✗ ✗ ✗	✔ ✗ ✗	✔ ✗ ✗	✗ ✗ ✗	✔ ✔ ✔
Predictive text input	✔	✗	✔	✔	✔	✔	✔
Ring tones (Polyphony, Composer, Exchangeable)	✗ ✔ ✗	✗ ✗ ✗	✗ ✗ ✗	✗ ✔ ✗	✗ ✔ ✔	✗ ✗ ✗	✗ ✔ ✗
Screensavers	✔	✗	✔	✔	✔	✔	✔
Operator logos	✗	✗	✗	✔	✔	✔	✔
No. of games	3	5	3	4	6	0	3
MMS	✗	✗	✗	✗	✗	✗	✗
Internet capability (3G, GPRS, WAP)	✗ ✗ ✗	✗ ✗ ✔	✗ ✗ ✗	✗ ✗ ✗	✗ ✗ ✔	✗ ✗ ✗	✗ ✗ ✔
Accessories							
Charger	✔	✔	✔	✔	✔	✔	✔
Manual	✔	✔	✔	✔	✔	✔	✔
Carry case	✗	✗	✗	✗	✗	✗	✗
Hands-free kit	✗	✗	✗	✗	✗	✗	✗
Car Adapter	✗	✗	✗	✗	✗	✗	✗
PC interface kit	✗	✗	✗	✗	✗	✗	✗
Changeable faceplates	✗	✗	✗	✗	✗	✗	✗
LCD Type (Colour, Hi-res, Standard)	Hi-res Mono	Hi-res Mono	Std Mono	Std Mono	Hi-res Mono	Hi-res LCD	Hi-res Mono
Extra features							
Integrated camera	✗	✗	✗	✗	✗	✗	✗
PDA	✗	✗	✗	✗	✗	✗	✗
MP3 capability	✗	✗	✗	✗	✗	✗	✗
Other	✗	✗	✗	✗	✗	✗	✗
PERFORMANCE							
Voice clarity (scale of 7)	5	4	5	5	4.5	3	6
Charging time (minutes)	123	120	120	87	96	128	115
Standby time (days)	4.6	6.25	5	4	10.8	14.5	5
Talk time (minutes)	129	210	150	150	142	120	105
Storage (Contacts, Messages, Calls)	100/10/30	200/10/30	100/10/30	0/10/30	150/10/30	0/10/30	100/10/30
Network sensitivity (scale of 5)	3.44	3.28	3.28	2.5	3.13	2.81	2.97
Zone 1: Stairwell (scale of 4)	3	3	3	4	4	3	3.5
Zone 2: Outdoors (scale of 4)	4	4	4	4	4	4	4
Zone 3: Basement (scale of 4)	0	0	0	0	0	0	0
Zone 4: Closed room (scale of 4)	4	3.5	3.5	0	2	2	2
WARRANTY & SUPPORT							
Number of authorised service centres	23	23	10	56	56	4	50
Number of cities where service centres are present	28	28	10	41	41	4	28
Period of warranty (years)	1	1	1	1	1	1	1
Standby phone provision	✔	✔	✔	✔	✔	✗*	✔
OVERALL SCORE							
Ergonomy	15.9	16.27	15.46	16.43	18.2	16.25	16.03
Features	19.5	14.5	11.5	19.5	24.5	11.5	23.5
Performance	12.85	13.53	13.11	11.66	14.23	11.94	12.95
Warranty & Support	8	8	8	8	8	3	8
Overall Score	**56.25**	**52.29**	**48.07**	**55.6**	**64.93**	**42.69**	**60.49**
Overall Product Rating	B+	B	B	B	A-	B-	B+
Vendor name	Phone Shop	Phone Shop	Phone Shop	Phone Shop	Nokia India Pvt. Ltd.	Philips Consumer Electronics Division	Samsung Electronics India Information and Telecom
Phone	022-2020411	022-2020411	022-2020411	022-2020411	011-6779000	011 -3322880	011-6322517
E-mail	phoneshop@vsnl.in	phoneshop@vsnl.in	phoneshop@vsnl.in	phoneshop@vsnl.in	nokia.ebag@ nokia.com	rishi.goyal@ philips.com	mobiles@sam-sungindia.com
Price (in Rupees)	8,495	9,495	6,995	6,995	9,250	5,990	9,000

Disclaimer: ■ The price of the phones are as quoted by the manufacturer at the time of testing and are subject to change. ■ Standby time and talk time are functions of the network ■ The Philips Fisio 120 has no games built-in but these can be downloaded as game packs. ■ * phone once taken for repairs is repaired within 24 hours, failing which a new phone is

	Siemens A35	Siemens M35i	Nokia 5210	Nokia 6210	Nokia 8250	Panasonic EB-GD75	Philips Fisio 620	Samsung SGH-A400	Siemens C45
						MID-RANGE			
	122	125	92	114	81	82	85	80	107
	11.8 x 4.6 x 2.8	11.8 x 4.7 x 2.2	10.55 x 4.75 x 2.25	12.95 x 4.73 x 1.88	10.25 x 4.5 x 1.9	10.6 x 4.6 x 1.6	10.4 x 4.6 x 2.2	11.2 x 4.8 x 2.1	10.9 x 4.6 x 2.3
	2	2.5	4.5	4	4	4	3.5	4	3
	2	2.5	4	4	4	4	4	4	3.5
	1.83	2.4	2.33	2.33	2.4	2.09	2.07	1.53	2.43
	5	6	3	3	3	4	6	4	5
	1	1	1	1	1	1	1	2	1
	2	1	1	1	1	1	1	3	1
	4	3	4	3	5	4	2	3	3
	3	2	3	3	3	6	6	3	2
	1.4	1.5	1.28	**1.53**	1.33	1.5	1.45	1.35	1.4
	Ni-MH	Ni-MH	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Ni-MH
	✗ ✗ ✗	✓ ✗ ✗	✓ ✓ ✓	✓ ✓ ✓	✓ ✗ ✓	✗ ✗ ✗	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✗
	✗	✓	✓	✓	✓	✗	✓	✓	✓
	✗ ✗ ✗	✗ ✗ ✗	✗ ✓ ✗	✗ ✓ ✓	✗ ✓ ✓	✓ ✓ ✗	✗ ✓ ✗	✗ ✓ ✗	✗ ✗ ✗
	✗	✗	✓	✓	✓	✓	✓	✓	✓
	✗	✓	✓	✓	✓	✓	✓	✓	✗
	0	4	5	3	4	2	2	7	3
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗ ✗ ✗	✗ ✗ ✓	✗ ✗ ✓	✗ ✗ ✓	✗ ✗ ✗	✗ ✗ ✓	✗ ✓ ✓	✗ ✗ ✓	✗ ✗ ✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	Std Mono	Hi-res Mono	Hi-res Mono	Hi-res Mono	Std Mono	Hi-res Mono	Hi-res Mono	Hi-res Mono	Hi-res Mono
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	✗	✗	✗	✗	✗	✗
	✗	✗	✗	HSCSD and Blue-tooth capable	✗	✗	Bluetooth capable	✗	✗
	6	4.5	5.5	4.5	4	3.5	5	3.5	3
	105	143	118	135	93	60	135	128	128
	6.25	7.5	7	6.25	7.5	6.25	6.8	3	11.6
	114	150	115	130	160	180	150	120	150
	0/10/30	200/10/30	250/30/30	**500/150/30**	250/10/30	200/10/30	300/10/30	99/10/30	75/10/30
	2.81	3.28	3.13	3.13	2.5	3.44	2.34	3.13	3.28
	2	3	4	4	3	3	3.5	4	3
	3	3.5	4	4	4	4	4	4	4
	0	0	0	0	0	0	0	0	0
	4	4	2	2	1	4	0	2	3.5
	15	15	56	**56**	56	14	4	50	15
	15	15	41	**41**	41	13	4	28	15
	1	1	1	1	1	1	1	1	1
	✓	✓	✓	✓	✓	✓	✗*	✓	✓
	9.23	16.4	16.43	16.13	18.2	19.89	17.57	19.33	15.33
	4.5	22.5	25.5	25	22.5	20.5	26	25.5	17.5
	12.37	13.1	14.82	13.95	13.28	14.41	12.93	9.9	12.14
	8	8	8	8	8	8	3	8	8
	34.09	**60**	**64.76**	**63.08**	**61.98**	**62.8**	**59.5**	**62.74**	**52.97**
	C+	B+	B+	B+	B+	B+	B+	B+	B
	Phone Shop	Phone Shop	Nokia India Pvt. Ltd.	Phone Shop	Nokia India Pvt. Ltd.	Phone Shop	Philips Consumer Electronics Division	Samsung Electronics India Information and Telecom	Phone Shop
	022-7895395	022-7895395	011-6779000	022-2020411	011-6779000	022-2020411	011-3322880	011-6322517	022-2020411
	phoneshop@vsnl.in	phoneshop@vsnl.in	nokia.ebag@nokia.com	phoneshop@vsnl.in	nokia.ebag@nokia.com	phoneshop@vsnl.in	rishi.goyal@philips.com	mobiles@samsungindia.com	phoneshop@vsnl.in
	4,950	9,995	11,500	10,999	14,399	10,290	11,995	17,000	10,995

signal's strength and could vary. ■ The Sony Ericsson T68i and the Siemens ME45 have flexi memory—you can allot different amounts for address and message storage. provided

SCORE BOARD

CATEGORY	HIGH-END					
MODEL	**Motorola V.66**	**Nokia 5510**	**Nokia 8310**	**Samsung SGH-M100**	**Siemens ME45**	**Sony Ericsson T68i**
ERGONOMY						
Weight (grams)	79	155	84	97	99	85
Dimensions (LxWxD in cm)	8.4 x 4.4 x 2.2	13.4 x 5.8 x 2.8	9.7 x 4.3 x 1.7	10.6 x 4.4 x 1.93	10.9 x 4.6 x 2	10 x 4.8 x 2
Design (scale of 5)	3	3.5	4	3	3.5	4.5
Layout of phone elements (scale of 5)	3	4	4	3	3	4.5
Ease of user interface (scale of 4)	2	2.4	2.4	2.4	2.67	2.4
Keys to read a message	3	3	3	3	2	2
Keys to increase/decrease the volume	1	1	1	1	1	1
Keys to search a name in address book	2	1	1	1	3	2
Keys to add new name in address book	3	3	3	3	1	2
Keys to get to 'compose message' screen	3	3	3	3	2	2
Display size (in inches)	1.34	1.42	1.32	1.4	1.55	1.63
FEATURES						
Battery type (Ni-MH, Li-Ion)	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion
PIM features (Reminders, To-do, Calendaring)	✓✓✓	✓✓✗	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Predictive text input	✓	✓	✓	✗	✓	✓
Ring tones (Polyphony, Composer, Exchangeable)	✗✓✗	✗✓✗	✗✓✓	✗✓✗	✗✓✗	✗✓✓
Screensavers	✓	✓	✓	✓	✓	✓
Operator logos	✓	✓	✓	✓	✓	✓
No. of games	3	5	4	7	2	8
MMS	✗	✗	✗	✗	✗	✓
Internet capability (3G, GPRS, WAP)	✗✓✓	✗✗✓	✗✓✓	✗✗✗	✗✓✓	✗✓✓
Accessories						
Charger	✓	✓	✓	✓	✓	✓
Manual	✓	✓	✓	✓	✓	✓
Carry case	✗	✗	✗	✗	✗	✗
Hands-free kit	✗	✗	✗	✓	✗	✗
Car Adapter	✗	✗	✗	✗	✗	✗
PC interface kit	✗	✓	✗	✓	✓	✗
Changeable faceplates	✗	✗	✗	✗	✗	✗
LCD Type (Colour, Hi-res, Standard)	Hi-res Mono	Std Mono	Std Mono	Hi-res Mono	Hi-res Mono	Colour
Extra features						
Integrated camera	✗	✗	✗	✗	✗	✗
PDA	✗	✗	✗	✗	✗	✗
MP3 capability	✗	✓	✗	✓	✗	✗
Other	✗	FM Radio	FM Radio & voice recording up to 180 seconds	✗	✗	GIF image support and Bluetooth
PERFORMANCE						
Voice clarity (scale of 7)	3.5	5.5	4.5	5	5	4.5
Charging time (minutes)	150	118	122	120	134	180
Standby time (days)	5	10.8	14.5	2	12.5	16
Talk time (minutes)	90	135	120	75	180	390
Storage (Contacts, Messages, Calls)	500/10/30	100/100/30	500/150/30	99/10/30	500/10/30	510/150/30
Network sensitivity (scale of 5)	2.97	3.13	2.5	2.97	2.97	2.34
Zone 1: Stairwell (scale of 4)	3.5	4	3	3.5	2	3.5
Zone 2: Outdoors (scale of 4)	4	4	4	4	3.5	4
Zone 3: Basement (scale of 4)	0	0	0	0	0	0
Zone 4: Closed room (scale of 4)	2	2	1	2	4	0
WARRANTY & SUPPORT						
Number of authorised service centres	10	56	56	50	15	19
Number of cities where service centres are present	10	41	41	28	15	14
Period of warranty (years)	1	1	1	1	1	1
Standby phone provision	✓	✓	✓	✓	✓	✗*
OVERALL SCORE						
Ergonomy	16.6	11.9	20.2	15	17.57	18.8
Features	25.5	25.5	29	23	26	32
Performance	11.1	15.5	15.27	10	13.82	18.74
Warranty & Support	8	8	8	8	8	7
Overall Score	**61.2**	**60.9**	**72.47**	**56.05**	**65.39**	**76.54**
Overall Product Rating	B+	B+	A-	B+	A-	A
Vendor name	Motorola India Pvt. Ltd.	Nokia India Pvt. Ltd.	Nokia India Pvt. Ltd.	Phone Shop	Phone Shop	Sony Ericsson Mobile Communications International AB
Phone	0124-6303212	011-6779000	011-6779000	022-7895395	022-7895395	011-6180808
E-mail	NA	nokia.ebag@nokia.com	nokia.ebag@nokia.com	phoneshop@vsnl.in	phoneshop@vsnl.in	NA
Price (in Rupees)	19,000	18,200	21,699	28,000	19,995	28,000

Disclaimer: ■ The prices are as quoted by the manufacturer. ■ Standby time and talk time are functions of the network signal's strength and could vary. ■ The Sony Ericsson T68i and the Siemens ME45 have flexi memory—you can allot different amounts for address and message storage. ■ * Repaired within 24 hours, failing which a new phone is provided

Decision Maker

	Boasting rights		Functionality	
You need	A very tiny phone, funky backlight, rich-sounding ring tones, faceplates with striking colours and design		A phone that supports the best in wireless communications technology with good PIM functionality and productivity features that are aimed at practical usability	
Look for	Phones that comfortably fit in the palm of your hand, with a weight of less then 85 grams, fluorescent backlights, polyphonic ring tones, MP3 and FM capability, ring tone composer and the capability to download ring tones and screensavers		Support for GPRS and Bluetooth, integrated reminders, to-do lists and calendar, extensive memory for addresses and messages	
Our recommendations	Price-conscious Panasonic EB-GD75, Samsung SGH-R220, Nokia 3350	Money no bar Sony Ericsson T68i, Nokia 8310 or 5510, Samsung SGH-M100	Price-conscious Siemens M35i, Nokia 6210, Panasonic EB-GD75	Money no bar Sony Ericsson T68i, Nokia 8310, Siemens ME45, Motorola V.66
Price range	Rs 9,000 to Rs 10,500	Rs 21,000 to Rs 28,000	Rs 9,000 to Rs 11,000	Rs 19,000 to Rs 28,000

technologies like MMS that will let you send multimedia content to other capable phones just as we do SMS messages today. This phone stood apart from the pack with its very appealing pearl colour scheme and one of the

Nokia 5510

largest screens that we have seen in a cellular phone. Add to this is the brilliant 256-colour screen that brings your phone to life with support for thematic backgrounds and GIF images. Bluetooth capability lets this device talk to other compliant devices, opening up a whole new world of pervasive wireless communication and data exchange. To top it all, the GUI control is one of the easiest to learn and get used to—the integrated joystick makes navigation through the phone very simple and highly intuitive. With support for bleeding-edge wireless technologies, enormous phone and message storage capabilities and a host of other very intuitive features, this phone wins the Best Performance Award with ease.

In this category, the phone that bagged the Best Value Award was the **Nokia 5510**. With a plethora of features and functionality integrated into it (a 64 MB MP3 player, FM tuner and enhanced SMS functionality), this phone is much more than a communications device.

We have reached a runway of sorts for mobile communication. From here on, newer technologies and enhancements to existing wireless networks are going to fuel a takeoff for cellular technology as we know it. The effects of this change are already being experienced—through GPRS, lower costs of rentals and network usage, and phones that incorporate newer and cooler features at lower prices. Get ready for the next generation of communication where you will be able to stay connected at all times to the people who matter to you and the information that you need the most.

DIGIT TEST CENTRE

message storing capability and WAP support, and still being available at a very attractive price.

High-end: The cell phone that undoubtedly came out tops in this comparison was the **Sony Ericsson T68i**. In a package that fits well and feels great in the palm of one's hand, this phone incorporated some of the most cutting-edge features ever seen on a mobile device. Even though GPRS is just about catching on in India, this phone comes well prepared for the onslaught of mobile multimedia with its support for GPRS and with

Motorola V.66

This little phone, based on a flip-type construction, features some impressive characteristics. Capable of GPRS and WAP, the monochrome display integrated into the top half of the device features sharp graphics. It uses a Li-Ion battery. An interesting feature is that the SIM card bay is separate from the battery bay: each is in one half of the phone. The phone has tri-band functionality—you can use it in all three types of GSM networks, GSM 900, GSM 1800 and GSM 1900. Weighing a mere 78.75 grams, this was the lightest phone in this roundup. However, with the flip-type construction, the phone is very prone to damage since there are moving parts in its construction. Great PIM functionality is provided in this phone with support for reminders, To-do lists and a calendar for keeping track of schedules and appointments. Another impressive feature is the massive 500-entry phonebook memory. In the tests, the network sensitivity of this phone was particularly commendable; it registered a good signal in places where other phones were not as effective. However, the logged talk time of this phone is not very good; it drained out in a shade under one-and-a-half hours. Also, even though it was clear, the voice volume of the phone was a little soft compared to other phones even when it was set to the maximum level. This feature-packed phone, with its small form factor and support for cutting-edge standards like GPRS, is suitable for users who need a lightweight cellular device with added functionality such as scheduling and a large phonebook.

Motorola V.66 **B+**

Ergonomics	▶ ▶ ▶ ▶ ▷
Features	▶ ▶ ▶ ▶ ▷
Performance	▶ ▶ ▶ ▷ ▷
Warranty	▶ ▶ ▶ ▶ ▷
OVERALL	▶ ▶ ▶ ▶ ▷

Price: Rs 19,000

+ Very light, impressive PIM functionality, large phonebook memory
− Flip-type construction is prone to breakage, voice loudness is lower than other phones

Battle
of the Titans

**The processor behemoths have started trading punches once again
with Intel upping its game and AMD roughing it out every step of the way**

Business Performance and Office Productivity

The Pentium 4 2.4 GHz will wipe out the word 'sluggish' from your PC experience. Your PC will steadily hum along even with multiple applications working simultaneously. You will be able to switch between applications in the blink of an eye and response times will be instantaneous. All this is possible largely due to the Pentium 4's hefty 512 KB of full speed L2 cache. This coupled with truckloads of processing frequency makes a potent combination that beats the Athlon XP 2100+ by a margin of over 8 points in both Business Winstone and the I/O-heavy Content Creation benchmarks. The Intel Pentium 4 2.4 GHz takes user experience to a new level of smooth and unhindered computing bliss.
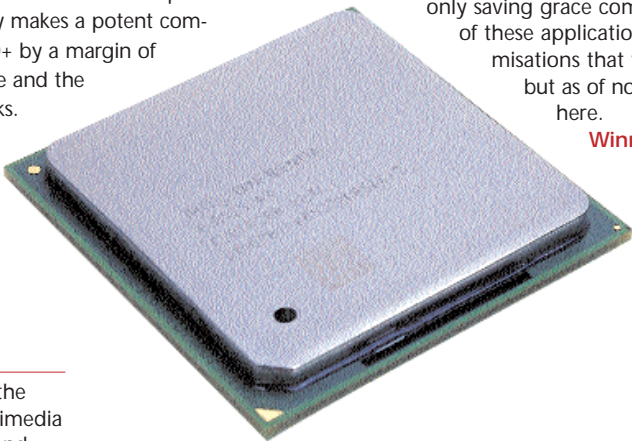
Winner: Pentium 4

Gaming and Multimedia

The raw speed of the Pentium 4 is all the more apparent when it comes to multimedia and games. SSE2 instructions and a bandwidth-quenching bus speed of 400 MHz ensure that the Pentium 4 can deal with almost anything you throw at it. Now your graphics card will have no excuses for churning out low frame rates. The Pentium 4, when paired with RDRAM, delivers unparalleled performance in our benchmarks—from the torturous 3DMark2001 SE to the legendary *Quake III Arena*—and beats the Athlon XP by a fair margin. We also bear witness to some of the highest recorded numbers in SiSoft Sandra's Multimedia benchmarks. To top it all, the processor hardly breaks a sweat running at a cool 42 degree Celsius!

Winner: Pentium 4

Professional Applications

This is one area where the Pentium 4 fails to deliver the knock-out punch. Professional legacy applications like imaging and 3D software catch the Pentium 4 off-guard as it lacks the FPU muscle of the Athlon XP, and its frequency advantage can only help to a limited extent. Without SSE2 support in aplications, the Pentium 4 lags considerably behind in our POV-Ray test. The only saving grace comes from the fact that future versions of these applications will include more Pentium 4 optimisations that will make up for its glaring deficiency, but as of now, the Pentium 4 needs crutches here.

Winner: Athlon XP

Durability

The Pentium 4 has integrated thermal throttling, which automatically slows or shuts down the CPU if the core is experiencing very high temperatures. Each Pentium 4 processor has a metal cap (that functions as a heat spreader), so that the delicate CPU core is not exposed. The heat spreader also aids CPU life by increasing the surface area that's cooled. Additionally, Intel has made the heatsink install process completely idiot proof. Try as you might, you just cannot damage the core by incorrectly installing the heatsink.

Winner: Pentium 4

Price

This is one area where the Pentium 4 needs serious rationing, as Intel's fastest baby doesn't come cheap. A paltry sum of Rs 35,000 fetches you the undisputed bragging rights for owning the fastest processor on the planet! But you could buy an entire computer for the price of this processor alone. The hefty premium that the Pentium 4 demands is worsened when you factor in the price difference between DDR memory used by the AMD processor and RDRAM used by Intel.

Winner: Athlon XP

How we Tested

We used the fastest available memory solutions officially endorsed by the manufacturer for each processor. The Pentium 4 was tested with 256 MB of PC800 RDRAM and an original Intel 850MD motherboard. The Athlon XP 2100+ was tested with 256 MB DDR SDRAM (PC2100) along with a VIA KT266A powered Gigabyte GA-7VTXE motherboard. The rest of the system remained common, consisting of nVidia GeForce3 64MB DDR graphics card (using Detonator 4 v21.83 drivers) and Seagate Barracuda 20 GB 7,200-rpm hard drive. We used Windows 2000 Professional SP2 with the latest patches and drivers.

Speed	
Category	**Benchmarks**
Business	Business Winstone 2001
Performance	Content Creation 2001
Gaming	3DMark2001 SE
Performance	*Quake III* (Normal) (FPS)
Multimedia	SiSoft Sandra Multimedia CPU
Benchmarks	(Integer)
	SiSoft Sandra Multimedia FPU
	(SSE2)
Professional	Video Encoding (in seconds)
Benchmarks	Photoshop 6.01 (in seconds)
	POV-Ray (Chess2) (in seconds)

Since the beginning of the year, Intel and AMD have been releasing speedier iterations of their processors with Intel's fastest Pentium 4 CPU now running at a whopping 2.4 GHz and AMD claiming its 1.73 GHz baby is faster than Intel's 2 GHz+ processors.

The fanatics from both camps have screamed their lungs out at online forums, group discussions, and press presentations and the flame wars have pursued. Some say that AMD's PR (Performance Rating) scheme is no good, while others argue that clock frequency makes no difference. The marketing teams of both these chip giants have pushed and shoved every known jargon at the end user, from NetBurst to QuantiSpeed architectures and SSE2 to 3DNow! `Professional'—that's enough to confuse even the technogeeks.

But the time has come to wipe the slate clean, to take a fresh look at what each company has to offer and verify their outlandish claims with a slew of benchmarks—both real world and next generation—that are relevant to all computing usage models. Ultimately, it's pure performance that counts. May the best processor win the fight!

