EXP NO: 1

AIM:

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

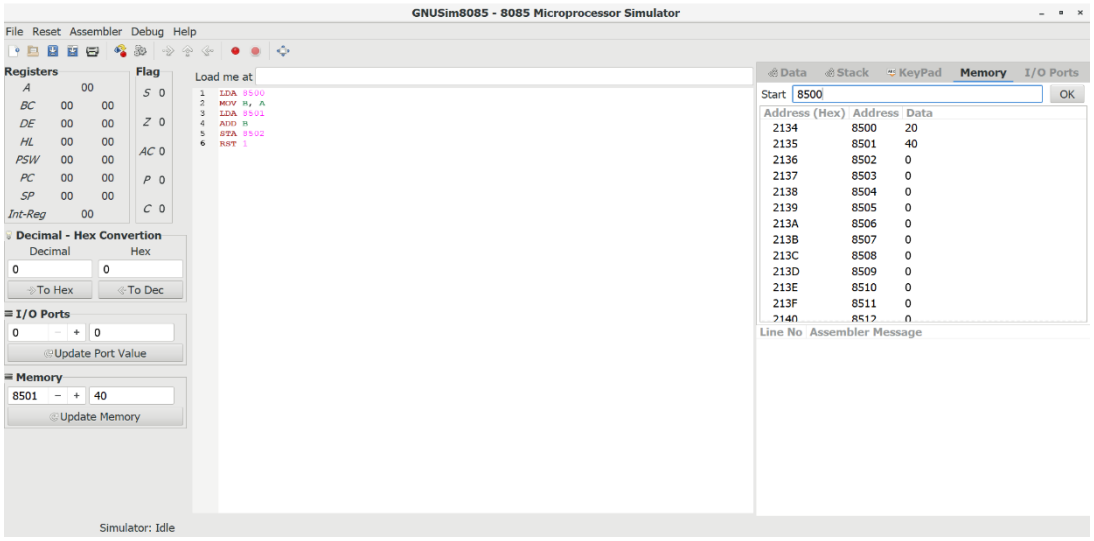
ALGORITHM:

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.

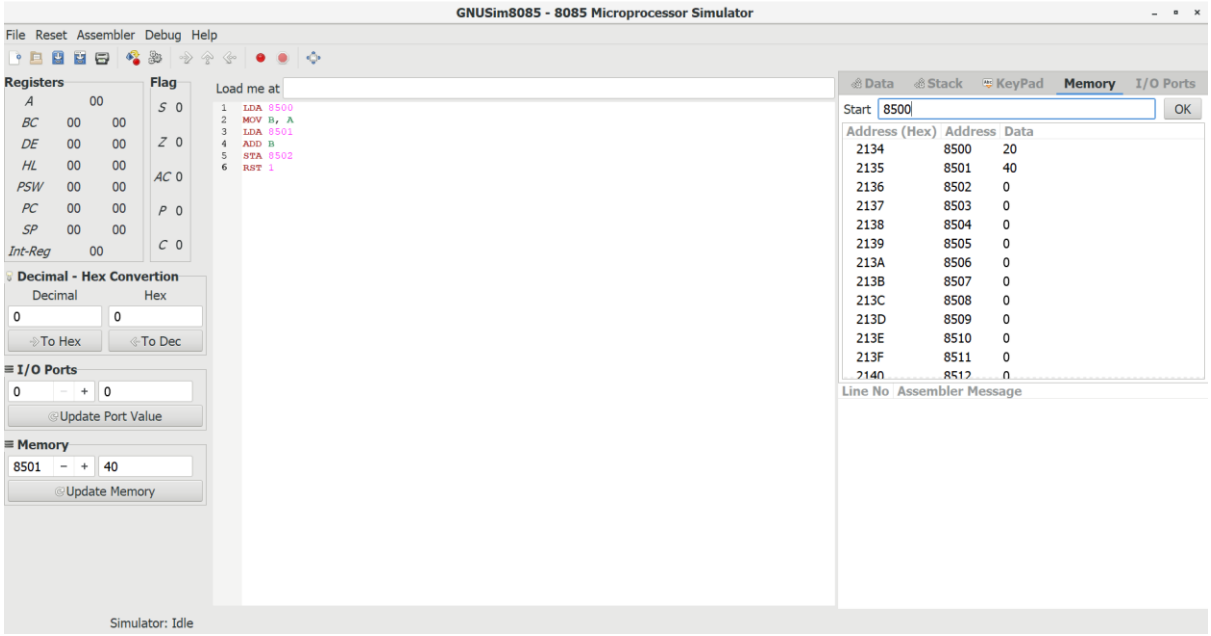
PROGRAM:

```
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.

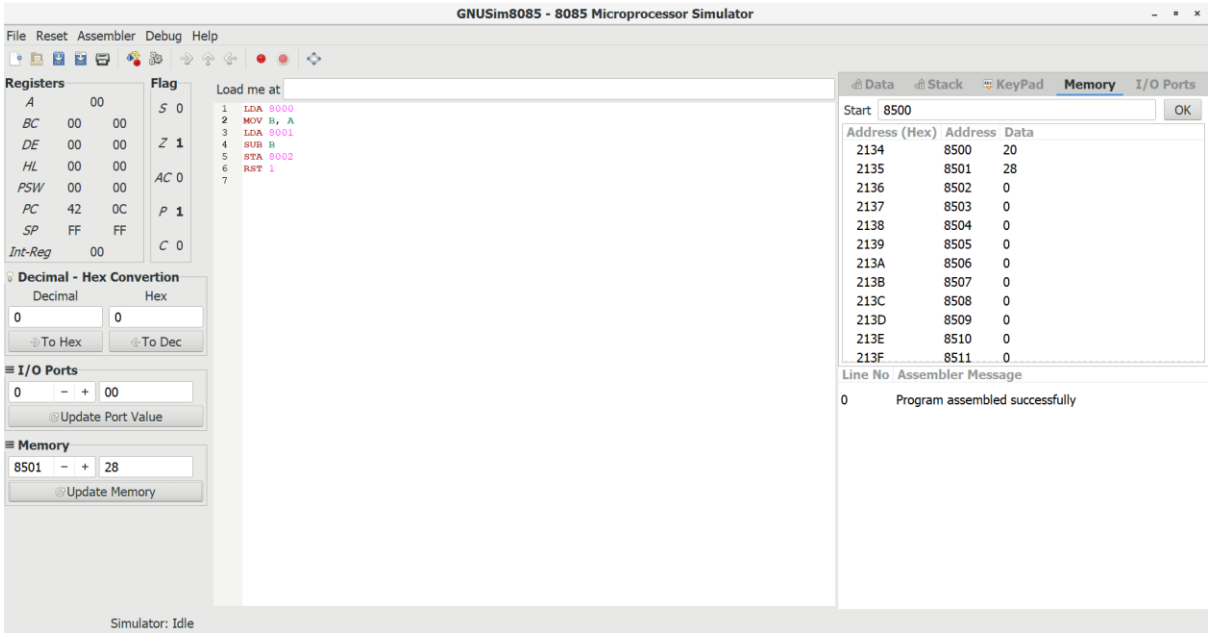
ALGORITHM:

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.

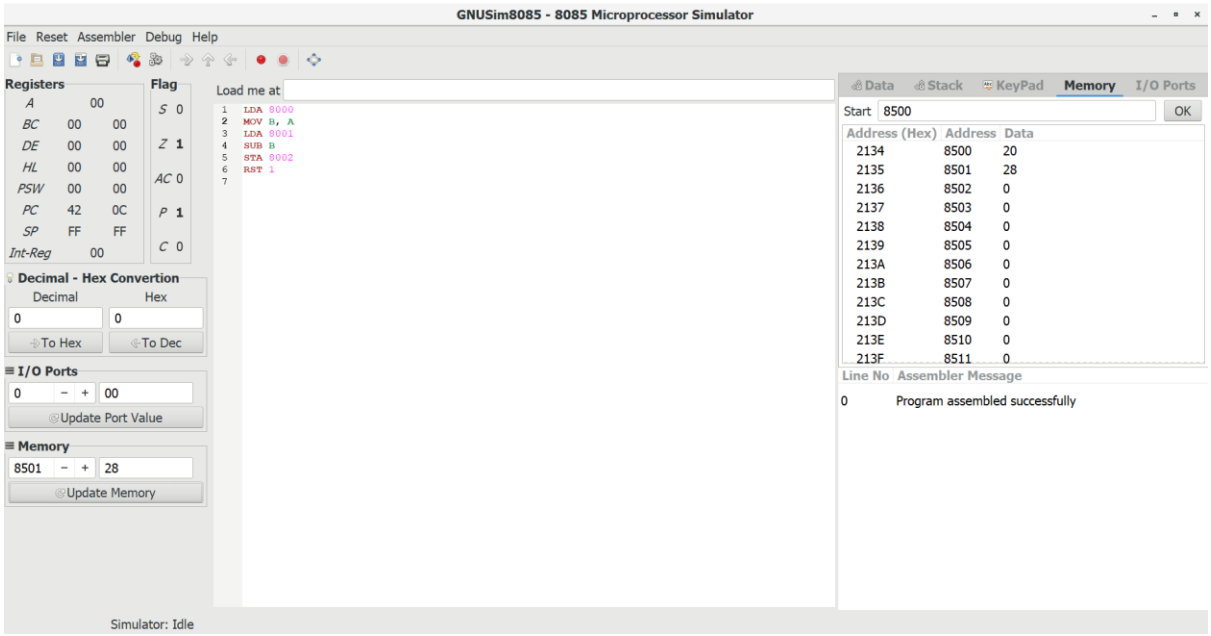
PROGRAM:

```
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:

