# EXP NO: 1

# AIM:

To write an assembly language program to implement 8-bit addition using 8085 processor.

#### **ALGORITHM:**

- 1) Start the program by loading the first data into the accumulator.
- 2) Move the data to a register.
- 3) Get the second data and load it into the accumulator.
- 4) Add the two register contents.
- 5) Check for carry.
- 6) Store the value of sum and carry in the memory location.
- 7) Halt.

# PROGRAM:

LDA 8500

MOV B, A

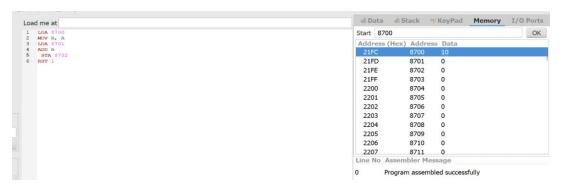
LDA 8501

ADD B

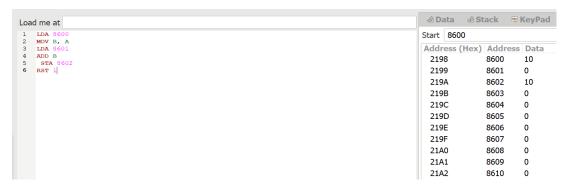
STA 8502

RST 1

# INPUT:



# **OUTPUT**:



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

# EXP NO: 2

AIM: To write an assembly language program to implement 8-bit subtraction using 8085 processor.

# **ALGORITHM:**

- 1) Start the program by loading the first data into the accumulator.
- 2) Move the data to a register.
- 3) Get the second data and load it into the accumulator.
- 4) Subtract the two register contents.
- 5) Check for borrow.
- 6) Store the difference and borrow in the memory location.
- 7) Halt.

#### PROGRAM:

LDA 8000

MOV B, A

LDA 8001

SUB B

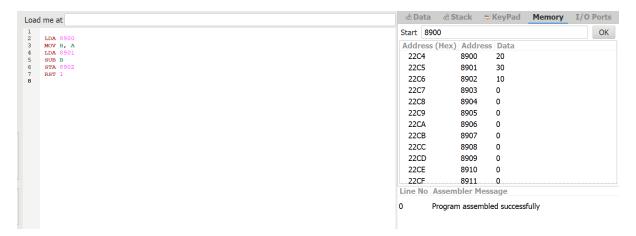
STA 8002

RST 1

#### **INPUT:**



# **OUTPUT**:



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

# EXP NO: 3

AIM: To write an assembly language program to implement 8-bit multiplication using 8085 processor.

# **ALGORITHM:**

- 1) Start the program by loading a register pair with the address of memory location.
- 2) Move the data to a register.
- 3) Get the second data and load it into the accumulator.
- 4) Add the two register contents.
- 5) Increment the value of the carry.
- 6) Check whether the repeated addition is over.
- 7) Store the value of product and the carry in the memory location.
- 8) Halt.

# Program:

LXI H,100

MOV B,M

MVI A,00

MOV C,A

INX H

CONT: ADD M

JNC SKIP

INR C

SKIP: DCR B

JNZ CONT

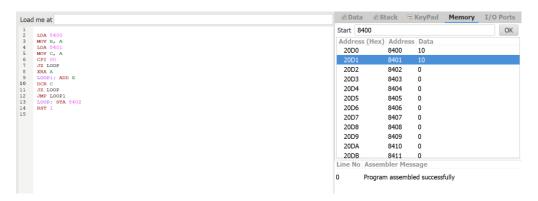
STA 102

MOV A,C

STA 103

#### HLT

#### **INPUT**:



# **OUTPUT**:

```
LXI H,100
MOV B,M
MVI A,00
MOV C,A
INX H
CONT: ADD M
JNC SKIP
INR C
SKIP: DGR B
JNZ CONT
STA 102
MOV A,C
STA 103
HLT
                                                                                                                              Start 100
                                                                                                                               Address (Hex) Address Data
                                                                                                                                0064
                                                                                                                                                   100
                                                                                                                                0065
                                                                                                                                                   101
                                                                                                                                0066
                                                                                                                                                   102
                                                                                                                                                               25
                                                                                                                                0067
                                                                                                                                                   103
                                                                                                                                                               0
                                                                                                                                0068
                                                                                                                                                   104
                                                                                                                                                               0
                                                                                                                                 0069
                                                                                                                                                   105
                                                                                                                                                   106
                                                                                                                                 006B
                                                                                                                                                   107
                                                                                                                                006C
                                                                                                                                                   108
                                                                                                                                006D
                                                                                                                                                   109
                                                                                                                                                               0
                                                                                                                                006E
                                                                                                                                                   110
                                                                                                                                                               0
                                                                                                                                006F
                                                                                                                                                   111
                                                                                                                                                               0
                                                                                                                              Line No Assembler Message
                                                                                                                                         Program assembled successfully
```

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

#### EXP NO: 4

AIM: To write an assembly language program to implement 8-bit division using 8085 processor.