Professional Applications

Finally, the Athlon XP has something to boast about. It beats the Pentium 4 hollow in these tests. High-end imaging and 3D authoring applications are FPU dependent and Athlon XP's FPU strength is unparalleled, which allows it to beat the Pentium 4 by hefty margins. Since the introduction of the original Athlon (K7), AMD processors have had the upper hand when it came to raw FPU muscle. The Athlon XP builds upon the same core and hurts the Pentium 4, which can do little without proper SSE2 support.
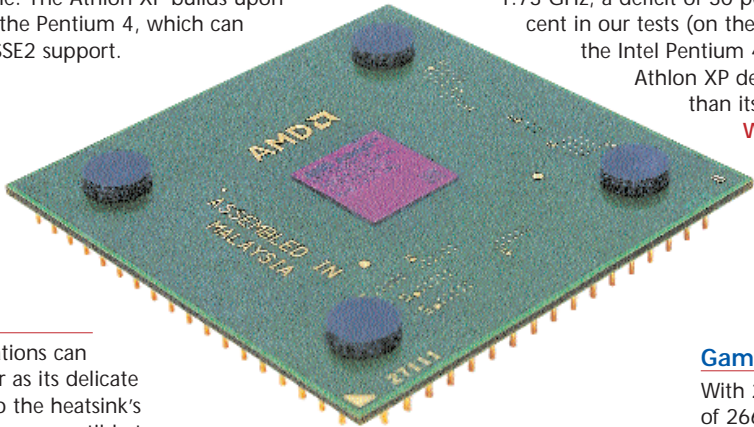**Winner:** Athlon XP

Durability

Improper heatsink installations can smash the AMD processor as its delicate core is directly exposed to the heatsink's pressure. This makes it very susceptible to cracking or chipping if the heatsink is incorrectly mounted. And even though Athlon XP now comes with some form of CPU overheat protection, it's nowhere in comparison to what Intel offers.
Winner: Pentium 4

Business Performance and Office Productivity

In the past, Athlon XP has managed to prove its mettle in these tests even when pitted against the fastest Intel processors. Despite its higher IPC (instructions per clock or work done per cycle), the Athlon XP 2100+ is slower by a whopping 667 MHz when compared to the mighty Pentium 4 2.4 GHz and simply cannot overcome a difference of this magnitude. Nevertheless, its scores are quite impressive when you consider that it runs at 1.73 GHz, a deficit of 30 per cent, and only loses out by 10 per cent in our tests (on the other hand, it does manage to beat the Intel Pentium 4 2.2 GHz!). This proves that the Athlon XP deserves a faster performance rating than its pure frequency speed.
Winner: Pentium 4

Gaming and Multimedia

With 256 KB of L2 cache and an FSB speed of 266 MHz, the Athlon XP can do little to overtake the Pentium 4 in this department. *Quake III Arena* has never been kind to the AMD processor and if you're interested in purchasing the fastest possible CPU to go with your spanking new GeForce4, then don't even bother with the Athlon XP, which lags behind its Intel counterpart by a huge 23 per cent! But the Athlon makes up for its lackadaisical performance in Direct3D games, losing by a mere 3 per cent in 3DMark2001 SE. Sadly, it blows a lot of hot steam, recording temperatures in excess of 50 degree Celsius while running our tests.
Winner: Pentium 4

Price

Who can argue with a price difference of Rs 15,000? There's just no contest here. AMD has always positioned its processors as true value for money propositions. Pricing has always been AMD's trump card and they've been winning this battle hands down. The street price of an Athlon XP 2100+ is Rs 20,000 which is way cheaper than its Intel counterpart. The Athlon XP is your true price to performance champion as it offers top-of-the-line performance without burning a large hole in your pocket.
Winner: Athlon XP

Test	
Pentium 4 2.4 GHz	**Athlon XP 2100+**
71.5	63.1
90.3	82.5
7720	7495
375.8	304.1
9483	9376
11511	10980
97	95
58.13	59.03
555	376

Make a Choice

Clock to clock, the Athlon XP is a faster processor. If there was an Athlon XP 2400+, we're quite certain that it would have won hands down. But the reality is that Intel has been steadily releasing faster processors and the Pentium 4 2.4 GHz is the current performance king. The Athlon XP 2100+ performs admirably but just cannot make up for the raw speed deficit of 667 MHz. Without a ramp up to 0.13 micron technology, it seems highly unlikely that AMD will be able to cover this speed gap anytime soon.

HATIM KANTAWALLA

Adding MAGIC to Linux

If you think Linux is for geeks and you need to dabble in command prompts, scripts and cryptic commands to get your machine started, Mandrake 8.2 will give you something else to think about

Mandrake 8.2 is a desktop operating system that can take on the likes of Windows without skipping a beat. Mandrake has evolved over the years into a comprehensive package that can perform the day-to-day tasks of most users without needing to use the command prompt. It now includes Ximian's Evolution 1.02, an 'Outlook clone' that contains an e-mail client and a rather extensive personal information manager. The new KDE 2.2.2 desktop features a much improved Konqueror browser and file manager and an integrated KOffice 1.1.1 office suite. New desktop features include a completely redesigned Mandrake Control Center that serves as a central location for Mandrake-specific tools and utilities, as well as many new easy-to-use configuration wizards. Desktop users will appreciate the task-oriented menus in KDE, which greatly simplify locating applications by categorising them. All in all, Mandrake 8.2 promises to be a wonderful alternative OS and a great starting point for new Linux users. With a simple, efficient and very intuitive interface along with an easy install process and a strong focus on the desktop, Mandrake 8.2 has every chance of cultivating a new breed of Linux-savvy users. In this article we'll evaluate its merits and nuances, and show you how you can install this OS on your computer. You can then decide for yourself whether you want to join the Free Software movement.

Installation

The installation of Linux distributions has improved tremendously over the years and Mandrake has probably the simplest possible installation amongst them all.
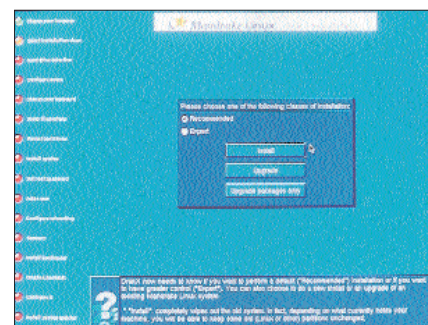
Basics: Before you install Mandrake 8.2, in the BIOS, change the first boot device from your hard drive to the CD-ROM. Now insert the bootable Mandrake 8.2 CD in the CD-ROM drive and restart the PC; the installation will now start automatically. Follow the onscreen instructions and choose the language in which the OS will be set up. English is selected by default, click 'Accept' for the license agreement and continue. Next, you will be presented with

Hits and Misses

- Rock solid Linux 2.4.18 kernel
- Superb menu system using the integrated Menudrake
- The all new Control Center for simple settings and configuration of components
- DiskDrake for all your partitioning needs (JFS, XFS, ReiserFS, Ext3 and Encrypted Filesystems)
- Excellent Multimedia (Xine!) and peripheral support
- URPMI—the graphical RPM installer rocks and is a lot faster
- Loads of games

- No troubleshooting wizards for newbies
- KDE 3.0 RC2 is not included in Mandrake 8.2
- The fonts are still uninspiring
- KDE is very sluggish at times and can get a little taxing for low-end machines

the option of 'Recommended installation' or an 'Expert installation'. If you are new to Linux, opt for 'Recommended installation'. If you have used Mandrake or any other Linux distribution before, you can choose 'Expert installation' and further customise your installation.

Partitioning: We now come to probably the most critical part of the installation. The screen will show the number of partitions and the number of drives installed

Select 'Expert installation' if you've used Linux before

on your system. If you have a hard drive with only one partition that has Windows installed on it, then Mandrake will display it as a FAT partition (it will be displayed as a dark blue band). If there is more than one partition then it will show blocks, each representing one partition.

Click on the partition or drive on which you want to install Mandrake 8.2 and click 'Auto allocate'. This option simplifies your work; you won't have to create mount points or assign separate swap partitions. Enabling this option will ensure that the total available size is automatically allocated for swap and native partitions. It will automatically create a total of three partitions: two native Linux partitions (Ext3) with different mount points and one

partition with around 250 MB of the disk space allocated as a swap partition.

We suggest that you stick to 'Auto allocate' if you are new to creating and resizing partitions. Also remember, once you are past this screen there is no way to change your partitions or the disk on which you want to install Mandrake. You will have to reset and start all over again. So make sure you choose the right options

Choose the partition in which you want to install Mandrake

the first time around. If you are planning to make custom partitions, then as a rule of thumb the swap partition should be twice the size of the RAM installed on your PC.
Selecting critical applications: Once you are through with setting partitions, Mandrake will present you with a screen listing different applications. Here you can select all the applications that you would like to install with the OS. Make sure you select applications such as KOffice 1.1.1 (an integrated office suite that includes a word processor and spreadsheet), GIMP (an image editing software), XMMS (a multimedia player), and Game station. Make sure to check the Configuration

Select applications as per your individual needs

button, which will later help you configure your system for Internet access.

Once you've selected all the packages you need, click on 'Install'. The amount of time the installation will take depends on your system. Generally, it takes not more than 30 minutes on a decently powered machine with the kind of packages that we have described. If you select all the applications listed on the screen, then you will need approximately 1.23 GB of disk space.
Creating user accounts: Once the installation is complete, Mandrake will prompt you to create a new root password. It will then prompt you to create a new user account and assign a name and password for it.

GUI options: After you've created a user account, you will be prompted for the default user and the default Windows manager to be used the first time Mandrake boots. The first user account created will be displayed by default along with KDE as the default Windows manager.

Configuring a Network card/modem: Mandrake 8.2 will automatically detect the network card or modem, whichever is installed on your machine, and will prompt you for further configuration settings. If you have trouble configuring your modem or network card here, then you can configure it once Mandrake is setup. Double-click on the Control Center shortcut on the desktop and configure using the 'Networking and Internet' tab.

Supply the necessary IP address, DNS settings, subnet masks, proxy settings or host name, dial-up number and login/password or any modem strings that you may choose to use. Once you have entered the information, Mandrake will test the settings and connection. If all goes well, it will display a message of successful configuration.

Other peripherals: Mandrake will now display some of the devices that are connected to the PC, such as a PS/2 mouse, keyboard, soundcard, printer, etc. You can change, add or configure more devices on this screen.

The user interface
Mandrake 8.2 boots with KDE 2.2.2 as the default graphical user interface and integrates the dramatically improved KOffice 1.1.1 office suite. Mandrake also comes with GNOME 1.4.1 along with Evolution 1.0.2 (a tool for personal and workgroup information management) and Nautilus 1.0.6 (file manager for the GNOME desktop). Mandrake now also bundles Supermount, which provides transparent access to removable media such as CD-ROMs and floppy disks to all applications. On a Pentium III 700e with 192 MB RAM, we found the user interface to be a little sluggish. The desktop is very simple to understand but it is advisable to spend sometime with the OS and read about it in the Help section before making any changes to the default setting.

The interface is quite easy to get accustomed to and the typical Windows user will not have too much trouble getting used to it. The Control Center, with its eye-catching icons, is almost similar to the Control Panel in Windows. The Control Center does not let you in without entering the root password. This protects your computer's settings by not letting

anyone make changes without authorisation. The level of security can be changed from 'standard' for desktop users to 'high', 'higher' and 'paranoid', if the PC is going to be used as a server. You can tweak your desktop resolution and the colour depth but the changes will be effective only after a reboot. In the Control Center you can even check the list of hardware installed on the system. Clicking the 'Hardware list' button will indicate whether or not the device has been detected properly. The boot sequence can also be changed if you wish to log in as a different user and with a different Windows manager.

There are 16 desktops available, out of which four are on the screen by default. Other GUIs that come bundled with Mandrake 8.2 are GNOME, IceWM and Sawfish. These can be selected at the login screen.

'Psuedo Explorer'
KDE's Konqueror acts, feels and behaves just like Windows Explorer. It allows you to browse to the various folders and files and makes file management much simpler. The Konqueror interface also works as a Web browser and its configuration process is similar to how you would configure other Windows-based Web browsers. Konquerer functions as your one-stop interface for browsing through the network, the file system and the Internet. One can browse the

network by typing *smb://machinename* from within Konqueror itself.

Bundled applications
The operating system comes standard with a few powerful applications such as XMMS 1.2.6 for playing and managing your MP3 music files. Mozilla 0.9.8 comes built-in. Though the 0.9.9 engine is out, this one is stable enough. GIMP 1.2.3, the all powerful image editing software, allows you to create and manipulate photos with ease. Gphoto2 gives you additional functionality to manage your digital photos, Grip 2.98 is your standard audio ripping software, KOffice 1.1.1 integrates all the necessary office applications and Gnomemeeting 0.84 is the fully featured video conferencing software.

Evolution 1.02 is the built-in mail client, and is very similar to Outlook. It's very easy to configure—just give the necessary incoming and outgoing mail server addresses. Supply the relevant e-mail address and passwords and you are done—it's as simple as configuring Microsoft's Outlook or Outlook Express.

Server side tools
In addition to desktop enhancements, Mandrake 8.2 also offers significant benefits when used as a server. Many new server applications and configuration utilities have now been integrated.
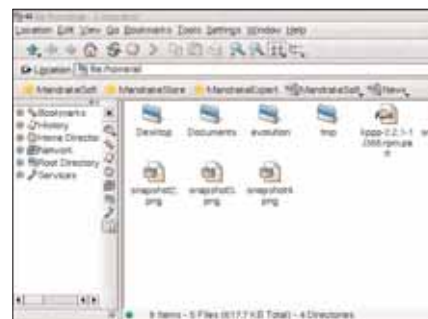
The Konqueror interface looks like Windows Explorer

The Enterprise Kernel 2.4.18 now provides native support for very high memory configurations (greater than 1024 MB) and has support for SMP (Symmetric Multi Processing). It also has support for file systems like Ext3, ReiserFS, XFS and JFS, as well as an encrypted file system to ensure data integrity. A special version of Samba combined with XFS and Samba 2.2.3 now allow Windows file sharing. Also available are a plethora of server side applications such as Apache 1.3.23, PHP 4.1.2, MySQL 3.23.47, PostgreSQL 7.2 and Sendmail 8.12.1.

Wizards for easy configuration of the main server functions such as Firewall, File and Print sharing, etc have also been provided. Draknet, a network configuration tool, provides a simple way to set up Internet connection sharing. You can configure DNS, Samba, NFS, local/remote

Configuring the Network Card

One of the best things about Mandrake 8.2 is that it detects most of the hardware and doesn't ask for drivers. We tested Mandrake 8.2 on a system which had a Realtek RTL8029AS-based LAN card.

Click on the Control Center to configure the network card. You will be prompted for the root password. Now, click on the 'Network and Internet' tab, and then on 'Connection'. Here you can see the card as eth0 below the 'Interface' tab. Click on the 'Wizard' tab and select the profile. Leave the profile as default if you are configuring only the LAN card.

If you also want to configure a modem on the same machine, you will have to create two separate profiles. The next window that opens up will present you with five different options; here click on 'LAN connection'. When you select it, the small checkbox against this option becomes hollow, so don't get confused. Click 'Next'; this will bring up the 'Draknet' window,
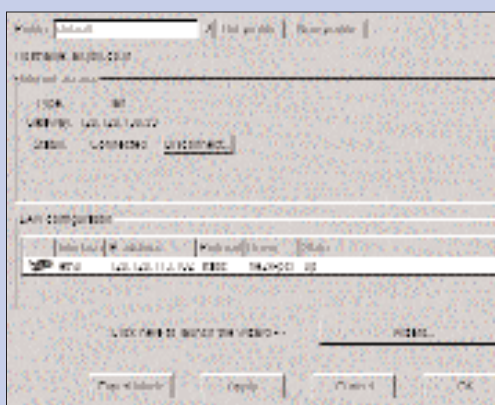
On correct installation, the network card shows a 'Connected' status

showing the name of the network card installed and you will be prompted to install another network card. Click 'Yes' if you have two network cards on your system; click 'No' if only one card is installed. After the card is detected, 'Draknet' will

ask for the IP address and the Netmask. You can get this information from your system administrator. The next step is to provide the DNS (domain name server) and gateway details along with the host name. In the subsequent windows, provide the HTTP/FTP proxy address, if there is one, and click 'Next'.

After you get a confirmation of successful configuration of the network card, click 'Finish'. To test whether or not the network is working, go to Control Center and click on 'Samba Mount Point'. In the next window, click on the 'Search Servers' tab.

The names of the machines on the network will be displayed on the left hand side. Try to mount any of the shared folders to ensure that your network card is working okay.

Setting up your Modem

If you are using an external modem, there is a good chance that it will be installed on its own without asking for any drivers. But if you are using an internal modem, follow these simple steps to set it up:

1 In the Mandrake Control Center, click on the 'Network and Internet' tab. If there is only a modem connected to the machine, go ahead with the default profile, else create a new profile and name it appropriately. The next window will have three options: 'Choose profile to configure', 'Auto detect' and 'Expert mode'.

2 Use 'Auto detect' as it will detect the modem automatically and display the

information regarding where it is connected. Click 'Next'.

3 The 'Control Center' will present you with the configuration window. Click 'OK' to feed in the required information.

4 In the 'Dial-up' option box, give the phone number you use to connect to your ISP and your login name and password.

5 Mandrake will bring you back to the first screen, from which you can test the modem connection. The Control Center will display information such as the data sent and received, and will show the status of the modem (whether it's connected or not).

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file systems and more from any computer with a secure browser connection. Automated software management systems URPMI (and APT) provide a hassle-free way to install and upgrade applications and Auto-Install tools duplicate servers and workstations effortlessly.

Conclusion

There is little doubt that Mandrake 8.2 is the easiest Linux distribution to install and has a very friendly desktop interface. There were absolutely no compatibility issues. From GeForce2 Ultra 64 MB cards to printers, scanners, serial modems and USB mice, everything was detected without any trouble. It displayed rock solid stability except for the odd sluggish response. We were constantly struck by a feeling of déjà vu while browsing through the Control Center, which is probably the best thing that happened to Linux, making it simple to set up and configure your system. Mandrake has done a lot of work in cleaning up the user interface and making Linux much more intuitive and user friendly. All in all, Mandrake 8.2 is the best Mandrake release ever. If you want a free office suite with a super stable operating system and fully featured server tools, then there is little that you can argue about. This latest release makes Mandrake a definite candidate for the top spot in the hard fought war for the desktop Linux distribution of choice.

DIGIT TEST CENTRE

Picture Perfect
Photoshop 7

Or is it? Here's a close look at some of the new features and enhancements in Photoshop 7

Photoshop was launched 12 years ago and over the years it has been constantly upgraded to suit people's needs. The first version that shipped in 1990 had a full palette of tools for creating images from scratch, as well as for editing, altering and enhancing images. With Photoshop 2.0 came features meant for black-and-white image editing and pre-press colour-separation tasks. Photoshop 3 saw the introduction of layers and new colour-correction tools. Further enhancements such as watermarking, layer adjustments, and actions that streamlined your work were seen in its next release. Photoshop 5 and 5.5 introduced 'Undo' capabilities, 'History' palette, 'Vertical Text', 'Magnetic Lasso' tool and an all-new image editing package, 'Image Ready', for creating animations. Photoshop 6 was a killer app of sorts with features such as integrated vector drawing tools, new dockable toolbar, text warping and enhanced layer management.

So what exactly does Adobe have in store for you with the release of Photoshop 7? We tested the software and also asked for expert opinions from G.V. Sreekumar, Faculty Member, Industrial Design Centre, IIT-Powai, and Swaroop Biswas, Manager-Design, Jasubhai Digital Media. Lets take a peek at the all-new Photoshop 7 and explore its worthiness.

Toolbar: The first thing you notice when you open Photoshop 7 is the elegant toolbar. It is similar to the one in Photoshop 6 but the palette and icons now have a 3D look. Each tool icon generates colour when you hover your mouse over it. As for the tool palette, nothing much has changed except that the 'Air brush' tool has now been accommodated into the 'Paint brush' tool option. The 'Text' tool has a few extra choices that were a part of the extra toolbar in the previous version. Similarly, the 'Slice' tool options have been revamped and are no longer available in the dockable extra toolbar that rests right below the menu.
G.V. Sreekumar: The 3D look doesn't add any value. The old toolbar, which looks crisp and clear, was better.
Swaroop Biswas: Though there are 3D icons, they don't make much of a difference to a designer. Moreover, they make the program a bit heavy.
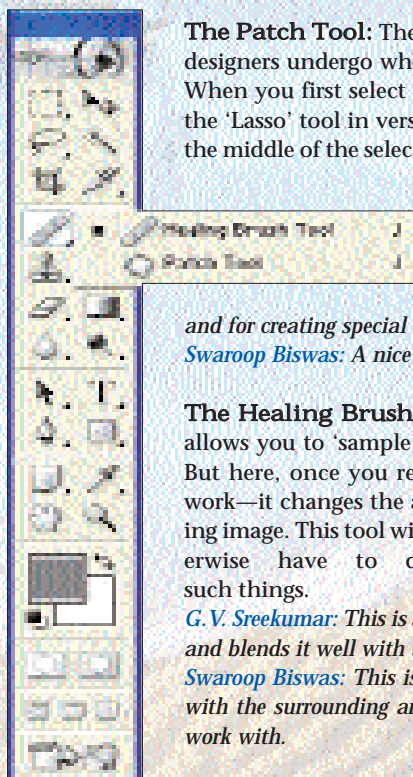
The Patch Tool: The inclusion of this tool will reduce some of the trouble that designers undergo when trying to achieve accuracy while manipulating images. When you first select this tool, it gives you a lasso cursor, which works just like the 'Lasso' tool in version 6. However, after making a selection, you can click in the middle of the selected area and then drag it to a new location. Photoshop then blends this dragged information into the underlying image in an attempt to blend in the brightness, colour and texture of the surrounding information. This tool makes for effortless manipulation of images.
G.V. Sreekumar: Useful while restoring damaged photographs and for creating special effects. Results can be very dramatic.
Swaroop Biswas: A nice addition, but it is a feature that is not often used.

The Healing Brush: The 'Healing brush', similar to the 'Rubber Stamp' tool, allows you to 'sample' from one area of an image and apply it somewhere else. But here, once you release the mouse button, Photoshop does the rest of the work—it changes the area you retouched so as to blend it in with the surrounding image. This tool will be well appreciated by the digital imagist who would otherwise have to devote copious amounts of time in perfecting such things.
G.V. Sreekumar: This is a useful tool. It intelligently retouches the area around the image and blends it well with the surroundings. Useful for beginners.
Swaroop Biswas: This is a nice addition. It not only clones the area but also merges it with the surrounding area and makes one's work much simpler. However, it's slow to work with.

File Browser: Earlier, browsing for new images while working in Photoshop was rather inconvenient. But the new File Browser lets you search and view images while working in Photoshop itself. Viewing images from the File Browser provides Metadata about images displayed such as the date on which it was created/modified, and also Exchangeable Image File (EXIF) information from digital cameras. You can rotate, batch rename, rank and sort your images from the File Browser.
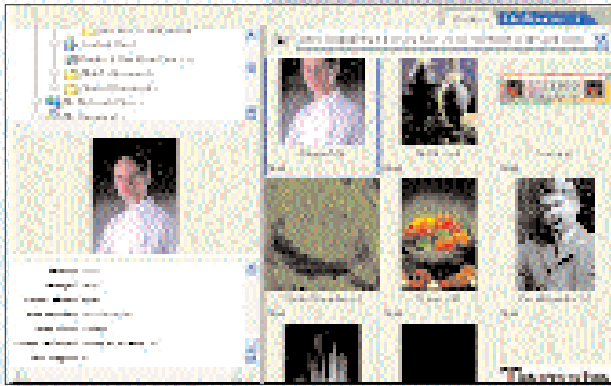
G.V. Sreekumar: A very useful and welcome addition. You can check various attributes of images without opening them. However, this feature doesn't allow you to type the path of a folder and forces you to navigate through the tree structure, which can be very frustrating.

Swaroop Biswas: This is a very essential feature. Now one doesn't need to shuffle between an image browser and Photoshop.
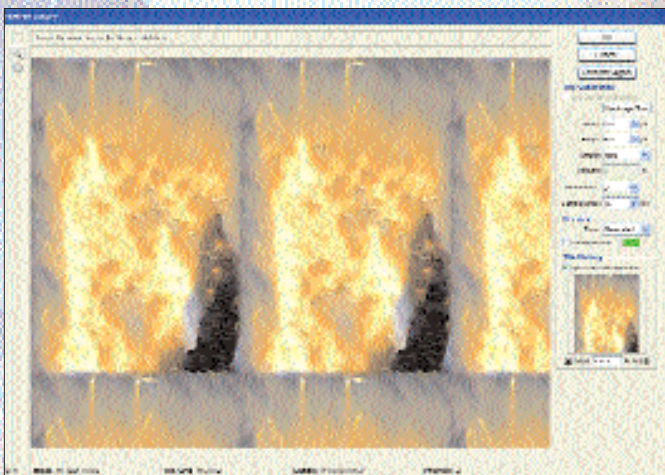
Pattern Maker: In the previous version, Photoshop had various patterns that you could use. However, you could not generate custom made patterns. Now this is possible via 'Pattern Maker', which falls under the 'Filters' menu. Just select an area and Photoshop will automatically generate various patterns that can be saved for later use.

G.V. Sreekumar: Pattern Maker is useful, but compared to the old method of generating patterns, the interface seems a bit unfriendly.

Swaroop Biswas: With this enhanced plugin, generating patterns is no longer time consuming.

Liquify Tool: This feature was appreciated by most users of the previous version—it gives funky effects to photographs. The latest offering of Photoshop offers greater control over image warping with 'Zoom', 'Pan' and multiple 'Undo'. The facility of saving meshes lets one return to the original image after experimenting with the 'Liquify' tool and also apply the same effects to various images by just reloading the saved mesh. The feature that allows working with multiple layers when using 'Liquify' will make things easier for digital imaging artists. The introduction of the 'Turbulence' tool allows you to mix up the pixels of an image, letting you distort an area into an entirely new image. For
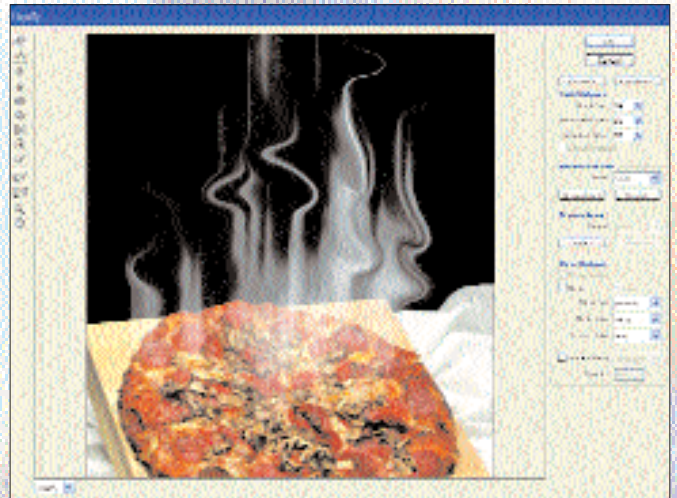
instance, in the accompanying screenshot, the steam emanating from the pizza has been given a wavy look to make it appear more realistic.

G.V. Sreekumar: A very useful feature. Users who don't have third-party plugins like KPT filters will definitely love this.

Swaroop Biswas: A very nice tool for giving funky effects. The facility of saving meshes is indeed admirable.

Spell Checker: Wouldn't it be convenient to have a spell checker in an image editing software? Well, Photoshop 7 does have one. This tool would come in handy for designers who have to deal with considerable amount of text. This feature, which has support for multiple languages, makes it possible to check and correct spelling errors within Photoshop itself.

G.V. Sreekumar: A very good value addition, especially for those who use Photoshop for creating slides for presentations.