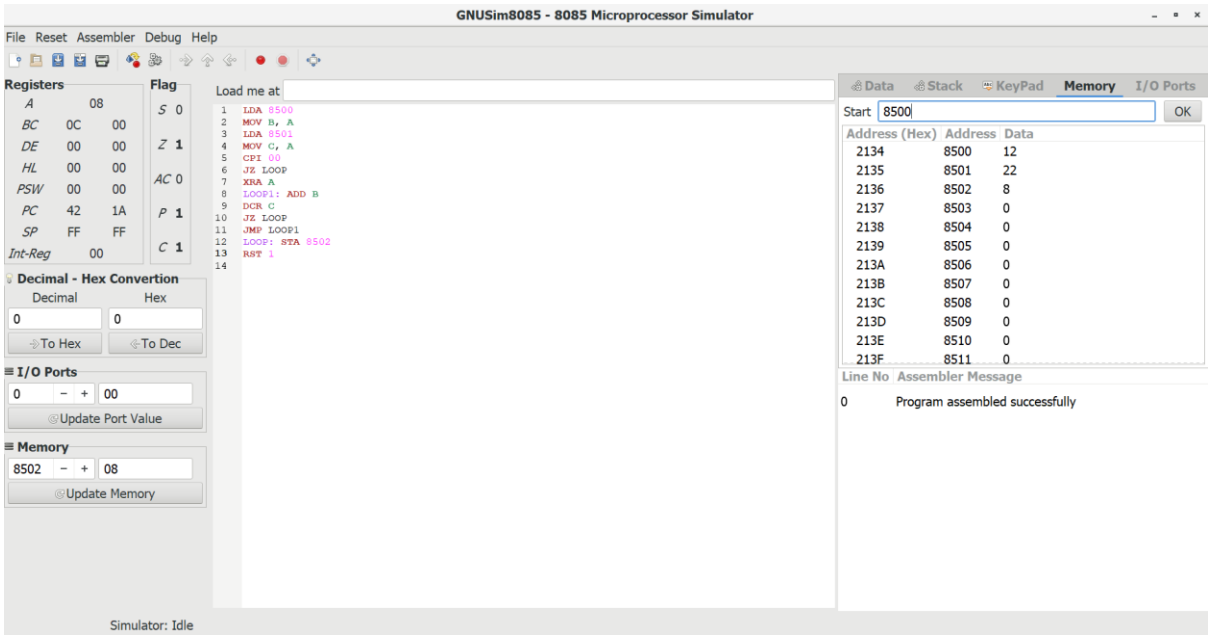
1) Start the program by loading a register pair with the address of memory location.
2) Move the data to a register.
3) Get the second data and load it into the accumulator.
4) Add the two register contents.

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.

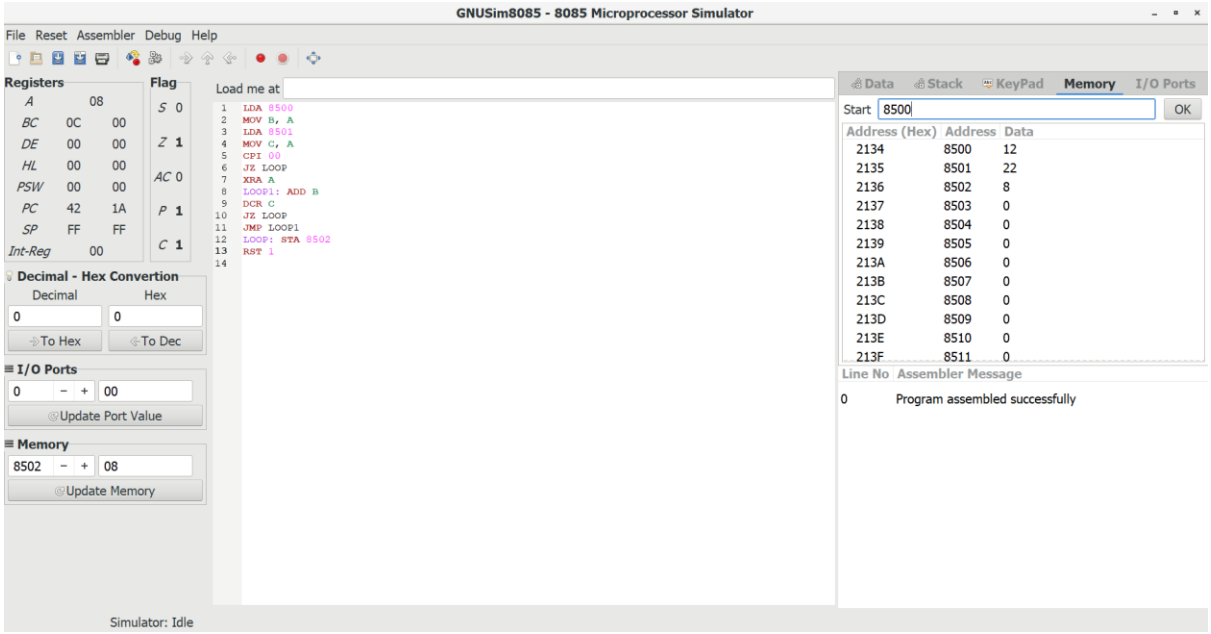
PROGRAM:

```
LDA 8500
MOV B, A
LDA 8501
MOV C, A
CPI 00
JZ LOOP
XRA A
LOOP1: ADD B
DCR C
JZ LOOP
JMP LOOP1
LOOP: STA 8502
RST 1
```

INPUT:



OUTPUT:



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.

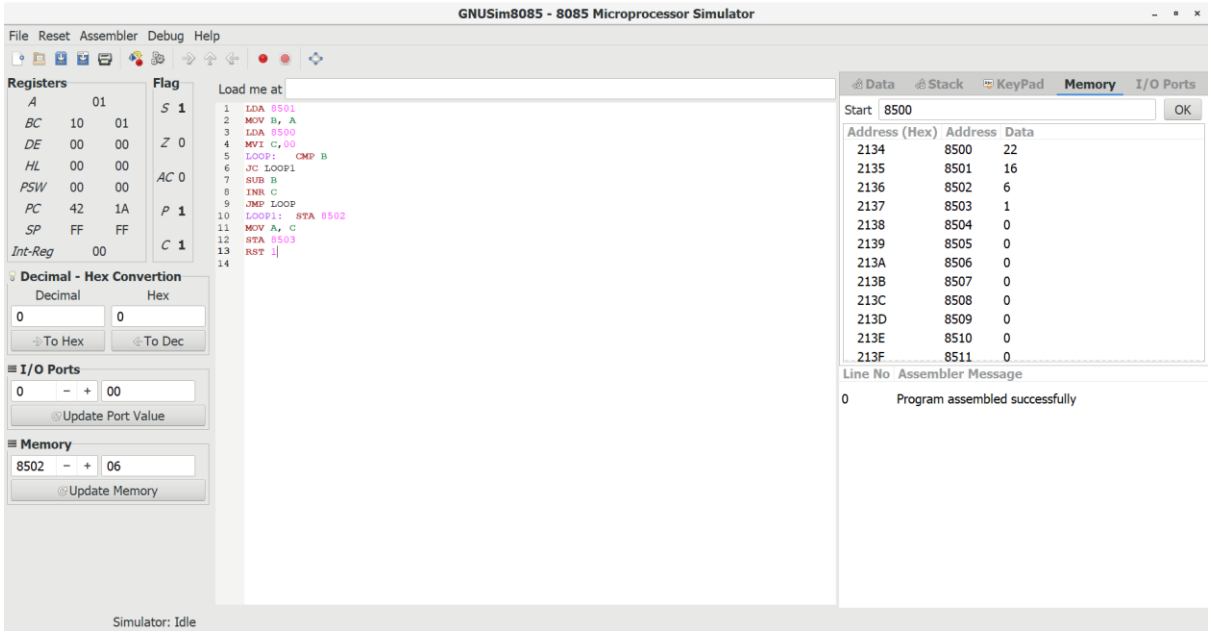
ALGORITHM:

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.

