

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:

0802	2050	8
0803	2051	0
0804	2052	3
0805	2053	0

OUTPUT:

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window is titled "GNUSim8085 - 8085 Microprocessor Simulator" and contains several panels:

- Registers:** A table showing the state of 8085 registers. The PC register is at 42, SP at 00, and Int-Reg at 00. The Z flag is set to 1.
- Flag:** A section for setting flags, with S, Z, AC, P, and C flags visible.
- Decimal - Hex Conversion:** A section for converting between decimal and hexadecimal values.
- I/O Ports:** A section for setting I/O port values.
- Memory:** A section for setting memory values.
- Assembly Code:** A central area for writing and editing assembly code. The code includes comments like "<Program title>", "start:", "data", "code", and instructions like "nop", "LHLD", "SHLD", "LXI", "JNC", "INX", "MOV", "ORA", "JNZ", "SHLD", "MOV", "SHLD", and "hlt".
- Memory Window:** A table showing memory addresses and data. The start address is 2050. The data at address 2054 is 24.
- Assembler Message:** A section for displaying assembler messages, showing "Program assembled successfully".

The simulator status at the bottom indicates "Simulator: Idle". The Windows taskbar at the bottom shows the system clock as 12:59 on 16-10-2023.

RESULT: Thus

The program was executed successfully using an 8085 processor simulator.