Swaroop Biswas: A much needed addition.
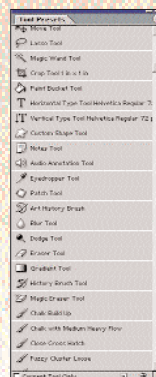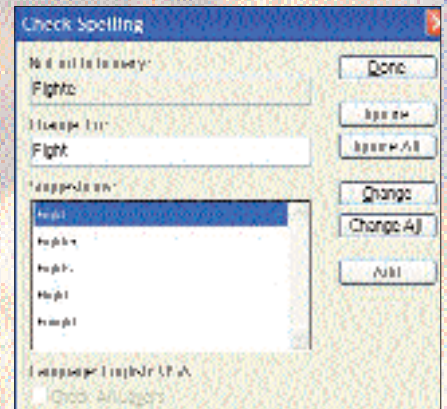
Preset Manager: The Preset Manager allows you to change the order of presets in the palette, so you can now put a newly added brush at the top of the 'Brushes' palette.

However, this is less of a much-needed feature and more of a luxury.

G.V. Sreekumar: Very useful for customising the tools as per personal needs and work methodology.

Swaroop Biswas: This addition allows one to completely avoid using the toolbar and handle the tools through this manager.
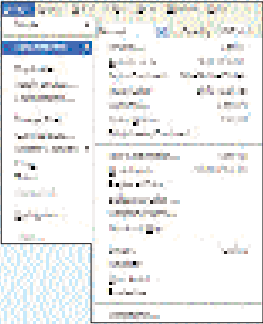
Auto Colour: This new feature completes Adobe Photoshop's set of automated colour correction tools. You can automatically remove colour casts from images as it adjusts the contrast and colour of an image with a slightly different algorithm than the 'Auto Levels' command.

G.V. Sreekumar: A good feature for beginners, but it cannot be a substitute for the colour correction work done by professionals. Since this is based on a set of rules, the results might not be the same in all images. I tried this feature in five images, out of which three came out with better results.

Swaroop Biswas: This feature is quite helpful.

Protect and Share Images: Most designers would be sceptical about sharing images as they might be modified by the person accessing them. Considering this, Adobe has come up with a reasonably good security feature wherein one can save the file in PDF format, and set a password to view it, change the content or print the image. With 128-bit encryption, it becomes very difficult to crack the password.
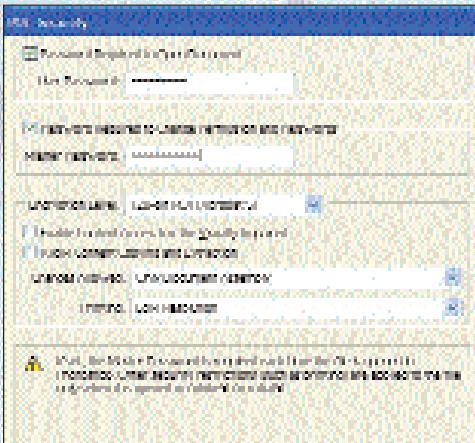
G.V. Sreekumar: An excellent feature. For example, in a publishing house like Digit, the digital imaging artist can share images with others involved in the production, at the same time restricting certain users from retouching any images.

Swaroop Biswas: With this feature, exchanging images is much safer now.

Newer Paint tools: With amazingly realistic dry and wet brush effects, you can simulate traditional painting techniques. Creating customised brush shapes is easier now with settings for shape, tilt, spacing, scatter, jitter, diameter, texture, etc. The preset brush styles make it a pleasure to add special effects such as adding grass or leaves.

G.V. Sreekumar: Fans of Fractal Painter will have to seriously consider having a look at this! Options like Dry Media, Special Effects, Thick Heavy and Wet Media are very useful for professional illustrators who work on Photoshop and switch to Painter for special effects.

Swaroop Biswas: Now the brush effects are much easier to generate.

Improved Features

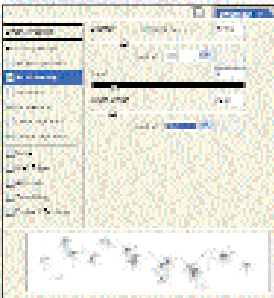**Picture Package:** The enhancements made to the 'Picture Package' feature are designed to save time and money while printing images. You can add text and labels to images and you can now print more than one image per page and output images either as one flattened document or in separate layers.

Scripting plugin: You can automate repetitive tasks and key workflows using the rich scripting support. This can be downloaded from Adobe's Web site.

Larger pane for viewing filter effects: Version 7 gives you a considerably larger viewing pane while applying filter effects.

Rename layers: You can rename a layer by simply double-clicking on the layer name in the layer palette and typing directly on screen.

Fill, Blending and Opacity: There are two separate options for increasing or decreasing the opacity and the amount of colour filled in the object. This is helpful in decreasing the opacity levels of the fill applied to an object without affecting the other parts of an object. New blending modes such as 'Vivid', 'Linear' and 'Pin light' have also been introduced in this version.

Support for newer operating systems: This version of Photoshop is fully compatible with all the newer operating systems such as Windows XP and Mac OS X.

Preset Image Sizes: The latest version of Photoshop comes with various preset sizes to create documents. Although a minor improvement, it is quite helpful.

Vector Shapes: Dealing with vector shapes in Photoshop 6 was rather confusing. In version 7, every time you draw a shape a new layer is automatically created instead of your having to add that shape to the original layer. **This allows one to create layer masks using the 'Pen' tool, which is extremely useful in creating cutouts without making any change to the original image.**

The bottomline

All said and done, is it worth upgrading to Photoshop 7? The addition of a few new tools and a couple of enhancements will, in all probability, not make much of a difference to your working environment if you are an amateur user. But the value of these improvements will definitely be recognised by hardcore professionals who use this software on a regular basis. These 'minor' enhancements will allow digital imaging artists to achieve greater accuracy levels while manipulating images in less time.

Parameters	Photoshop 6.01	Photoshop 7
Start up time	22 seconds	23.5 seconds
Memory consumption	23 MB	30 MB
Time taken to complete PS5 filter test	458.10 seconds	437.8 seconds

MITUL MEHTA

Photoshop 7   A-
Performance   ▶ ▶ ▶ ▶ ▶
Ease of Use   ▶ ▶ ▶ ▶ ▶
Value for Money   ▶ ▶ ▶ ▶ ▶
Features   ▶ ▶ ▶ ▶ ▶
OVERALL   ▶ ▶ ▶ ▶ ▶

Contact: Adobe Systems India P Ltd
Phone: 0128-4532026
Price: Rs 31,500 (upgrade Rs 7,800)
E-mail: sandeepm@adobe.com
Web site: www.adobe.com

System Requirements:
Pentium III or 4 processor; Windows 98/98 SE/Me/NT with Service Pack 6a/2000 with Service Pack 2/XP; 128 MB RAM (192 MB recommended); 280 MB free hard disk space; 800x600 colour monitor with 16-bit colour video card
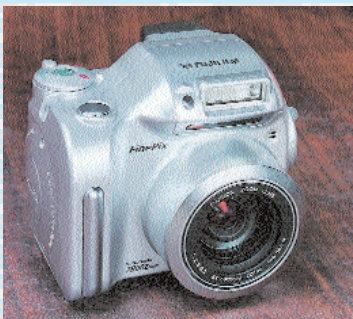
Bazaar

We test the latest and the best hardware and software available in the market

Fuji FinePix 2800 Zoom
Very photogenic

If you're looking for a digital camera that delivers professional-quality images yet doesn't require you to have an in-depth understanding of photography, then this device fits the bill.

It features an intuitive menu system that allows you to change certain parameters of the camera such as the flash mode, image quality and the mode of connectivity with a computer. The camera links to the computer through a USB interface and can also be used as a Web cam. When connected, it shows up as a standard drive in Windows, allowing you to simply drag and drop images from it. This is a completely automatic camera that takes away the drudgery of setting parameters such as exposure of the image and flash, literally making it point-and-shoot. However, advanced users can override the camera's automatic features by selecting the manual mode, where these aspects can be individually modified. The thumbwheel switch at the top of the camera lets you quickly switch between preview, playback and video modes. Both the electronic as well as the TFT viewfinders are very sharp and all modes of operation of the camera are superimposed on the display for an easy view of the current mode of operation. The camera's macro setting is especially impressive—it lets you get really close to your subject to capture details. The quality of the image in this mode and during normal photography was impressive with sharp detailing and good contrast and colour balance. The bundled software provides a user friendly interface for transferring images. Battery consumption was the only real downside to this camera; it can chew through four AA-size batteries in about 3 hours of usage time. However, the camera does incorporate power saving features and can be set to shut off if not used for more than 30 seconds. With brilliant image quality, intuitive controls and a great set of features, this camera packs in a lot of quality for its price.

Price: Rs 30,000 + taxes
Contact: Jindal Photo Films
Phone: 022-8504949
E-mail: rawat@jindals.com
Web site: www.fujifilm.com

SPECIFICATIONS
2.1 Megapixel CCD sensor, 16 MB Compact Flash memory, 1600x1200 at 72 dpi maximum image capture, 6x optical zoom, can record AVI clips with sound, USB interface

Fuji FinePix 2800 Zoom	A-
Performance	▶ ▶ ▶ ▶ ▶
Build Quality	▶ ▶ ▶ ▶ ▶
Value for Money	▶ ▶ ▶ ▶ ▶
Features	▶ ▶ ▶ ▶ ▶
OVERALL	▶ ▶ ▶ ▶ ▶

HP LaserJet 1000 series
Speedy printer

The LaserJet 1000 series is the latest offering from HP and can churn out 10 pages per minute. This printer can reach a maximum print resolution of 600 dpi for professional-quality monochrome printing. The LaserJet 1000 performed decently when tested for quality and speed, taking 4 minutes 50 seconds to print 50 sheets of plain text. Its warm-up time of 15 seconds may seem high if just one sheet is to be printed but wouldn't be much of a concern if you require continuous printing. A 26 MB PDF file with text and graphics was printed in less than 20 seconds, which is above average.

The printer driver doesn't have too many options besides the standard page setting and print quality configurations. You can select a dpi

Marco D'Souza
Head, Test Centre

"Excellent optics coupled with a load of features make the Fuji FinePix 2800 Zoom an excellent choice"

setting from among three meagre options—300 dpi, Custom and EconoMode. You can also print formats such as Envelope and choose different paper sizes.

The cartridge slides out along with the cover when you open it. The LaserJet 1000 sports a parallel interface but comes bundled with a parallel to USB converter so that the printer can also be used on a USB port.

SPECIFICATIONS
10 pages per minute, parallel/ USB 1.1 interface, 600 dpi resolution, HP PCL 5e print language

Price: Rs 17,500
Contact: HP India
Phone: 011-6826000
E-mail: tarunjeet_sarao@hp.com
Web site: www.hpindia.com

HP LaserJet 1000 series					B
Performance	▶	▶	▶	▶	▶
Build Quality	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	▶
OVERALL	▶	▶	▶	▶	▶

SmartDraw 6.0 Standard Edition
Easy draw

Professional flowcharts, network diagrams, floor plans and more…SmartDraw 6.0 allows for easy creation of all the above. The program comes with an Explorer type template viewer, which proves quite handy while selecting and using the various templates provided. Another plus point of this application is its ability to download templates as and when required, giving you a lot of flexibility in case of a space crunch. It supports various file formats including PDF, JPEG, TIFF, HTML, WMF and GIF, to name a few.
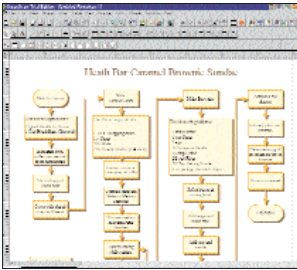
Another noteworthy feature is its ability to integrate Office suite files like Microsoft Word, Excel and PowerPoint. For mathematical calculations, you can also incorporate equations and special symbols not generally supported by the keyboard. It also allows you to create timeline calendars in the form of Gantt charts, yearly timelines or a monthly calendar. With around 11 categories of templates and with each category having around five to seven different samples, this software has one of the most elaborate lists.

Price: Rs 3,312 Standard, Rs 6,192 Professional and Rs 9,504 Professional Plus (approx prices). There's also a 30-day shareware version.
Web site: www.smartdraw.com

However, every time you start the program for a new design, the application takes you to the template selection screen, which is rather cumbersome.

This software is available in three different versions: the Standard version with 1000 symbols; the Professional version with 1000 standard symbols plus features supporting MS applications as well as file import and export facility; and the Professional Plus with all the professional features and a collection of 11 symbol categories including Business, Networks, Engineering and Maps.

SPECIFICATIONS
Works with Windows 95/98/Me/ 2000 and XP, needs a minimum of 30 MB free disk space

SmartDraw 6.0					B+
Performance	▶	▶	▶	▶	▶
Ease of use	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	▶
OVERALL	▶	▶	▶	▶	▶

Sony Multiscan E230
For the professional

The E230 is a 17-inch true flat screen monitor with a 0.25 mm aperture grille pitch. It has a neat joystick-style OSD interface for setting the various parameters. The monitor did very well in the geometry test, showing perfectly straight lines. This can be attributed to the aperture grille technology used in the monitor. It produced colours precisely and its clarity was perfect. However, it did show some signs of weakness in the streaking and ghosting tests, with a little ghosting visible near the white and yellow colour bands. There was also a slight white as well as black level shift and the edges appeared blurred. In the horizontal bar resolution test the gap between two bars was not visible, which made a distinct moiré pattern. The monitor fared well in the dark screen test with hardly any reflections visible in the background.

The E230 comes bundled with just a quick start manual and a power cord. This monitor would be suitable for the professional who works with high-end CAD/CAM, imaging and 3D authoring applications. Its price, however, is a bit steep.

Price: Rs 23,000
Contact: Rashi Peripherals
Phone: 022-8260258
E-mail: ho@rptechindia.com
Web site: www.sony.com

SPECIFICATIONS
Resolution of 1600x1200 at 68 Hz, 0.25 mm stripe pitch, 30-85 KHz horizontal frequency, 40-170 Hz vertical frequency

Sony Multiscan E230					B
Performance	▶	▶	▶	▶	▶
Build Quality	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	▶
OVERALL	▶	▶	▶	▶	▶

Nikon COOLPIX 775
Just right for the amateur photographer

This camera sports a cool 2.14-Megapixel capable CCD that helps you take photographs at a maximum resolution of 1600x1200 pixels. It offers three resolutions: 1600x1200, 1024x768 and 640x480. It can also capture short videos (15 seconds maximum) at a rather paltry 15 frames per second. You can select from seven white balance modes depending on the lighting conditions. It offers three capture modes: single, continuous, and multi-shot (16 frames at 400x300 pixel resolution). It's compactly designed and fits into the palm snugly. All the buttons are well within reach of the thumb and index finger. Transferring images to the PC is very easy,

as the camera comes with a dedicated button. All you need to do is connect the camera to the PC using the USB interface and press the button—the application automatically gets launched.

The camera cannot directly save images in the TIFF format and the images may get patchy, especially when there are gradual variations in tone and colour. Distant photographs using maximum zoom showed a slight pixelation. The bundled software, Canto Cumulus 5.0, is used to transfer images from the camera as well as for basic image editing. The installation was hassle free and the camera was detected instantly.

Price: Rs 29,000
Contact: Antrix Tech Zone
Phone: 022-8061531
E-mail: antrix@vsnl.net

The lightweight and rechargeable Lithium-Ion battery makes it easy to carry the camera around for outdoor photography. The different modes in which the images can be captured assure good quality pictures, both indoors and outdoors. This camera is well suited for the enthusiast and amateur photographer. But professionals will have to look at other high-end cameras with at least a 4-Megapixel CCD.

SPECIFICATIONS
2.14-Megapixel CCD, 8 MB Compact Flash memory, USB interface

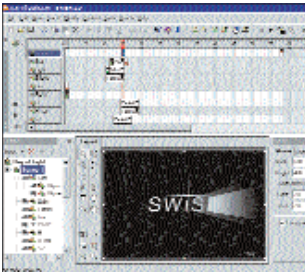| Nikon COOLPIX 775		B+
Performance	▶ ▶ ▶ ▶ ▶	
Build Quality	▶ ▶ ▶ ▶ ▶	
Value for Money	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

SWiSH 2.0
Flash it around

SWiSH 2.0 is the quick, easy, and affordable way to create Flash animations for your Web site. You can create animated effects, shapes, text, buttons, sprites, motion paths, and your own dazzling effects or make an interactive movie by adding actions to objects. SWiSH has 150 ready-to-use animated effects such as Explode, Vortex, 3D Spin, and Wave. SWiSH exports the same SWF file format used by Macromedia Flash, so almost all Web surfers can see your animation without having to download a plugin.

One problem you might face with this software is its inability to export your work in GIF format. The other feature it lacks is image compatability; SWiSH is only good for its intended pur-

pose, which is basically text animation.

This version includes Movie, Scene, Transform and Action tabs that were not available in earlier versions. SWiSH 2.0 delivers a 'kindergarten' level text 'fx' solution for Flash wannabes.

SPECIFICATIONS
4.55 MB file size, compatible with SWF file format of Macromedia

SWiSH 2.0		A-
Performance	▶ ▶ ▶ ▶ ▶	
Ease of use	▶ ▶ ▶ ▶ ▶	
Value for Money	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

Price: Rs 2,450 (approx)
Web site: www.swishzone.com

EyeD OptiMouse
Security at your fingertips

This optical mouse has one very unique feature. It has a fingerprint recognition system integrated into it. This USB mouse, when attached to your system, scans the finger you use to operate the mouse with and then creates a user account. The bundled software can even be configured to scan more than one finger. This is an important feature because if your finger is hurt, the mouse will not allow you to access the system. It is therefore advisable to have at least two accounts (two fingerprints) per machine.

The design of the mouse is not very impressive and the scroll wheel isn't smooth. The mouse was not directly detected and you need to attach an older PS/2 or serial mouse along with it to load the driver. The bundled software gives you an option to feed in all the fingerprints from either hand, but the best thing to do here is to have the impression of a colleague or another fam-

ily member so that the machine would not be inaccessible if you're not around. Conversely, if security is paramount, there is no way another user would be able to access the system. This mouse is a great buy for users who are satisfied with adequate functionality as a pointing device, but need additional security for the critical information stored on their computer.

SPECIFICATIONS
USB interface, optical pointing mechanism, programmable button, finger print recognition

EyeD OptiMouse		B+
Performance	▶ ▶ ▶ ▶ ▶	
Build Quality	▶ ▶ ▶ ▶ ▶	
Value for Money	▶ ▶ ▶ ▶ ▶	
Features	▶ ▶ ▶ ▶ ▶	
OVERALL	▶ ▶ ▶ ▶ ▶	

Price: Rs 13,900
Contact: Antrix Tech Zone
Phone: 022-8061531
E-mail: antrix@vsnl.net

Nike PSA[Play 120
Just play it

This MP3 player sports a radical design and is created for people on the move. Targeted specifically at sportspersons, this digital audio player can be strapped onto your arm with the included armband and offers an hour of MP3 digital audio encoded at 128 Kbps. The main unit is completely moulded in a rubber coating, making it resistant to moisture and heat. This makes the player

well suited for strenuous applications such as jogging, exercising, etc. The player's 64 MB of memory can be expanded to 128 MB through the Smart-Media memory interface. Controls for Play, Forward, Volume, etc are located on the base unit. It's linked to an in-line controller that also features the LCD display, which shows information about the track and the mode that the player is operating in. The headphones, ➔

though compact, are based on the in-the-ear format and the sound quality is quite average. The 'mids' and the 'highs' were exaggerated, and the sound lacked in bass response. This is a common shortcoming among headphones of this kind. Also, the display on the in-line controller is very small and you need to scroll across it to read the information, which makes it rather cumbersome. The bundled CD includes MusicMatch Jukebox for encoding MP3s and for transferring songs to the player. Setting up the player was very

Price: Rs 23,500
Contact: Nike India
Phone: 011-6816752
E-mail: niketiming@rediffmail.com
Web site: www.nike.com

simple because of the USB interface and there was no problem in configuring it.

This player has a very arresting design, but there are other players with similar specifications that you can buy at a significantly lower cost.
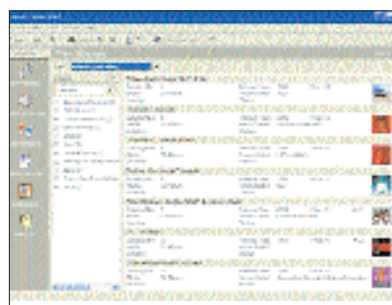
SPECIFICATIONS
64 MB onboard memory, expandable to 128 MB; support for MP3 or Windows Media Audio (WMA) audio formats; Play, Stop, Forward/Back, Scan Forward/Back, and four preset equaliser settings; USB interface; in-line remote control with LCD display

Nike PSA[Play120						B
Performance	▶	▶	▶	▶	▶	
Build Quality	▶	▶	▶	▶	▶	
Value for Money	▶	▶	▶	▶	▶	
Features	▶	▶	▶	▶	▶	
OVERALL	▶	▶	▶	▶	▶	

Music Label 2002
Your music album

Music Label 2002 is a small utility, which helps you keep tabs of the music on your hard disk. This utility will help locate your music, be it in MP3, WMA or any other format. To do this, Music Label uses the powerful CDDB (CD DataBase). This utility also uses ID3v2 (tagging system) technology to name the files. All this is done without you having to type a single word. Simply put the MP3s in the drive and click on Fast Scan. Music Label 2002 will scan the drive and download all the required

Price: Rs 1,715 (approx)
Web site: www.codeaero.com

information from the Net and create a database.

After scanning the MP3 files in our test, we found a lot of spelling mistakes. This could create problems later on when you enter the name of a song or artiste while searching for a particular MP3.

Music Label allows you to print CD covers from within the utility. You can program the 'Organizer' feature to remind you of releases and purchases, as well as CDs that you may have loaned to friends.

This software is best for audio freaks who have a lot of music on their PC.

SPECIFICATIONS
6.11 MB file size, works with Windows 95/98/Me/2000 and XP

Music Label 2002						B
Performance	▶	▶	▶	▶	▶	
Ease of use	▶	▶	▶	▶	▶	
Value for Money	▶	▶	▶	▶	▶	
Features	▶	▶	▶	▶	▶	
OVERALL	▶	▶	▶	▶	▶	

Fujitsu P-1030
Well connected

The P-1030 is probably the smallest and the most compact laptop that we've come across to date. This laptop comes bundled with Microsoft Windows XP Home Edition. The unusual feature of this laptop is its screen size, which uses a 16:9 aspect ratio and makes watching movies simply fantastic. This Lithium Ion powered notebook has a decent battery life of about 1 hour 51 minutes when tested with BatteryMark 4.0.1. The coolest feature, though, is that this tiny device is Bluetooth enabled, which means it can connect wirelessly with other Bluetooth devices. The keyboard buttons are soft and silent but using the pointing device is not all that easy as the pointer is quite hard and difficult to manoeuvre. The graphics subsystem, powered by ATi's Rage Mobility video chip, wasn't able to run *Quake III* in spite of having 8 MB of video

Price: Rs 1,10,000
Contact: ACI INFOCOM
Phone: 022-8266031
E-mail: jason@aciinfo.com
Web site: www.fujitsu.com

memory. The bottom of the laptop heated up a bit when used for more than an hour.

The Fujitsu P-1030 is extremely light and easily fits into even the smallest of hands. The LAN and built-in modem makes connecting to the network and the Internet an easy task. Included with the unit is a cable that lets you use an external display system such as a CRT or an LCD monitor. However, there is no CD-ROM or floppy drive, which is standard in most laptops.

SPECIFICATIONS
Transmeta Crusoe 700 MHz processor, 128 MB RAM, 20 GB hard disk drive, 8.9-inch TFT screen

Fujitsu P-1030						B+
Performance	▶	▶	▶	▶	▶	
Build Quality	▶	▶	▶	▶	▶	
Value for Money	▶	▶	▶	▶	▶	
Features	▶	▶	▶	▶	▶	
OVERALL	▶	▶	▶	▶	▶	

POWERCOM BNT600VA UPS
Protection against blackouts

The BNT600VA enjoys a very compact design, and plugging it to the PC is quite simple. This UPS has only two AC outlets; you can plug in only two loads, for example a PC and a scanner or a monitor. The UPS starts beeping the moment the main power is lost. You can turn these beeps off by pressing the power button for 3 seconds. When the battery

is low, the UPS beeps faster; this happens only when the battery power falls below 20 per cent, thereby warning you to save your work and shut down the PC. There is only one LED indicator on the UPS displaying its on/off status.
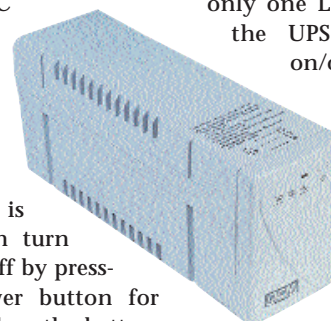
The UPS does not come bundled with any monitoring software (there is no RS-232 support which

would let you connect the UPS to your computer and monitor its functions). It comes with a built-in surge protector for telephones. The compact design makes it easy to accommodate anywhere. The unit is light-weight and can be moved around easily.

Price: Rs 4,500
Contact: Kunhar Peripherals
Phone: 022-2345758
E-mail: salesbom@kunhar.com
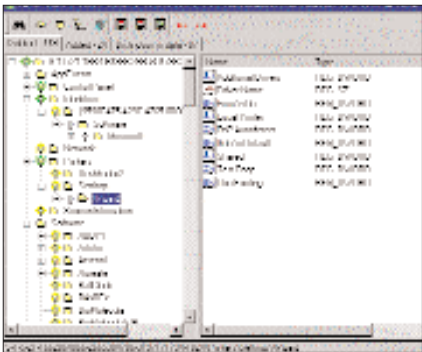**Web site:** www.kunhar.com

POWERCOM BNT600VA					B
Performance	▶	▶	▶	▶	▶
Build Quality	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	
OVERALL	▶	▶	▶	▶	▶

Advanced Registry Tracer (ART)
Simplifies registry editing

Advance Registry Tracer (ART), is a registry editing and managing tool. Compared to other registry monitoring applications (Regmon and WinExpose), ART compares full copies of the registry made at different times, whereas the above-mentioned software monitor all access to the registry within a certain period of time using date filters. Also, the registry entries can be stored in a database format, making it convenient for you to import them in any spreadsheet application.

Another plus is that you can compare between the two registry entries saved and diagnose the problem area. With support for almost all major Windows operating systems including XP, 2000 and NT, it could be one of the preferred tools for system administrators.

This program can also detect Trojan viruses and eliminate some problems caused by software and hardware. Remote registry management is another option, which advanced users would appreciate in a networked environment.

Novice users might find its interface, which is similar to Windows' own proprietary registry editor, a bit confusing, and the Help files do not throw much light on the matter either.

