

## 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) Store the value of difference and borrow in memory locations.
- 6) 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 & OUTPUT

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window shows the assembly program being executed, with the following instructions and their addresses:

Line No	Instruction	Address
1	LHLD 2050	2050
2	XCHG	2051
3	LHLD 2052	2052
4	MVI C, 00	2053
5	MOV A, E	2054
6	SUB L	2055
7	STA 2054	2056
8	MOV A, D	2057
9	SUB H	2058
10	STA 2055	2059
11	HLT	2060

The registers window shows the following values:

Register	Value
A	00
BC	00 00
DE	00 F4
HL	00 48
PSW	00 00
PC	42 14
SP	FF FF
Int-Reg	00

The memory window shows the following data:

Address (Hex)	Address	Data
0802	2050	244
0803	2051	0
0804	2052	72
0805	2053	0
0806	2054	172
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 I/O Ports window shows the following values:

Port	Value
0	00

The Memory window shows the following values:

Memory	Value
2052	48

The Assembler Message window shows the following message:

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

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