

12. Write an assembly language program to find factorial of n in the given number.

AIM: To find factorial of n in the given number using assembly language.

RESULT:-

Hence the designing of the 2-bit half adder using logisim simulator has been implemented successfully.

ALGORITHM:

1. First set register B with data
2. Set register D with data by calling MULTIPLY subroutine one time.
3. Decrement B and D to itself B times by calling MULTIPLY subroutine.
4. Repeat the above step till B reaches 0.

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window is divided into several sections:

- Registers:** Shows the state of various registers. A is 78, BC is 00 06, DE is 00 78, HL is 00 00, PSW is 00 00, PC is 42 1B, SP is FF FF, and Int-Reg is 00. Flags S, Z, AC, P, and C are also shown.
- Flag:** Shows the status of flags S, Z, AC, P, and C.
- Decimal - Hex Conversion:** A section for converting between decimal and hex values.
- I/O Ports:** A section for interacting with I/O ports.
- Memory:** A section for interacting with memory.
- Assembly Code:** A list of assembly instructions:

```
1 LDA 2001
2 MOV b,a
3 MVI c,#01
4 MVI e,#01
5 loop: MOV d,c
6 MVI a,00h
7 lp: ADD e
8 DCR d
9 JNZ lp
10 MOV e,a
11 INR c
12 DCR b
13 JNZ loop
14 MOV a,e
15 STA 2010
16 HLT
```
- Memory Table:** A table showing memory addresses and data:

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
- Assembler Message:** A table showing the result of the assembly process:

Line No	Assembler Message
0	Program assembled successfully

The simulator status at the bottom is "Simulator: Idle".

RESULT:

Thus the assembly language program to find factorial of n in the given number is successfully executed.