This software is quite a handy tool for system administrators and users who install and uninstall a whole bunch of applications which would tend to degrade the performance of a system.

Price: Rs 2,000 (approx)
Web site: www.elscomsoft.com

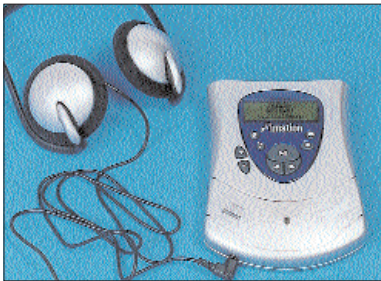| Advanced Registry Tracer					B
Performance	▶	▶	▶	▶	▶
Ease of Use	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	▶
OVERALL	▶	▶	▶	▶	▶

Imation RipGo!
Jack of all trades

RipGo! is a 3-in-1 device that can function as an MP3 player, CD-Writer and CD-ROM drive. You can use it as an MP3 player while jogging or connect it to the PC as a full-fledged 4x external CD-Writer and CD-ROM drive. It's probably one of the smallest CD-Writers available. The drive uses 8-cm CD-R disks, which can store up to 185 MB of data. It is capable of playing MP3, WMA, MPEG, and AVI files. The best thing about this device is that it comes with a rechargeable Lithium Ion battery—this feature is not offered by other MP3 players.

RipGo! can play music continuously for 3 hours and there is no skipping as it stores up to 8 MB of data (music) in the buffer and plays it from there. This also helps save on battery usage. The LCD screen is reasonably big and also features a spectrum analyzer. Of course, compared to a fully featured MP3 player, the RipGo! lacks many features. The device is light and can

also double as an optical drive, which can be plugged to a computer using a USB interface. The only problem one might face is that 8-cm CD-R disks are not freely available. Another negative point is that the RipGo! offers less capacity, but costs at least 30 per cent more than a regular 700 MB CD-R based MP3 player.

This hybrid device will attract people of all ages—a teenager who can use it as an MP3 player or a sales executive who can plug it into a PC and burn important sales reports.

Price: Rs. 18,000
Contact: Imation
Phone: 022-8377053
E-mail: imation@bom3.vsnl.net.in
Web site: www.imation.com

Imation RipGo!					A-
Performance	▶	▶	▶	▶	▶
Build Quality	▶	▶	▶	▶	▶
Value for Money	▶	▶	▶	▶	▶
Features	▶	▶	▶	▶	▶
OVERALL	▶	▶	▶	▶	▶

Aliasgar Pardawala
Reviewer, Test Centre

" Imation RipGo! is a portable optical drive that plays MP3 and other music formats and also doubles up as a CD-Writer "

Go East

Agent 001 scoures Singapore for the best deals in hardware

We've seen our Lamington Roads, Nehru Places and Manish Markets crammed with computer hardware, electronic gadgets, cheap deals and friendly dealers. Now imagine a place that has electronic and computer equipment stacked one on top of the other for six full floors!

Welcome to Sim Lim Square, a shopping mall on Rochar Canal Road, Singapore, which enjoys the rather overburdening reputation of being the Mecca for computer hardware and electronic gadgets in South East Asia. The entire gamut of gadgetry is here: PCs, peripherals, HiFi Audio/Video, DVDs, cell phones, software, etc.

So how does it compare with the *desi* hotbeds of hardware? For one, you can buy the absolute latest in computer hardware. No waiting lists—if it's released, it's here! I found the Intel Pentium 4 2.4 GHz, Athlon XP 2100+ and 120 GB hard drives along with top-of-the-line GeForce4s, Xboxes, PS2s and other droolable hardware! Add to that the dozens of small vendors clamouring for your attention and you know you'll get the best deals. Unlike most Indian dealers, these guys won't take you for a ride and have intimate knowledge about the products, their releases and revisions. So even if you aren't tech-savvy, they will help you make the right choice. They are also aware of

problem products and advise against buying particular products if they've had higher than average return rates.

Fourth floor ho!

The fourth floor mainly deals with computer equipment and that's where I spent most of my time. Almost everything is cheaper here. From motherboards to hard drives to memory to processors, you'll end up saving a bundle on almost every PC component. You can buy an IBM Deskstar 120GXP 40 GB 7,200-rpm drive for as low as S$150 (approx Rs 4,000), 40x CD-Writers are available for around

ILLUSTRATION: Mahesh Benkar

Rs 4,000, and a 512 MB stick of DDR memory is available for just Rs 7,000. Compare this to the 10,000 bucks you would have to shell out for the same amount of memory in India and you'll soon be singing my tune.

Even I was amazed at some of the things that I managed to find: a 256 MB module of the Corsair XMS3000, the world's fastest memory, running at a whopping 370 MHz! It was available for S$265 (approx Rs 7,000). Also for sale were the newly released GeForce4 Ti4600 video cards. These were being sold for around Rs 20,000. These cards aren't available in India yet and when launched will cost nothing less than Rs 35,000. I even found some exotic cooling solutions

like the Cooler Master HHC-001, all copper heat sinks and various water-cooling kits—pretty handy if you're the overclocking type.

But the highlight turned out to be the specially designed combos of motherboards, processors and RAM that guarantee huge savings—sometimes up to 20 per cent on the original MRP. You can get a Pentium 4 1.6A and ASUS P4B266-C combination for S$490 (approx Rs 13,000). This bundle alone saves you over 25 per cent on the Indian pricing, which would come to around Rs 17,000. On the AMD front, an Athlon XP 2000+ along with the feature-packed MSI KT3Ultra ARU board (based on the KT333 chipset) was selling for S$545 (approx Rs 15,000)!

To buy or not to buy

So should we all run to Singapore to fulfill our computing needs? Not really. Whether the trip is really worth it will depend on the current exchange rate and the amount of custom duty you'd end up paying. There is also the significant risk of no warranty and after-sales service. Remember that you'll have to bear all shipping costs to Singapore and back in case something goes wrong.

Game Treat

BEST DEAL OF THE MONTH

Dreaming of playing high-end 3D games on a low budget? You can now purchase a Pine Excalibur GeForce2 MX 400 64MB DDR card for just Rs 3,650! Go frag some!

Wirefree
Connectivity

Emerging wireless networking technologies are ready to cut you free

The PC is the centre of your digital universe, and it ties this universe together with the tangled cables of the information age. The mess of wiring behind your computer could all be gone, the cable sticking out of your PC Card Ethernet adapter could be unnecessary, the PDA cradle sitting on your desk could be counting sheep in your bottom drawer, and of course, you could be working while sipping on a Pina Colada by the seaside. All you need is a couple of little upgrades…to wirefree connectivity. Every single cable you see on your desk has a wireless equivalent just itching to replace it.

Zoning the world

Information connectivity can be conceptually divided into three zones, based upon the distance it needs to span. The shortest zone is the one immediately around you, your personal space. Let's assume you have a cell phone/PDA in one pocket, and an MP3 player hooked to your belt. Now before you hit the road you need to Hotsync your PDA and backup your phonebook and also download fresh music to your MP3 player. For this you first need to disentangle the cables and then connect the cables for each of your mobile devices. But, if you have a Personal Area Network (PAN) powered with say, Bluetooth, then all you need to do is simply point and click! A Wireless PAN is like a next-generation Infrared, far more sophisticated and far more capable, that creates a kind of 'data-island' over a short radius for your information. It will connect all your personally accessible devices, plus eliminate all wires from your desktop
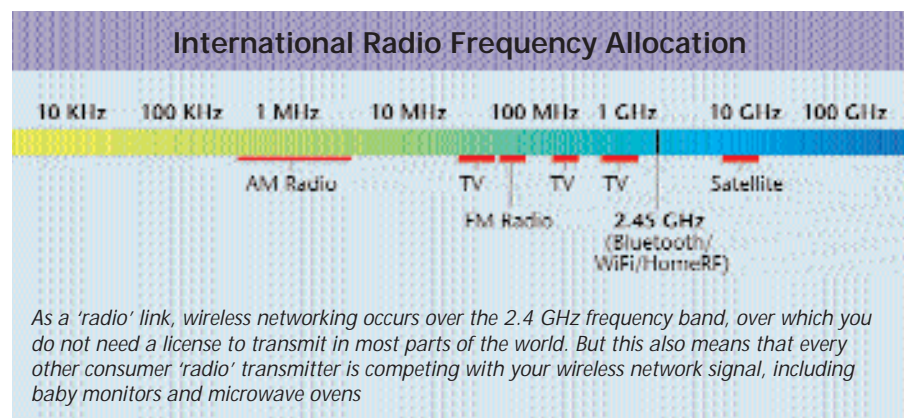
for the printer or scanner or digital camera or any device that needs to exchange data with any other. Bluetooth is now being incorporated into many personal devices including top-range PDA models and cellular phones, as well as laptops.

Local Area Networks (LAN) with wires like the one you are plugged into right now continue to be the mainstay of networking infrastructure. Yet if you are the type who carries your computing device, a laptop or one of the newer PDAs around, you could walk into to your office and automatically get on the company network using IEEE802.11 wireless technology. With a range of up to 300 metres, LANs offer high-speed permanent connectivity to other 'data-islands'. Equipped with a PC Card for your laptop or a CF Card based Wireless LAN (WLAN) adapter for your PocketPC device, you'd be all set to network with your counterparts in any location within your building.

However, on the road you are unlikely to find WLAN connectivity as easily as the connectivity you could get over the

cell phone network. With the launch of digital GPRS services, data connectivity over long distances is much more convenient. Connections over long distances are the domain of Wide Area Networks (WAN) that connect far-flung devices, and even complete networks, to each other. What could be more convenient than a laptop that connects to the WLAN in the office as you walk in, and seamlessly switches to GPRS as you walk out, leaving you permanently connected no matter where you go?!

As business-oriented technologies, these three are the ones you can expect to use the most. But home networking is another ball-game altogether. At home, you have a wide range of devices that are all wired at some point, some communication oriented, some information/entertainment oriented, all with different needs. Yet there are many benefits to be

International Radio Frequency Allocation

10 KHz	100 KHz	1 MHz	10 MHz	100 MHz	1 GHz	10 GHz	100 GHz

AM Radio   TV   TV   TV   Satellite

FM Radio   2.45 GHz (Bluetooth/ WiFi/HomeRF)

As a 'radio' link, wireless networking occurs over the 2.4 GHz frequency band, over which you do not need a license to transmit in most parts of the world. But this also means that every other consumer 'radio' transmitter is competing with your wireless network signal, including baby monitors and microwave ovens

had by connecting them all together. For example, you could be talking to your buddy over a DECT (Digital Enhanced Cordless Technologies) standard cordless connection while listening to music over speakers that are connected wirelessly to an amplifier, which is controlled via your computer that you are also using to surf the Net through a wireless home gateway. All of this can be handled by one wireless network that fills the air in your house. Analyse the needs—the connection has to maintain telephone-quality sound to the DECT telephone device, while streaming real-time audio over a high priority band to the speakers in your room and handle your Web browsing at the same time. Conventional networks would be hard put to juggle this mixed traffic. Yet, HomeRF WLANs can do all this with ease.

The best part about all of this wireless business is that it's a snap to set up and use. As the end-user, you need not ever consciously twiddle with switches and configuration options—it's all automatic. Bluetooth devices find each other, exchange their capabilities and set up private connections. Laptops with wireless connectivity authenticate themselves and join the nearest open WLANs or any other computers that wish to exchange data. And with multimode adapters, your network technology hand-off occurs seamlessly from PAN to LAN to WAN and all the way back without any intervention on your part. However, as with any technology it's always good to know what's going on under the hood.
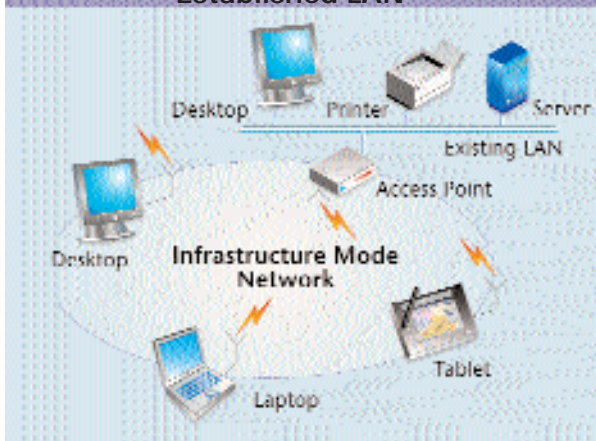
Local networking with WiFi
IEEE usually sets computer networking standards under the 802 umbrella. The 802.11 wireless standard has been around for many years, but it's only with 802.11b that it has become popular. The 802.11b standard has a range of up to 300 metres and a data transfer speed of 11 Mbps over the 2.4 GHz frequency band. Compliant devices are accorded the WiFi (Wireless Fidelity) logo by the Wireless LAN Association (WLANA). These networks work in two modes, Ad Hoc and Infrastructure. When a computer fitted with an 802.11b interface is brought within range of

Automatic Point-to-point Connections
Desktop   Ad Hoc Network   Tablet
Laptop
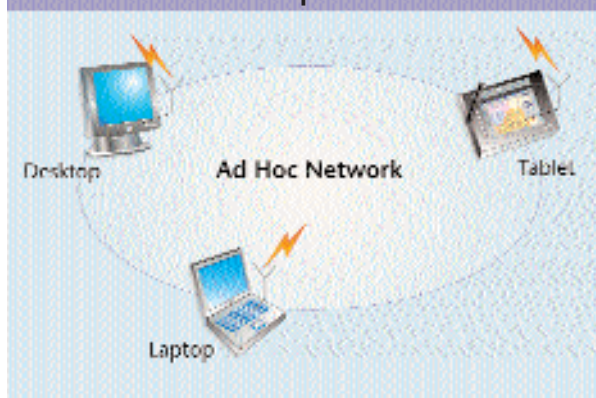
Connecting to the Services of an Established LAN
Desktop   Printer   Server
Existing LAN
Access Point
Desktop   Infrastructure Mode Network
Tablet
Laptop

another similarly equipped computer, both of them register each other's presence and communicate directly. A third computer will find both the existing computers and open connections to each of them separately and directly. When any of these moves out of range, it will simply be dropped from the network. This automatic, ungoverned behaviour constitutes Ad Hoc networking. If a computer is to connect with the rest of the wired world, its wireless connection must be to an Access Point. Access Points can be wired into an existing LAN, providing infrastructure connectivity to the mobile device, for services such as corporate applications, intranets and Internet access. An Access Point also behaves like a repeater, which amplifies and retransmits the network signal, doubling the range of the wireless network. Networks that include Access Points to conventional wired networks are called Infrastructure networks. Because of the way 802.11b divides its frequency range, no more than three Access Points should overlap or they will cause interference

and the performance of the network will begin to degrade. 802.11b networks also suffer from other interference problems because of the frequency band they work on.

Concerns with WiFi
WLANs work over line-of-sight, but the high-power signals can easily spill out of intended usage areas. This makes these networks rather easy to snoop on (see box, 'Drive-by Hackings') and difficult to protect. As a basic measure, WiFi includes an encryption system called Wired Equivalent Privacy (WEP). WEP encrypts each transmitted packet, but this system suffers from a few major weaknesses that render it useless against any but the most casual hackers. As a result, a new standard for security is now being deployed, called 802.1x that allows for more standard authentication schemes like Kerberos and RADIUS and greater security through proven technologies such as VPNs.

The 11 Mbps speed of 802.11b is as fast as an older co-axial cable based LAN but only one-tenth the speed of the current 100BaseT 100 Mbps networks. While that may not be blazing, it's quite adequate bandwidth for most business users. For people with higher bandwidth needs, a newer standard called 802.11a is now available, bringing speeds of up to 54 Mbps while reducing the range. Networks following this standard operate in the 5 GHz frequency band, making them incompatible with the 802.11b networks that operate over 2.4 GHz frequency band. 802.11a networks can also be packed closer; up to 12 overlapping networks can safely co-exist. While many networking companies support 802.11a, a third standard—802.11g—seeks to bring higher speed to the 2.4 GHz band, but this is not yet finalised. So there will soon be three standards vying for dominance: 802.11b (WiFi), 802.11a and 802.11g.
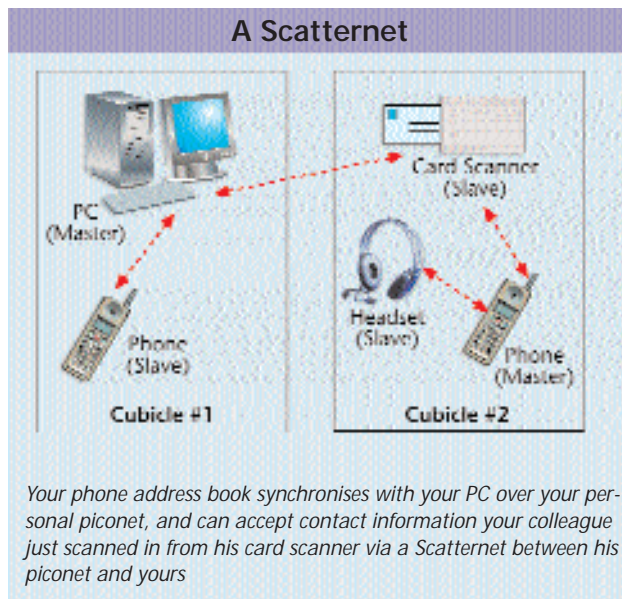
Quick connect with Bluetooth
Fortunately there isn't such an embarrassment of choices with PANs. As things stand today, Bluetooth rules for wireless connectivity. Bluetooth originated at Ericsson, to answer their needs for connecting handsets conveniently to a range of

accessories, so it's not very surprising that the first commercial Bluetooth product was an Ericsson hands-free headset. Now, Bluetooth is managed by a large consortium including all the major cell phone manufacturers and many other hardware and software companies, with dozens of products available for a variety of purposes. Bluetooth has a very clearly defined zone of activity—it connects personal devices.

When two Bluetooth devices are brought within range of each other they automatically negotiate a network. More devices can be added to the network or removed at will. One of the devices becomes the Master and regulates the traffic over the ad-hoc network. Up to eight devices can form one network, sharing communications and bandwidth in a configuration called a 'piconet'—a tiny network. In any given area there can be multiple such piconets, and where they need to communicate with other piconets, they can do so across designated devices like gateways. These larger networks are called 'Scatternets'. Bluetooth also operates in the 2.4 GHz frequency band, but it uses the band in a Frequency Hopping mode. It uses 79 1-MHz bands, with each transmission lasting less than a second over any one band. The next transmission is over another band. Thus by rapidly jumping around, Bluetooth avoids interference problems between piconets or other devices in the same band.

With a normal range of 10 metres and peak transfer speeds below 800 KBps Bluetooth isn't designed for much more than replacing local wires. That doesn't stop people from trying though, and there is a wide misconception that Bluetooth will replace all your wireless networking needs. Obviously, that is not possible. But to prove the

A Scatternet

Your phone address book synchronises with your PC over your personal piconet, and can accept contact information your colleague just scanned in from his card scanner via a Scatternet between his piconet and yours

point, Toshiba has a portable storage device that connects via Bluetooth. It will be excruciatingly slow, but it's a concept. The 5 GB hard disk based appliance will work out-of-the-box—just place it in the same room as a Bluetooth equipped computer or a network. And Bluetooth-enabling your computer could be as easy as plugging in a key-sized USB device from D-Link. More to the point are Bluetooth-enabled PDAs, laptops and cell phones. Equipped thus, the road warrior could be online via the cell phone still in his pocket—no hassles with IR ports needing careful aiming and alignment.

The problem with Bluetooth is that it demands a chip in every device, which balloons up the cost. As volumes ramp up, costs are expected to come down to more affordable levels in a year or two, but be prepared to pay a premium for the convenience it offers until then.

Home free with HomeRF
HomeRF tries to replace all cables in the home except the power lines. Based on a combination of DECT voice technology, and 802.11 networking, it aims to connect phones, entertainment devices, such as your TV and stereo systems, and your information access systems, computers and Internet gateways. With such a combination, you could route connections from your phone to your PC to your TV set-top box. You could even use the DECT cordless phone to talk to your PC, as a mobile headset replacement. With

Drive-by Hackings

According to an International Chamber of Commerce report, 92 percent of the 5,000 wireless networks in London freely hand out connections to all comers, providing Internet access and transferring data unencrypted even though there's rudimentary encryption built into all WiFi (Wireless Fidelity) devices. Interestingly,
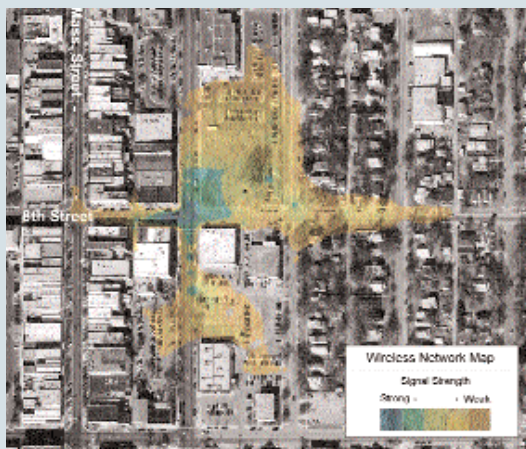
the firm performing the survey gathered data by simply driving around the streets of London with a WiFi laptop and a long-range antenna. Even more interestingly,

such long-range antennae can be made out of any suitable metallic tube (e.g. cans of Pringles wafers).
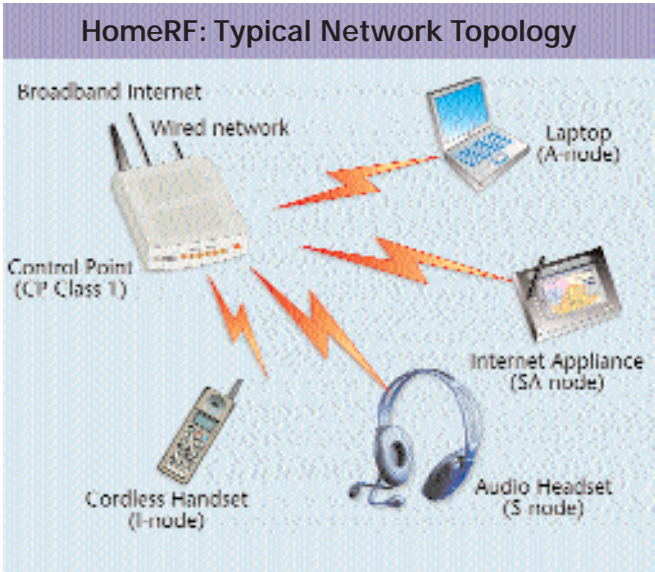
In the early days of computer networking, uninformed companies had banks of modems waiting for any incoming connections. Hackers searching for these open connections would scan entire area codes, a process commonly called 'war-dialling'. The 'in' thing now is 'war-driving'. The equipment is commonplace and affordable, the bounties rich and easy. It is quite common for a network to have firewalls on the Internet connection, yet the backdoor of the wireless network provider has unrestricted access to the backbone infrastructure. People often do not realise the extent that a wireless network can spill over, well outside the buildings it's installed in. Two researchers from Kansas University came up with a technique for mapping wireless network signals (*www.ittc.ku.edu/wlan/*) producing images like the one you see here of a commercial network.

HomeRF: Typical Network Topology

Broadband Internet

Wired network

Laptop
(A-node)

Control Point
(CP Class 1)

Internet Appliance
(SA node)

Cordless Handset
(I-node)

Audio Headset
(S node)

appropriate software, you could use this to voice-command your PC to wirelessly control your home environment, or simply call 'Grandma'.

HomeRF too works in the 2.4 GHz frequency range, and operates in point-to-point mode (Ad Hoc) where devices within range can simply access each other over either TCP/IP or DECT interfaces.

The key differentiator with HomeRF is QoS (Quality of Service) support for prioritised traffic. Regular networks are 'dumb' in that they make no assumptions about the data they carry. They simply forward it as it comes through. When you have streaming audio, or a phone conversation occurring, any delays in data transmission would be immediately noticeable. On a regular network, wireless or otherwise, traffic generated while surfing the Net would have the same priority as the voice call and would interrupt the conversation. In HomeRF the network detects the type of traffic and ensures that important data is delivered in real-time disregarding what happens with other data. HomeRF kits are a little cheaper than 802.11b, and with their additional features it may be the network you want to use at home.

The big picture

All three technologies are tested and available today. And yes, the potential is as exciting as you can imagine, maybe more. Yet, beyond niche applications we may not see them in India for a while. Bluetooth has been three years in coming and 802.11 is only just picking up momentum. That too may be slowed down till early next year because of the standards. But most importantly, there needs to be a killer application for wireless before we can see it deployed widely.

As things stand right now, businesses might adopt wireless networking only for the convenience factor, a luxury for their small mobile employee base. However, wireless equipment costs are already approaching ethernet equipment prices of only a couple of years ago. With increasing volumes, lower prices combined with the ease of deployment mean that in the long term, wireless will eventually dominate its cable dependant competitors in all but the highest performance networks. ▪

SUMOD HAJELA

1/2 page H. AD

A Hex
on
the Evil Eye

Dabbling in voodoo and reciting magical incantations may not help all that much towards protecting your PC. To be really effective, here's what you need

PHOTOGRAPH: Jiten Gandhi, IMAGING: Neeta Wadiker

Intrusion has many forms. You may have the latest and best security systems, or a fierce guard dog to keep your home safe. But some forms of intrusion go unnoticed in spite of all the hi-tech security gadgetry. Take for instance all that valuable data that you have stored on your desktop PC. Is it safe from people who can use your PC for pushing pirated software and illic-it activities such as hacking? Is your cred-it card account information and all those intimate e-mails safe from prying eyes? Here are a few simple steps to ensure that your computer is not broken into.

While these steps will not make your system completely intruder proof, they will help towards keeping most Peeping Toms from accessing your machine with-out your permission.

Talismans for Windows

Boot passwords are a somewhat effective, albeit low-level method of security. How-ever, boot passwords can be over-ridden by resetting jumpers or removing the CMOS battery. Another simple security measure you can implement is to have a password protected screensaver. But bear in mind that getting past the screensaver password is as simple as restarting the PC! A more secure method is to use a 'Win-dows Lock', which requires a user ID and password to access a PC.

