## Q.1. Write an assembly language to add two 8-bit numbers without carry.

Solution:

AIM: To write a program that adds two 8- bit numbers.

Requirements: i) 8085 Microprocessor kit / 8085 Simulator

ii) (0 –5v) DC Battery

Algorithm:

Step1: Start the microprocessor.

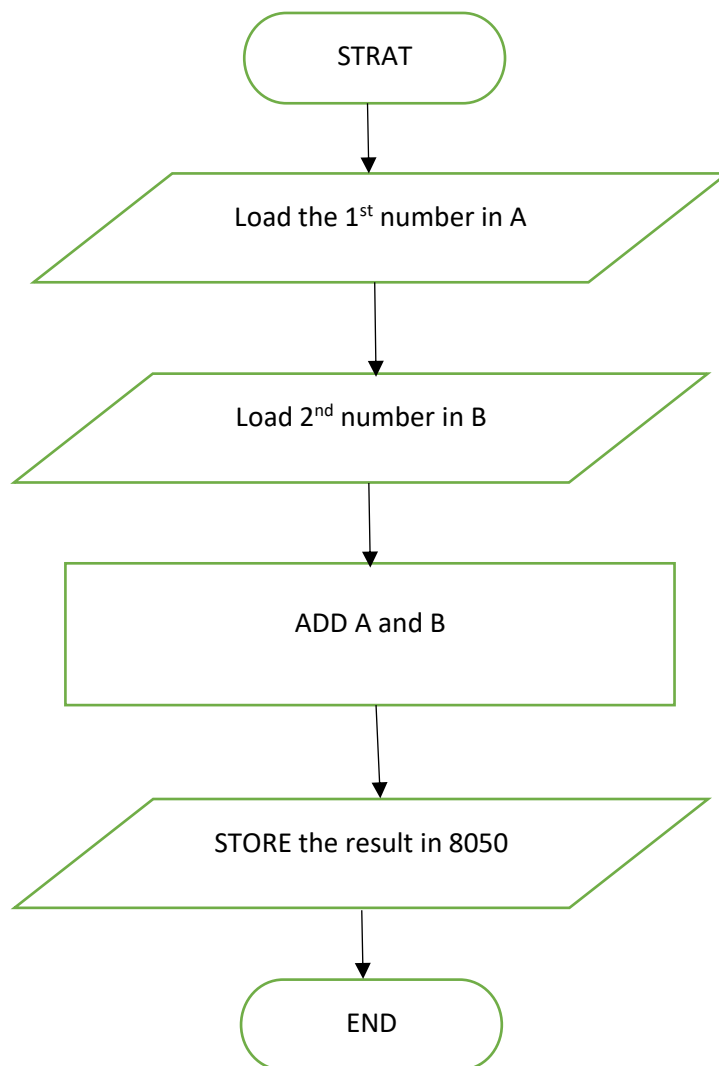Step2: Load the first 8-bit data into accumulator.

Step3: Load the second 8-bit data into register B

Step4: Add the two 8-bit data.

Step5: Store the result from accumulator to the specified memory location.

Step6: Stop the program execution.

Flow Chart:

```
        ┌─────────────┐
        │    STRAT    │
        └──────┬──────┘
               │
               ▼
     ╱────────────────────╲
    ╱  Load the 1st number  ╲
    ╲        in A           ╱
     ╲────────────────────╱
               │
               ▼
     ╱────────────────────╲
    ╱  Load 2nd number      ╲
    ╲        in B           ╱
     ╲────────────────────╱
               │
               ▼
     ┌────────────────────┐
     │     ADD A and B     │
     └──────────┬─────────┘
               │
               ▼
     ╱────────────────────╲
    ╱  STORE the result     ╲
    ╲      in 8050          ╱
     ╲────────────────────╱
               │
               ▼
        ┌─────────────┐
        │     END     │
        └─────────────┘
```

Main Program:

MVI A, 02

MVI B, 04

ADD B

STA 8050

HLT

Result after Assembling:

| Address | OP Code |
|---|---|
| 8000<br>8001<br>8002<br>8003<br>8004<br>8005<br>8006<br>8007<br>8008<br>8009 | |

Final Result: 8050 =

Conclusion: Hence the two 8-bit data was being added using 8085 microprocessor and result was verified.

**Q.2. Write an assembly language to subtract two 8-bit numbers without borrow.**

Solution:

AIM: To write a program that adds two 8- bit numbers.