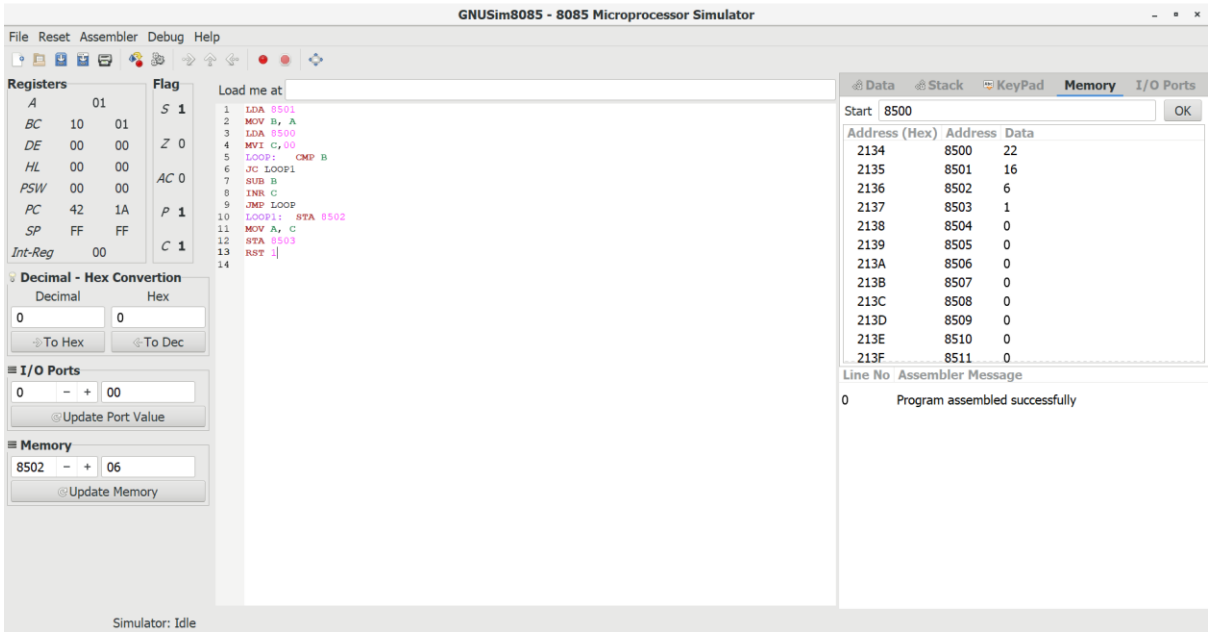
PROGRAM:

```
        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 8503
        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:

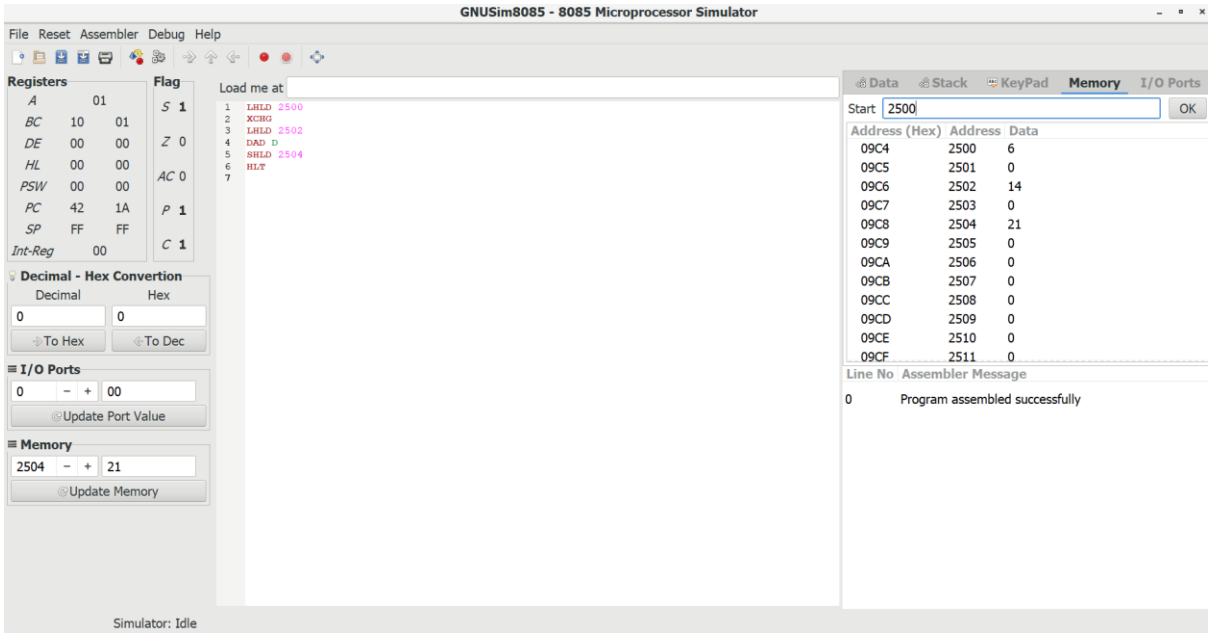
1) Start the program by loading a register pair with address of 1st number.
2) Copy the data to another register pair.
3) Load the second number to the first register pair.
4) Add the two register pair contents.
5) Store the result in memory locations.

6) Terminate the program.

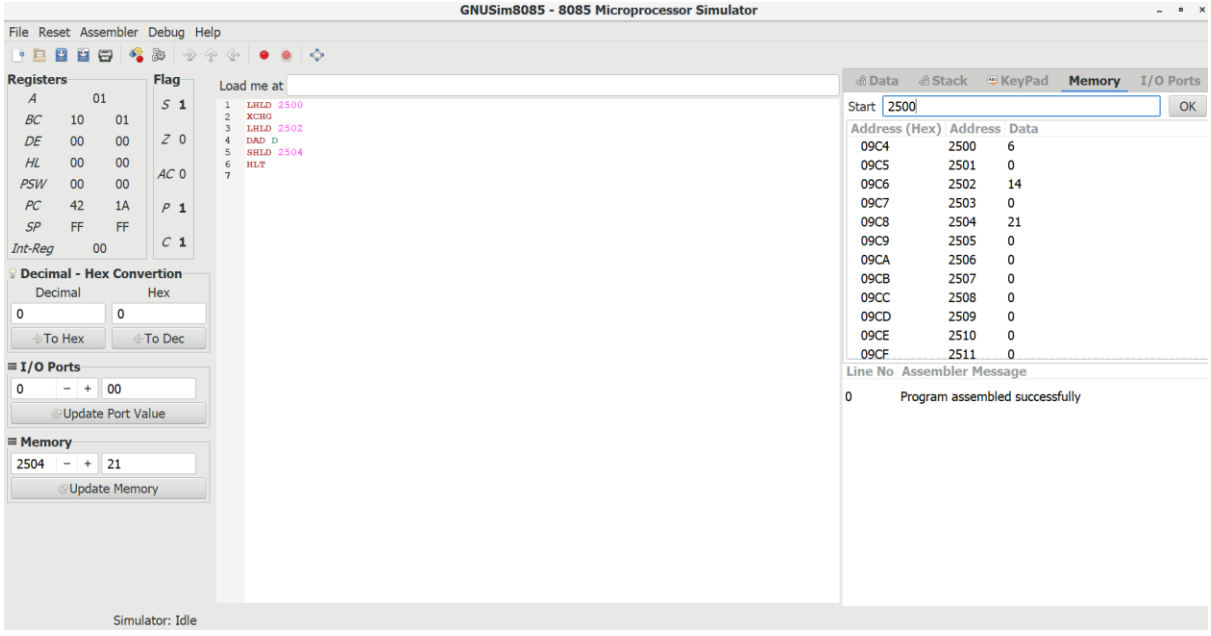
PROGRAM:

```
LHLD 2500
XCHG
LHLD 2502
DAD D
SHLD 2504
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.

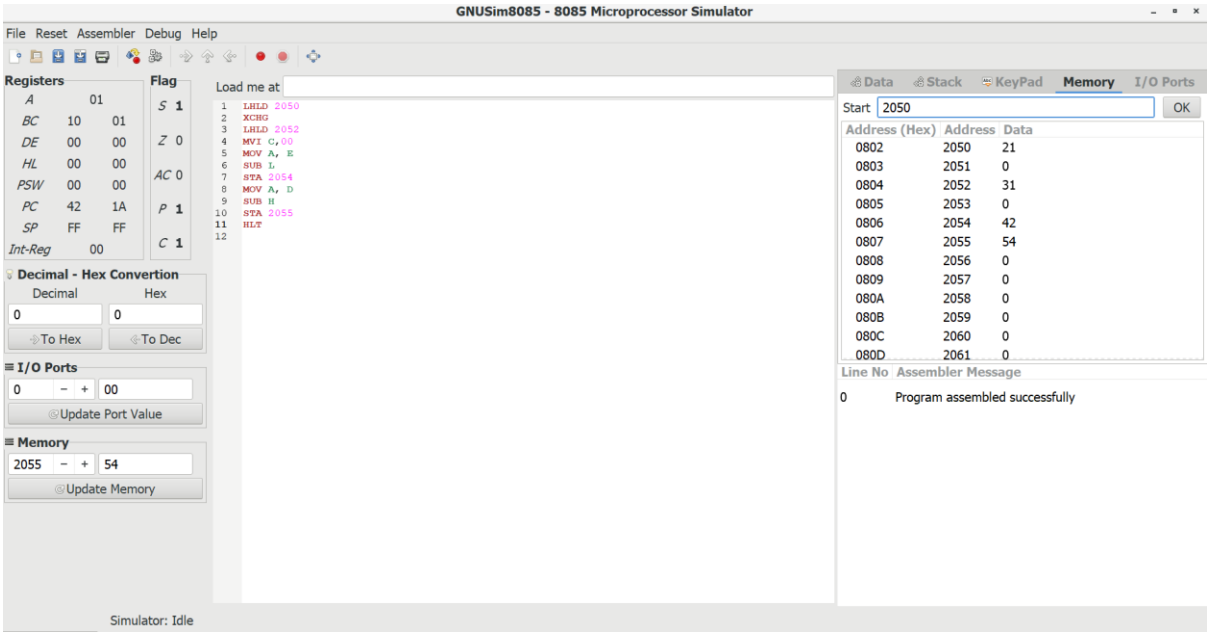
ALGORITHM:

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 register pair.
4) Subtract the two register pair contents.
5) Store the value of difference and borrow in memory locations.
6) End.

