

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:

```
LHLD 2050
SPHL
LHLD 2052
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 & OUTPUT:

Start

2050

OK

Address (Hex)	Address	Data
0802	2050	3
0803	2051	4
0804	2052	6
0805	2053	2
0806	2054	18
0807	2055	30
0808	2056	8
0809	2057	0
080A	2058	0
080B	2059	0
080C	2060	0
080D	2061	0

GNUSim8085 - 8085 Microprocessor Simulator

FileResetAssemblerDebugHelp

Registers

A00

BC00 08

DE00 00

HL00 08

PSW00 00

PC42 22

SP04 03

Int-Reg00

Flag

S0

Z1

AC0

P1

C0

Decimal - Hex Conversion

Decimal

Hex

00

00

To Hex

To Dec

I/O Ports

0

-

+

00

Update Port Value

Memory

0

-

+

00

Update Memory

Load me at

1LHLD 2050

2SPHL

3LHLD 2052

4XCHG

5LXI H, 0000H

6LXI B, 0000H

7AGAIN: DAD SP

8JNC START

9INX B

10START: DCX D

11MOV A, E

12ORA D

13JNZ AGAIN

14SHLD 2054

15MOV L, C

16MOV H, B

17SHLD 2056

18HLT

DataStackKeyPadMemoryI/O Ports

Start2050

OK

Address (Hex)	Address	Data
0802	2050	3
0803	2051	4
0804	2052	6
0805	2053	2
0806	2054	18
0807	2055	30
0808	2056	8
0809	2057	0
080A	2058	0
080B	2059	0
080C	2060	0
080D	2061	0

Line No

Assembler Message

0Program assembled successfully

Simulator: Idle

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