**MATRIX REPLACE ROW**

**PURPOSE**

Copy a variable into a row of a matrix.

**DESCRIPTION**

This command is useful when operating on rows (rather than columns) of a matrix. You can loop over the rows, extract a row, operate on the row, and then replace the row. An example might be to subtract the row means from a matrix. An alternative is to take the transpose of the matrix and loop over the columns of the transposed matrix. Although this is simpler, it does not work when there are too many rows. The default limits for matrices are 750 rows by 100 columns.

**SYNTAX**

LET <mat2> = MATRIX REPLACE ROW <mat1> <var> <rowid>

where <mat1> is a matrix for which the row is to be replaced;
<var> is a variable;
<rowid> is the row number to be replaced;
and <mat2> is a matrix where the replaced row is saved (it typically has the same name as <mat1>).

**EXAMPLES**

LET C = MATRIX REPLACE ROW C A 3

**DEFAULT**

None

**SYNONYMS**

None

**RELATED COMMANDS**

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<td>MATRIX ROW</td>
<td>Extract a row of a matrix.</td>
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<td>Replace an element of the matrix.</td>
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<td>MATRIX SUBMATRIX</td>
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**APPLICATIONS**

Linear Algebra

**IMPLEMENTATION DATE**

93/10
PROGRAM

. MULTIPLYING A MATRIX BY A DIAGONAL MATRIX IS EQUIVALENT TO
. MULTIPLYING EACH ROW BY THE CORRESPONDING DIAGONAL ELEMENT.
READ MATRIX M
14 37 32
19 42 17
12 17 10
END OF DATA
.
LET DIAG = DATA -6 8 4
LET NROW = MATRIX NUMBER OF COLUMNS M
.
LOOP FOR K = 1 1 NROW
    LET TEMP = MATRIX ROW M K
    LET A = DIAG(K)
    LET TEMP = A*TEMP
    LET M = MATRIX REPLACE ROW M TEMP K
END OF LOOP
PRINT M

The following output is generated.

    MATRIX M -- 3 ROWS
    -- 3 COLUMNS

VARIABLES-- M1  M2  M3

-0.8400000E+02 -0.2220000E+03 -0.1920000E+03
0.1520000E+03  0.3360000E+03  0.1360000E+03
0.4800000E+02  0.6800000E+02  0.4000000E+02