CORRELATION MATRIX

PURPOSE
Compute the correlation matrix of a matrix.

DESCRIPTION
The correlation matrix computes the correlation coefficients of the columns of a matrix. That is, row i and column j of the correlation matrix is the correlation between column i and column j of the original matrix. The diagonal elements of the correlation matrix will be 1 since they are the correlation of a column with itself. The correlation matrix is also symmetric since the correlation of column i with column j is the same as the correlation of column j with column i.

SYNTAX
LET <mat2> = CORRELATION MATRIX <mat1>   <SUBSET/EXCEPT/FOR qualification>
where <mat1> is a matrix for which the correlations are to be computed;
        <mat2> is a matrix where the resulting correlations are saved;
and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

EXAMPLES
LET C = CORRELATION MATRIX A

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
CORRELATION	=	Compute the correlation of two variables.
VARIANCE-COVA MATRIX	=	Compute the variance-covariance matrix of a matrix.
PRINCIPAL COMPONENTS	=	Compute the principal components of a matrix.

APPLICATIONS
Linear Algebra

IMPLEMENTATION DATE
87/10

PROGRAM
DIMENSION 100 COLUMNS; SKIP 25; COLUMN LIMITS 20 132
READ AUTO79.DAT Y1 TO Y12
LET N = SIZE Y1
LET X = MATRIX DEFINITION Y7 N 6
LET C = CORRELATION MATRIX X
PRINT C

This command generates the following output.

```
    MATRIX C      --        6 ROWS
              --        6 COLUMNS


VARIABLES--C1      C2        C3        C4        C5        C6

 0.1000E+01  0.6782E+00  0.7242E+00  0.4095E+00  0.5726E+00 -0.4367E+00
 0.6782E+00  0.1000E+01  0.9552E+00  0.6118E+00  0.8651E+00 -0.6197E+00
 0.7242E+00  0.9552E+00  0.1000E+01  0.6093E+00  0.8029E+00 -0.5744E+00
 0.4095E+00  0.6118E+00  0.6093E+00  0.1000E+01  0.7233E+00  0.3410E-01
 0.5726E+00  0.8651E+00  0.8029E+00  0.7233E+00  0.1000E+01 -0.4845E+00
-0.4367E+00 -0.6197E+00 -0.5744E+00  0.3410E-01 -0.4845E+00  0.1000E+01
```