

Experiment - V

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1 Aim:

Write an 8085 assembly language program to calculate factorial of a number stored at memory location C300H, store the result at C301H.

2 Code

```
# ORG C300H
# DB 05H
# ORG 0700H
    LXI H, C300H
    MOV A, M
    CPI 00H
    JNZ SKIP
    MVI A, 01H
    JZ SAVE

SKIP:    MOV D, M
    DCR D

FACT:    MOV B, D
    MOV C, A
    XRA A

MULT:    ADD C
    DCR B
    JNZ MULT
    DCR D
    JNZ FACT

SAVE:    STA C301H
    HLT
```

3 Observations:

The screenshot displays the 8085 Assembler and Memory Editor interface. The Assembler window shows the assembly code being entered, and the Memory Editor window shows the memory contents at various addresses.

Assembler Window:

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ C000		LXI H,C300	21	3	3	10
✓ C001			00			
✓ C003		MOV A,M	7E	1	2	7
✓ C004		CPI 00	FE	2	2	7
✓ C005			00			
✓ C006		JNZ SKIP	C2	3	3	10
✓ C007			0E			
✓ C008			C0			
✓ C009		MVI A,01	3E	2	2	7
✓ C00A			01			
✓ C00B		JZ SAVE	CA	3	3	10
✓ C00C			1C			
✓ C00D			C0			
✓ C00E	SKIP	MOV D,M	56	1	2	7
✓ C00F		DCR D	15	1	1	4
✓ C010	FACT	MOV B,D	42	1	1	4
✓ C011		MOV C,A	4F	1	1	4
✓ C012		XRA A	AF	1	1	4
✓ C013			01			

Memory Editor Window:

Memory Address	Value
C000	21
C002	C3
C003	7E
C004	FE
C006	C2
C007	0E
C008	C0
C009	3E
C00A	01
C00B	CA
C00C	1C
C00D	C0
C00E	56
C00F	15
C010	42
C011	4F
C012	AF
C013	01
C014	05
C015	C2
C016	13
C017	C0
C018	15
C019	C2
C01A	10
C01B	C0
C01C	32
C01D	01
C01E	C3
C01F	76
C300	05
C301	78

Simulate Window:

Start From → C000H

Run all At a Time Step By Step

Created by : Jubin Mitra

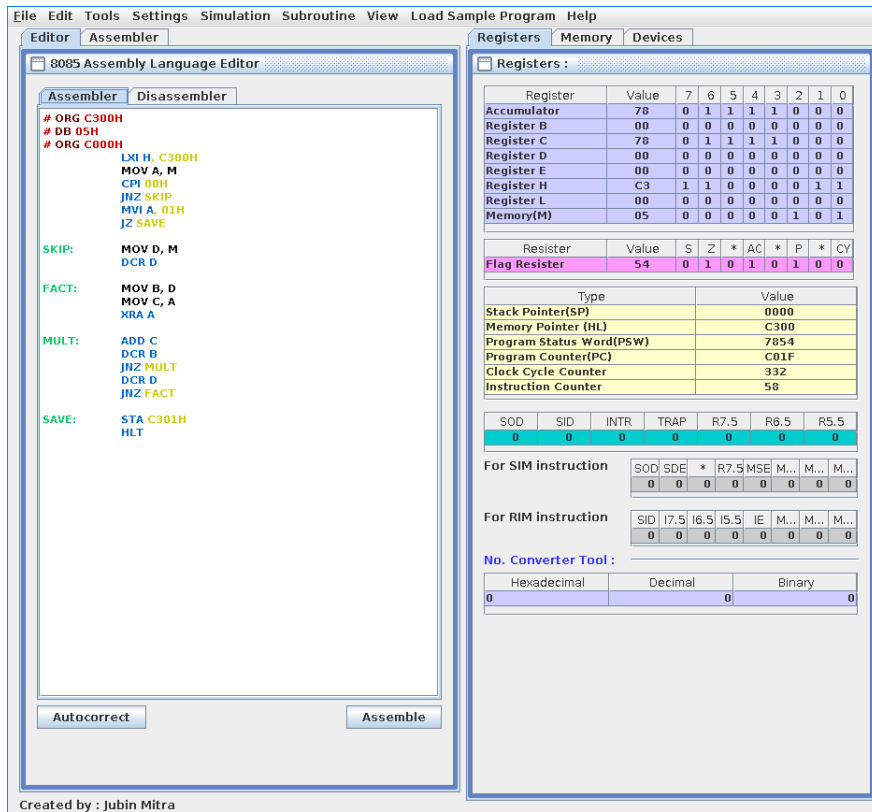


Figure 1: factorial

4 Conclusion:

Input: $C300H = 05H$
Output: $C301H = 78H$

Hence the program for factorial given in [section 2](#) works as expected for 8085 microprocessor.