; PROGRAM :: COMPUTE nCr using Recursive procedure. Assume that 'n' and 'r' are non-negative integers

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.model small

.data
N DB 05H                    ; n >= r
R DB 02H
NCRVAL DW 01H DUP(?)

.code
START: MOV AX, @DATA
       MOV DS, AX

       MOV CL, R      ; CL=02H --> VALUE OF R
       MOV CH, N      ; CH=05H --> VALUE OF N
       XOR AX, AX     ; Clear the contents of AX
                        Register or MOV AX,00
       CALL NCR
       MOV [NCRVAL], AX
       MOV AH, 4CH
       INT 21H

NCR PROC NEAR
    CMP CH, CL
    JE EQUAL   ; N==R ? SET 1
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JC FINISH      ; N<R ? SET ZERO
CMP CL, 01H    ; R==1 ? SET N
JE NEXT
CMP CL, 00H    ; R==0 ? SET 1
JE EQUAL
DEC CH         ; CH=04 = N-1
PUSH CX        ; CH=04 CL=02
CALL NCR
POP CX
DEC CL
CALL NCR
RET

NEXT: XOR BX, BX   ; CLEAR CONTENTS OF
                     BX REGISTER
MOV BL, CH     ; BL=05 --> VALUE OF N
ADD AX, BX     ; 00+05=05 STORED AS
                 RESULT WHICH IS THE VALUE
RET              OF N

EQUAL: ADD AX, 01H  ; AX=01H
FINISH: RET
NCR ENDP
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$$5C_2 \rightarrow 4C_2 + 3C_1 + 2C_0$$

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END START
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