



رمز السجل :
تاريخ الإصدار:
رقم الإصدار:
المرحلة الثانية
المعيد: الهمام علي حسين

وزارة التعليم العالي والبحث العلمي
كلية المستقبل الجامعة
قسم/هندسة تقنيات الحاسوب
التدريسي / حسن موفق غني

(مختبر)BL-403

سجل التجارب للعام الدراسي 2020 - 2021

EXPERIMENT 2

ARITHMETIC OPERATION

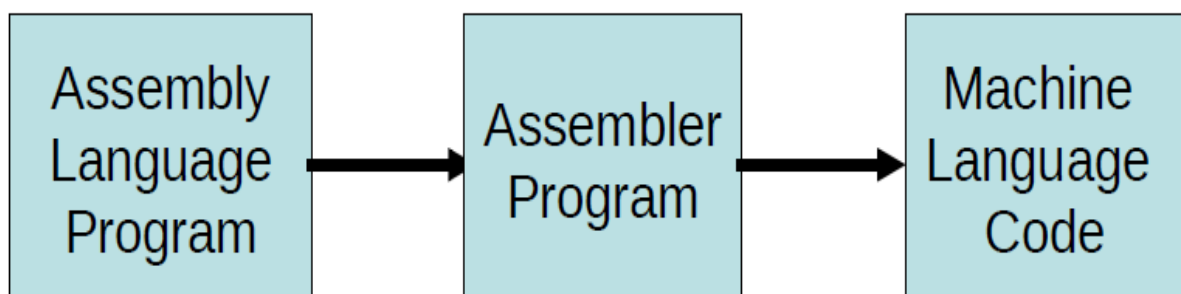
I. Introduction

Arithmetic Instructions are the instructions which perform basic arithmetic operations such as addition, subtraction and a few more. In 8085 microprocessor, the destination operand is generally the accumulator. In 8085 microprocessor, the destination operand is generally the accumulator.

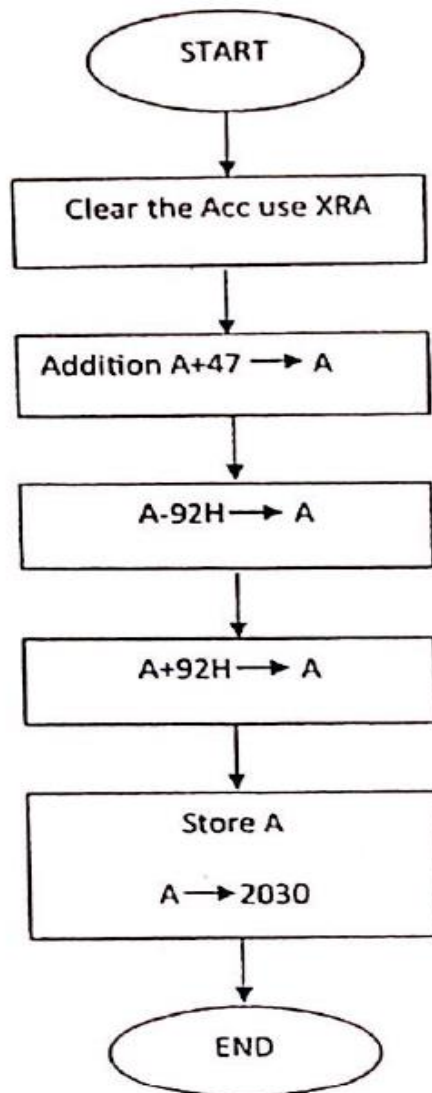
II. Experiment

Write a program to do following.

