

## 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 & OUTPUT:

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window shows the assembly code being executed, with line numbers 1 through 17. The registers section on the left shows the state of the 8085 registers: A (78), BC (00 06), DE (00 78), HL (08 94), PSW (00 00), PC (42 1B), SP (FF FF), and Int-Reg (00). The flag section shows S (0), Z (1), AC (0), P (1), and C (0). The memory section on the right shows the memory dump starting at address 2001, with data values ranging from 5 to 0. The I/O Ports section shows the port value as 0. The Memory section shows the memory address 8001 and the value 32. The bottom status bar indicates the simulator is in an idle state.

Registers:

Register	Value
A	78
BC	00 06
DE	00 78
HL	08 94
PSW	00 00
PC	42 1B
SP	FF FF
Int-Reg	00

Flag:

Flag	Value
S	0
Z	1
AC	0
P	1
C	0

Memory:

Address (Hex)	Address	Data
07D1	2001	5
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	120
07DB	2011	0
07DC	2012	0
07DD	2013	0
07DE	2014	0

I/O Ports:

Port	Value
0	00

Memory:

Address	Value
8001	32

Assembler Message:

```
Line No Assembler Message
0 Program assembled successfully
```

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