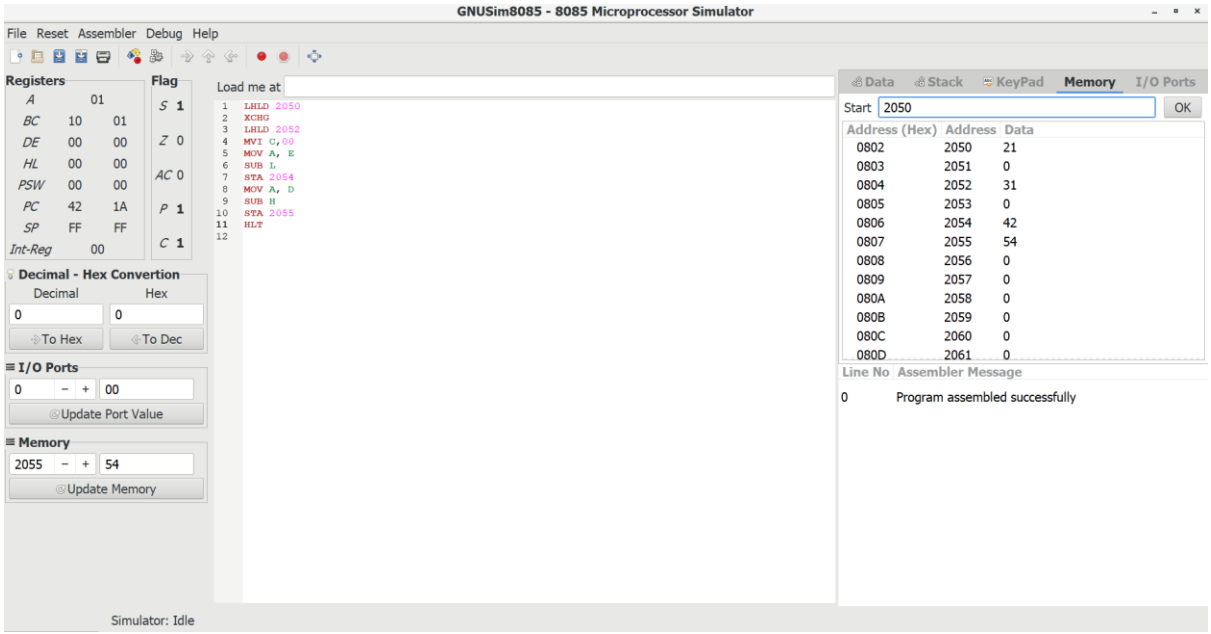
PROGRAM:

```
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:



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:

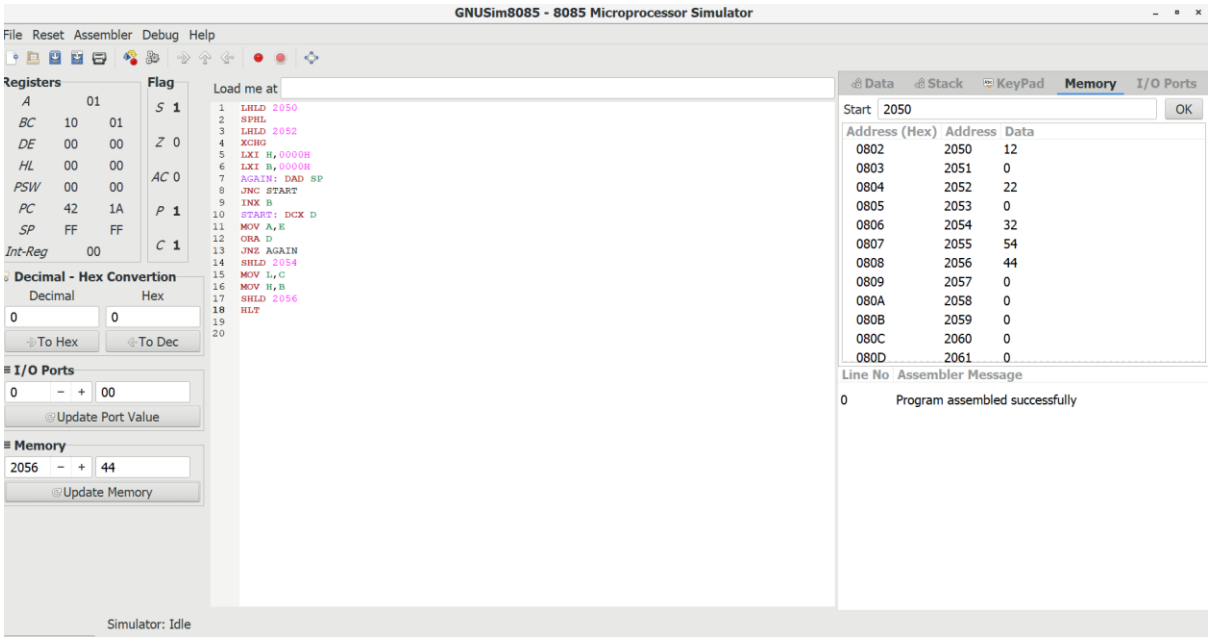
1) Load the first data in HL pair.
2) Move content of HL pair to stack pointer.
3) Load the second data in HL pair and move it to DE.
4) Make H register as 00H and L register as 00H.
5) ADD HL pair and stack pointer.
6) Check for carry if carry increment it by 1 else move to next step.
7) Then move E 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:

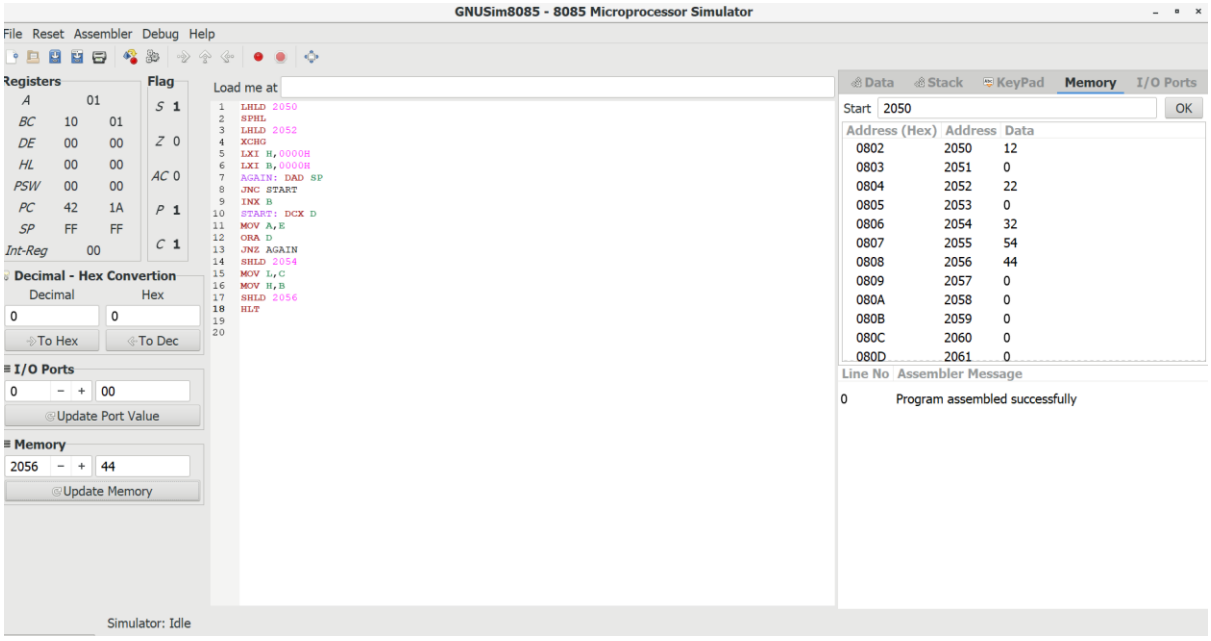
```
        LHLD 2050
        SPHL
        LHLD 2052
        XCHG
        LXI H,0000H
        LXI B,0000H
AGAIN: DAD SP
        JNC START
        INX B
        START: DCX D
        MOV A,E
```

ORA D
JNZ AGAIN
SHLD 2054
MOV L,C
MOV H,B
SHLD 2056
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.

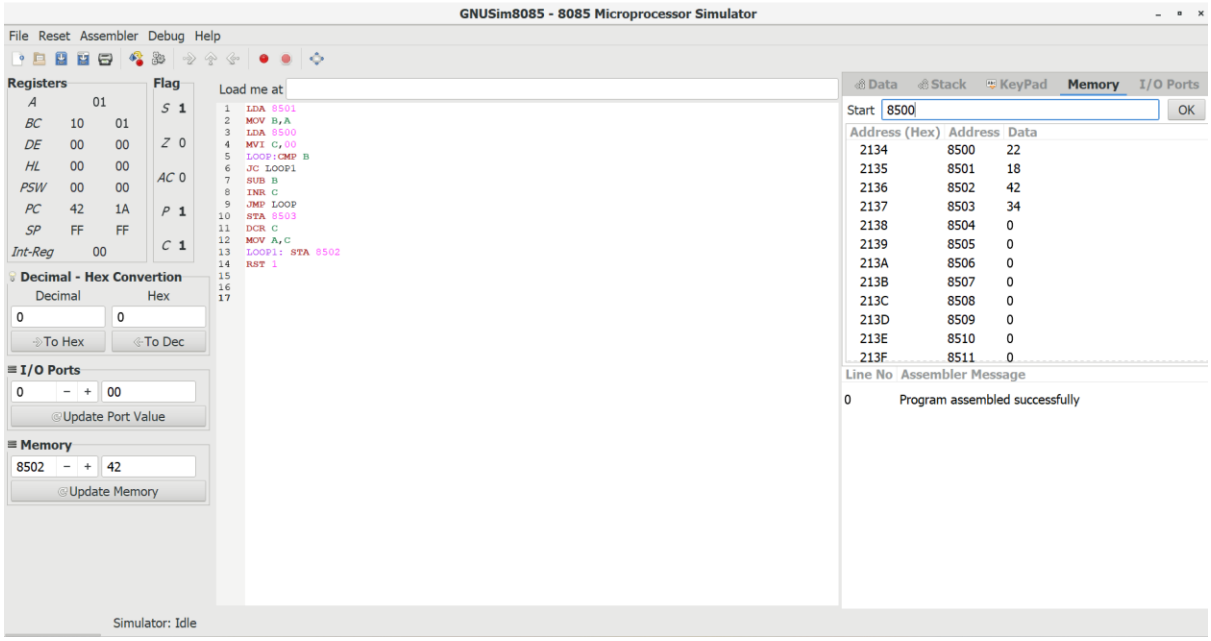
ALGORITHM:

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

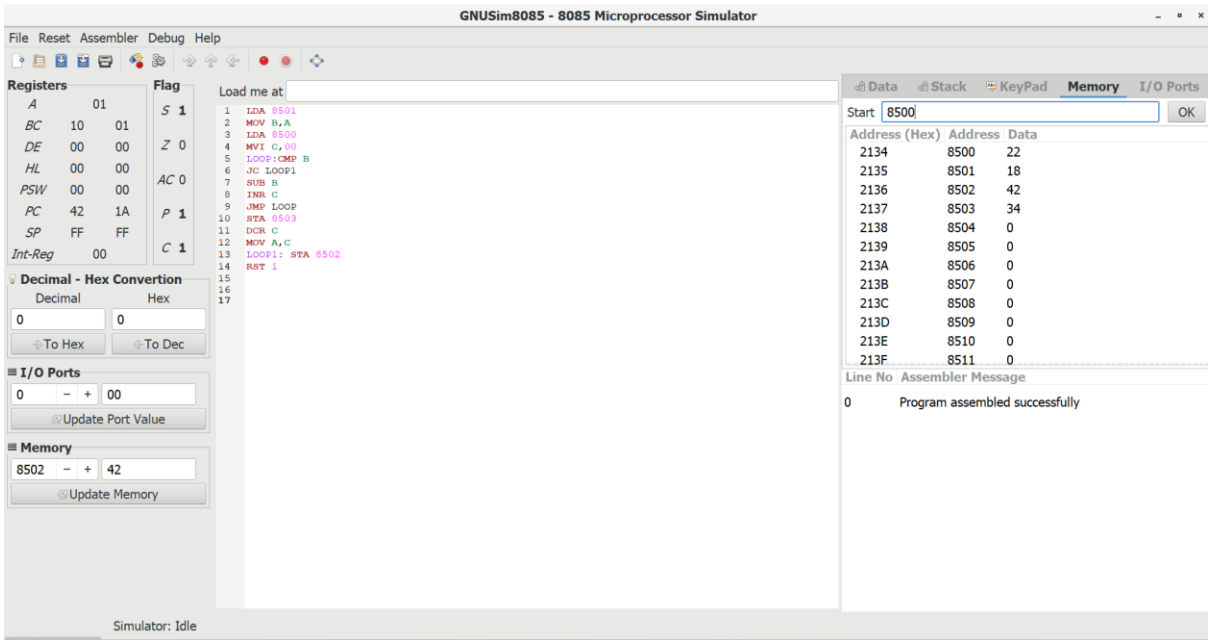
PROGRAM:

```
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:

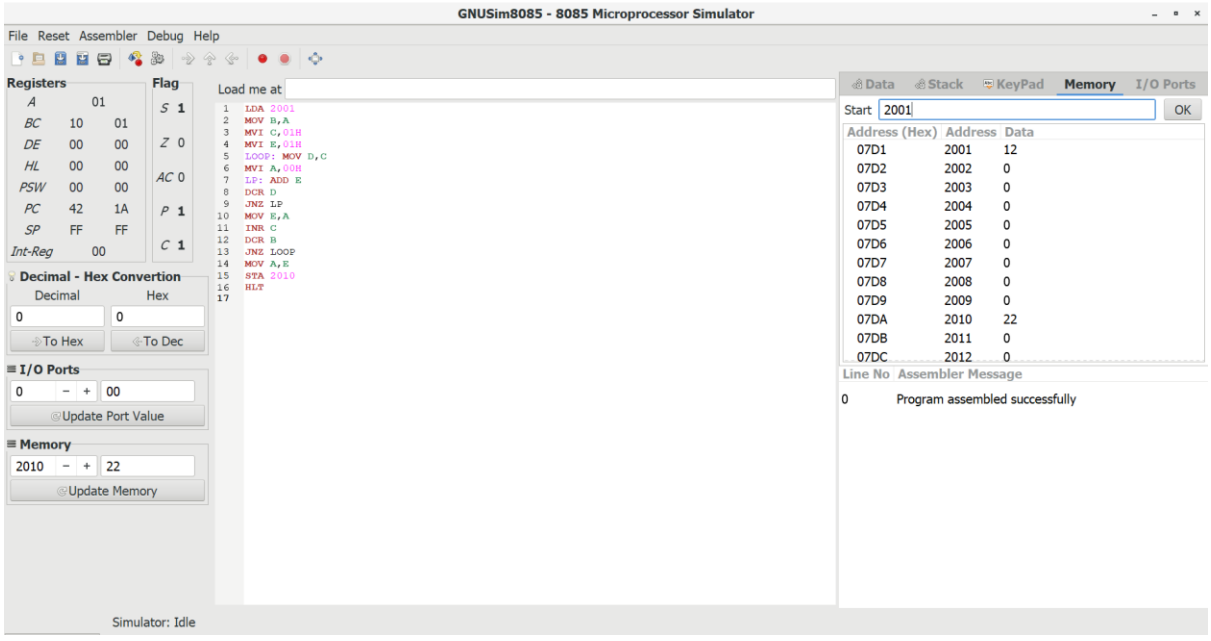
1) Load the data into register B
2) To start multiplication set D to 01H
3) Jump to step 7
4) Decrements B to multiply previous number
5) Jump to step 3 till value of B>0

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

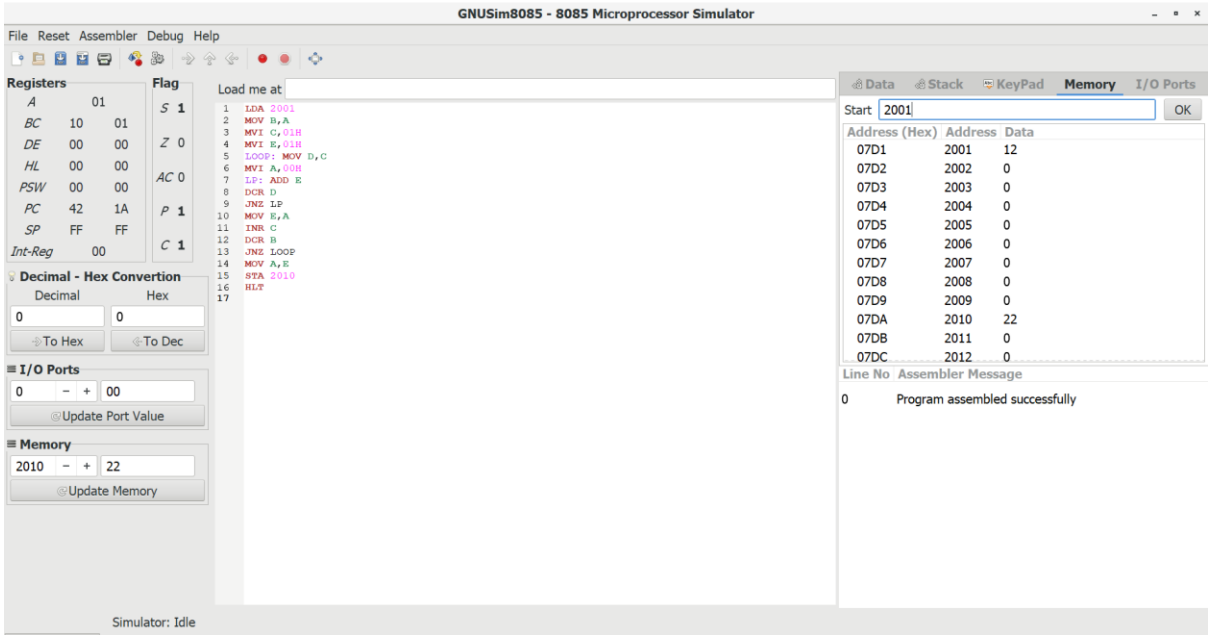
PROGRAM:

```
LDA 2001
MOV B,A
MVI C,01H
MVI E,01H
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.

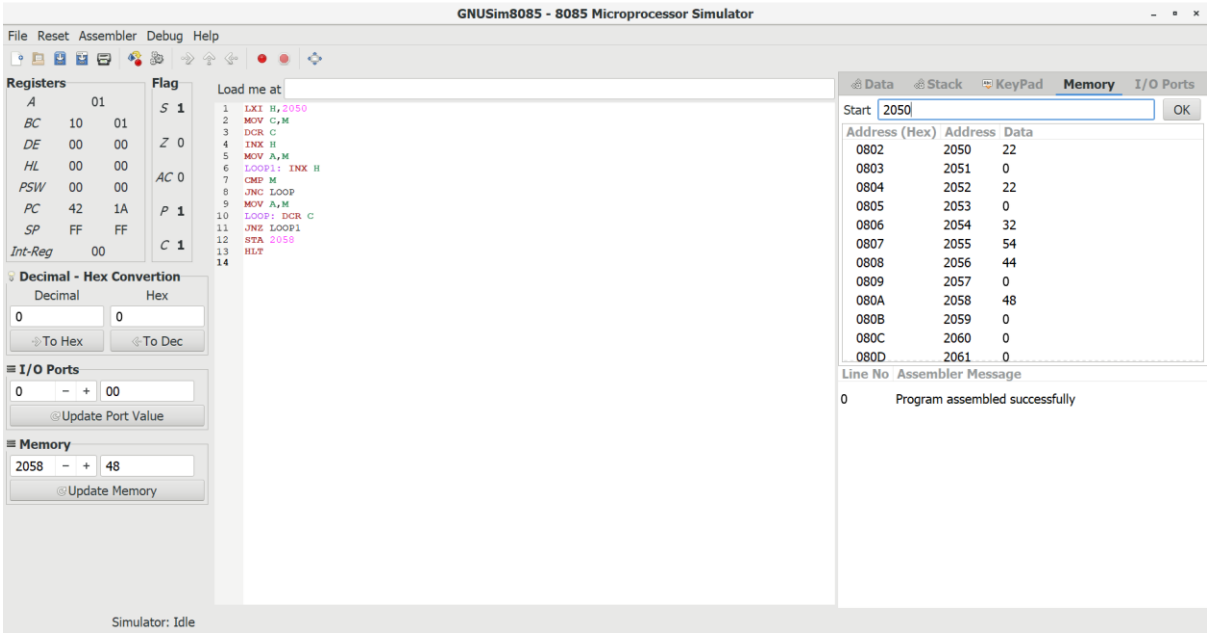
ALGORITHM:

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.

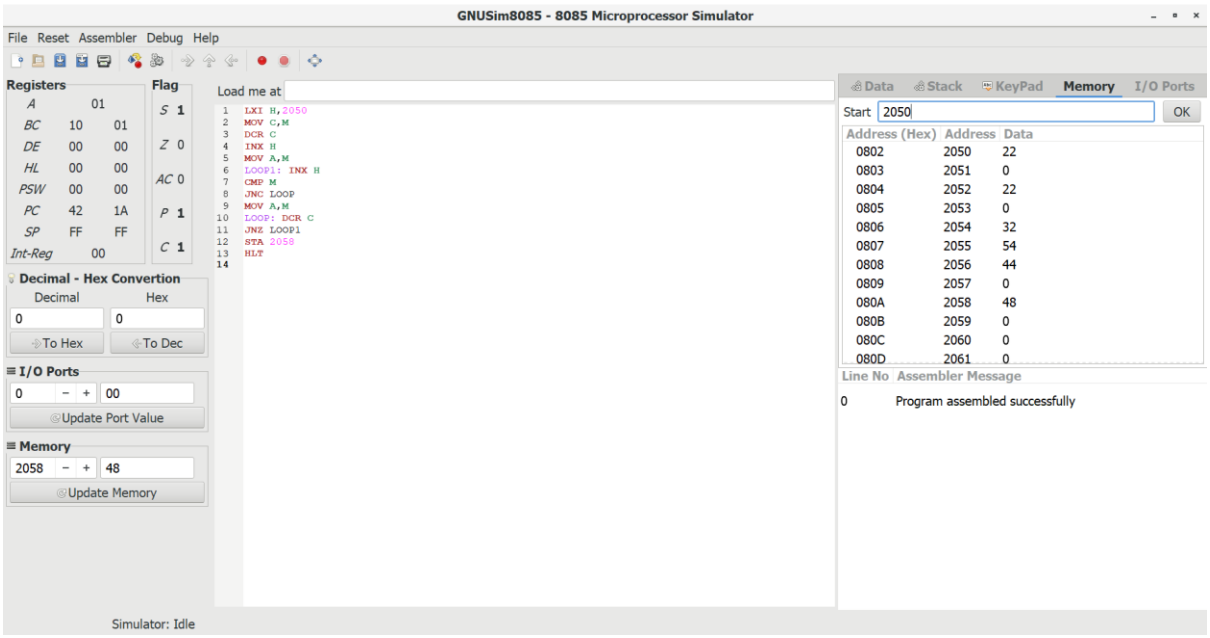
PROGRAM:

```
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.