1. Clear the Acc(A).
2. Add 47H (use ADI instruction).
3. Subtract (92H).
4. ADD 64 H.
5. Store the Result in 2030H.



FLOW CHART



III. Source Code for program:

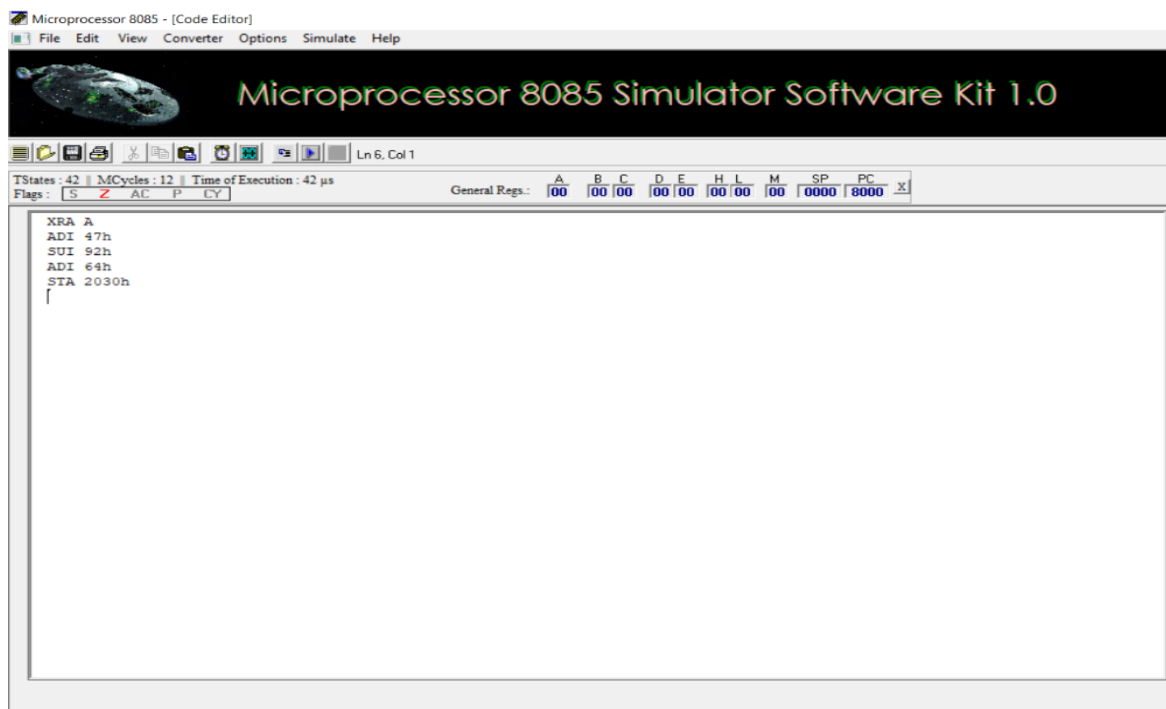
XRA A	<i>; Clear the ACC (A=00)</i>
ADI 47H	<i>; Add the Acc. Data to 47H</i>
SUI 92H	<i>; sub Acc. Data to 92H</i>
ADI 64H	<i>; add Acc. Data to 64H</i>
STA 2030H	<i>; Save the output result in Acc.</i>
RST5	<i>; Finish the program</i>

IV. Memory

INSTRUCTION CODE	REGISTER	DATA
XRA A	Accumulator	00
ADI 47H	Accumulator	47
SUI 92H	Accumulator	B5
ADI 64H	Accumulator	19
STA 2030H	2030	19
RST5	2030	19

V. Simulation program

I. Write the program code using microprocessor 8085 simulator



II. XRA A.

The screenshot shows the Microprocessor 8085 Simulator Software Kit 1.0 interface. The assembly code in the editor is:

```

XRA A
ADI 47h
SUI 92h
ADI 64h
STA 2030h
    
```

The status bar indicates: TStates: 0 | MCycles: 0 | Time of Execution: 0 μs. The General Registers are: A: 00, B: 00, C: 00, D: 00, E: 00, H: 00, L: 00, M: 00, SP: 0000, PC: 8000. The Starting Address is 8000. The User Data Grid shows address 2030 with data 00. The Hex Code Grid shows memory addresses 8000 to 8009 with data values AF, C6, 47, D6, 92, C6, 64, 32, 30, 20.

