

16-BIT SUBTRACTION

EXP NO: 6

AIM: To

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

ALGORITHM:

- 1) Start the program by loading a register pair with address of 1st number.
- 2) Copy the data to another register pair.
- 3) Load the second number to first register pair.
- 4) Subtract the two register pair contents.
- 5) Check for borrow.
- 6) Store the value of difference and borrow in memory locations.
- 7) End.

PROGRAM:

```

    LHLD
2050
    XCHG

    LHLD
2052

    MVI C,00

    MOV A, E

    SUB L

    STA 2054

    MOV A, D

    SUB H

    STA 2055

    HLT
```

INPUT:

Address (Hex)	Address	Data
0802	2050	79
0803	2051	0
0804	2052	5
0805	2053	0

OUTPUT

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window shows the assembly code being executed, with the following instructions visible:

```
1 ;<Program title>
2
3
4 jmp start
5
6 ;data
7
8
9 ;code
10 start: nop
11 LHLD 2050
12 XCHG
13 LHLD 2052
14 MVI C, 00
15 MOV A, E
16 SUB L
17 STA 2054
18 MOV A, D
19 SUB H
20 STA 2055
21 hlt
```

The left panel shows the registers and flags. The registers are A (00), BC (00 00), DE (00 4F), HL (00 05), PSW (00 00), PC (42 18), SP (FF FF), and Int-Reg (00). The flags are S (0), Z (1), AC (0), P (1), and C (0).

The right panel shows the memory dump, which matches the input data provided in the table:

Address (Hex)	Address	Data
0802	2050	79
0803	2051	0
0804	2052	5
0805	2053	0
0806	2054	74
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

The bottom panel shows the assembler message, indicating that the program was assembled successfully:

```
Line No Assembler Message
0 Program assembled successfully
```

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