

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:

Data	Stack	KeyPad	Memory	I/O Ports
Start 2050				
Address (Hex)	Address	Data		
0802	2050	0		
0803	2051	5		
0804	2052	0		
0805	2053	4		

OUTPUT:

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window shows the assembly process with the following assembly code:

```

1  ;<Program title>
2
3  jmp start
4
5  ;data
6
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 INR B
20 START: DCX D
21 MOV A, E
22 ORA D
23 JNC AGAIN
24 SHLD 2054
25 MOV L, C
26 MOV H, B
27 SHLD 2056
28
29 hlt

```

The memory dump on the right shows the following data:

Address (Hex)	Address	Data
0802	2050	0
0803	2051	5
0804	2052	0
0805	2053	4
0806	2054	0
0807	2055	0
0808	2056	20
0809	2057	0
080A	2058	0
080B	2059	0
080C	2060	0
080D	2061	0

The assembly message window at the bottom shows the message: "Program assembled successfully".

RESULT: Thus

the program was executed successfully using 8085 processor simulator.