

16-BIT MULTIPLICATION

EXP NO: 7

AIM:

To write an assembly language program to implement 16-bit multiplication using 8085 processor.

ALGORITHM:

- 1) Load
the first data in HL pair.

- 2) Move
content of HL pair to stack pointer.

- 3) Load
the second data in HL pair and move it to DE.

- 4) Make
H register as 00H and L register as 00H.

- 5) ADD
HL pair and stack pointer.

- 6) Check
for carry if carry increment it by 1 else move to next step.
- 7) Then
move E to A and perform OR operation with accumulator and register D.
- 8) The
value of operation is zero, then store the value else go to step 3.

PROGRAM:

2050 LHLD

SPHL

2052 LHLD

XCHG

 LXI
H,0000H

 LXI
B,0000H

AGAIN: DAD SP

JNC
START

INX B

START: DCX D

MOV
A,E

ORA D

JNZ
AGAIN

SHLD
2054

MOV
L,C

MOV
H,B

SHLD
2056

HLT

INPUT:

Address (Hex)	Address	Data
0802	2050	9
0803	2051	0
0804	2052	5

OUTPUT:

GNUSim8085 - 8085 Microprocessor Simulator

File Reset Assembler Debug Help

Registers

A	00	S	0
BC	00 00	Z	1
DE	00 00	AC	0
HL	00 00	P	1
PSW	00 00	C	0
PC	42 26		
SP	00 09		
Int-Reg	00		

Flag

Load me at:

```
1 ;<Program title>
2
3
4 jmp start
5
6 ;data
7
8
9 ;code
10 start: nop
11 LHLD 2050
12 SPHL
13 LHLD 2052
14 XCHG
15 LXI H,0000H
16 LXI B,0000H
17 AGAIN: DAD SP
18 JNC START
19 INX B
20 START: DCX D
21 MOV A,E
22 ORA D
23 JNZ AGAIN
24 SHLD 2054
25 MOV L,C
26 MOV H,B
27 SHLD 2056
28 hlt
```

Decimal - Hex Conversion

Decimal: 0 Hex: 0

To Hex To Dec

I/O Ports

0 - + 00

Update Port Value

Memory

0 - + 00

Update Memory

Start: 2050

Address (Hex)	Address	Data
0802	2050	9
0803	2051	0
0804	2052	5
0805	2053	0
0806	2054	45
0807	2055	0
0808	2056	0
0809	2057	0
080A	2058	0
080B	2059	0
080C	2060	0
080D	2061	0
080E	2062	0
080F	2063	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

30°C Mostly cloudy

Search

ENG IN

11:49 AM 16-10-2023

RESULT: Thus

the program was executed successfully using 8085 processor simulator.