Windows NT, 2000 and XP have inbuilt Windows Locks and user man-agement, which can be used to restrict access to your PC. You need to provide a username and password to gain access. However, it's a different story with Win-dows 95/98. Security was not a highly rated issue when Microsoft designed these operating systems. Nevertheless, System Policy Editor (Poledit.exe) is a tool included with Windows 9x that helps you set user access and privileges. You can install it from your Windows 95/98 installation CD by going to *Settings > Add/Remove Programs*. Click on the 'Win-dows Setup' tab and then on 'Have Disk'. Browse to *\admin\apptools\poledit* in Win-dows 95, or to *\reskit\netadmin\poledit* in Windows 98, for accessing the poledit.inf or grouppol.inf files (depending on your Windows version) and install the System Policy Editor. Restart your PC and set the user privileges you would like to assign to other users.

System Security 2001 is a handy utili-ty, which helps you set access and per-mission criteria for users on your PC. It also helps you lock up your desktop at startup and when you are not around. Sys-tem policies can be set in System Security 2001, which help you allocate access rights for each user. This means separate passwords and accounts for users, varying levels of protection, etc.

Encryption and decryption

So now that you have your passwords, user accounts, and all those Windows Locks in place, you probably think that your confidential data is finally safe, right? Well, think again! The truth is that anyone can take your hard disk out, plug it into another PC and access your information.

The way out of this dilemma is to encrypt your sensitive data. Encryption basically converts your data into a secret code. To convert it back into the original

Keep out Prying Eyes
Set up a BIOS password to stop unwanted guests from getting past the bootup screen. You can set the boot pass-word through your PC's BIOS. Press [Delete], [F1] or [Esc] to enter your BIOS during startup.
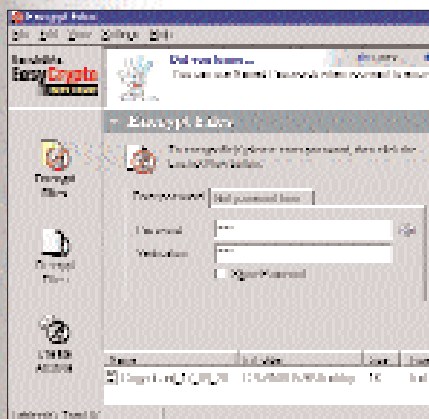
Protect your sensitive data with EasyCrypto

data (known as decryption), you need to provide a secret key or password. This ensures that no one besides you will have access to the data.

You can encrypt your data using free encryption software such as HandyBits EasyCrypto Deluxe.

EasyCrypto allows you to encrypt files and folders with password protection. To encrypt files, click on the 'Add Files' button in the 'Encrypt Files' dialog box. Now, browse to select the files you need to encrypt and click on 'Open'. Enter the password that will decrypt the files. To complete the encryption, click on the 'Encrypt Now' button. To decrypt the files, click on the 'Decrypt Files' icon. Add the files using 'Add Files'. Enter the password and click on the 'Decrypt Now' button. The files will be restored to their original state.

If you want to encrypt an entire folder, use the [F3] key to browse to the folder. Add the folder and encrypt it as you would encrypt a file. You can also encrypt or decrypt files and folders from Windows Explorer by right-clicking on the file or folder and selecting the 'Encrypt' or 'Decrypt' options.

You can even mail encrypted files as self-extracting archives. For this, select the 'Send To Mail Recipient' box in 'Create Archive'. Add the file and click on 'Build Now'. The file will be converted to a self-extracting archive file and added as an attachment to a new mail from your mail client. You can also select the encryption key length as 40, 64, or 128 bits by clicking on the 'Options' button.

A charm for the network

The measures that we've discussed so far were all about how you can protect your data physically, i.e. how you can protect your computer from being accessed by intruders around you. Now let's take a look at protecting your PC from prying eyes when you are connected to the Internet. If you thought that just running an anti-virus would protect you, then you are in for a rude shock.

It is very easy for someone to get access to your PC on the Internet, especially if you have an 'always on' connection such as Cable Internet or DSL. These connections usually provide you with a static IP, an Internet address for your PC which is constant whenever you are connected to the Internet. Dial-up connections usually have a dynamic IP, which changes every time you log on to the Internet. Static IPs allow hackers easier access to a PC.

A personal firewall will help you secure yourself from unwanted visitors. Your PC's doors, or its ports, are completely invisible to outsiders when you have a firewall running. A personal firewall also helps you safeguard yourself from spyware and Trojans. Spyware are programs that send information about you to software developers without your knowledge. Many freeware

You can prevent certain applications from accessing the Internet

and shareware programs are spyware. Trojans are basically programs you unknowingly install on your PC, which give hackers control of your PC.

Circle of fire

One of the best personal firewalls available is Zone Alarm from Zone Labs. It is free and installing it is pretty straightforward.

Zone Alarm is quite easy to use once you get the basics right. The first time you access the Net via a particular program (Web browser, chat client, etc) after

General Safeguards
■ Disable 'File/Print Sharing'. This feature has a lot of vulnerabilities.
■ If you need to share folders, share them as hidden folders. For this add a '$' sign after the folder name. For example, if you need to share a folder named music, share it as music$. Also make it a habit to assign passwords.
■ Rename your Administrator account in Windows 2000/NT/XP. This will make it harder for people to get access to your machine.
■ Use a combination of alphabets and numbers in your password so that it's hard to guess and crack. Take any word, for example 'Digit' and frame your password by mapping the letters above each letter of the keyword 'Digit' on the keyboard. This is a good method to frame a password and it's extremely difficult

System Security 2001 (System Tools CD), HandyBits Easy Crypto Deluxe (System Tools CD), Eraser (System Tools CD), Zone Alarm (Internet Solutions CD)

Conjure up an Update

Most of us tend to believe in not messing with whatever's working fine. Perfectly all right, but in the case of software that's not a very good approach to take. It is very important that you update all the software installed on your PC.

Some of the programs you need to keep updated at all times are Windows, Internet Explorer, Outlook and Outlook Express. These have a reputation for carrying a large number of security vulnerabilities. These programs can be updated from the 'Windows Update' option in *Start > Settings*. This will take you to the Microsoft Windows Update page where you will be able to download the latest updates and install them.

Your anti-virus program is another important item you shouldn't ignore. Most anti-virus programs have automatic live update schedulers, which allow for automatic updation. Enable this feature and let the anti-virus do the updating for you.

installing Zone Alarm, a small message box appears near your system tray asking if you want the program to access the Internet. For example, when you launch Internet

Remember to set local and Internet security levels in Zone Alarm to High

Prevention is Better than Cure

■ Avoid running e-mail attachments.
■ Use a separate ID when you post messages to newsgroups and other public forums.
■ Do not make it a habit to sign Web site guest books, since this is an open invitation to spam.
■ Most Web sites use small files called cookies, which are stored on your PC. These cookies send information about you to the sites. Use cookie removal programs to get rid of these.
■ Use programs that clear the browser's history (sites you've visited) after every session.

Explorer, Zone Alarm will ask if you want Internet Explorer to access the Net. Click on 'Yes'. If you want the specific program to always access the Net, select the check box 'Remember this answer the next time I use this program' above the 'Yes' button.

Zone Alarm will also prompt you to set the program accessing the Net to act as a server. Be sure that this program is from a trusted source before allowing it to act as a server, because once you enable this option, it will allow others to gain access to your PC.

Click on the 'Security' button in Zone Alarm. Setting both local and Internet security levels to High ensures that your PC is invisible to outsiders. You can allow access to or block whichever programs you want to by clicking on the 'Programs' button.

Zone Alarm alerts you of potential hacking attempts and automatically blocks them. And the number of alerts you get, especially if you are using a cable or DSL connection, is unbelievable! This is because hackers usually run programs that send data packets to find vulnerable PCs, to which they can gain access. You can configure Zone Alarm to display a message every time you get an alert, or log them in a text file, or both. These alerts will give you details such as the IP address of the computer trying to access your PC, time of attempt, etc. An option you could use in Zone Alarm is to engage 'Automatic Internet Lock' when the PC is inactive for a certain period or when the screensaver is running. Click on the 'Lock' button in Zone Alarm to enable this feature.

So there you go! Follow these simple steps, and though they may not turn your PC into Alcatraz, you definitely will have some respite from nosy siblings, intrusive colleagues or malicious individuals on the Net.

ANIL PATRICK R.

Switch to Autopilot

Create macros to automate repetitive tasks and you can sit back and let your computer do the grunt work for you!

IMAGING: Ram

Computing has made several everyday tasks simpler for many of us. From accounting software to manage finance, to word processors that take much of the tedium out of writing letters, computers have been quite successful at reducing the monotony of performing repetitive and often boring tasks. However, there still remain many tasks that we end up performing over and over again on a PC. For instance, every bootup is followed by the predictable ritual of launching the Internet connection, starting up your favourite site in a browser and then running Outlook Express to check for new mail.

Even Windows, which most of us would consider a sophisticated and user-friendly operating system, doesn't offer tools that could provide some much needed relief in this area. True, there is the Windows Task Scheduler, but it isn't very powerful and doesn't let you perform more complex tasks such as launching multiple programs, or copying specific files at predefined times. The only way to do this in the past has been through the use of programs that require you to get a hang of fairly complex scripting languages.

Today, however, there are several applications that let you automate some pretty complex Windows tasks. One of the better ones around is Macro Angel v1.5.2, which has a simple wizard-based interface that lets you get the job done without having to first get a degree in programming.

Understanding the task

What an automation tool does is to create a task. A task involves steps (or actions) that are executed in a sequence which is specified in advance. These actions could be anything from launching a specific utility, to switching between windows, sending keystrokes to an application or even performing a complex series of mouse movements and clicks.

Tasks can be set to run either at a specific time or on the occurrence of a specific event, which is called a trigger. A triggering event could be the pressing of a particular key combination or even the appearance of a dialog box, application or window.

Working with the Task Wizard

Creating a task is very simple in Macro Angel, which provides us with a wizard that does this in five relatively simple steps. Clicking on the *File > New Task* menu in the main screen of the Macro

Angel interface launches the first screen of the 'Task Wizard'.

STEP 1 **Task name:** At this stage you need to specify a unique name for your task. You can also enter detailed information describing the task in this window. Other options include an 'Enable Task' checkbox that can be used to disable a task at any time.

STEP 2 **Recurrence:** If you have a timetable in mind then here is where you need to enter specifics about the time intervals at which the task needs to be executed. You are also given the option of setting a task to run only on specific days of the week.

STEP 3 **Date and time:** This step is optional and necessary only if you choose to schedule the task in the previous screen. You need to key in the date and time when the task will first be launched. This lets the software keep track of whether everything's progressing as per schedule. It also lets it calculate the frequency of tasks that have been configured to run repeatedly. In case the execution of a task is delayed for some reason—perhaps the computer was turned off at the prescribed time—
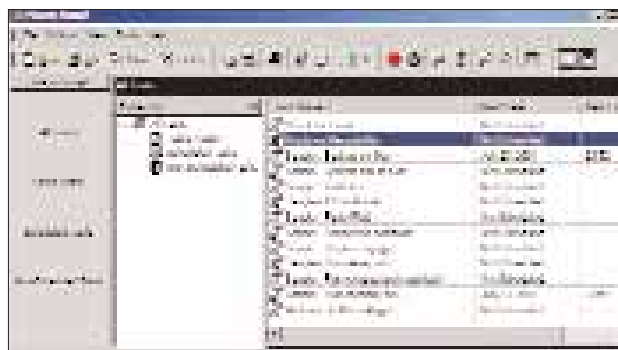
The Macro Angel interface is well designed and very easy to use

you can tell the software to either prompt you for instructions or just continue or cancel execution of the task.

STEP 4 **Define triggers:** Triggers are necessary in Macro Angel to set off an event that has not been scheduled to run at a particular time. There are several types of triggers for you to choose from according to the task you want to set off. **Hotkeys:** Setting up hotkeys makes sense when you want to launch a task manually. An example of a good situation to use this feature is while launching an application or a Web site.

Magic keys: Using this trigger, Macro Angel can launch a task when it detects that a certain string of text has been typed into any application on your system.

Appearance of a window: This allows you to execute your task on the appearance of a specific application window. You can specify this window from the list that appears when the checkbox activating this kind of trigger is selected.

Although one trigger is sufficient, in most cases you can assign multiple triggers to a single task if you want to launch it in a range of circumstances.

STEP 5 **Task Steps:** This is the most important stage because 'Task Steps' are the key to helping Macro Angel provide the functionality to simulate your actions on your PC. Each 'step' involves the use of one of many types of actions that are possible on a PC. Once a Macro Angel task is triggered, the program moves through the steps defined during the task creation.

This is the part that requires the most planning. Not only is it necessary to choose the right task steps, but you need to ensure that these are arranged in the correct sequence so that everything goes off as planned.

Let the action begin

One of the most critical steps towards achieving a properly functioning macro is to understand the actions recognised by the software and using them appropriately. While Macro Angel and other similar software support a large number of actions, you are likely to use some of them more than the others. It is essential to get a general understanding of these action types and what they do before you actually begin creating a macro.

Sending keystrokes: This is the first button in the 'Task Steps' pane and clicking
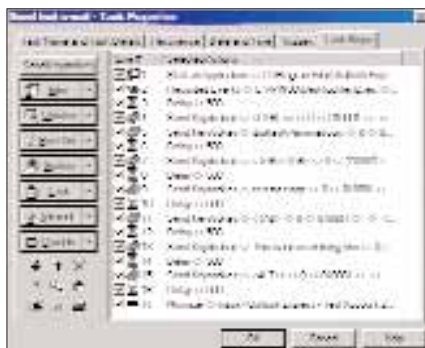
A sequence of action items are executed to perform a task

on it will take you to the 'Send Keystrokes' menu. It lets you enter text that you need to send to a particular application. The application window can also be specified so that the text isn't sent to the wrong location. For this to work properly, the application window needs to be 'in focus' or activated.

Miscellaneous actions: This collection of actions lets you perform tasks such as starting an application and opening a document or Web page. The 'Show a Message' action displays a Windows-style dialog box with the text you specify, which is meant for providing feedback during a task's execution cycle.

The most versatile and useful tool however is the 'Record Events' option. This allows you to record the movements of your mouse as well as keystrokes to a file, which can then be played back through a task to simulate the same mouse movements. For example, you can record your mouse movements as you double-click an icon to open a folder. Then just play these mouse movements back through Macro Angel, and you will see the pointer move about on the screen as if you were actually moving the mouse yourself. The program will continue to record events and

Record events and play them back to perform tasks

save them to a selected file until you press [Ctrl] + [Esc] on your keyboard.

Handling windows: Working with different application windows is necessary from time to time, especially when you decide to use the appearance of a window as a trigger for an event. This menu lets you focus on a particular window and then maximise, minimise, resize, close or even hide it.

Flow control: When designing a complex task made of different options, it becomes necessary for you to have some control over the progress of the task from one action step to another. Macro Angel provides us with several flow control tools that make this possible. A Windows-like dialog box can be made to appear, which pauses the task and prompts you to click either a 'Yes' or 'No' button. Depending on your choice the task either proceeds or can be terminated.

Macro Angel also allows the creation of loops that consist of one or more steps. These loops let you repeat a series of actions as many times as you like without your having to create them repeatedly.

However, one of the most powerful features of automation software is the ability to create conditional actions. They are usually used to check whether a previous action has been successfully completed. These conditional 'If/Else/End if' options help to completely automate tasks and completely eliminate the need for user intervention, which becomes necessary if even one step fails to complete correctly.

System procedures: This set of actions gives you control of Windows system level operations such as file and folder management, and program termination. It even lets you reboot your computer when necessary. You can even automate actions such as Backup, which lets you create automatic backup processes that can even compress multiple files into a single ZIP file in order to save space. Other useful file handling actions include 'Copy', 'Move', 'Delete', 'Rename' and 'Findfiles'.

Task management: Often a task might consist of several subtasks that handle dif-

You can even control Windows' system level operations

ferent types of action. In order to control the operation of such nested tasks, you need to be able to 'Start', 'Stop', 'Pause' or 'Enable/Disable' a task. These tools are likely to be useful later, when you need to create really complex tasks.

Internet functions: These functions can be used to make or terminate a connection to the Internet and perform basic tasks such as checking your mail box or starting a file download or upload operation via HTTP or FTP.

Create your first macro

To get an idea of how a macro is created, let's start by creating a macro that fires up Outlook Express and sends a test message to a specified address when you press the [Ctrl] + [Shift] + [B] key combination.

Use the 'New Task' button ([Ctrl] + [N]) to start the 'Task Wizard' and enter a name for the macro in the 'Task Name' field. You can then skip to step 4 to define the trigger that we decided on earlier—[Ctrl] + [Shift] + [B]. Before we start with step 5 ('Task Steps'), you should define all the actions that need to take place in order to complete this task. For this you should first go through the entire process manually and make a list of each step involved.

For our task, the process list would look something like this:

ᵤ Start Outlook Express
ᵤ Select the appropriate account from the 'Identity Login' screen
ᵤ Key in the password for the account
ᵤ Create a 'New Message'
ᵤ Enter the e-mail address as required
ᵤ State the subject for the e-mail
ᵤ Enter the body text for the message
ᵤ Send the message
ᵤ Minimise the Outlook Express window

Some other Automation Tools

Although we decided to work with Macro Angel v1.5.2, there are several other automation utilities that can get the job done. They are all available in the Macro Mania section on the System Tools CD this month. But you might want to visit their home pages for version updates.

AceMacro v2.0 - *www.hiteksoftware.com*
MouseAssist 2.0 - *www.mindmaker.com*
AutoMate 4.5n - *www.unisyn.com*
Macro Magic 4.1r - *www.iolo.com*
WinScheduler v4.61 - *www.pitrinec.com*

Once we have this listed, creating the Tasks Steps is quite simple. Our first macro can be broken up into four main stages as follows:

Stage 1: Start up e-mail client

To start Outlook Express, go to *Misc > Start an Application* and select the path to the Outlook Express executable from the box that pops up. In this case you would select *C:\Program Files\Outlook Express\msimn.exe.*

Stage 2: Log into e-mail account

Selecting the right e-mail account is done by going to *Misc > Record Events* and recording mouse movements that will click on the account that you want to log into. The password can be entered using the 'Enter Keystroke' action.
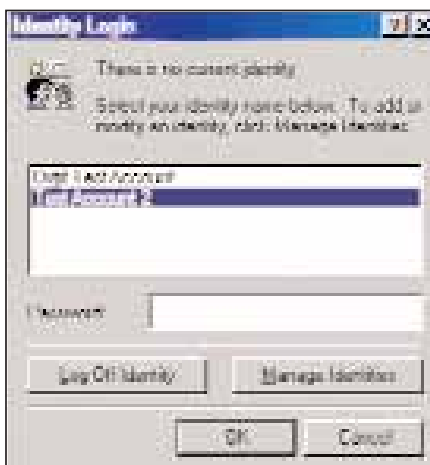
Use the Event Recorder to select your e-mail identity and enter the password

Stage 3: Create and send the e-mail

This stage can be completed in most part with the 'Keystroke' action. Just use the [Ctrl] + [N] command in Outlook Express to create a 'New Message'. The e-mail address, subject line and body text can also be entered using this action. Finally, you can send the e-mail using the [Alt] + [S] command in the 'New Message' window.

You might want to use 'Time Delays' between the actions just to make sure the text goes where you intend it to. You wouldn't want the address to end up in the subject line field and cause an error when you try to send the e-mail.

Stage 4: Minimise the e-mail client

This is really easy to do with the *Windows > Minimise a window* action, but you will need to specify the title of the Outlook Express window. You can either type this yourself or just select it (by double-clicking) from amongst the windows listed in the

Free your Mind!

Here are five tasks that you shouldn't waste your time with. Just go ahead and automate them pronto!

Checking e-mail: Let your PC connect to the Internet, Send/Receive your e-mail and disconnect, all on its own.

File backups: Set up automatic backups of files and folders according to a predetermined schedule.

System cleaning: Purge your system of temporary files and empty your Recycle Bin regularly.

Web site updates: Download and upload your Web site files automatically via an FTP client on schedule.

Standard e-mail responses: Create an e-mail template for every occasion. Make your own macros for standard greetings, e-mail taglines and more.

Select the window that you want to minimise

'Window List' on the right. Just remember, the window must already be open in the background for it to appear in this list.

We are done with making our first macro and have familiarised ourselves with a number of different types of actions as well as some basic flow control techniques. The macro is now ready to run and can be executed at any time by pressing [Ctrl] + [Shift] + [B]. Just remember that Macro Angel should be running in your system tray.

A little practice with these commands and techniques and you'll be able to automate even the most complex tasks. Remember that you should try and construct a macro that gets the job done in as few steps as possible. Having done that you can relax, put your legs up and leave things to your PC and the autopilot. ⬛

KARAN MANRAL

Can't stop the Music

Napster may be history, but peer-to-peer file sharing is far from dead. A new generation of file sharing applications are keeping the flame alive, despite RIAA's attempts to stop the digital music blitzkrieg

The golden era for Napster buffs is over. The music stealing software of choice now uses a finger printing technology that prevents the trading of copyrighted material. The 50-million-strong service has been re-formed to a membership-based service—users will now pay for downloads. A dozen other services have gone under too, as legal battles mounted by the record industry take their toll.

But RIAA's (Recording Industry Association of America) attempts at filtering music are about as effective as trying to soothe a rioting mob with a copy protected Kenny G CD. Ironically, for every target the RIAA has fought, there seem to be three more that spring out of the shadows. The services that gave momentum to peer-to-peer (P2P) file sharing may be extinct, but P2P is thriving and is one of the hottest technology buzzwords today. The number of file-swapping sites has grown more than five-fold in the past year, despite legal efforts by music companies and software firms to shut them down. Nearly one in three of the most popular applications at *Download.com* are for P2P services.

Power to the people

One of the most popular second-generation P2P applications is Morpheus, distributed by StreamCast Networks. Since its inception, 60 million have already downloaded Morpheus and a large number of them are heavy users. In the two weeks after StreamCast upgraded its version of Morpheus onto the open source Gnutella technology, 25 million users downloaded the new version. This proved to be of help to the Gnutella network as well—the number of people sharing files on the Gnutella network jumped from 100,000 to 500,000. Limewire, Morpheus, Bearshare, and many other P2P applications now share the same backbone, Gnutella. Users can share, search, and download not only all types of music, but also movies, pictures, games and text documents.

Justin Frankel and Tom Pepper at Nullsoft developed the original open source Gnutella client—the same company that created Winamp, the world's most popular MP3 playback software and Shoutcast, the number one Internet radio application. Many different companies, individuals and groups have gone on to modify and evolve the Gnutella protocol.

Gnutella is the record industry's worst nightmare, built to survive both court rulings and nuclear war. While P2P services based on centralised servers may be vulnerable to lawyers and court rulings, decentralised servers such as those based on the Gnutella technology can-

not be attacked at a single point. Shutting such systems down, even by court order, would be difficult because they are decentralised and do not belong to any particular company. Unlike Audiogalaxy, iMesh or any of the other similar systems, no central point links people together and serves as an index to all of their files and searches.

Despite all its pluses, Gnutella's performance during a session is quite flaky. If a client happens to find reliable hosts early, it will obtain a steady flow of data. At other times, a client may struggle to find even a single permanent connection. Other alternatives to decentralised server technology include Aimster, which piggybacks on Instant Messaging clients, and Espra, built upon Freenet, a decentralised and anonymous publishing/distribution system.

I will survive

So in the post-Napster era, how do the surviving P2P file sharing programs fare? Here's a round-up of some of the most

Digital Music in India

The Indian music industry works under a different reality, wherein Internet infrastructure and PC penetration aren't widespread enough to cause any noticeable dent in music revenues. Indian music may not be as popular as Eminem's latest single, but a large amount of Indian music is easily available online. Our test run with file sharing applications revealed a large bank of Indian classical music, Bollywood hits and regional folksongs on Audiogalaxy and P2P applications using Gnutella.

Alternatively, you can buy your MP3s online from *www.soundbuzz.com*, which has tied up with major Indian record labels, independent labels and unsigned artistes to distribute their content online. Credit cards are the default mode of payment as of now, but Soundbuzz is looking at alternate payment methods including ISP and telecom billing.

popular services and a review of what you can expect.

Aimster
www.aimster.com
A decentralised 'plugin' for AOL Instant Messenger, it allows users to view and swap files with those on their buddy list. The latest version of Aimster allows the user to plug into other file transfer services, including Napster, OpenNap and Gnutella, among others.

Audiogalaxy
www.audiogalaxy.com
This   is   a   browser-based

Music Keyword Search

How good are these surviving services at getting the MP3s you want? We made a test run with four singles belonging to different categories to gauge their effectiveness.

Popular: Shakira s Whenever Wherever

Indian Regional: Suprabhatam as sung by M.S. Subbalakshmi

Rare: John Lennon s Make Love, Not W ar

Non-Commercial: Mc Hawking s Entropy

This is a popular song that's getting a lot of airplay, but is also copyrighted. This would check if the service blocks copyrighted MP3s.

A Tamil bhajan; does the service cover world regional music?

A rare number from The Lost Lennon Tapes. Widely bootlegged since first being aired on a radio show.

*An MP3 only release that hit the top position on the charts at **mp3.com**.*

	BearShare	Audiogalaxy	Espra	Morpheus	iMesh	Edonkey
Popular	✔ (67 Results)	✔	✘	✔ (1304 Results)	Not Functioning*	✔ (24 Results)
Indian Regional	✘	✔	✘	✘		✘
Rare	✘	✔	✘	✘		✘
Non-commercial	✔	✔	✘	✔ (10 Results)		✘
Speed	▮▮▮▮	▮▮▮▮	▮▮▮	▮▮▮▮		▮▮▮
Accuracy of results	▮▮▮▮	▮▮▮▮	▮▮▮			▮▮▮▮
User base	▮▮▮▮▮	▮▮▮	▮	▮▮▮▮		▮▮▮
OS Support	Windows	Windows, Linux	Windows, Mac, Linux	Windows	Windows	Windows, Mac, Linux

* The latest version of iMesh kept crashing after the registration process

Conclusion: Although BearShare and Morpheus use the same Gnutella backbone, Shakira's `Whenever Wherever' gave a different number of search results. This is because each session with Gnutella is variable, and depends on the peer you are connected to.

Espra, based on Freenet is still in the beta stage and many features haven't been implemented yet. Freenet definitely has a long way to go before it becomes popular. It's unfair to judge Edonkey with MP3 file sharing applications—it's primarily used to swap movies and games.

Audiogalaxy still remains the best MP3 downloading application, despite its attempts to filter MP3s. A word of caution: results are not always accurate. You might find a lot of MP3s that don't belong to the original recording artist at all.