EXP NO: 11

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

ALGORITHM:

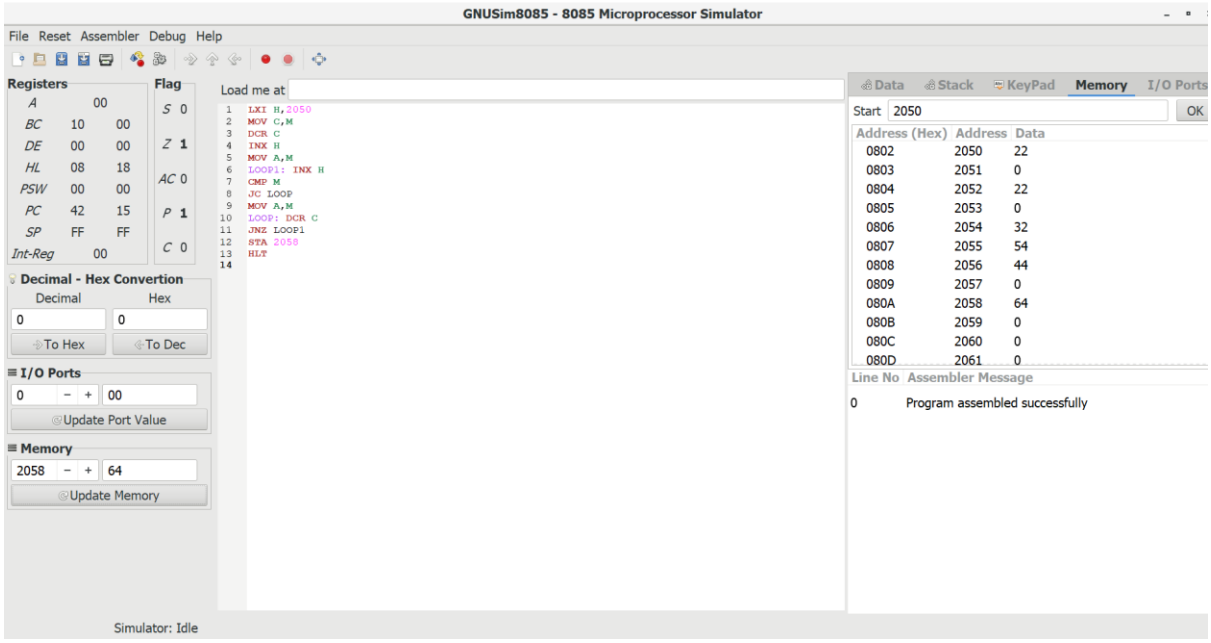
1) Load the address of the first element of the array in HL pair.
2) Move the count to B register.
3) Increment the pointer.
4) Get the first data in A register.
5) Decrement the count.
6) Increment the pointer.
7) Compare the content of memory addressed by HL pair with that of A register.

8) If carry=1, go to step 10 or if carry=0 go to step 9
9) Move the content of memory addressed by HL to A register.
10) Decrement the count.

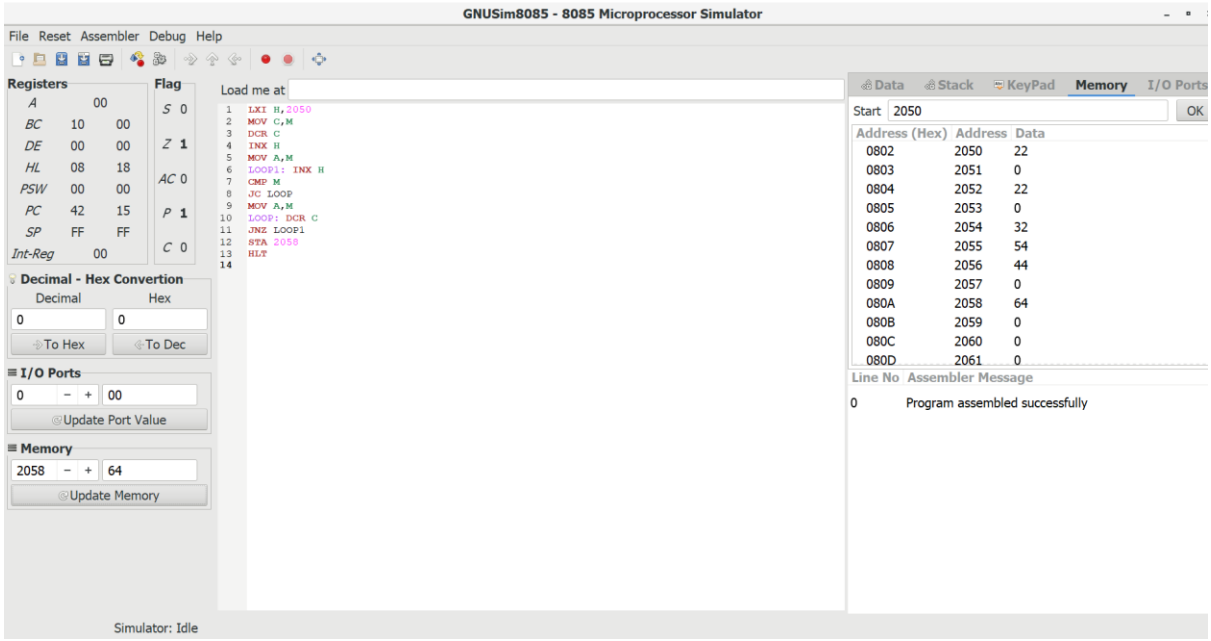
PROGRAM:

```
LXI H,2050
MOV C,M
DCR C
INX H
MOV A,M
LOOP1: INX H
CMP M
JC LOOP
MOV A,M
LOOP: DCR C
JNZ LOOP1
STA 2058
HLT
```

INPUT:



OUTPUT:



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

EXP NO: 12

AIM: To compute ascending order of an array using 8085 processor.

ALGORITHM:

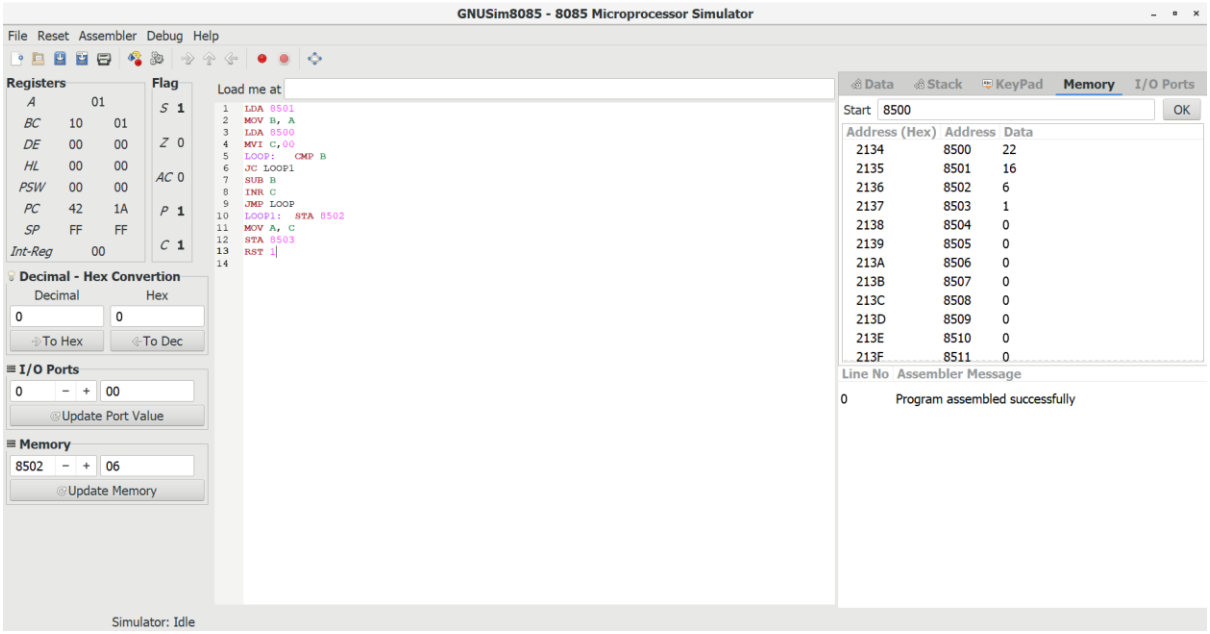
1) Initialize HL pair as memory pointer.
2) Get the count at memory and load it into C register
3) Copy it in D register (for bubble sort (N-1)) times required.
4) Get the first value in A register.
5) Compare it with the value at next location.
6) If they are out of order, exchange the contents of A register and memory.
7) Decrement D register content by 1
8) Repeat step 5 and 7 till the value in D register become zero.
9) Decrement the C register content by 1.
10) Repeat steps 3 to 9 till the value in C register becomes zero.