#### **ALGORITHM:**

- 1) Start the program by loading a register pair with the address of memory location.
- 2) Move the data to a register.
- 3) Get the second data and load it into the accumulator.
- 4) Subtract the two register contents.
- 5) Increment the value of the carry.
- 6) Check whether the repeated subtraction is over.
- 7) Store the value of quotient and the reminder in the memory location.
- 8) Halt.

#### PROGRAM:

LDA 8501

MOV B,A

LDA 8500

MVI C,00

LOOP: CMP B

JC LOOP1

SUB B

INR C

JMP LOOP

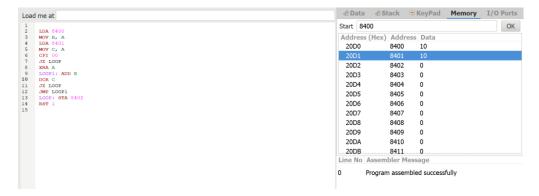
LOOP1: STA 8502

MOV A,C

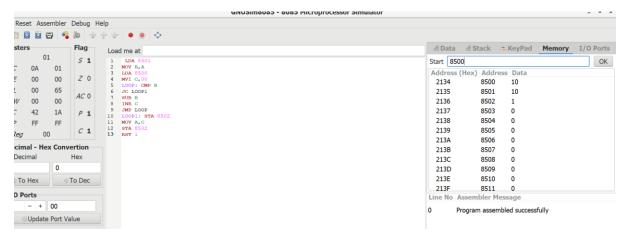
STA 8502

RST 1

### INPUT:



# **OUTPUT**:



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

#### EXP NO: 5

AIM: To write an assembly language program to implement 16-bit addition 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 the first register pair.
- 4) Add the two register pair contents.
- 5) Check for carry.
- 6) Store the value of sum and carry in memory locations.
- 7) Terminate the program.

#### PROGRAM:

LDA 3050

MOV B,A

LDA 3051

ADD B

STA 3052

LDA 3053

MOV B,A

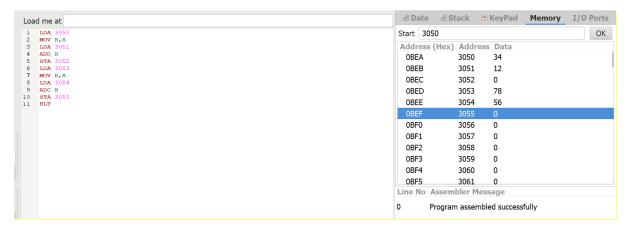
LDA 3054

ADC B

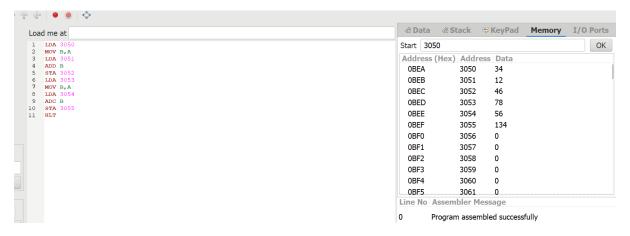
STA 3055

HLT

# INPUT:



# **OUTPUT**:



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

# 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 registre 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**:



#### **OUTPUT**:



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

# 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** 

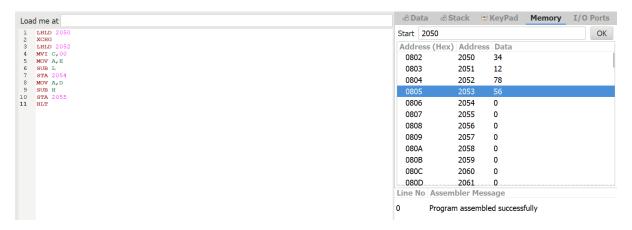
MOV L,C

MOV H,B

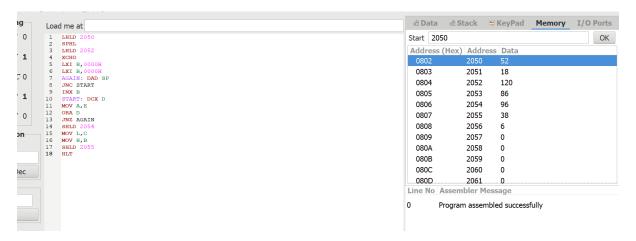
**SHLD 2055** 

#### HLT

# INPUT:



# **OUTPUT**:



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

# EXP NO: 8

AIM: To write an assembly language program to implement 16-bit divided by 8-bit using 8085 processor.