Musically Yours

Five major recording companies have introduced file sharing services of their own—Pressplay courtesy Sony and Vivendi Universal, and MusicNet from AOL Time Warner, EMI, Bertelsmann's BMG, and RealNetworks. Both services allow users limited access to portions of their catalogues for $10 a month. MusicNet is available through AOL, RealNetworks and Napster, while Pressplay is linked on MSN Music, MP3.com, and Yahoo Music.

Both MusicNet and Pressplay will be streaming and download services. Unlike free services, both music services suffer from huge gaps in their selection of music, and their collection is less than comprehensive.

Both the services are mutually exclusive, and music under independent labels isn't available. The music collection on both services looks like a mail order catalogue.

Another problem is that music downloaded from Pressplay or MusicNet won't play on anything except the PC that downloaded it. Burning the files onto a CD or transferring them onto an MP3 player is also not possible.

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program where you use its Web site to select which songs to download, while the client facilitates the transfer. The client program is small and simple, designed to use a minimum of CPU and memory resources. The Satellite automatically selects the closest user carrying the file you want, reducing external bandwidth usage. Popular and easy to use, Audiogalaxy allows you to resume downloads. Most copyrighted music is blocked, although you can dig deeper and find your song if you're persistent.

Direct Connect
www.neo-modus.com

Unlike other file-sharing networks, Direct Connect offers a community-oriented approach to a user-controlled network. While Direct Connect's network architecture is built on a peer-to-peer foundation, the users run, control and maintain the network. Users are able to share any kind of file—absolutely no restrictions. This service is useful for those with a lot of spare bandwidth at their disposal.

Edonkey
www.Edonkey2000.com

More of a movie and a game swapping ring than an MP3 service, Edonkey's popularity comes from the vast number of servers run by anonymous individuals. At a given time, Edonkey has at least a hundred servers running all over the world. Edonkey uses file hashing, which breaks a large file into smaller shareable chunks, and allows

simultaneous uploading and downloading of files. It allows auto resume of files from any source.

iMesh
www.iMesh.com

Israel-based iMesh routes requests through a central server and allows access to video and image files apart from MP3s. Downloads are very fast and can be resumed later if a file's owner disconnects. iMesh allows you to download files from up to seven users simultaneously. You can complete downloads even if the original owner goes offline during file transfer. It's not as popular as Audiogalaxy or Gnutella-based applications, but it is one of the oldest surviving P2P services.

OpenNap
http://opennet.sourceforge.net

OpenNap is an open source version of Napster that looks and works basically like Napster, but allows various individual sites to create their own interlocking Napster networks. It's been written by programmers who reverse-engineered the Napster protocol.

Money for nothing

The year 2001 was the first year when sales of CDs were lower than the

year preceding it. The International Federation of the Phonographic Industry (IFPI) announced that global sales of recorded music fell by 5 per cent in 2001. While the general economic situation could be one reason for the decline, the IFPI insisted that illegal copying of music across the Internet was also to blame.

In a contrasting report made by Jupiter Media Metrix, Internet users who download songs from P2P services are more likely to increase their music purchases than regular Internet users. According to the report, 34 per cent of P2P users said they spent more money on music than they did before they used such services, while 15 per cent said they spent less. One-half said the amount of money they spent remained the same.

The report showed that music fans who did not use file-sharing services were less likely to report increased spending. Nineteen per cent said they spent more money on music, while 10 per cent said they spent less and 71 per cent said they spent the same amount. In fact, the biggest impact of digital music may turn out to be the fact that it will drive more people to their local music stores with well-researched shopping lists.

Music companies however are preoccupied with making frantic attempts to ensure that consumers continue to pay for music even as technology makes it increasingly easy to copy and transfer digital music. These attempts range from music with expiry dates that would work for a certain amount of time to digital 'watermarks', which prevent copies from being made.

In a recent report carried out by an Internet data measurement firm, ComScore Networks, for the month of February, Morpheus attracted 37 million visitors worldwide, KaZaA garnered 25 million, and Audiogalaxy 20 million, while Pressplay brought in only 788,000 and MusicNet got a piddling 154,000. As is evident, the legitimate services have a long way to go.

SRIRAM SHARMA

By the end of 2002, there will be only about 8 million MP3 capable devices in consumers' hands

30Minutes Expert

Flash Forward!

The BIOS is a tiny chip on your motherboard, which provides the basic instructions for operating your hardware. Updating your BIOS can eliminate niggling problems due to bugs and add features that give your motherboard a new lease of life.

The process of flashing involves rewriting the EEPROM of your BIOS chip with newer instructions and patches. This will take a maximum of 1 minute or even less. The process explained here is applicable to the more popular Award BIOS. Before you begin, make sure you have a Windows 9x bootable floppy disk handy.

STEP 1 Identify your motherboard and the current BIOS version. Press the [Pause] key while your system boots up and note down the signature of your BIOS. The name of the BIOS

Check for the BIOS ID and the name of the manufacturer on the Bootup screen

manufacturer shows up at the top left corner of the screen while your system does a memory check. The BIOS ID string is the long string displayed at the bottom left corner of the screen. In the third part of the string, the sixth and seventh characters denote the motherboard manufacturer. For example, in the ID 'i815-w83627-6a69rd4dc-00', 'd4' in the third part of the string denotes the

motherboard manufacturer, in this case, DFI (Diamond Flower).

If your motherboard uses an Award BIOS, you can check for the manufacturer at *www.abios.com/award.html*. If it uses an AMI (American Megatrends) BIOS, check *www.abios.com/ami.html*.

STEP 2 Depending on the type of your BIOS (Award, Phoenix, AMI, etc), download the latest flash utility and the necessary update file from your motherboard manufacturer's Web site to a floppy disk. Unzip the files. There should be three files in all: a .exe file, a .bin file (the BIOS update) and a .txt file. Copy the .exe and .bin files to the bootable floppy disk.

STEP 3 Boot your PC in the DOS mode using your bootable floppy. See to it that no memory management programs or emulators such as emm386.exe are running, as this might interrupt the update process.

STEP 4 To run the flash utility type the executable filename with the parameter as follows:

A:\> [executable file] [bin file]

You can type *[executable file] / ?* to seek help on using the file.

STEP 5 Most flash updating utilities have an option to backup your old BIOS settings. Make sure that you backup the current BIOS to a file by using the same utility.

STEP 6 Check the path of the .bin file and press [Enter] to proceed. You'll be asked for a confirmation. Press [Y] to continue. The software will automatically update your BIOS. During this update period there should be no power surges or
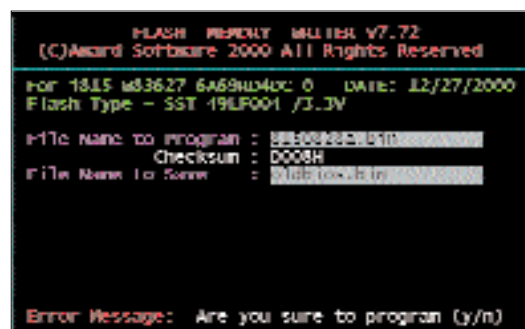
The flash utility screen showing the BIOS update process

electrical disturbances, else your BIOS can get corrupted and you would have to replace it (if the BIOS is socketed) or buy a new motherboard (if it's hardwired).

STEP 7 Now exit the flash updating utility, reboot the PC and enter the BIOS settings by pressing [Del] while your system boots. Load the BIOS defaults by pressing [F6] or [F7], as required. Now when you reboot your PC, your BIOS ID at the bottom left corner of the screen should show the new date (the date on which you flashed your BIOS).

You're done. Now your PC will run smooth and steady with the newer instructions written into your BIOS. Hardware compatibility issues and bugs, if any, will also get resolved when you flash the BIOS. ▌

VIDYARAMANAN S.

Q&A

Opening Binder files in Office XP, tackling overclocking issues, clearing your CMOS
and other problems that are crying out for solutions

Backing up Windows Address Book

Q. I have a computer running Windows 98 and I use Outlook Express for e-mail. I recently purchased a laptop with Windows XP installed. Is there a file(s) that I can copy to the laptop so that I can update and make use of my address book from here? I have over 100 addresses and don't want to retype them into the laptop. Please help.
Kelly
Via e-mail

A To backup the Windows Address Book you will have to copy the **.wab** file to another folder. To locate this file go to *Start > Find > Files and Folders.* In the search field, type **.wab*, and click 'Find Now'. Before copying, make sure that Outlook Express is closed. Now create a new folder to store the .wab file, for instance, C:\Backup. Copy the user-name.wab file to the new folder that you created, where 'username' is the name or alias of the Outlook Express user whom the .wab file belongs to.

Remove MSN Messenger in Windows XP

Q. In all previous versions of Windows, I could remove MSN Messenger. But in Windows XP when I go to Add/Remove programs there is no entry for MSN Messenger whatsoever. How can I remove this program from Windows XP?
Rajat Banerjee
Via e-mail

A To remove MSN Messenger from Windows XP, locate SYSOC.INF in the \Windows\INF folder, which is a hidden folder. Open it in Notepad and locate the line, msmsgs=msgrocm.dll,OcEntry, msmsgs.inf,hide,7. Remove the word 'hide' from the line and save the file. You will

Removing MSN Messenger from Windows XP

now be able to see MSN Messenger in the Add/Remove Windows components list. You can then remove it for good.

Office XP refuses to open Binder files

Q. Whenever I try to open a Microsoft Binder file, I receive an error message: "This file does not have a program associated with it for performing this action. Create an association in the Folder Options control panel." How do I open such files in Office XP?
Sarfaraz
Via e-mail

A You get this error message because Microsoft Binder is not included in Microsoft Office XP. However, Office XP includes a program called Microsoft Unbind. After installing it (you will require the Office XP installation CD to install this feature) you can use Unbind to extract sections from the Binder file that you

want to use. To unbind a Binder file, follow these steps: Double-click the Binder file, or right-click on it. On the shortcut menu, click 'Unbind'. In the 'Unbind' dialog box, select the folder that you want to save the unbound files in. Click 'OK'.
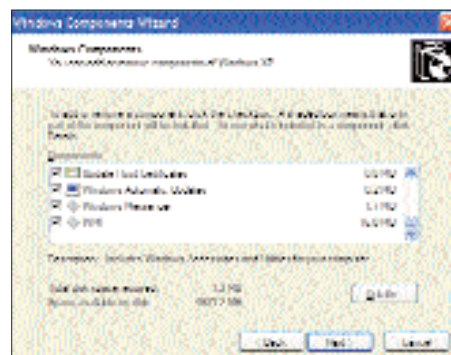
Lost Windows Product Key

Q. I have lost my CD Key (Product Key) for Windows 98 SE. Is there any way I can get the serial number?
Pukul Sharma
Via e-mail

A When Windows is installed, the Setup program requires that you type in a 25-character Product Key that is printed at the back of the CD (jewel) case or on a certificate on the cover of the Getting Started/User Manual. During Windows installation, the Product Key is stored in the Windows Registry. You can find it on your computer by clicking *Start > Run* and typing *regedit.* Click the plus signs to expand the branches in the Registry until you reach: HKEY_LOCAL_MACHINE\ Software\Microsoft\Windows \Current Version. Scroll down the right pane until you find ➜

Locate your Windows Product Key from the registry

the Product Key. Note down the number and store it in a safe place.

Overclocking problem

Q. I overclocked my Celeron 400 MHz processor to 500 MHz, but I soon reverted back to 400 MHz because after overclocking, my mouse hung after Windows had loaded and subsequently the system

crashed. Now my machine refuses to load Windows and all the files on the drive are corrupt. What is the problem?
Cyrus
Via e-mail

A. You have overclocked your Celeron processor by increasing the Front Side Bus (FSB) speed from the default 66 MHz to 83 MHz. Because of this, your PCI bus is running at 41 MHz, whereas the default PCI bus speed is 33 MHz. Because the PCI bus is overclocked, your hard disk drive cannot handle the extra bus speed. Hence, the files on your drive have become corrupt and you are unable to boot into

Windows. To avoid FAT/file corruption and to maintain your overclock, you can run your drive in PIO mode. To do this, access the BIOS by pressing [Del] when the Power-on Self Test screen comes up during bootup, and disable UDMA. This will ensure that the files on your hard drive don't get corrupted when you overclock and you will be able to boot into Windows. However, the speed with which your system accesses the hard drive will become a lot slower.

What's the buzz?

Q. I recently purchased Creative's SoundBlaster Audigy. From the very first day I've been hearing a buzzing sound from the speaker set. I contacted my dealer and he said that there was nothing wrong with the speakers and suggested that I had probably not installed them properly. I reinstalled everything from scratch but the result is the same. How do I solve this problem?
*Santosh*
Via e-mail

A. First, ensure that there are no power lines running too close to the audio cables of your speakers—this sometimes causes a buzz which is the result of noise caused by the 50 Hz frequency of your power line. Move any such power cords away from the signal cables running to your speakers.

Many digital speaker systems do not support the 96 KHz sampling rate of the Audigy, resulting in static or buzzing from your speakers. So if you have a digital speaker system, change the sampling rate to either 48 KHz or 44.1 KHz. To change the sampling rate, click on 'Audio HQ' in the system tray. Then select the 'Device Controls' applet. On the 'Sampling Rate' tab, select the

required sampling rate from the 'Digital Output Sampling Rate' list. Most speakers support the 48 KHz output option. Your speakers should immediately stop buzzing and you should be able to enjoy normal output.

Using FlashGet on proxy

Q. I work in a company that has broadband Internet. Earlier all machines could directly access the Net. However, to keep a check on employees' activities while they are online, the system administrator installed a proxy through which we now access the Internet. As a result, we had to apply certain settings in Internet Explorer as provided by the system administrator. Prior to this, I used to use FlashGet to download files
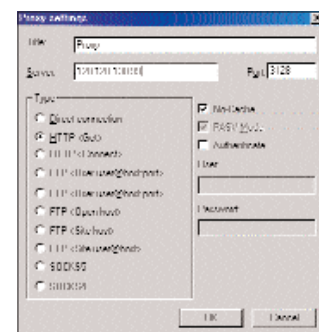
Add your proxy details in FlashGet

from the Internet, however I am unable to do so now. Is there any way by which I can make FlashGet download programs?
*Sanjay*
Via e-mail

A. Since your machine is no longer directly connected to the Internet, you will have to change the settings in FlashGet. By default, FlashGet is configured to access the Internet directly. To change this, go to *Tools > Options > Proxy* and click on the 'Add' button. Here you can define the title of your connection in the 'Title' box. You will have to add the

Problematic USB mouse

Q. I recently purchased a new USB mouse. It works well, but whenever I try to wake my computer from standby mode, my mouse stops responding. Since a USB to PS/2 connector was provided in the box, I tried plugging it in the PS/2 port. To my surprise this time the mouse worked just fine. So where exactly does the problem lie?
Gautami Shroff
Via e-mail
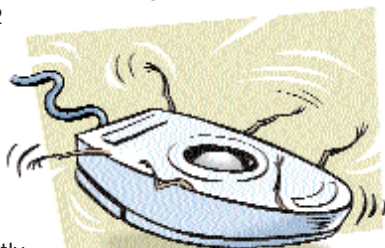
ILLUSTRATIONS: Mahesh Benkar

A. There is nothing wrong with your mouse. You might have enabled STR (Suspend to RAM) from your BIOS. When you try to wake your computer from Sleep mode any USB device attached will consume more power. If your machine can provide that excess power to the USB device it will be able to wake up, else it won't respond. Check your motherboard manual and if it says that there is an extra jumper setting to draw more power (+5VSB with at least 1A throughput through the power supply) for USB devices, then change the jumper accordingly. If your motherboard does not support this feature then disable the STR feature from the BIOS (access the BIOS by pressing [Del] when the Power-on Self Test screen comes on during bootup) and your problem will be solved.

same settings that you added in the browser, as provided by your system administrator. Now FlashGet will be able to download files for you as usual.

Can't play *Medal of Honor*

Q. I have a P-III 500 MHz machine with an ASUS TNT M64 32 MB graphics card and a 20 GB hard disk. I recently purchased the game *Medal of Honour*. I installed it successfully, but when I tried to play the game it gave me an OpenGL error. I went back to the dealer and he said there was no problem with the CD he gave me. Please help.
Anurag
Via e-mail

A There is no defect in the CD and there's nothing wrong with your system either. Apparently, you are using an outdated set of drivers. As a result, when the game requires to use the OpenGL functionality of your graphics card, the drivers can't initialise that functionality and you get this error. Download the latest set of drivers (called the Detonator 4 v28.32) for your operating system from *www.nvidia.com* and you will be able to play the game.

Monitor refuses to display

Q. I tried to change the resolution of my 17-inch monitor from 1024x768 to 1152x864 and the refresh rate to 85 Hz. It was working fine, but when I restarted my machine the next day, after the Windows 98 boot up screen it showed 'Out of Sync Range'. I tried to restart the machine and boot in safe mode. However, I am using a USB keyboard and it does not get initialised unless the machine starts loading Windows. I tried to use another monitor to rectify the problem but the situation remains the same. Please help me.
Vivek
Via e-mail

A There's nothing wrong with your monitor or graphics card. The monitor displays the 'Out of Sync' message because you have set a refresh rate that the monitor does not support at that particular resolution. To solve your problem, you will have to boot in safe mode and reset your display to a lower resolution and refresh rate settings.

However, apparently, you haven't enabled the USB keyboard support from your BIOS and as a result you are unable to boot into safe

mode. You should go to the BIOS (press [Del] when the Power-on Self Test screen comes on during boot up) and enable USB keyboard support in your BIOS menu. This will solve your problem.

Once in safe mode, you'll be able to uninstall the display card drivers, restart your machine and reinstall them. Your problem should now be solved.

CD-ROM problem

Q. I have a 48x CD-ROM. I've had it for the past two years and it's been working fine so far. But recently when I inserted a Video CD in it, it scanned the CD for some time but refused to play. I tried to eject the VCD from the CD drive but nothing happened. I shut down my machine and switched it on after some time and again tried to eject the VCD and still nothing happened. How can I eject the CD?
Nimish Patel
Via e-mail

A Apparently the CD is jammed in your CD drive. In order to remove it you will need an extremely thin and sharp object that can be inserted in the front panel of the CD drive (usually just below the CD

Open your jammed CD-ROM tray by inserting a pin in the front panel

tray). On inserting this, the CD tray will eject the CD-ROM.

Clearing CMOS

Q. I had specified a password to access my CMOS and have now forgotten it. I can no longer access my BIOS. Is there any way I can get the CMOS cleared?
Natrajan
Via e-mail

A Yes, you can reset the password by clearing the CMOS. Unscrew your cabinet. Locate the CMOS clear jumper on the motherboard; it's usually located near the battery. Keep the motherboard manual handy for reference. Most CMOS clear jumpers have three pins or two pins that you will need to short. If it has two pins, short the CMOS by touching a metal object to both the pins or by putting a jumper on both the pins.

If the CMOS has three pins, move the jumper from one set of pins to the other to discharge the battery. Make sure that the computer is switched off and the power cord is unplugged when you do this. If you can't identify the jumper, remove the battery and let the CMOS discharge for 10 or more minutes. Reinsert the battery. On going to the CMOS now, you will no longer be prompted for a password.

E-mail error

Q. When I try to retrieve my mail I get the following message: "A time-out occurred while communicating with the server. Account: pop.vsnl.com (1)', Server: ' pop.vsnl.com ', Protocol: POP3, Port: 110, Secure (SSL): No, Error Number: 0x800CCC19." What can I do to fix it?
John
Via e-mail

A You can try increasing the server timeout to 1 to 2 minutes. You

can do so by going to *Tools > Accounts > Mail > Properties > Advanced.* If the message continues to appear, there might be a problem with your account settings. Make sure that you've entered the correct username and password. Or you may have a very large message to download as a result of which you are getting this error. In this case, use VSNL's Web mail interface and delete the file manually.
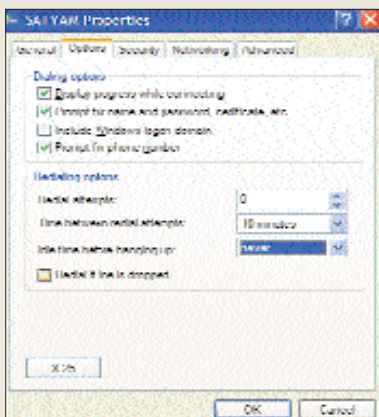
FAQs

I get disconnected

Q. Whenever I try to connect to the Internet the connection automatically breaks off. I recently upgraded to Windows XP, but the problem persists. Please help me.
Navin M. Mehta
Via e-mail

Prevent automatic disconnection from the Internet

A There could be various reasons for your Internet connection dropping automatically. Try the following and you shouldn't be facing the problem any longer:
In the Control Panel, go to 'Printers and Other Hardware'. Click on 'Phone and Modem Options'. On the 'Dialling Rules' tab, click 'Edit'. Here you will find an option for disabling call waiting. Enable it by typing *119*.

If this does not solve your problem then before hanging up, click on *Properties > Options > Idle time*. Change this option to 'Never'. As a last resort, you could try the following: Select 'Modem Properties' in the Control Panel. Click on 'Advanced' and type in the extra setting key *ATS10=250*.

CMOS error

Q. Of late I keep getting 'CMOS checksum error'. Can you tell me what causes this error?
Chandrashekhar
Via e-mail

A A CMOS checksum is generated by adding all the bytes (or bits) in the CMOS one after the other. That is, byte 1 is added to byte 2, byte 3 is added to the sum of bytes 1 and 2, and so on. The result (checksum) is stored in the CMOS.

During the boot-up process or POST (Power-On Self Test) a checksum is generated by the BIOS from the CMOS and compared with the one saved the last time the CMOS Setup was run or the BIOS defaults were loaded.

If the two numbers don't agree it is an indication that the data in the CMOS has been corrupted (one or more bits in the CMOS changed when they weren't supposed to) and a checksum error is issued by the BIOS ('CMOS checksum invalid', 'CMOS invalid', 'CMOS battery low', etc).

The causes for this are:
1. A bad battery
2. A battery that has become discharged (the computer has been off for a very long time)
3. A disconnected battery
4. Insertion of an expansion board in a manner that shorts out the bus
5. A power surge
6. Lightning
7. Static electricity
8. A faulty motherboard
9. A faulty real-time clock

A spotted scanner

Q. I recently bought a new scanner and it works perfectly well. One day when I viewed the glass closely, I noticed a green spot underneath the glass and there now seems to be a permanent green spot on the scanner glass. Should I take up this issue with the dealer and ask for a replacement?
Jatin
Via e-mail

A Yes, there does seem to be a problem with the scanner glass. It would be advisable to contact the nearest service centre and get it checked. The permanent spot indicates that there is probably a manufacturing defect on the glass. So even though your scanner works well, you should ask the authorised technician to check the device and change the glass if necessary.

System freezes

Q. My computer hangs when I'm scrolling a Web page that hasn't loaded completely, and vertical green lines appear on the screen. What could be the cause for this?
Shwetha Mani
Via e-mail

A This problem usually occurs if there is a bad write to the frame buffer or RAM-DAC of the video card. To fix this problem, open Display Properties (right-click on an empty spot on the desktop and select 'Properties'). Click on the 'Settings' tab and reduce the resolution by one notch; click on 'Apply'. Now bring it back to the original setting. This will reset the important parts of your video card and you will not have to restart your machine.

If this does not solve your problem, then in Display Properties, Click on the 'Settings' tab and then click on 'Advanced'. In the window that opens, select 'Performance' and reduce the Hardware acceleration by one notch.

Problems with a scroll mouse

Q. I have a scroll mouse and I use the scroll function while surfing the Net and viewing Web pages. My sister used my PC for a while and now when I surf the Net, I can't scroll down Web pages but the scroll function works fine in all Office applications. I removed the Logitech drivers and downloaded the latest ones, but the problem persists. Is my mouse damaged?
Merzi
Via e-mail

A Neither is your mouse damaged nor are the drivers corrupted. You are unable to scroll through Web pages in
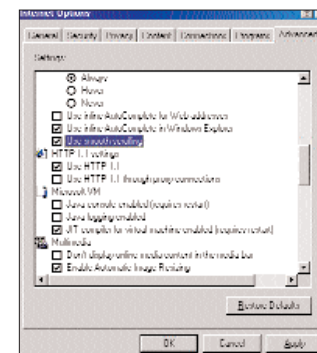
Enable the scrolling option in IE

your browser because your sister may have accidentally disabled this option. To enable it, go to *Tools > Internet Options > Advanced* and enable the 'Smooth Scrolling' option. Now you will be able to scroll through Web pages in your browser. 🔲

tips&tricks

Web site Vastushastra

Building a Web site is no mean task. You need to take care of its design, content and even decide on factors such as which hosting service you must use.
Here are some tips that will help you build the Web site of your dreams

ILLUSTRATIONS: Mahesh Benkar

contents

THE BUILDING BLOCKS

Decide what the site is going to be about. The purpose decides the visitors and both these factors guide the design
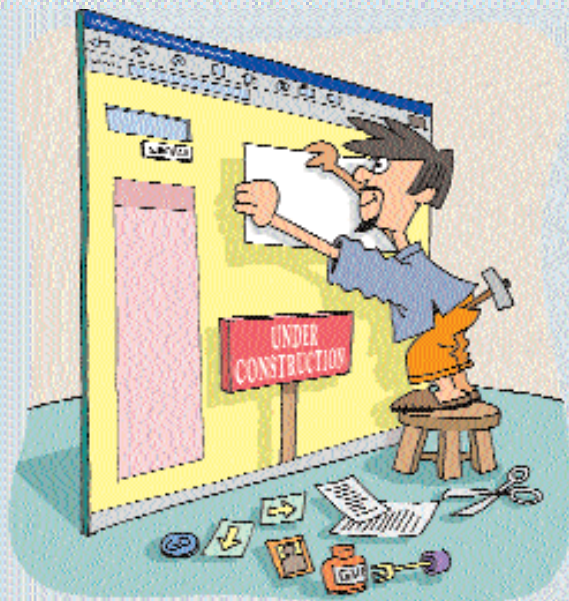
Design Tips

Aesthetics take a back seat in Web site design. Navigation, layout and grouping of information are more important here

Picture it

Here's where you actually start designing the site. Don't rush into making the pages or graphics yet. Use a paper and pencil, or even an imaging tool (MS Paint is good enough for this) and scribble your site layout first. Try and indicate with as much detail as possible, what fits in which part of the site. You should also check out some existing Web sites for ideas. It's a good practice to keep all navigation links together. If there are too many of them, club them into logical groups.