PROGRAM:

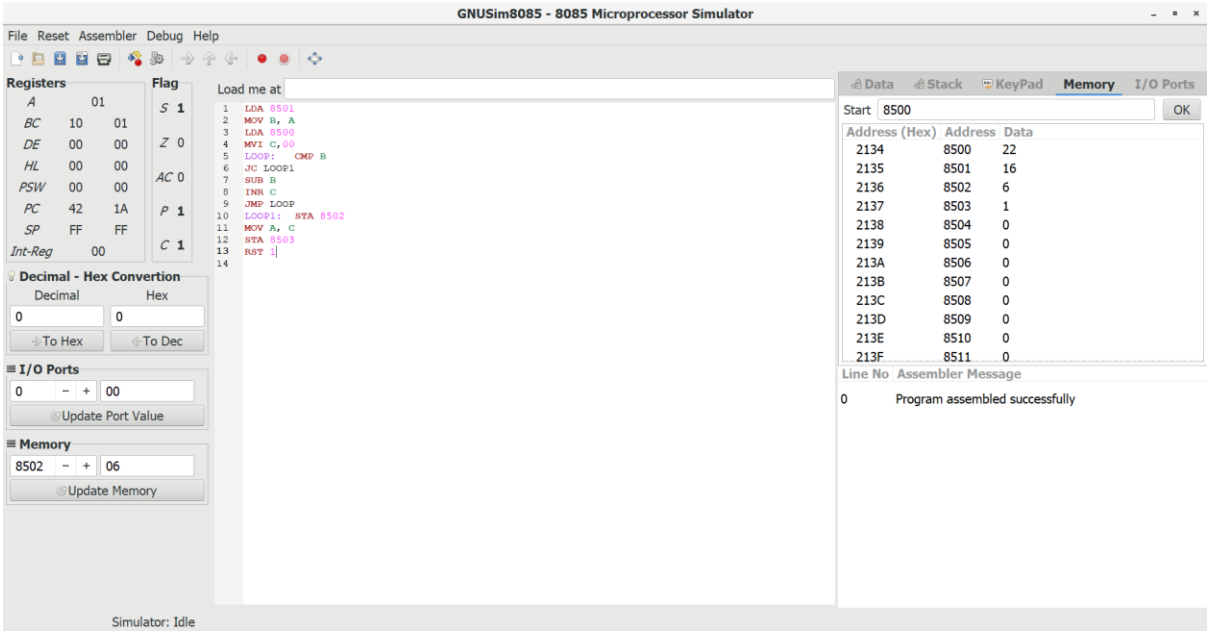
```
LOOP: LXI H,3500
MVI D,00
MVI C,05
LOOP1: MOV A,M
INX H
CMP M
JC LOOP2
MOV B,M
MOV M,A
DCX H
MOV M,B
INX H
MVI D,01
LOOP2: DCR C
```

JNZ LOOP1
MOV A,D
RRC
JC LOOP
HLT

INPUT :



OUTPUT:



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

EXP NO: 13

AIM: To compute descending order of an array using 8085 processor.

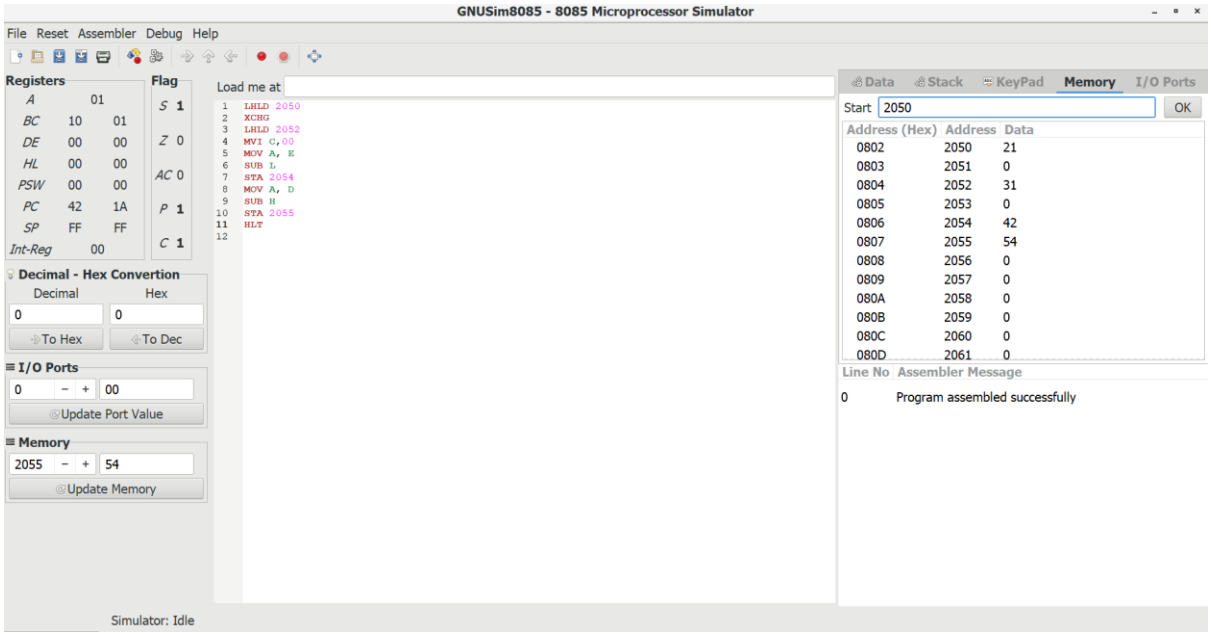
ALGORITHM:

1) Initialize HL pair as memory pointer.
2) Get the count at memory and load it into C register
3) Copy it in D register (for bubble sort (N-1)) times required.
4) Get the first value in A register.
5) Compare it with the value at next location.
6) If they are out of order, exchange the contents of A register and memory.
7) Decrement D register content by 1.
8) Repeat step 5 and 7 till the value in D register become zero.
9) Decrement the C register content by 1.
10) Repeat steps 3 to 9 till the value in C register becomes zero.

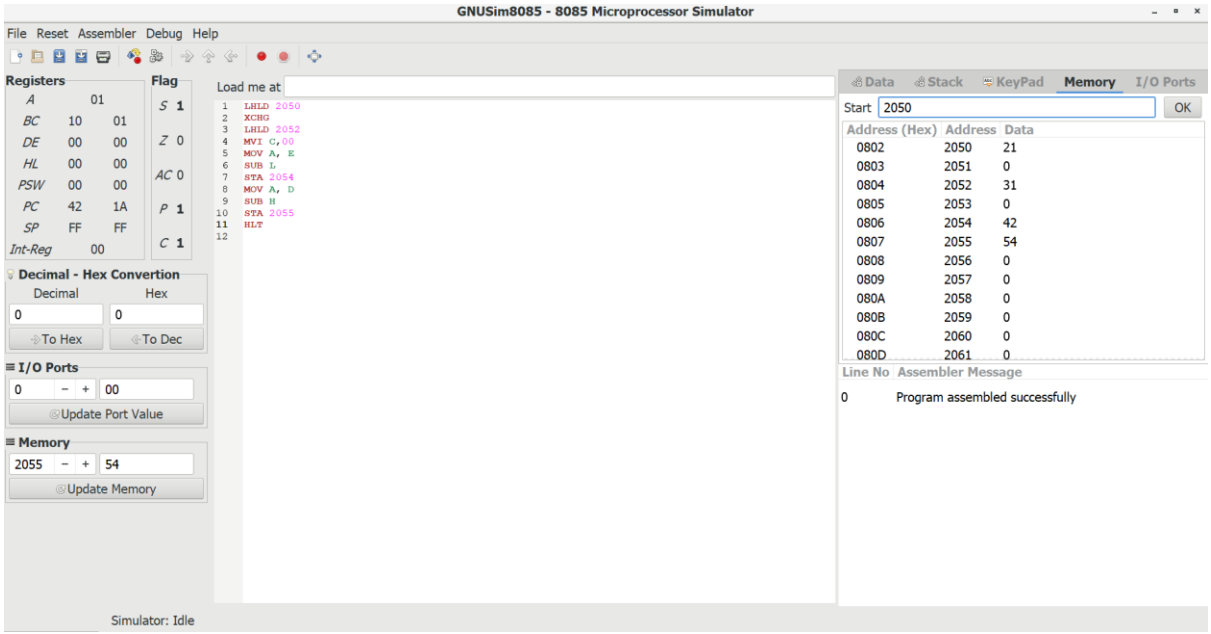
PROGRAM:

```
LOOP: LXI H,3500
MVI D,00
MVI C,05
LOOP1: MOV A,M
INX H
CMP M
JNC LOOP2
MOV B,M
MOV M,A
DCX H
MOV M,B
INX H
MVI D,01
LOOP2: DCR C
JNZ LOOP1
MOV A,D
RRC
JC LOOP
HLT
```

INPUT:



OUTPUT:



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

EXP NO: 14

AIM: To compute addition of N numbers using 8085 processor.