# ALGORITHM:

- 1) Read dividend (16 bit)
- 2) Read divisor
- 3) count <- 8
- 4) Left shift dividend
- 5) Subtract divisor from upper 8-bits of dividend
- 6) If CS = 1 go to 9
- 7) Restore dividend
- 8) Increment lower 8-bits of dividend
- 9) count <- count 1
- 10) If count = 0 go to 5
- 11) Store upper 8-bit dividend as remainder and lower 8-bit as quotient
- 12) Stop

# PROGRAM:

LDA 8501

MOV B,A

LDA 8500

**MVI C,00** 

LOOP:CMP B

JC LOOP1

SUB B

INR C

JMP LOOP

STA 8503

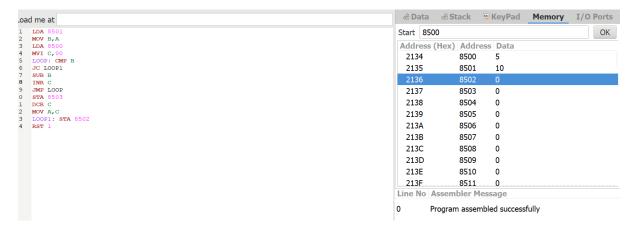
DCR C

MOV A,C

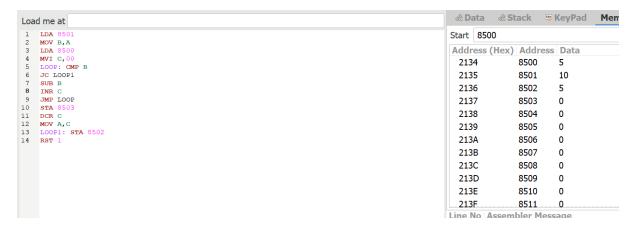
LOOP1: STA 8502

RST 1

### **INPUT**:



# **OUTPUT**:



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

# EXP NO: 9

AIM: To find the factorial of a given number using 8085 microprocessor.

# ALGORITHM:

- 1) Load the data into register B
- 2) To start multiplication set D to 01H
- 3) Jump to step 7
- 4) Decrements B to multiply previous number
- 5) Jump to step 3 till value of B>0
- 6) Take memory pointer to next location and store result
- 7) Load E with contents of B and clear accumulator
- 8) Repeatedly add contents of D to accumulator E times
- 9) Store accumulator content to D

# 10) Go to step 4

# PROGRAM:

LDA 2001

MOV B,A

MVI C,#01

MVI E,#01

LOOP: MOV D,C

MVI A,00H

LP: ADD E

DCR D

JNZ LP

MOV E,A

INR C

DCR B

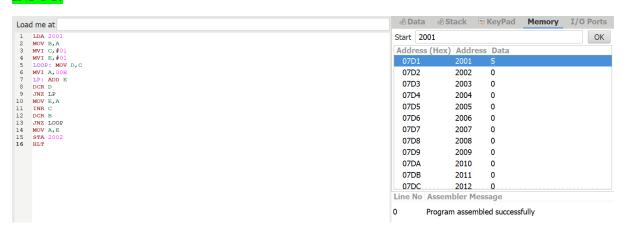
JNZ LOOP

MOV A,E

STA 2010

HLT

# **INPUT**:



#### **OUTPUT**:



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

#### EXP NO: 10

AIM: To find the largest number from an array using 8085 processor.

#### **ALGORITHM:**

- 1) Load the address of the first element of the array in HL pair.
- 2) Move the count to B register.
- 3) Increment the pointer.
- 4) Get the first data in A register.
- 5) Decrement the count.
- 6) Increment the pointer.
- 7) Compare the content of memory addressed by HL pair with that of A register.
- 8) If carry=0, go to step 10 or if carry=1 go to step 9
- 9) Move the content of memory addressed by HL to A register.
- 10) Decrement the count.

#### PROGRAM:

LXI H,2050

MOV C,M

DCR C

INX H

MOV A,M

LOOP1: INX H

CMP M

JNC LOOP

MOV A,M

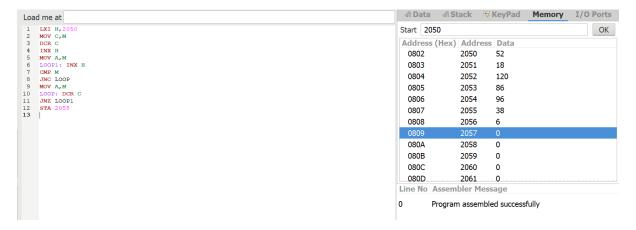
LOOP: DCR C

JNZ LOOP1

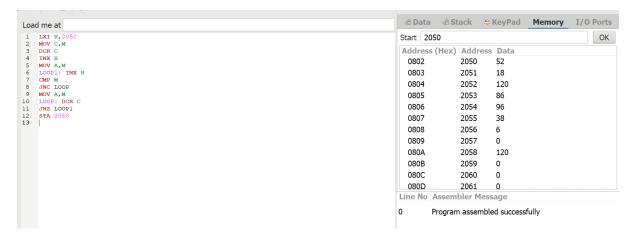
STA 2058

HLT

#### INPUT:



# **OUTPUT**:



RESULT: Thus the program was executed successfully using 8086 processor simulator.