Keep important items, such as navigational links in the top 400 pixels of the page. Visitors to the site see this area first, so that's where the most important information should appear. Also, ensure that the main body of the page starts within this area, so visitors can

A template designed in MS Paint

start reading the text right away.

The first cut

When you start designing your site, work on the whole page as a single image instead of starting with the different elements. Once this is ready, you can start cropping out each item. This will ensure that all items are of the appropriate size and making the final page will be easier.

The sacred scrolls

Keep vertical scrolling to a minimum and avoid any horizontal scrolling. Restrict vertical scroll to a maximum of two-and-a-half scrolls of an 800x600 screen. However, if you do have a lot of information that must be given on the same page, don't fill up the entire page

Keep the most important matter on the top half of the page

with text. One column in the centre, irrespective of the amount of scrolling involved, interspersed with attractive graphics works well. This is one reason why it's a good idea to dedicate a column on the left to navigation links—since it already takes up some space, you have to worry less about the information flow.

Avoid gimmicks such as tickers and scrolling text. It slows down the page, is usually quite irritating and distracts the visitor's eye from the rest of the page.

Optimisation Tips

It's easier to retain visitors to your site if the pages load fast. A fast-loading site holds attention, so they won't go clicking around other windows

Table smart

In browsers, tables do not show up on a page until all content within the table has been downloaded, making a page seem slow. Avoid nested tables and long vertical tables. Instead, stack tables on top of each other—pages then appear to load faster as each table shows up faster. In this context, it's better to place your navigation links horizontally, towards the top, as it will show up before most of the rest of the page. Keep the most important links at the top and the rest on the left, or keep top-level sections on the top and subsections on the left.

To make a table stand out on a page, use a border around it rather than an

Use borders to highlight tables

image, which is fixed in size. Nest the table within a single-cell table with a cell padding of 1 pixel (or more for a thicker border) and a background of the colour you want for the border.

```
<table border=0 bgcolor=#000000
cellpadding=1 cellspacing=0>
<tr><td>
<table border=0 bgcolor=#FFFFFF
cellpadding=0 cellspacing=0>
<tr><td>Content here</td></tr>
</table></td></tr></table>
```

Re-use images
If an image is repeated through the site, use the same file across all pages so that it needs to be downloaded only once—the browser's cache takes care of this. If you use similar images, break them into static and changing parts so you can reuse the static part of the image.

Smaller images
The size of an image will be smaller if you use a 256-colour palette. GIFs are generally smaller than JPEGs, but JPEGs offer better quality when using lots of colours as on photographs. With smaller images, use distinct edges and crisp colours.

Almost all imaging tools optimise images by saving them with a palette of only those colours used in the image. Some applications let you choose how many colours to use in the image. It then replaces colours not fitting in that palette with the nearest match, thus reducing the image size.

Avoid too many animated graphics. A lot of them together are unpleasant to the eye and also take longer to download as compared to simple images.

Stylise your site
Use a style sheet for your site to add consistency and reduce page size. You won't have to explicitly define many font and paragraph tags. Avoid using inline styles—this is as good as using HTML tags—except for special cases. Use a single CSS file that has all the style definitions. Once a person visits a page, the browser will use the file from the cache for the rest of the pages.

De-script-ion
As with external style sheets, try and push all JavaScript (JS) into one or several external JS files. Re-used code such as that for rollovers, menus, validation, etc can easily be separate functions in a single file. Again, the file will have to be downloaded only once and will be used from the cache henceforth. So try to use scripts that are as generic as possible so that they work smoothly with all pages.

Less jazz, more speed
The lesser jazz on a page, the faster it loads. Animations and rollovers affect the size and number of files the browser has to download. Another aspect usually overlooked is DHTML items such as menus that show and hide themselves. Though hidden away, they add a lot of code to the page, increasing the size considerably. Use these wisely and limit the number of such hidden blocks to a minimum.

GETTING ONLINE

Select wisely. Check out the features and deals offered by different services before you register with free hosting services
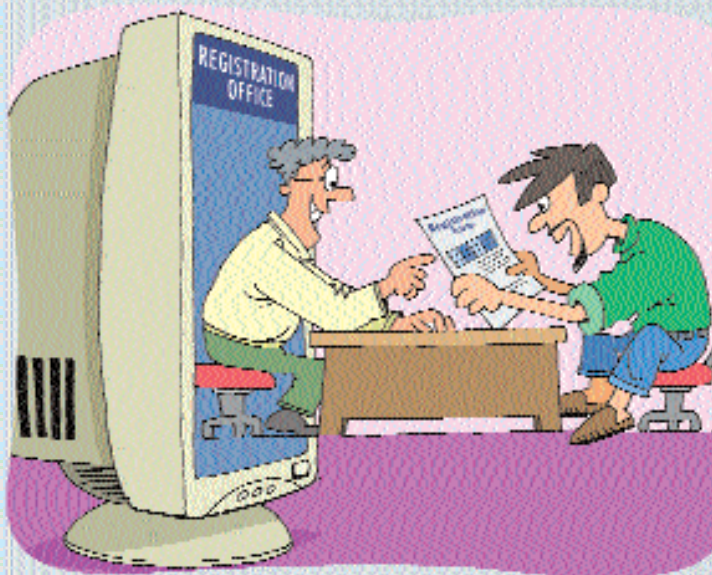
Free Hosting
The Web offers free software utilities and other services that let you design, upgrade and maintain your site

Storage space
Server space becomes a constraint as you start building up your site. You have to ask yourself the question "How much space will I actually need?" HTML pages take up very little space and if you follow the optimisation techniques discussed above you will save on a considerable amount of space while uploading images.

Choose a free hosting service that offers you upwards of 10 MB of space. For instance, *Freeserver.com* offers you 12 MB of free space while *Yahoo Geocities* offers you 15 MB.

File size limits
Hosting your pages on free servers across the Internet would gulp down the bandwidth of the free service provider. Hence, most of them restrict the size of the files that can be uploaded. For example *www.freeservers.com* offers you a 256 KB file size limit, which is the maximum as far as we have seen. Choose a free hosting provider that would offer better file size limits. *Freeservers.com* also gives its free registrants a maximum bandwidth of 512 MB per month.

FTP access
For maintaining your site

and uploading newer pages you might require FTP access to your Web space—this is faster than the GUI Web interface. Most free Web space providers don't offer FTP access. It's usually reserved for professional and other paid package schemes. *Yahoo Geocities* closed down its offer of free FTP access from April 2, 2002, as it went paid on some of its services. But there are exceptions too. You just have to do some hunting around.

Site search engine

You could make your Web site a repository of all your intelligence and knowledge. Now what if someone wants to search your knowledge store for something specific? Does your free service provider offer you the facility of searching your site? Check

44

DID YOU KNOW — Smart coding

■ Do not use any WYSI-WYG editors such as MS FrontPage or Netscape Composer. They might change the script you are copying and it's possible that errors might occur on your Web page. Use a normal text editor such as Notepad to do HTML inclusions/exclusions.

■ If you know a bit of HTML you can use frames to load message boards and guest books within your main site. Check out *www.wdvl.com* for more information.

on it before registering with a hosting service. *Freeservers.com* offers a site search engine as well as a search engine that can search across similar sites.

Site builder

If you are a novice on the Web you might prefer some kind of guidance. While registering for a free hosting service check if the service provider will assist you with site building templates and tools. Most service providers do that as a part of their effort to promote their services.

Site copier

This is a feature that's available with *www.freeservers.com*. Imagine you have your site hosted elsewhere on the Web. Copying those files one-by-one to your *freeservers.com* account would be a tedious process. Site copier helps you copy all your files from your earlier hosting space into your *freeservers.com* space in a jiffy. Once the files have been moved, the site becomes available in your new account and you can start working on them.

Forwarding e-mail

Certain sites provide you with free e-mail services while others don't. The ones that do, provide a mail-forwarding service. When you have registered a domain such as *tintinsclone.freeservers.com* and someone sends a mail to anyname@tintinsclone.freeservers.com, it will be auto-

matically forwarded to the e-mail address that you entered in your membership details. You need to activate the e-mail forwarding facility before you can actually use it. If you plan to distribute the mail you receive to other individuals, then enter an e-groups mail ID to which all of them have subscribed. Whatever mail you receive at your site will then be forwarded to all the subscribers.

Sundry features

Other features that you could possibly look for could be free site statistics, site counters, message boards, guest books and form e-mailers. Most free hosting sites provide these features. Choose the best from the options you have.

Monthly bandwidth

Data is sent back and forth when visitors enter and leave your site. Your monthly bandwidth is the total amount of data transferred from your hosting space to all the visitors' computers. Since bandwidth is a main cost factor involved in hosting, free services limit the bandwidth offered. *Yahoo Geocities* offers you a maximum bandwidth of 3 GB per month

Cheap deals

The facilities offered by free hosting service providers are restricted. It's advisable to opt for cheap paid services

Cheap domains

Most Netizens would prefer

DID YOU KNOW — Host it yourself

If you are a Cable Internet/DSL subscriber and have a dedicated IP, you don't have to bother with free hosting or buying Web space. You can host all the content on your computer and direct all requests to your domain name to your computer's static IP. There is a downside to this—be prepared for huge electricity bills.

having their own online identity. Domain name registrars allow you to register your preferred name. Offers range from Rs 350 to over Rs 1,000 depending on the service.

The cheapest and probably most reliable of all services is *www.net4domains.com*. You can register your domain name for just Rs 445 a year. Of course, a 10-year deal for Rs 4,450 will be economical if you wish to maintain a site that you can hand over to your successor. What's more, you get two free e-mail IDs on any booking made with *Net4domains*.

Search for your domain name. If it's available, book it on the Web site and send a cheque or demand draft to *Net4domains* as instructed on the site or in the confirmation e-mail that you receive. Your domain will be registered only after your payment is received and will remain active for the registered period only.

Hosting/Storage

Web space is an expensive commodity. With add-on services such as POP3 mail accounts, most of the service providers rip you off even for a meagre 2 MB of Web space. *Cybersitesindia.com* is probably one of the cheapest options available. The company charges Rs 850 for 5 MB of space on an NT server or a Win2k server. If you are booking hosting space upwards of 1 GB, then your per MB cost slumps to Rs 20. A list of hosting service providers is available in the links section. You can also check out hosting servers located abroad—they could turn out to be cheaper alternatives.

Availability of domain name

Check whether your choice of domain name is available. Find domain name availabil-


Check if the domain name you want is available

ity within different domains with any of the registrar sites. For example, enter your choice of domain name in *www.net4domains.com*, and click 'Search'. If it is taken, you get a 'whois' link. Click on the link to find who has registered the site name.

ENHANCE YOUR SITE

Don't know the latest scripting languages? Relax. You can get great scripts and applications for your site for free!
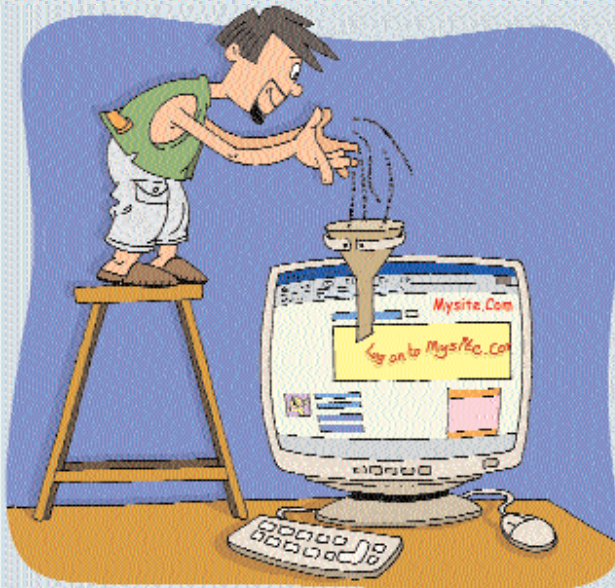

Free Scripts

You can make your Web site interactive without knowing any VBScript, JavaScript, etc. Simply follow instructions closely and do a perfect 'Copy, Paste'

Dial pad to link you

A script available at *http://javascript.internet.com* allows you to link to Web sites through a dial pad interface. Choose the Web site from the text listing and note the cor-

responding number. Now dial the number in the dial pad on the Web site and you will automatically be redirected to the desired site. Embedding this script into your site is quite simple. Copy the script from the script section on the above-mentioned site and paste it into the head section of your Web page. Enter the required site names and URLs in the appropriate space as instructed. Save it and you are done.
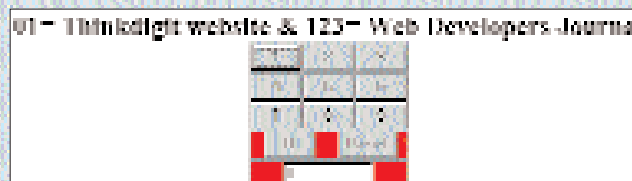
Dial-a-site through javascript.internet.com

Your visitors can now use the dial pad to link to sites you have listed in your page.

Scrolling image script

You can get some neat software at *www.qiksearch.com*, a site where a novice programmer is publishing the fruits of his labour. Scrolling image is one of the latest in the collection of JavaScripts posted on this site. This script lets you scroll an image or multiple lines of text to the right or left. To use the script in your site, download it from the site and follow the instructions to embed the code into your HTML page.

Treasure house of scripts

You will want your site to be highly interactive so that users find it easier to navigate. You might want to add menu systems, mouse scroll effects, etc. What you would definitely want is dynamic content. You can download any number of these scripts for free from *Dynamicdrive.com*.

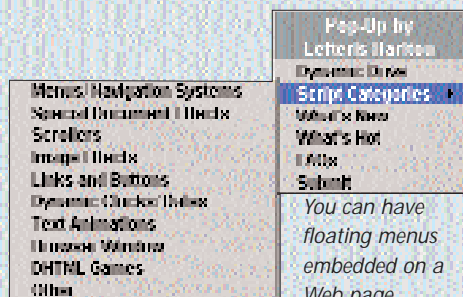### Menu and navigation systems

Windows users might prefer having a Windows interface on the Web too. You can satisfy this need by using the menu and navigation scripts available at *www.dynamicdrive.com*. You can test each script before trying it on your site. Select the one that you like and following the instructions, copy and paste the code into your Web page and presto! You have the

45

You can have floating menus embedded on a Web page

required menu and navigation effect on your site. You can choose from a range of scrolling, static, and drop-down menu and navigation items from this section.

Document effects

Your HTML pages need not be static. You can add cool effects to it. For instance, you can have snowfall or flowers moving across the page randomly. Mind you, this looks good but can be irritating too. So add these effects to pages where you have lighter

content, for example, a photo gallery or a personal links section. You can download code from the sites mentioned in the 'Cool links' box and paste it into your document in the same manner as you did before.

Free applications

If you want to track the number of visitors to your site, you can add a page counter for this purpose. The other small applications that you could possibly add to your Web site are forums, guest books, log systems, polls, e-mail forms and so on. Your hosting service might provide most of these. Since all the information is stored on the application provider's server, you don't have to worry about hosting space for using any of these applications.

Count the visitors

Make use of the counters if you want to track the number of users who visit your site. Some sophisticated counters allow you to track down statistics on user visits month-wise or even day-wise. Microsoft bCentral offers you a counter that tells you exactly how many people visited your site on a particular day in a month.

Visit *www.fastcounter. com* and you will be redirected to *www.bcentral.com*. Register and get your passport. A couple of

Get visitor statistics on a daily basis

clicks, and the site designs the counter and gives you the HTML code. You can copy and paste the code onto your page. All stats will be stored on the bCentral server and you can log on to your account anytime to view the statistics.

Tracking the stats

You might be curious about which pages on your site are visited the most, what browser the visitor uses, or probably what OS most visitors use. Visit *www.extreme-dm.com* and register yourself for free tracking code. You will be sent a mail with the code details. Follow the instructions provided and paste the code onto your site. As users visit your Web page, tracking starts automatically and your account is updated with details of the user and his PC. You can login to your account at the site at any time to view your site statistics, which are quite exhaustive. You can also restart your tracking at any point in time, but this is at the cost of losing your earlier data.

Soapbox

You can include message boards for free on your site. Visit *www.boards2go.com* and

register yourself for a neat message board service. You can provide a link to the message board from your site or copy the code provided by *boards2go.com* while you register.

RSVP

You have worked hard to put together your online monument. Wouldn't you like to hear from the visitors whether they liked your site? A guest book is your solution. Some free subdomain name registrars such as *Freeservers* and *Yahoo Geocities* provide a free guest book within the site manager.

Visit *www.guestbookgiant.com* and signup for a free service. Create as many guest books as

A sample guest book
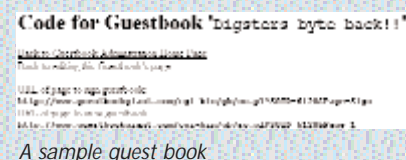
you want and customise them from the respective menus. After customising the guest book, click on the 'Get code' link. This provides you two links––one to enter the guest book and the other to view it. Paste these links on to your Web site. There! Now visitors to your site can use the guest book to send their feedback to you.

DHTML games

Want to spice up your Web page? Then host some Shockwave, Flash and DHTML games. Some DHTML games are available at *www.dynamic-*

drive.com. Download the games and unzip them. Before you upload them on your site, read the instructions provided by the author. Copy all the necessary files on a specific directory on your hosting space and provide a link from your main page to the games section of your Web site. Believe it or not, most visitors get highly enthusiastic when they see age-old games that they can play online!

Create the blocks

There are sites where you can create logos, buttons and GIFs of your choice. Customise the available buttons and GIFs to suit your preference

Create Logos

If you want a logo for your site, log on to *www.flamingtext. com* and from the sitemap choose 'Start here' in the 'New Users' section. You'll reach a page that carries a list of all available designs. Select the one you want, and you're taken to a page where you can edit the design—change the text, size, colour, or font. Enter

Digsters World!!

It's easy to create logos

your preferences in the appropriate boxes and click on 'Create logo'. A few seconds of rendering, and your logo's ready. Right-click on the image to save it to your disk. You can use the image on your site as your registered logo.

Sew that button

There are sites that help

you render buttons. Visit *www.flamingtext.com* and click on the buttons section listed at the top of the page. Choose the style and appearance of the button. The final section of the page lets you add text and change features such as colour gradients, the shape, etc of the button. Make your modifications and click on the

Creating buttons for your site

'Add text' button to create your button. A few seconds and your button's rendered and displayed on the Web site. Save it by right-clicking on it.

PROMOTE YOUR SITE
There are many ways to promote your site to increase traffic

Tell your friends

One of the best ways to inform your friends about your online home is by 'word of mouth'. Include your URL in the e-mail signature file that goes with your mail. Most e-mail clients and Web-based e-mail services such as *Yahoo!* and *Hotmail* allow you to create signature files that go with your mail. So add your URL and every time you mail someone you will be informing the recipient about your site at absolutely no cost.

Meta tags to mobilise your site

Meta tags are HTML tags that carry descriptions about your site. Keywords that search engines look for (while indexing) are usually placed inside the Meta tag of a Web page.

To analyse whether your Meta tags are useful, visit *http://www.bcentral.com/products/metatags.asp* and enter your URL in the space provided. Click on the 'Check Metas' button. The Meta tags in your site are analysed and results are displayed.

Use the site's 'Meta tag builder' tool to build better tags that will rank you higher in search engines.

Keyword meta tag: *<META NAME="keywords" CONTENT="technology, computers, digital lifestyle">*

Description meta tag: *<META NAME="description" CONTENT="This page is about technology, computers and digital lifestyle.">*

Image indexing

It's not only title and Meta tags that help you get indexed on search engines. Some search engines use the image tag's 'alt' attribute to

47

index and rank pages. The attribute shows a tool-tip kind of text when you hover the mouse over the image. This descriptive text can help you get listed in search engines that use this feature for indexing and ranking. Of course, this does not work across all search engines, but you could definitely give it a try.

<IMG SRC = "thinkdigit.jpg" width= "20" height= "20" alt= "Think digit logo">

Search secrets

When providing keywords, the 'alt' attribute of any image on your Web page is a good place for placing commonly misspelled versions of a keyword and associated plural phrases.

48

Get linked
Most traffic to your site would be directed from links that people click at other Web sites. So you need to build your online network and get listed on other sites that could pro-

vide a link to your page. You can exchange links with other people by visiting www.123link.com or www.recipro-links.com. Link exchange involves something called reciprocal links. This means that you need to list a particular site in order to get yourself listed on that site. While choosing a link exchange site, choose one that pertains to your content.

Check your stats
Check your stats and other log details regularly so that you can watch which pages are visited the most and which aren't. This will help you figure out which are the popular sections of your site and you can start providing more of the relevant content to your visitors.

Five ways not to promote your site
■ **Say no to spam:** If you start mass mailing frequently, you can be sure that your site will soon be ignored.

■ **Submit right:** There aren't more than 30 to 40 effective search engines. So don't waste money on sites that offer to get you listed in 500 search engines. Use some auto-submitters as we mentioned earlier and then make manual submissions to directories that hook with your interest and are relevant to the con-

Get listed

■ **Focus on the site:** Search engines rank their results according to relevance with the search phrase. If you get yourself listed on the 'Education' section while your page talks about entertainment, most visitors will turn away from your site. So focus on the content and get listed in the appropriate section.

■ **Do not spam your index:** If you think repeating the keyword in the Meta tags or the title of Web page will rank you higher in the search, you

tent of your Web page.

■ **Perfection gentlemen:** Do not host an incomplete site. If there are dead links or 'under construction' pages, visitors may not return. Complete the site in all respects and then upload it.

■ **Play it safe:** There are a lot of sneaky tricks available on the Internet that claim to increase your Web traffic. Do not fall for any of those. Use normal Meta tags and description tags as suggested earlier in this section.

■ **Don't stop if you are finished:** Site promotion is an on-going process and is never to be stopped. Once URL submissions are made to search engines, make sure that they are working. Check again after a month or as frequently as possible and

are wrong. Most search engines are trained to ignore such spamming of keywords and they might even remove you from the result set.

■ **Submit to specialised searches:** Use the services of www.submitexpress.com or www.submit-it.com to submit your site to some of the popular search engines. Not all search engines work in the same manner. Look for special instructions on the search engine's Web site and customise accordingly.

resubmit URLs if required. Check on services such as link exchanges and banner ads. Keep updating your pages regularly with newer content and that will keep your site alive and the visitors coming in. ◻

Cool links

Submit your URLs
www.submit-it.com
www.submitexpress.com
www.siteowner.com/sifree.cfm
www.selfpromotion.com

Link exchange
www.geocities.com/CollegePark/Quad/6680/linkpage.htm
www.123link.com
www.reciprolinks.com
www.countrycalendar.com/our_links/

Time required to get listed on popular search engines

Search engine	Time
MSN	Up to two months
Google	Up to four weeks
AltaVista	Up to one week
Excite	Up to six weeks
AOL	Up to two months
HotBot	Up to two months
iWon	Up to two months

GAM FOR SOME
MODIFICATION?

Sick of playing the same titles on your hard drive over and again? How about producing your own offering just to show you can do better?

In the early days, gamers would almost stumble onto programming while playing their favourite game. Early computer games were written in BASIC, and the player could quite easily break into the source code and read what the programmer had written. These gamers very often grew up to become programmers!

But that was then. Game development is like rocket science now. The technology curve of modern 3D games is as advanced as F1 racing (gouraud shading, doppler effects, anti-aliasing anyone?). It's almost impossible to build a game from scratch. With 3D engines and gazillion lines of coding required for a game, game development is an impossible proposition for someone without a mathematics or physics degree.

The time, money and resources required to make a title today are daunting. You need a team of artists, programmers and designers. Hence, before you attempt to make a whole new game, it makes more sense to take baby steps and try to modify an existing game.

Mods 101

Modifications or mods have their roots in hacking and reverse engineering game code, but now they've evolved to a point where mod support in games is almost a requirement. Any game released these days without a large editing component is frowned upon by reviewers. Games like *Quake* and *Half-Life* were almost designed to serve as an SDK (Software Development Kit) for the community to build on.

A mod is essentially a new game you can play, using modified rules, weapons or levels. Since the early days of *Quake I*, id Software has generously allowed the community to create their own mods. It's these mods that have given *Quake* its longevity and fostered the great *Quake* community we have today. *Capture the Flag* and *Team Fortress* turned out to be the driving points for the game

ILLUSTRATION: Ram

itself. Some mods are so different from the original version of the game that they become 'Total Conversions' (TC) and bear no resemblance to the original product. *Half-Life's Counter-Strike*, *Quake III's Rocket Arena*, *Quake II's Jailbreak* and *Quake III Rally* are some of best examples of such work.

Almost every game these days allows you to create new extensions for it, there's something out there for everyone. But the best pad to start off from would be the 'the big three'—the *Quake* series, *Unreal Tournament*, and *Half-Life*. All of them have seen a huge popularity in the modding, mapping and modelling scene. Of late, *Serious Sam* has also emerged as a popular mod development platform.

Compile as you are

Making a mod requires some level of programming knowledge; in fact, mods are good teaching tools to learn programming from. The language of choice for programmers is usually C or C++, so you will be able to find a wealth of resources and help. You should pick up some advanced books for reference. There are also a number of tutorials available on the Web for learning C and C++ that can help in supplementing what you learn from books.
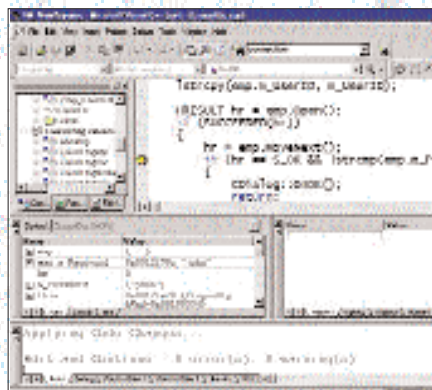
Programming mods in Visual C++

Microsoft Visual C++ has a powerful development environment that will make things easier for you, and there's no other compiler better suited to developing Windows applications.

There are a large number of compilers available, including many free ones. Bloodshed is an awesome IDE (Integrated Development Environment) for beginners. It has everything you need to start out and is completely free. It can compile as quickly as Visual C++ or Borland, and is suitable for beginners.

Once you have the tools, you need to download the source code to work with. Each game has a different way by which you can tinker with it. There are actually two types of code that an editing community may see: game code (which allows you to make mods) and source code (engine code, networking code, etc—basically, if you had this you could rebuild a game from scratch).

