Experiment 3

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TO.oU llo9 LA\A:h3te8\viO

MODEL SMALL

STACK 100H

ATAO.

NUM DB 5 ; Number for factorial (change this value as needed)

FACT DW 1 ; Variable to store factorial result

MSG DB 'Factorial: \$' ; Message to display before result

CODE

MAIN PROC

ATAO, (XA VOM

MOV DS, AX

A ni nadmun beol ; MUM ,JA VOM

CBW ; Convert AL to AX (sign-extend)

CALL FACTORIAL ; Call factorial procedure

MOV DX, OFFSET MSG

Heo ,HA VOM

INT 21H ; Print message

CALL PRINT_NUM; Print the factorial result

MOV AH, 4CH

INT 21H ; Exit program

MAIN ENDP

; Factorial Procedure

FACTORIAL PROC

MOV CX, AX ; Move number to CX for loop counter

(L actorial starts at 1) L = XX = X (Factorial starts at 1)

FACTORIAL_LOOP:

MUL CX \Rightarrow AX = AX * CX

LOOP FACTORIAL_LOOP

MOV FACT, AX ; Store the result in FACT

RET

FACTORIAL ENDP

; Print Number Procedure

PRINT_NUM PROC

MOV AX, FACT ; Load factorial result

MOV CX, 0 ; Clear CX (digit counter)

NEXT_DIGIT:

MOV DX, 0

MOV BX, 10

DIV BX \uparrow XA in Dividing in AX, Remainder in DX

PUSH DX ; Push remainder (digit) onto stack

INC CX ; Increment digit counter

TEST AX, AX ; Check if AX is zero

JNZ NEXT_DIGIT; If not, continue extracting digits

PRINT_LOOP:

POP DX ; Get digit from stack

ADD DL, '0' ; Convert to ASCII

H20, HA VOM

INT 21H ; Print digit

LOOP PRINT_LOOP; Repeat for remaining digits

RET

PRINT_NUM ENDP

END MAIN

:TU9TU0

```
es:0018 01 01 01 00 02 04 FF FF 8E8 8+
  ss:0100\52FB
  5010: 22
                        es:0010 12 03 S8 08 12 03 03 01 80($800
                        62:0008 UD DE 35 OB C2 O2 PB O5 ! SQ-W+
                          GS:0000 CD SO SD 3D 00 EU FF FF = 3\pm \text{ R}
                                                                   2000 qi
                                                     #fact#factorial

    ◆ INT 21H : Exit program

       cz 687C
                                                      cs:0018 CDS1
       S880 ss

 ◆ MOU AH, 4CH

                                                      CS:0016 B44C
       0980 sa
                  ◆ CALL PRINT_NUM : Print
                                                    cz:0013 E81100:20
                  INT 21H; Print messag
       1880 sb
                                                      cs:0011 CDS1
0=P
       0010 qz
                              Heo ,HA ∪OM ◆
                                                      cs:000F B409
       0000 dq

    ◆ MO∩ DX' OFFSET MSG

                                                    cz:000C) By0300
T=I
0=թ
       0000 ip

    ◆ CHLL FACTORIAL : Call

                                                    CS:0009 E80E00
T=d
       0000 is
                  ★ CBW ; Convert AL to AX
                                                         86 8000:sp
                  MOU AL, NUM ; Load num
0=0
       0000 ×p
                                                    CS:0005 A000000
       0000 xp
                               MOU DS, AX
                                                      cz:0003 8ED8
                           ◆ MOU AX, DGROUP
       P× 0000
                                                    cz:0000 B88108
       8700 X5
                                                           #fact#main
                                                      :[#]=Cbn 8048e
```