19.6 Running Problems in Matrix Market Format With Codes in Chapter 4.7

A. Purpose

These programs written in C will output either a Fortran code or a C code which will solve sparse matrix problems entered in Matrix Market Format, see `http://math.nist.gov/MatrixMarket/`.

B. Usage

Edit the two define's at the start of the code for your desired use, and compile the code. Make up a file named mmjob which contains a list of names for the matrix market files that you may have an interest in running and that are stored on your machine.

mmgen [–**Options**] **Path** [**name_1**] [**name_2**] **...**

Options are a string of letters and numbers interpreted as follows.

[**a** Process all lines in mmjob after processing the last name_k. If no names are given, start with the first name in mmjob.

t Save the transpose of the matrix, and solve $A^T\mathbf{x} = \mathbf{b}$.

b0–**b9** Specify the number of right hand sides in **b**. The defauls is b1. In the case of 0, the matrix is factored, and another call is made to solve the problem with a single right hand side.

c Compute the reciprocal of the condition number.

d Compute the determinant.

C. Examples and Remarks

The file mmjob listed at the end of this document gives the output shown.

D. Functional Description

Not applicable.

E. Error Procedures and Restrictions

In the case of input errors, an error message is printed.

F. Supporting Information

The source language is C.

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The random number generator from Chapter 3.1 is called by the drivers generated.

The File mmjob
1138_bus
CRY10000
CURTIS54
add32
arc130
cry2500
e20r5000
small1

```
./mmgen -acd ./mmarket
```

Problem	N	Seconds	RESERR	XERR	Unused	Used	RCOND	DET	x 10^?
1138_bus	1138	0.016	1.87E-16	4.44E-16	36816	16895	3.98E-08	6.78450	2151
CRY10000	10000	1.620	1.17E-15	6.31E-03	1675872	1554563	2.52E-28	6.30195	15523
CURTIS54	54	0.000	1.46E-15	3.20E-14	2513	1930	1.15E-03	-1.78000	-8
add32	4960	0.292	6.21E-16	1.34E-14	738755	211828	2.23E-03	1.13981	-9892
arc130	130	0.004	4.27E-16	1.43E-09	7736	12327	8.83E-08	1.10261	3
cry2500	2500	0.100	7.27E-16	1.19E-04	98883	240714	3.09E-24	8.65650	2445
e20r5000	4241	1.828	8.14E-14	6.79E-10	2677775	2085209	2.95E-10	-1.24088	-671
small1	54	0.000	1.46E-15	3.20E-14	2513	1930	1.15E-03	-1.78000	-8