

## LOGICAL IFF

### PURPOSE

Carry out the logical iff of 2 variables where true values are coded as 1 and false values are coded as 0.

### DESCRIPTION

Logical iff, where iff means if-and-only-if, means that the result is true when the input values are both true or they are both false. Otherwise, the result is false. For example, the logical iff of the 4-element variable 1 1 0 0 and the 4-element variable 1 0 1 0 is the 4-element variable 1 0 0 1. The logical sequence T F T F T T F F F T F T (T = true, F = false) can be coded as a “logical” variable as follows:

```
LET Y = DATA 1 0 1 0 1 1 0 0 0 1 0 1
```

For long sequences, you can use the SERIAL READ command. The IND function can be helpful in converting a numeric variable that is not coded with 0 and 1's to one that is.

### SYNTAX

```
LET <v3> = LOGICAL IFF <v1> <v2> <SUBSET/EXCEPT/FOR/qualification>
```

where <v1> is the first variable;

<v2> is the second variable;

<v3> is the resultant variable;

and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

### EXAMPLES

```
LET Y3 = LOGICAL IFF Y1 Y2
```

### DEFAULT

None

### SYNONYMS

None

### RELATED COMMANDS

LOGICAL AND	=	Carries out a logical and.
LOGICAL OR	=	Carries out a logical or.
LOGICAL XOR	=	Carries out a logical xor.
LOGICAL IFTHEN	=	Carries out a logical if-then.
LOGICAL NOT	=	Carries out a logical not.

### REFERENCE

“Handbook of Mathematical Tables and Functions,” Edition 5, Burington, McGraw-Hill, 1973 (page 132).

### APPLICATIONS

Mathematics

### IMPLEMENTATION DATE

87/10

### PROGRAM

```
LET Y1 = DATA 1 1 0 0
LET Y2 = DATA 1 0 1 0
LET Y3 = LOGICAL IFF Y1 Y2
SET WRITE DECIMALS 0
WRITE Y1 Y2 Y3
```