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10 (Program to show the use of recursion)
20
30 PROGRAM FACTOR;
40
50 (This program calculates the factorial of a number input from the
60 keyboard 1) using recursion and 2) using an iterative method.)
70
80 TYPE
90   POSINT = 0..MAXINT;
100
110 VAR
120   METHOD : CHAR;
130   NUMBER : POSINT;
140
150 (Recursive algorithm.)
160
170 FUNCTION RFAC(N : POSINT) : INTEGER;
180
190   VAR F : POSINT;
200
210   BEGIN
220     IF N>1 THEN F:= N * RFAC(N-1)           (RFAC invoked N times)
230     ELSE F:= 1;
240     RFAC := F
250   END;
260
270 (Iterative solution)
280
290 FUNCTION IFAC(N : POSINT) : INTEGER;
300
310   VAR I,F: POSINT;
320   BEGIN
330     F := 1;
340     FOR I := 2 TO N DO F := F*I;           (Simple Loop)
350     IFAC:=F
360   END;
370
380 BEGIN
390   REPEAT
400     WRITE('Give method (I or R) and number ');
410     READLN;
420     READ(METHOD,NUMBER);
430     IF METHOD = 'R'
440       THEN WRITELN(NUMBER,'! = ',RFAC(NUMBER))
450       ELSE WRITELN(NUMBER,'! = ',IFAC(NUMBER))
460   UNTIL NUMBER=0
470 END.

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