

To Write A Program To Find The Factorial Of A Number Using Procedures.

Aim: To find a gcd between two numbers in mixed language (C and Tasm) programs

Prerequisite: TASM assembler

Theory:

If the Given Number is a 16-bit number, the AX register is automatically used as the second parameter and the product is stored in the DX:AX register pair. This means that the DX register holds the high part and the AX register holds the low part of a 32-bit number. In an 8086 microprocessor, users have direct instruction (MUL) to multiply two numbers, so we don't have to add multiplicand by Multiplier times like in 8085.

Algorithm :

1. Start
2. Load the data into register B
3. To start multiplication set D to 01H
4. Jump to step 8
5. Decrements B to multiply previous number
6. Jump to step 4 till value of B>0
7. Take memory pointer to next location and store result
8. Load E with contents of B and clear accumulator

9. Repeatedly add contents of D to accumulator E times
10. Store accumulator content to D
11. Go to step 5
12. Stop.

Code :

```
DATA SEGMENT
NUM1 DW 05H
RESULT DW ?
DATA ENDS

MY SEGMENT
FACT PROC FAR
MUL CX
RET
ENDP
MY ENDS

CODE SEGMENT
START:
ASSUME CS:CODE , DS:DATA
MOV AX,DATA
MOV DS,AX
MOV CX,NUM1
MOV AX,0001H

UP : CALL FACT

LOOP UP
```

```
MOV RESULT,AX
MOV AH,4CH
INT 21H
CODE ENDS
END START
```

Output:

The screenshot shows a debugger window with the following content:

Address	Disassembly	Comment	Register/Value
48AF:0011	E2F9	loop 000C	ax 0192
48AF:0013	A30200	mov [0002],ax	bx 000B
48AF:0016	B44C	mov ah,4C	cx F709
48AF:0018	CD21	int 21	dx 098D
48AF:001A	0000	add [bx+si],al	si F70C
48AF:001C	0000	add [bx+si],al	di F70D
48AF:001E	0000	add [bx+si],al	bp 0100
48AF:0020	0000	add [bx+si],al	sp 0106
48AF:0022	0000	add [bx+si],al	ds 2110
48AF:0024	0000	add [bx+si],al	es 012D
48AF:0026	0000	add [bx+si],al	ss 0192
48AF:0028	0000	add [bx+si],al	cs 0000
48AF:002A	0000	add [bx+si],al	ip 0000

Below the assembly list, there is a memory dump showing hex values and their ASCII representations. To the right, a register window shows the current values of various registers.

Conclusion :

From the above experiment we are really able to find the factorial in the assembly program. We are also able to learn about how we can use procedures in an assembly program. Just we need to check in the debugger where we can easily see the changes how the program works step by step just by clicking fn + F7. We can see the changes in the registers at the end.