NAG Toolbox for MATLAB

m01ec

1 Purpose

m01ec rearranges a vector of character data into the order specified by a vector of ranks.

2 Syntax

```
[ch, irank, ifail] = m01ec(ch, m1, irank, 'm2', m2)
```

3 Description

m01ec is designed to be used typically in conjunction with the M01D ranking functions. After one of the M01D functions has been called to determine a vector of ranks, m01ec can be called to rearrange a vector of character data into the rank order. If the vector of ranks has been generated in some other way, then m01zb should be called to check its validity before m01ec is called.

4 References

None.

5 Parameters

5.1 Compulsory Input Parameters

1: **ch**(**m2**) – **string array**

Elements **m1** to **m2** of **ch** must contain character data to be rearranged.

Constraint: the length of each element of **ch** must not exceed 255.

2: **m1** – **int32 scalar**

the range of the ranks supplied in **irank** and the elements of **ch** to be rearranged.

Constraint: $0 < \mathbf{m1} \leq \mathbf{m2}$.

3: **irank**(**m2**) – **int32 array**

Elements **m1** to **m2** of **irank** must contain a permutation of the integers **m1** to **m2**, which are interpreted as a vector of ranks.

5.2 Optional Input Parameters

1: **m2** – **int32 scalar**

Default: The dimension of the arrays **irank**, **ch**. (An error is raised if these dimensions are not equal.)

the range of the ranks supplied in **irank** and the elements of **ch** to be rearranged.

Constraint: $0 < \mathbf{m1} \leq \mathbf{m2}$.

5.3 Input Parameters Omitted from the MATLAB Interface

None.

5.4 Output Parameters

1: **ch**(**m2**) – **string array**

These values are rearranged into rank order. For example, if **irank**(i) = **m1**, then the initial value of **ch**(i) is moved to **ch**(**m1**).

2: **irank**(**m2**) – **int32 array**

Used as internal workspace prior to being restored and hence is unchanged.

3: **ifail** – **int32 scalar**

0 unless the function detects an error (see Section 6).

6 Error Indicators and Warnings

Errors or warnings detected by the function:

ifail = 1

On entry, **m2** < 1,
or **m1** < 1,
or **m1** $>$ **m2**.

ifail = 2

On entry, the length of each element of **ch** exceeds 255.

ifail = 3

Elements **m1** to **m2** of **irank** contain a value outside the range **m1** to **m2**.

ifail = 4

Elements **m1** to **m2** of **irank** contain a repeated value.

If **ifail** = 3 or 4, elements **m1** to **m2** of **irank** do not contain a permutation of the integers **m1** to **m2**. On exit, the contents of **ch** may be corrupted. To check the validity of **irank** without the risk of corrupting **ch**, use m01zb.

7 Accuracy

Not applicable.

8 Further Comments

The average time taken by the function is approximately proportional to n, where n = **m2** − **m1** + 1.

9 Example

```
ch  =  {'A02AAF';  'A02ABF';  'A02ACF';  'C02ADF';  'C02AEF';  'C05ADF';
'C05AGF'; 'C05AJF'; 'C05AVF'; 'C05AXF'; 'C05AZF'};
m1 = int32(1);
irank = [int32(6);
     int32(5);
     int32(4);
     int32(10);
     int32(3);
     int32(2);
     int32(7);
```

```
     int32(11);
     int32(8);
     int32(9);
     int32(1)];
[chOut, irankOut, ifail] = m01ec(ch, m1, irank)
```

```
chOut =
    'C05AZF'
    'C05ADF'
    'C02AEF'
    'A02ACF'
    'A02ABF'
    'A02AAF'
    'C05AGF'
    'C05AVF'
    'C05AXF'
    'C02ADF'
    'C05AJF'
irankOut =
           6
           5
           4
          10
           3
           2
           7
          11
           8
           9
           1
ifail =
           0
```