H02BVF – NAG Fortran Library Routine Document

Note. Before using this routine, please read the Users' Note for your implementation to check the interpretation of bold italicised terms and other implementation-dependent details.

1 Purpose

H02BVF prints the solution to a linear or integer programming problem computed by E04MFF or H02BBF and H02BZF, with user supplied names for the rows and columns.

2 Specification

```
    SUBROUTINE H02BVF(N, M, A, LDA, BL, BU, X, CLAMDA, ISTATE, CRNAME,
   1                  IFAIL)
    INTEGER           N, M, LDA, ISTATE(N+M), IFAIL
    real              A(LDA,*), BL(N+M), BU(N+M), X(N), CLAMDA(N+M)
    CHARACTER*8       CRNAME(N+M)
```

3 Description

H02BVF prints the solution to a linear or integer programming problem with user supplied names for the rows and columns. All output is written to the current advisory message unit (as defined by X04ABF). The routine must be preceded in the same program by calls to H02BUF and either E04MFF (if an LP problem has been solved) or H02BBF and H02BZF (if an IP problem has been solved). The documents for H02BUF, E04MFF and/or H02BBF and H02BZF should be consulted for further details.

4 References

[1] (1971) MPSX – Mathematical programming system *Program Number 5734 XM4* IBM Trade Corporation, New York

5 Parameters

1: N — INTEGER *Input*

On entry: the number of variables, as returned by H02BUF.

Constraint: N > 0.

2: M — INTEGER *Input*

On entry: the number of general linear constraints, as returned by H02BUF.

Constraint: M ≥ 0.

3: A(LDA,∗) — **real** array *Input*

Note: the second dimension of the array A must be at least at least N when M > 0, and at least 1 when M = 0.

On entry: the matrix of general linear constraints, as returned by H02BUF.

4: LDA — INTEGER *Input*

On entry: this **must** be the same parameter MAXM as supplied to H02BUF.

Constraint: LDA ≥ max(1,M).

5: BL(N+M) — **real** array *Input*

On entry: the lower bounds for all the constraints, as returned by E04MFF or H02BZF.

6: BU(N+M) — **real** array *Input*

On entry: the upper bounds for all the constraints, as returned by E04MFF or H02BZF.

7: X(N) — **real** array *Input*

On entry: the solution to the problem, as returned by E04MFF or H02BBF.

8: CLAMDA(N+M) — **real** array *Input*

On entry: the Lagrange multipliers (reduced costs) for each constraint with respect to the working set, as returned by E04MFF or H02BZF.

9: ISTATE(N+M) — INTEGER array *Input*

On entry: the status of every constraint in the working set at the solution, as returned by E04MFF or H02BZF.

10: CRNAME(N+M) — CHARACTER*8 array *Input*

On entry: the user defined names for all the variables and constraints, as returned by H02BUF.

11: IFAIL — INTEGER *Input/Output*

On entry: IFAIL must be set to 0, −1 or 1. For users not familiar with this parameter (described in Chapter P01) the recommended value is 0.

On exit: IFAIL = 0 unless the routine detects an error (see Section 6).

6 Error Indicators and Warnings

If on entry IFAIL = 0 or −1, explanatory error messages are output on the current error message unit (as defined by X04AAF).

Errors detected by the routine:

IFAIL = 1

> On entry, $N \leq 0$,
>
>   or $M < 0$,
>
>   or $LDA < \max(1, M)$.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

See Section 9 of the document for H02BUF.