

8-BIT MULTIPLICATION

EXP NO: 3

AIM: To write an assembly language program to implement 8-bit multiplication using 8085 processor.

ALGORITHM:

- 1) Start the program by loading a register pair with the address of memory location.
- 2) Move the data to a register.
- 3) Get the second data and load it into the accumulator.
- 4) Add the two register contents.
- 5) Increment the value of the carry.
- 6) Check whether the repeated addition is over.
- 7) Store the value of product and the carry in the memory location.
- 8) Halt.

PROGRAM:

```
LDA 8500
MOV B, A
MOV E, A

LDA 8001
MOV C, A

CPI 00
JZ LOOP
XRA A
LOOP1: ADD E
      DCR C
      JMP LOOP1

LOOP: STA 8002
      RST 1
```

INPUT:

8500-3

8001-3

OUTPUT

File Reset Assembler Debug Help

Registers Flag

Register	Value	Flag
A	09	S 0
BC	03 00	Z 1
DE	00 03	AC 0
HL	00 00	P 1
PSW	00 00	C 0
PC	42 1B	
SP	FF FF	
Int-Reg	00	

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 00 Update Port Value

Memory

0 00 Update Memory

Load me at

```
1 LDA 8500 ; Load first number (multiplicand)
2 MOV B, A ; Save it in B
3 MOV E, A ; Also copy to E for addition
4
5 LDA 8001 ; Load second number (multiplier)
6 MOV C, A ; Save it in C
7
8 CPI 00 ; Check if multiplier is zero
9 JZ LOOP ; if zero, result = 0
10
11 XRA A ; Clear Accumulator (A=0)
12
13 LOOP1: ADD E ; A = A + E (add multiplicand)
14 DCR C ; Decrement multiplier
15 JZ LOOP ; if C = 0, stop
16 JMP LOOP1 ; Otherwise, repeat
17
18 LOOP: STA 8002 ; Store result at 8002H
19 RST 1 ; Stop
20
```

Start 8001 OK

Address (Hex)	Address	Data
1F41	8001	3
1F42	8002	9
1F43	8003	0
1F44	8004	0
1F45	8005	0
1F46	8006	0
1F47	8007	0
1F48	8008	0
1F49	8009	0
1F4A	8010	0
1F4B	8011	0
1F4C	8012	0
1F4D	8013	0
1F4E	8014	0

Line No Assembler Message

0 Program assembled successfully

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