

FACTORIAL OF A GIVEN NUMBER

EXP NO: 9

AIM: To find the factorial of a given number using 8085 microprocessor.

ALGORITHM:

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

9)

Store accumulator content to D

10) Go to

step 4

PROGRAM:

LDA 2001

MOV B,A

MVI C,01H

MVI E,01H

LOOP: MOV D,C

MVI A,00H

LP: ADD E

DCR D

JNZ LP

MOV E,A

INR C

DCR B

JNZ LOOP

MOV A,E

STA 2010

HLT

INPUT:

07D1	2001	4
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OUTPUT:

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window shows the assembly code being executed. The registers panel on the left shows the status of various registers, including A, BC, DE, HL, PSW, PC, SP, and Int-Reg. The memory panel on the right shows the memory contents, with the address 2001 highlighted. The status bar at the bottom indicates that the program was assembled successfully.

Registers:

A	18	S	0
BC	00 05	Z	1
DE	00 18	AC	0
HL	00 00	P	1
PSW	00 00	C	0
PC	42 1F		
SP	FF FF		
Int-Reg	00		

Memory:

Address (Hex)	Address	Data
07D1	2001	4
07D2	2002	0
07D3	2003	0
07D4	2004	0
07D5	2005	0
07D6	2006	0
07D7	2007	0
07D8	2008	0
07D9	2009	0
07DA	2010	24
07DB	2011	0
07DC	2012	0
07DD	2013	0
07DE	2014	0
07DF	2015	0
07E0	2016	0

Assembly Code:

```
1 ;<Program title>
2
3
4 jmp start
5 ;data
6
7
8
9 ;code
10 start: nop
11 LDA 2001
12 MOV B,A
13 MVI C,01H
14 MVI E,01H
15 LOOP: MOV D,C
16 MVI A,00H
17 LP: ADD E
18 DCR D
19 JNZ LP
20 MOV E,A
21 INR C
22 DCR B
23 JNZ LOOP
24 MOV A,E
25 STA 2010
26
27 hlt
```

RESULT: Thus the program was executed successfully using 8085 processor simulator.