

FACTORIAL OF A GIVEN NUMBER

EXP NO: 9

AIM: To find the factorial of a given number using an 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:

Start	2001	OK
Address (Hex)	Address	Data
07D1	2001	5
07D2	2002	0

OUTPUT:

GNUSim8085 - 8085 Microprocessor Simulator

Registers

A	78
BC	00 06
DE	00 78
HL	00 00
PSW	00 00
PC	42 1F
SP	FF FF
Int-Reg	00

Flag

S	0
Z	1
AC	0
P	1
C	0

Decimal - Hex Conversion

Decimal

Hex

0

0

To Hex

To Dec

I/O Ports

0

-

+

00

Update Port Value

Memory

0

-

+

00

Update Memory

Load me at

```
1
2 <Program title>
3
4 jmp start
5
6 rdata
7
8
9 rcode
10 start: nop
11 LDA 2001
12 MOV B,A
13 MVI C,01H
14 MVI D,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 TMB C
22 DCR B
23 JNZ LOOP
24 MOV A,B
25 STA 2010
26 hlt
```

Data

Stack

KeyPad

Memory

I/O Ports

Start

2001

OK

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

Line No

Assembler Message

0

Program assembled successfully

Simulator: Idle

SA - NED

In 17 hours

Search

ENG IN

08:44

17-10-2023

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