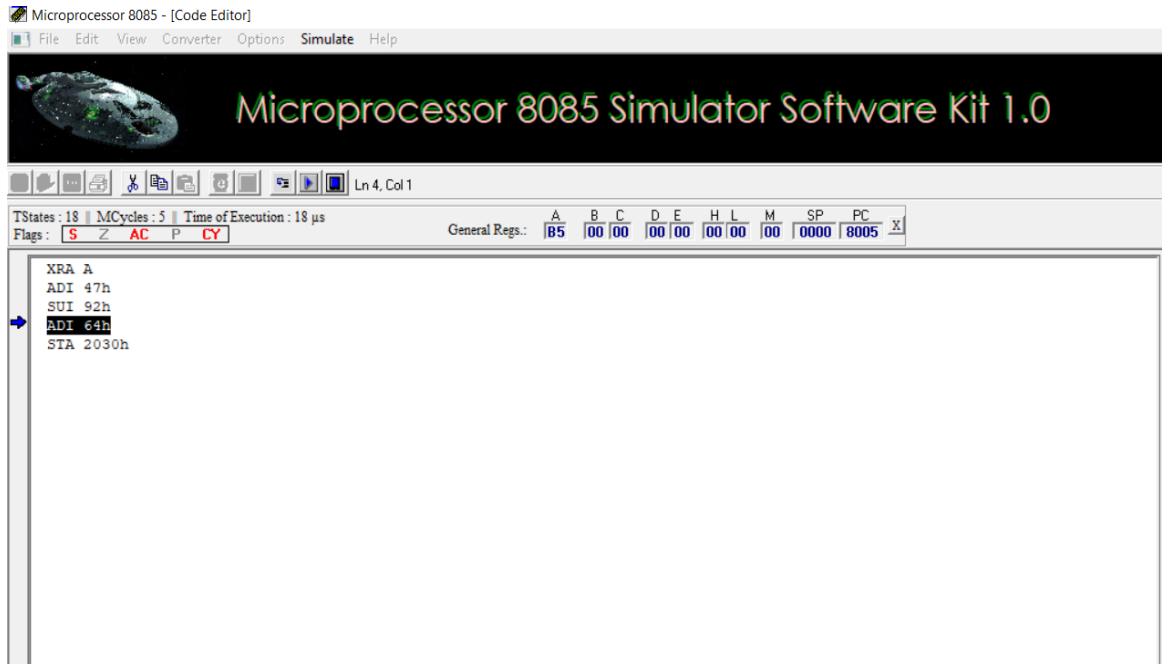
The screenshot shows the Microprocessor 8085 Simulator Software Kit 1.0 interface. The assembly code in the editor is:

```

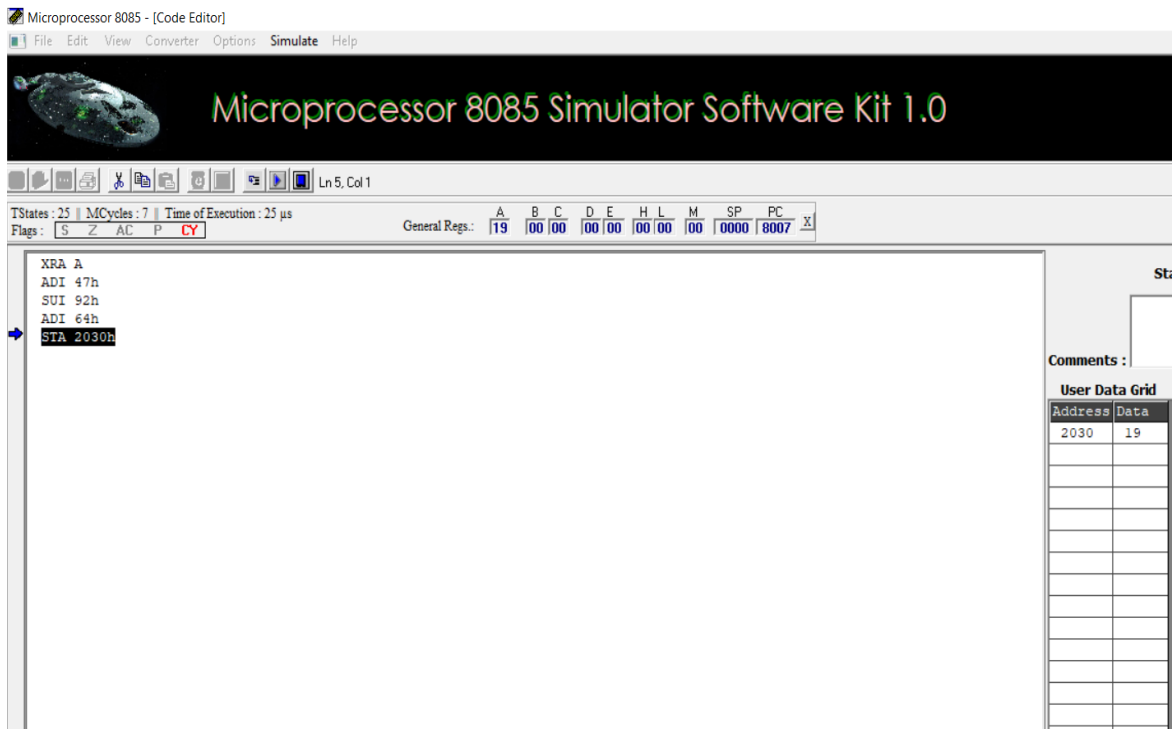
XRA A
ADI 47h
SUI 92h
ADI 64h
STA 2030h
    
```

The status bar indicates: TStates: 11 | MCycles: 3 | Time of Execution: 11 μs. The General Registers are: A: 47, B: 00, C: 00, D: 00, E: 00, H: 00, L: 00, M: 00, SP: 0000, PC: 8003. The Starting Address is 8000. The User Data Grid shows address 2030 with data 19. The Hex Code Grid shows memory addresses 8000 to 8009 with data values AF, C6, 47, D6, 92, C6, 64, 32, 30, 20.

III. ADI 47H.



IV. SUI 92H



V. STA 2030H

VI. Discussion

- 1- Specify the register contents and the flag status as the following instruction are executed:

A X S Z CY

SUB A

MOV B, A

DCR A

INC B

DCR A

ADI 88H

SUI 01H

RST5

- 2- The following instruction subtraction two unsigned number, specify the content of register A and the status of the S and CY flags, explain the significance of the sign flag if it is set.

MVI A, 35H

ADI 22H

SUI 45H

- 3- Specify the register contents and the flag status (S, Z, CY) after the instruction ORA is executed:

MVI A, B5H

MVI B, 66H

ADD B

SUI 90H

ORA A

HLT