MATRIX MINOR

PURPOSE

Compute the matrix minors of a matrix.

DESCRIPTION

The minor B_{ij} is the determinant of matrix A with row i and column j omitted. The corresponding cofactor is $(-1)^{(i+j)}*B_{ij}$. The determinant of the reduced matrix is calculated with an LU decomposition. Matrices for which a minor is computed must have the same number of rows and columns. An error message is printed if they do not.

SYNTAX

LET <par> = MATRIX MINOR <mat> <rowid> <colid> <SUBSET/EXCEPT/FOR qualification>
where <mat> is a matrix for which the minor is to be computed;
<rowid> is the row of <mat1> for which a minor is to be computed;
<colid> is the column of <mat1> for which a minor is to be computed;
<par> is a parameter where the resulting minor is saved;
and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

EXAMPLES

LET C = MATRIX MINOR A 4 3
LET C = MATRIX MINOR A K J

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

MATRIX ADJOINT	=	Compute the adjoint matrix of a matrix.
MATRIX COFACTOR	=	Compute a matrix cofactor.
MATRIX DEFINITION	=	Set a matrix definition.
MATRIX DETERMINANT	=	Compute a matrix determinant.
MATRIX SUBMATRIX	=	Define a matrix submatrix.

REFERENCE

Any standard text on linear algebra.

APPLICATIONS

Linear Algebra

IMPLEMENTATION DATE

87/10

PROGRAM

```
DIMENSION 100 COLUMNS
SKIP 25
COLUMN LIMITS 1 15
READ MATRIX AUTO83.DAT X
LET C = VARIANCE-COVARIANCE MATRIX X
LET NC = MATRIX NUMBER OF COLUMNS C
LET NR = NC
LOOP FOR J = 1 1 NC
    LOOP FOR I = 1 1 NR
        LET TEMP = MATRIX MINOR C I J
        LET B(I) = TEMP
    END OF LOOP
    LET A^J = B
END OF LOOP
LET A = MATRIX DEFINITION A1 NR NC
PRINT A
```

The following matrix is printed.

```
          MATRIX A       --            4 ROWS
                         --            4 COLUMNS

VARIABLES--A1             A2             A3             A4

  0.8735344E+06 -0.6206164E+06  0.2569923E+05 -0.5241652E+05
 -0.6206158E+06  0.6479352E+08  0.1027997E+07  0.1858257E+06
  0.2569925E+05  0.1027997E+07  0.2613389E+05  0.2129365E+05
 -0.5241648E+05  0.1858264E+06  0.2129366E+05  0.6535403E+05
```