ALGORITHM:

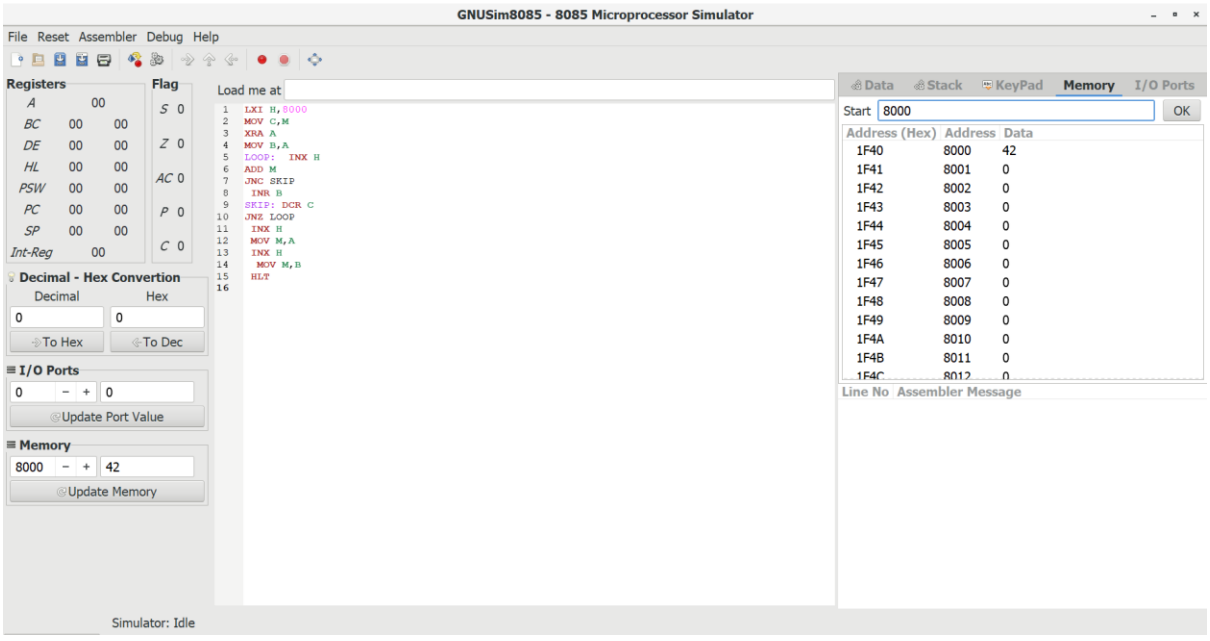
1) Load the base address of the array in HL register pair.
2) Load the memory with data to be added.
3) Take it as count.
4) Initialize the accumulator with 00.
5) Add content of accumulator with content of memory.
6) Decrement count.

7) Load count value to memory location.
8) Repeat step 5.
9) Check whether count has become 0.
10) Halt.

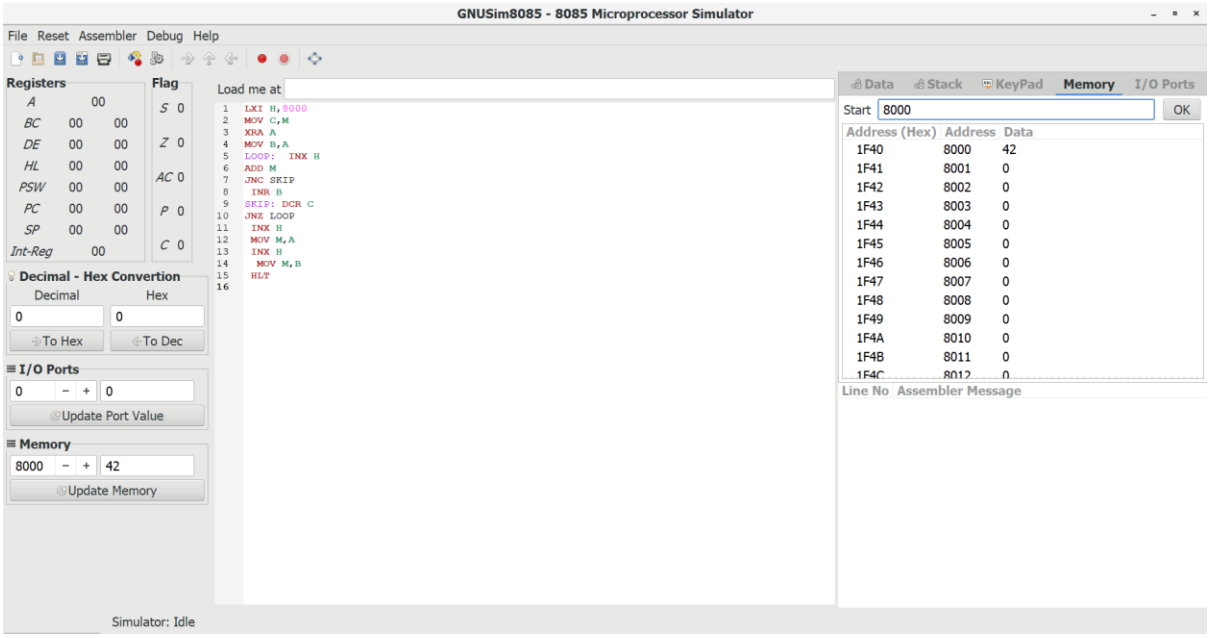
PROGRAM:

```
LXI H,8000
MOV C,M
XRA A
MOV B,A
LOOP:  INX H
ADD M
JNC SKIP
 INR B
SKIP: DCR C
JNZ LOOP
 INX H
 MOV M,A
 INX H
  MOV M,B
 HLT
```

INPUT:



OUTPUT:



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

EXP NO:15

AIM: To compute swapping of numbers using 8085 processor.

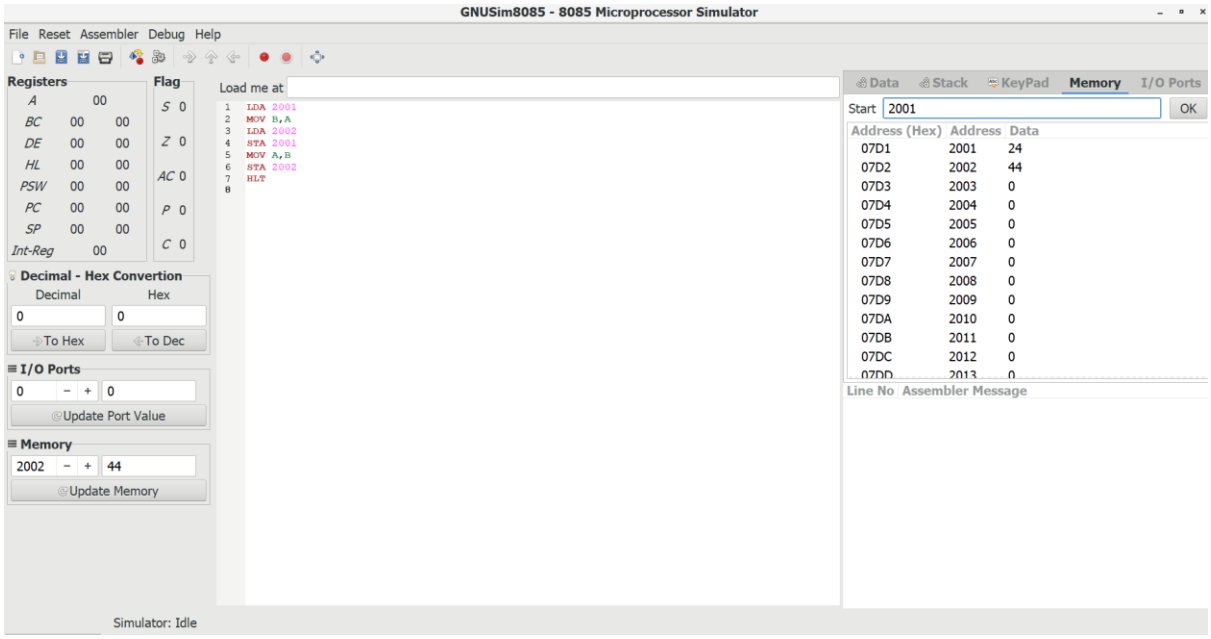
ALGORITHM:

1) Load a 8-bit number from memory location into accumulator.
2) Move value of accumulator into register H.
3) Load a 8-bit number from next memory location into accumulator.
4) Move value of accumulator into register D.
5) Exchange both the registers pairs.
6) Halt

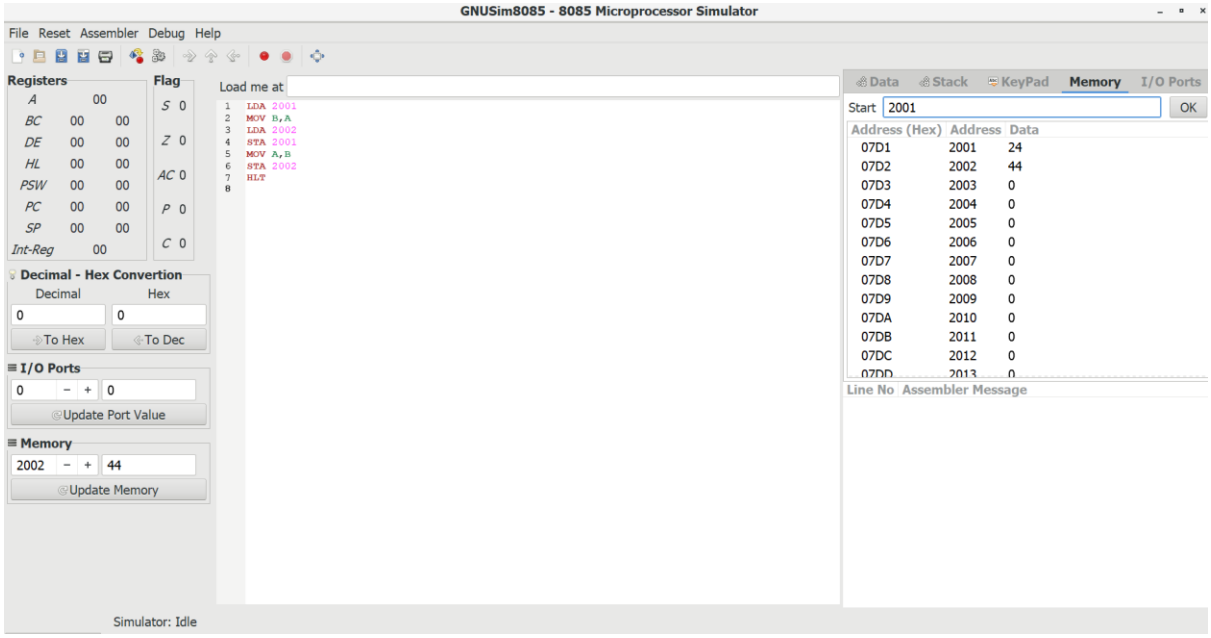
PROGRAM:

LDA 2001
MOV B,A
LDA 2002
STA 2001
MOV A,B
STA 2002
HLT

INPUT:



OUTPUT:



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