You would either need to tamper with the game code (*Quake III*) or write high level scripts (*Unreal Tournament*) to create your own custom version of the game. Some games don't require any downloads; you simply work with the files packaged

within the game (*Unreal Tournament*). For almost every game that can be 'modded', there are extensive tutorials available on the Net that show you how to do so. Code 3 Arena (*www.planetquake.com/code3arena*) is an excellent resource for *Quake III* editing, and it teaches you everything you wanted to know about programming *Quake III* mods.

When you begin writing a mod you should start small. Don't plan to write a TC from the very start. If you set goals that are too hard to reach, you'll get frustrated in the process of working towards them. It is much better to set a series of small goals and work towards each one in turn. Start with a simple idea that could be expanded into a larger game. A simple gun or gameplay modification would be a great way to begin.
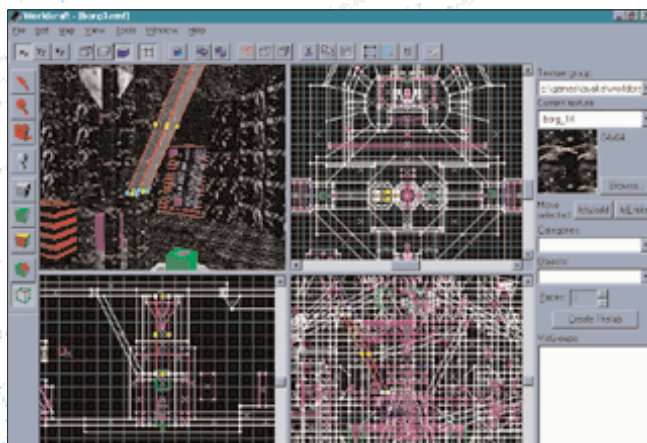
Worldcraft Editor: Design your own levels for Half-Life

Quake II goes Open Source

id Software released the source code for *Quake II* at the end of 2001 under the 'GNU Public License'. The *Quake I* code was released a year prior to that under the same license. This license, amongst other things, allows you to use the source code and the binaries of *Quake* and *Quake II* for commercial and non-commercial purposes.

Simply put, it means that if you have made a game without using any of id Software's other intellectual properties (such as textures, models, sounds and so on), you are now legally allowed to sell your work. You can do anything you want with the code, including sell your new version. The catch is that if you distribute new binary versions, you are required to make the entire source code available for free to everyone.

All of the *Quake II* data files remain copyrighted and licensed under the original terms. So you cannot redistribute data from the original game, but if you make a true total conversion, you can create a standalone game based on this code.

Make your own world

Did you always want to make games but not spend a lot of time programming? Maybe you're more the elite Photoshop and graphics expert than the programming geek. In that case you might be interested in learning how to make maps and 3D models for games.

Mapping is probably the most popular way to modify your game. Games today ship with map editors and anyone can produce a playable map in a short time. While the other aspects of making a mod require experience in programming or 3D modelling, map making is fairly easy to learn. Though anyone can make a map, making a level that is playable and enjoyable is a totally different ball game. Level design is an art and a science that doesn't come easy. It requires an insight into how a person perceives a 3D environment and is a science in the way you manage the number of polygons (objects) on the screen. The best way to learn would be to observe how other game maps are made.

The tools for mapping differ with each game. Map editors available for *Quake II* include Worldcraft, gmax and Q3Radiant. For editing *Unreal Tournament* you need UnrealED, which conveniently ships with the game. There are many different editors, and it's entirely up to you to pick the one that works best for you.

Modelling

Essentially there are five main steps in the creation of a model to be used in a mod: establishing the concept of how you want the finished model to look, the creation of the model itself, adding bones to the model, animating it, and finally creating a texture map (skin) for the model and
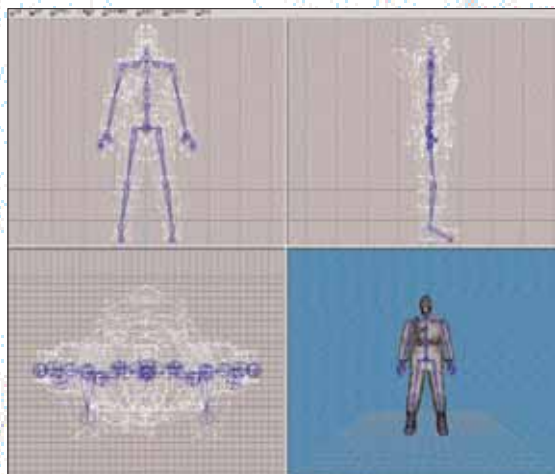
Milkshape 3D: The poor man's modelling kit

Game Creation Toolkits

There are freeware game engines, textures and sound samples available on the Net, all ripe for the picking. While they might not be as graphically spectacular as the current crop of games, they will provide valuable insight into the process of making your own game. Freeware engines such as Varnavski's 3D Engine, HAWK and Yager are good starting points.

If you've ever wanted to make your own games, you should play around with DarkBasic for a while. It is just BASIC, so the programming won't make you tear your hair out.

It combines a high-end 3D engine, a 2D engine, a map and model editor, a compiler and huge libraries of 3D objects, artwork and pre-made games. With such an environment, you can create first person games, third person games, role-playing games, side scrollers, flight simulators, spaceship simulators—in fact, anything you can imagine. DarkBasic's big plus is that you don't have to pay a license fee to

Use 3D Game Maker to create immersive games of your dreams

sell your games. You can make as much money as you like without DarkBasic trying to take a chunk of your cash, unlike some other packages of this type.

If you're an aspiring game maker with no idea where to start or a user who cannot imagine the complexities of game making, then this is the product for you. There are many other options that do the same, BlitzBASIC, Game Maker, and 3D Gamestudio being the worthwhile ones.

exporting it to the 3D engine of your choice. The game engine you use will affect the way your models, animations and skins need to be set up and saved.

The standard in 3D modelling is 3D StudioMax. The drawback is that it happens to cost a bomb. For many mod makers the cost of purchasing 3D Studio Max rules out the possibility of owning a copy. With Milkshape 3D, however, you have a readily available model editor that anyone can use. Milkshape 3D is a shareware modelling and animation package available from chUmbaLum sOft.

A lighter version of 3D StudioMax, called gmax is now available. This package has been specially formulated for game modders—gmax itself is free for use; the developers need to pay for supporting it in their games.

For tips and pointers, run through a few Milkshape 3D help files to get yourself started. The next logical place to go is *www.planetquake.com/polycount*, one of the best resources for game models on the Net. You can learn a lot by keeping a watch on the forums, which are frequented by skilled 3D modellers.

Start a modding team

The obvious drawback of doing it single-handedly is the amount of work and skills needed to make a good mod. You'd have to create all the maps, do your own programming, handle the art and modelling—basically you'd have to supply everything a mod needs, on your own. That's a lot for one person to work on. The team approach works best when creating a mod. Each person on the team has a specialty—texture art, programming, models, sound, etc. Responsibilities are doled out based on what each person can do.

Your team doesn't have to come together at a physical location. Most of the popular mods we know today were collaborative projects made entirely on the Net, using IRC and IMs. It might be a little hard to find enthusiastic and talented team members, but hanging around game forums should get you acquainted with likeminded people. It's pretty easy to get the word out that you're forming a mod team; game forums usually don't have a problem with listing 'Help Wanted' notices for groups. Once you've formed your band of merrymen all you need is an opponent to frag.

SRIRAM SHARMA

SERIOUS SAM

THE SECOND ENCOUNTER

Sam is back, and he's more Serious than ever in the Second Encounter!

Serious Sam: The Second Encounter starts where the original left off, with our hero in arms, Sam Stone, crash landing the alien's mothership in South America. *The Second Encounter* resolves one of the biggest flaws of the original game—the constant Egyptian environment. You'll face many new scenarios, from lush jungles to fearsome medieval castles. The winning formula of dizzying and frenetic 'frag-fests' set in three new environments, South America, Babylon, and the Middle Ages, will keep your trigger finger itching for more.

Must-know console commands

☀ **Open Doors:** If you want to open a door without going through the effort of finding the key, stand in front of the door and press [F1] to bring down the console. Now type *please open* and hit [Enter].

☀ **Bullet Time:** To slow down the game *Max Payne* style or even speed it up, go to the console and type */gam_frealtimefactor=X*, where 'X' is the speed factor. Choose a

Skin 'em raw: The chainsaw is an excellent melee weapon to dispose of Gnaars and Kleers

number larger or smaller than 1 to increase or decrease the speed. A setting of 2 will double the game speed, while setting it to 0.5 will make everything move at half the speed.

☀ **Display the frame rate:** Bring down the console by pressing the [~] key, type */hud_iStats =1*, and then press [Enter] to display the FPS. Anything above 30 FPS is playable; change the resolution and colour depth if you are getting less than that.

☀ **Multiplayer Models:** Display only the Sam multiplayer model to reduce the load on

your system. Bring the console down with the [~] key and type */plr_bOnlySam=1*, then press [Enter].

Survival is the name of the game

A few basic rules that should help you hold your own in *Serious Sam*:

☀ Circle-Strafe, Circle Strafe—and Circle Strafe some more!

☀ If it moves, shoot it! There are no good guys.

☀ Pay attention—keep your ears tuned for sound cues on enemies appearing, items spawning and other clues that let you know what's going on.

☀ Explore—search every room before moving on. You'll need all the hidden items, weapons and armour that you can get your hands on.

☀ Quick Save often, especially when you've grabbed health or armour.

Deathmatch Tricks

☀ **Fun with ramps:** You can use the quirks in the *Serious Sam* physics engine to your advantage. When jumping off a ramp, your character accelerates to a speed that is normally impossible. You can use this quirk to take shortcuts and outsmart enemies. In the deathmatch maps, there are several ramps in the central pit where you can use this tactic.

☀ **Sniper haven:** Equip yourself with a rocket launcher, head toward one of the outer walls and rocket jump out of the arena. You'll end up on top of the level, standing on a black surface. From this point you can snipe uninhibited at the players below. Don't hang around there for too long though; the longer you stay up there, the more health you lose. **d**

SRIRAM SHARMA

Serious Sam II cheats

Press the [~] key during gameplay to bring up the console window. Type in the following cheats and press [Enter] to turn on the desired cheat.
God mode: *please god*
Restore energy: *please refresh*
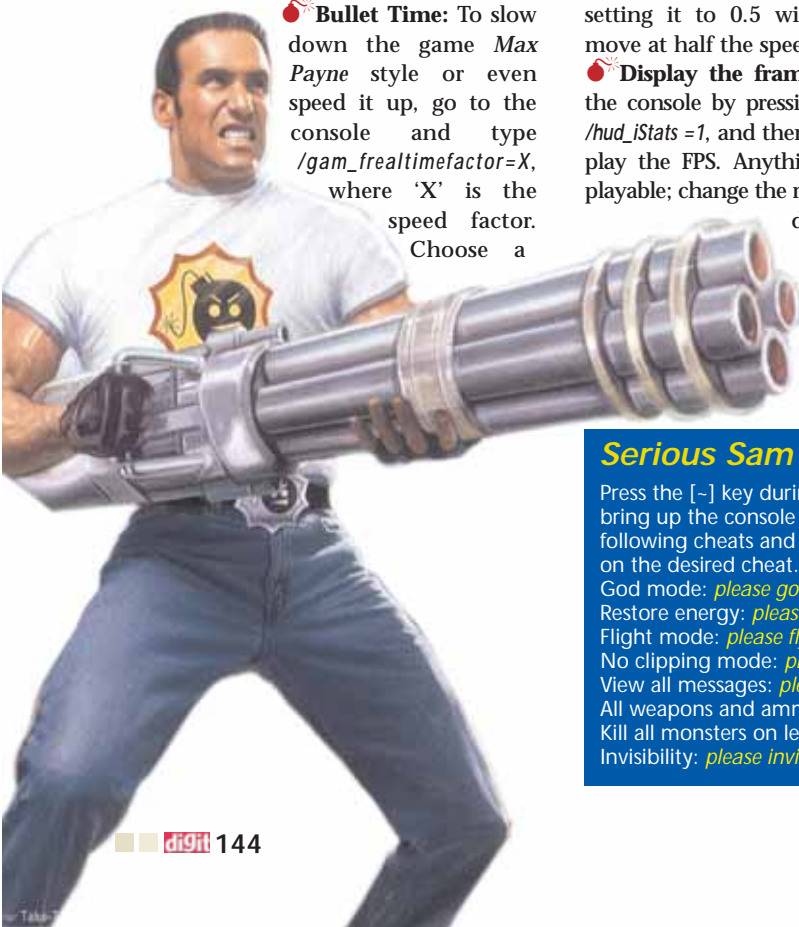Flight mode: *please fly*
No clipping mode: *please ghost*
View all messages: *please tellall*
All weapons and ammo: *please giveall*
Kill all monsters on level: *please killall*
Invisibility: *please invisible*

Off the Shelf

Get your adrenaline rush with these power-packed game reviews

GLOBAL OPERATIONS
Send in the Experts

The rage in online gaming for the last couple of years has undeniably been *Counter-Strike* (*CS*), a team-based title that allows groups of terrorists and counter-terrorists to go head to head. An obvious offshoot of the *CS* craze, *Global Operations*

TUNNEL VISION: The Binoculars are one of the many toys you get to play with

from Barking Dog takes the original formula, adds a bit of innovation, and comes up with something that's tasteful.

You play a member of an elite military force such as the SAS or the Australian Special Operation forces, pitted against criminal organisations in Chechnya, Sri Lanka and the South China seas. Missions are team-specific, such as 'Rescue the hostage'

and 'Disarm the bomb'. Now before you say "*Counter-Strike* clone", *Global Operations* plays more like *Team Fortress* and less like *CS*, with a focus on team play, which is a non-existent aspect of *CS*. While *CS* is based more on individual combat, *Global Operations* focuses more on working with your team mates to complete your missions.

You can play one of six different roles: Recon, Commando, Medic, Heavy Gunner, Demo and Sniper. You have an arsenal of real-life weapons such as machine guns, shotguns and snipers, as well as accessories such as silencers, laser sights, and night vision goggles.

Missions begin with your characters being transported to the battleground. During this time, you are alloted some money much like in *Counter-Strike*, for purchasing your character's weaponry and equipment. Money is earned by killing enemies and completing mission objectives. Plus you have whatever is left over from purchases in the previous round.

The graphics aren't breathtaking in any way, especially when compared to games like *Serious Sam* and *Return to Castle Wolfenstein*. The animations and character movement are well done, as are the

weapons effects. When a grenade is hurled at you, the screen will go all blurry and you'll experience a hearing defect, followed by a long buzzing noise. These contribute a lot to the gameplay value.

The game is heavy on the Multiplayer aspect, and even the single player mission is dependent on bots, which are poorly programmed. While playing the game, the teammates routinely ran directly into the line of fire without regard for stealth. The AI proved to be weak at many spots and didn't give a team-based experience.

The game successfully fuses a wide variety of great weapons with character classes in a slick fashion, which is its winning argument. However, *Global Operations* does not measure up to the playability of *Counter-Strike*. If you're comfortable playing *Counter-Strike*, there is no compelling reason to pick up *Global Operations*. Poor network performance and irksome graphics require some patching, which should be available by the time this review reaches you.

Genre: Team Based FPS
Developer: Barking Dog Studios
Distributor: Gayatri Impex Pvt Ltd
Phone: 022-3881443
Web site: www.barkingdog.com
Price: Rs 1,299
Rating: ★★★☆☆

4X4 EVOLUTION 2
Race on

If hardcore fun and racing reality is what you are looking for, then you can expect some rough riding and a face full of muck while playing this game! It has some amazingly realistic graphics with gravel and dust flying up in the air, and large open maps with some neat scenery. The tracks are very well thought out and lend

themselves well to the game's inherent physics. Running it on a GeForce3 powered machine allows the game to really shine. The only thing lacking in the graphics department is the damage effect to the trucks. The trucks remain as shiny as ever despite going through dirt, blasting through rocks, and falling off cliffs!

The game offers four different weather options, which include Clear, Foggy, Dense fog and Rain, and two different 'time of the day' options (Mid-day and Dusk). All these are brilliantly rendered and greatly improve the replay value of the game. It boasts of over 32 tracks and over 120 top-of-the-line trucks from Dodge,

Jeep, Nissan, Infiniti, Toyota, Lexus, Mitsubishi, Chevrolet and GMC, with every bit of external detail recreated. The game runs you through a series of races and challenges, with a cash prize at the end of each, which you will need to upscale your truck and buy new components.

Its gameplay and physics are more of the 'hit and run' arcade style racing games but it makes for some very enjoyable racing action. There is little that you can do wrong with the controls and you would have to really push the vehicle to make it go belly up.

The game pits you against seven computer AI opponents, none of whom is a pushover! You can expect a lot of fun trying to beat them and that will happen only when you've gained enough knowledge about the track. You can take as many shortcuts as you want but you can't go too far off track because you have to go through all the checkpoints on a track.

The game offers a rather interesting option called 'Free Roam', where the driver can tour maps alone. It has multiplayer support and you can compete against your pals on a LAN or on the Internet.

Genre: Sports/Simulation
Developer: Terminal Reality
Distributor: e-Xpress Interactive
Phone: 022-8870017
Web site: www.4x4evolution.com
Price: Rs 699
Rating: ★★★★☆

OFFROAD ACTION: *An arcade style racing game that will have you ploughing dirt at your opponents*
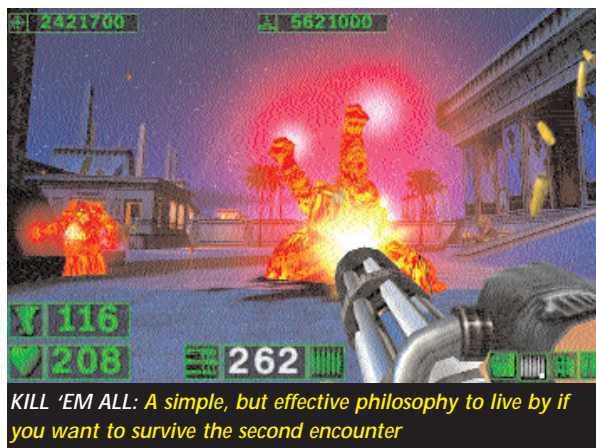
SERIOUS SAM: THE SECOND ENCOUNTER
Seriously Fun

About a year ago, Croteam, an unknown garage development team from Croatia released the surprise hit of 2001. Hailing back to the formula of *DOOM*, this game was welcomed by everyone for its wafer-thin plot, tongue-in-cheek humour, and run-and-gun gameplay. The colourful and bright settings and graphical eye candy made it a real blast to play. Croteam now serves up another dose of adrenaline with *Serious Sam: The Second Encounter*.

This time, Sam Stone has some new enemies and new guns in a whole new setting (you explore Mayan, Babylonian, and Medieval lands). We could tell you more about the story, but that's hardly the point. Rest assured, you will have a lot of Mental's Minions to kill. *The Second Encounter* (*TSE*) builds on the ideas laid out in the original by adding more things to shoot at, more levels, more wacky secrets, and more of that unique humour that has become a trademark of the original.

If you haven't played *Serious Sam 1*, you're in for a visual treat. The Serious Engine is just amazing. Glorious lighting, gigantic levels, bright colours, and hundreds of enemies on the screen at once—with no drop in frame rates! No one else has attempted to create a game with such wide, open areas and locations since the first *Serious Sam*.

There are four new weapons for *TSE*:

KILL 'EM ALL: *A simple, but effective philosophy to live by if you want to survive the second encounter*

the Chainsaw, Sniper Rifle, Flame Thrower, and Serious Bomb, in addition to all the fun weapons from the first game. The gameplay usually revolves around getting a gun and killing things. Get a bigger gun, and kill some more. You'll be hunting for switches and/or objects to open doors but unlike *Quake*, you'll be warding off hundreds of monsters at the same time. There's a bit of puzzle solving involved too and the level design will test your reflexes as well as your brain.

There's nothing like the scream of a Kamikaze coming from far off to send waves of panic through you. Or having a 50-foot tall Mechanoid shoot rockets at you. The sound effects have been done exceedingly well, considering the budget Croteam would have been working with.

Extra points for the background music, which switches to Metal/Industrial mode when the enemies appear up and close.

There's a whole bunch of multiplayer options that come with this game—LAN, Internet (Gamespy), or Co-operative Deathmatch. You also get some really cool mods for multiplayer, such as *Seriously Warped Deathmatch*, *Scorematch*, *Co-operative*, *Fragmatch*, *Thief*, *Rugby*, *Teamplay* and *Capture the Flag*, all of which are bundled with the game.

While all the other shooters out there are trying hard to be realistic, *Serious Sam* tries to make the game as much fun as possible. And fun is what you get. For Rs 699, *TSE* gives you single player, co-operative, multiplayer, and other gameplay modes, which will keep you busy for a long time. If you have a decent PC with a 3D graphics card yearning to be pushed, go get this game.

Genre: First Person Shooter
Developer: Croteam
Distributor: e-Xpress Interactive
Phone: 022-8870017
Web site: www.croteam.com
Price: Rs 699
Rating: ★★★★☆

A Model Issue

Or a look at what goes on inside to present a sparkling front

The excitement never ends at Digit. There was another round of it in May, while we were preparing for the June anniversary issue. Being a special issue, the stories obviously had to be off the beaten path—topics that weren't covered before, comparison test of products that hadn't been tested earlier and so on. Then of course, since we wanted to create a unique package with five content-packed CDs, there was double the amount of research and planning to ensure that everything was smooth sailing. Even the cover had to be special, befitting our first birthday.

All kinds of ideas were tossed around to make the cover stand out. After several brainstorming sessions, heated discussions and cups of tea, we finally settled on a cover that would have a gold touch to it, in keeping with the celebratory mood.

But first things first. We had to start off by choosing a female model appropriate for the cover. And if you are thinking why female, well, here's the answer. The model is selected on the basis of the cover story. Depending on the product covered in the leading story, we make the decision as to whether we must go for a male or a female model—products that are sleek, funky and 'smooth' are generally accompanied by female models (cellular phones, MP3 players, digicams and so on), while traditional and powerful computing products (hard disks, processors, monitors, etc), are graced by men. Anyway, getting back to the earlier and moot point. As we were going with the gold touch, obviously the best skin tone would be a dusky brown and so the hunt for the model with the right dusky looks was launched. The folks in charge of selecting the model did a thorough job, examining the short listed candidates taking into consideration every possible photographic factor—the appropriate skin tone, the right kind of sophisticated looks for a cutting-edge technology product, the lightning that would be used, and so on.

While the designers and photographers pored over the portfolios to pick the right model, there were some parallel (and unofficial) judging panels that were doling out their decisions. Almost all Digsters managed to sneak out some time to go over the portfolio that our

ILLUSTRATION: Mahesh Benkar

photographers had brought in. Several rounds and several criteria and an even larger number of vastly differing opinions were forthcoming. But choose a model we did. There were some other interesting incidents. One that distinctly stood out was a top model's sibling insisting that we carry a story written by him if we wanted his sister to pose for the cover. Well, well…

The actual model shoot was to be held at a venue that was about 45 minutes away from the office premises. This involved lugging some equipment (an easy task) and a few excited souls (the more difficult job) to the destination taking care that neither of the two encountered any damage. Ashwin, one of our ace designers, was more than thrilled to accompany Mexy and Jiten, our in-house photographers to the shoot.

Every element that went into the shoot was carefully and painstakingly examined and checked and then checked once again—the lighting, make-up, clothes and so on. When the photographs were processed, the next task was to do the necessary high jinks in Photoshop to adjust the look and feel of the scanned image, so that it matched the magazine's spirit and the contents that would go on the cover. An easy task for Ashwin, except that he had to contend with the 'expert' opinions of everyone who happened to pass by his desk. Everybody was curious and excited about the anniversary issue, even those not directly working on Digit, and there were more ideas and suggestions being offered. We finally had to shift Ashwin to a secluded spot where he could work in peace and volunteers from the team took it upon themselves to make sure that he wouldn't be disturbed.

The final output obviously saw hordes of Digsters gathering around our man's desktop, admiring…er…the model, um…Ashwin's handiwork. Oh well, we can't really make up our minds about that. ▪

Technology wise

"For a list of all the ways technology has failed to improve the quality of life, please press three."
— *Alice Kahn*

"Any sufficiently advanced technology is indistinguishable from magic."
— *Arthur C. Clarke*

"Humanity is acquiring all the right technology for all the wrong reasons."
— *R. Buckminster Fuller*

"For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled."
— *Richard Feynman*

"Technology is a way of organising the universe so that man doesn't have to experience it."
— *Max Frisch*

Selected from www.quotationspage.com

Blue Death

Somethings stay the same—even on a wide screen!
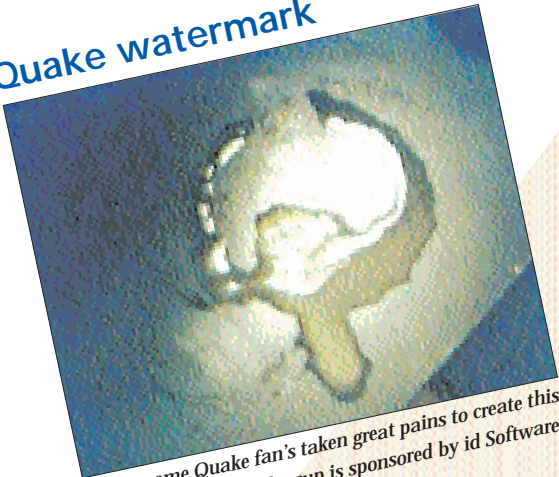*Contributed by Savio Fernandes, Via e-mail*

Thinking ahead

Can't blame Microsoft for all their success—they always plan ahead!

> *Where a calculator on the ENIAC is equipped with 18,000 vacuum tubes and weighs 30 tonnes, computers of the future may have only 1,000 vacuum tubes and perhaps weigh 1½ tonnes*
> —*Popular Mechanics, March 1949*

Quake watermark

Either some Quake fan's taken great pains to create this momento, or his coffee cup is sponsored by id Software!

Sentenced to slog!

Looks familiar, doesn't it?

Your chance to bite back!

Highlight the lighter side of computing. Mail your contributions to:
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Digit, Plot D-222/2, TTC Industrial Area, MIDC, Shirvane, Nerul, Navi Mumbai 400 706
or e-mail us at backbyte@jasubhai.com

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The proverbial all-in-one device, now with communications capability!

Specially designed for the new-age woman!

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Contributed by Tanya Misquitta, via e-mail