Requirements: i) 8085 Microprocessor kit / 8085 Simulator

ii) (0 –5v) DC Battery

Algorithm:

Step1: Start the microprocessor.

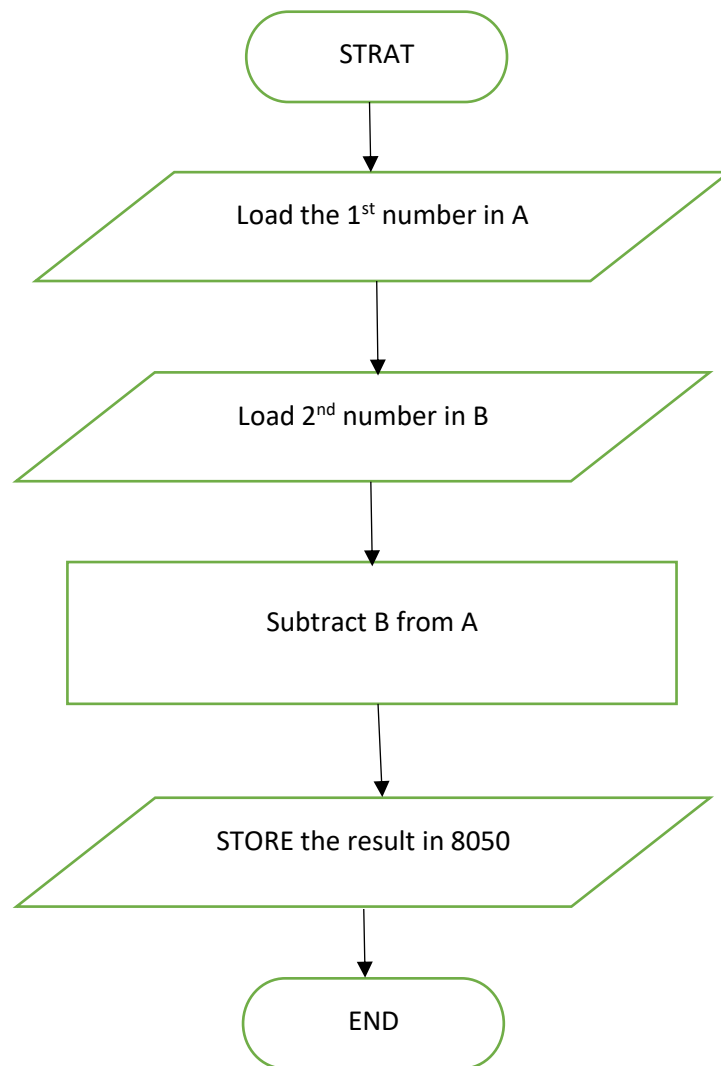Step2: Load the first 8-bit data into accumulator.

Step3: Load the second 8-bit data into register B

Step4: Subtract the two 8-bit data.

Step5: Store the result from accumulator to the specified memory location.

Step6: Stop the program execution.

Flow Chart:

```
                    ┌─────────────────┐
                    │      STRAT      │
                    └─────────────────┘
                             │
                             ▼
              ╱──────────────────────────────╲
             ╱    Load the 1ˢᵗ number in A     ╲
            ╱────────────────────────────────────╲
                             │
                             ▼
              ╱──────────────────────────────╲
             ╱     Load 2ⁿᵈ number in B        ╲
            ╱────────────────────────────────────╲
                             │
                             ▼
            ┌────────────────────────────────────┐
            │         Subtract B from A           │
            └────────────────────────────────────┘
                             │
                             ▼
              ╱──────────────────────────────╲
             ╱    STORE the result in 8050     ╲
            ╱────────────────────────────────────╲
                             │
                             ▼
                    ┌─────────────────┐
                    │       END       │
                    └─────────────────┘
```

Main Program:

MVI A, 04

MVI B, 02

SUB B

STA  8050

HLT

Result after Assembling:

| Address | OP Code |
|---------|---------|
| 8000 | |
| 8001 | |
| 8002 | |
| 8003 | |
| 8004 | |
| 8005 | |
| 8006 | |
| 8007 | |
| 8008 | |
| 8009 | |

Final Result: 8050 =

Conclusion: Hence the two 8-bit data was being subtracted using 8085 microprocessor   and result was verified.