1. Write an assembly language program for adding two 8-bit data A7 A6 A5 A4 A3 A2

A1 A0 and B7 B6 B5 B4 B3 B2 B1 B0 using 8085 processor.

PROGRAM:

LDA 2000

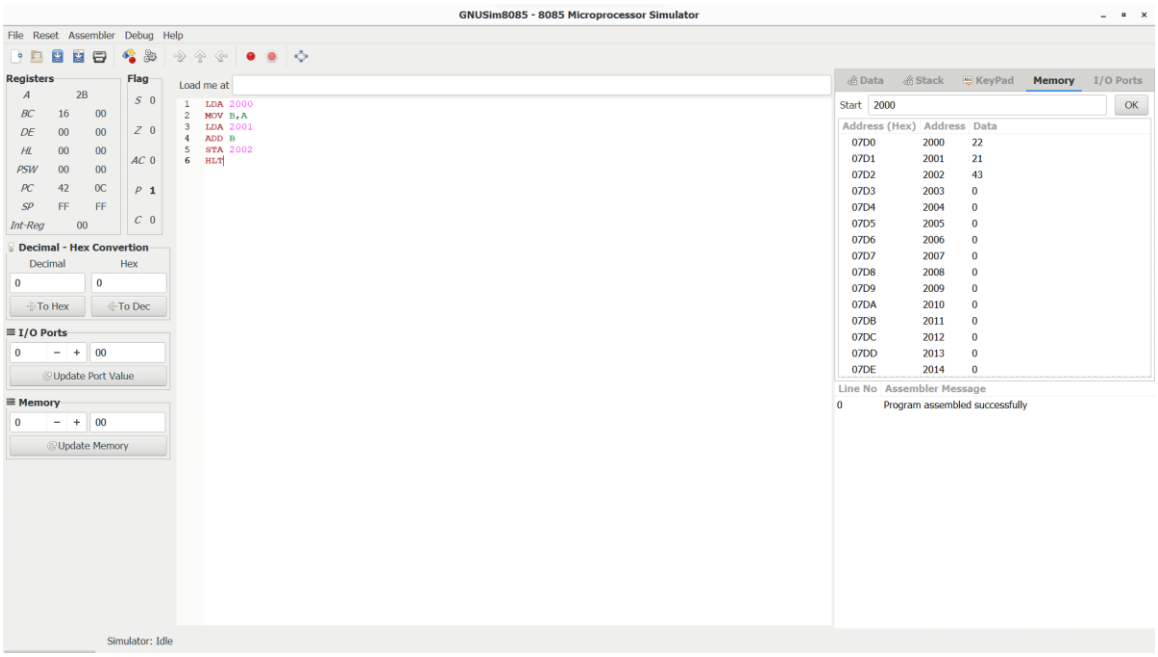
MOV B,A

LDA 2001

ADD B

STA 2002

HLT



2. Write an assembly language program for subtraction of two 8-bit data A7 A6 A5 A4

A3 A2 A1 A0 and B7 B6 B5 B4 B3 B2 B1 B0 using 8085 processor.

PROGRAM:

LDA 2000

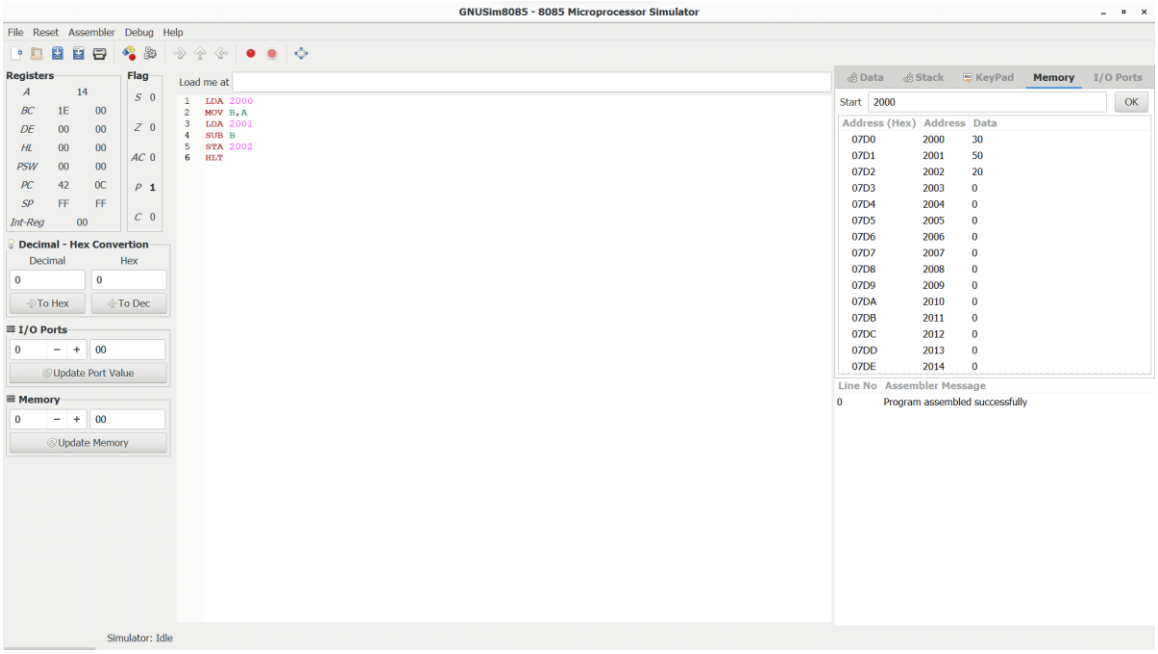
MOV B,A

LDA 2001

SUB B

STA 2002

HLT



3. Write an assembly language program for adding two 16-bit data using 8086 processor.

PROGRAM:

LDA 2050

MOV B,A

LDA 2052

ADD B

STA 2060

LDA 2051

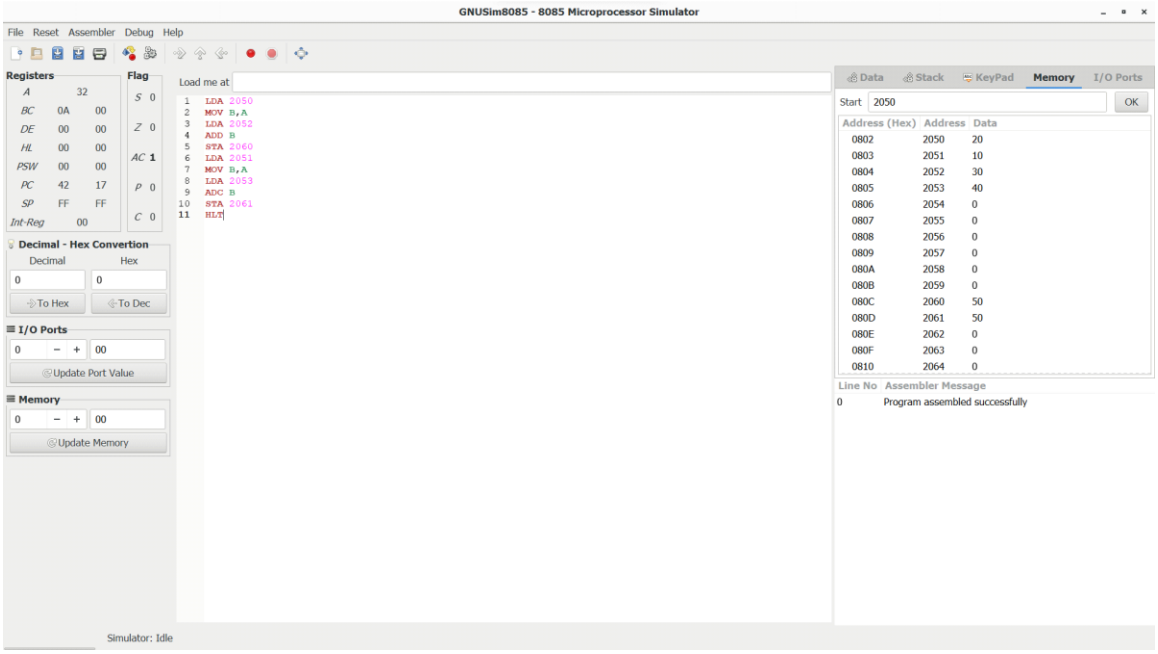
MOV B,A

LDA 2053

ADC B

STA 2061

HLT



4. Write an assembly language program for subtracting two 16-bit data using 8086 processor.

PROGRAM:

LDA 2050

MOV B,A

LDA 2052

SUB B

STA 2060

LDA 2051

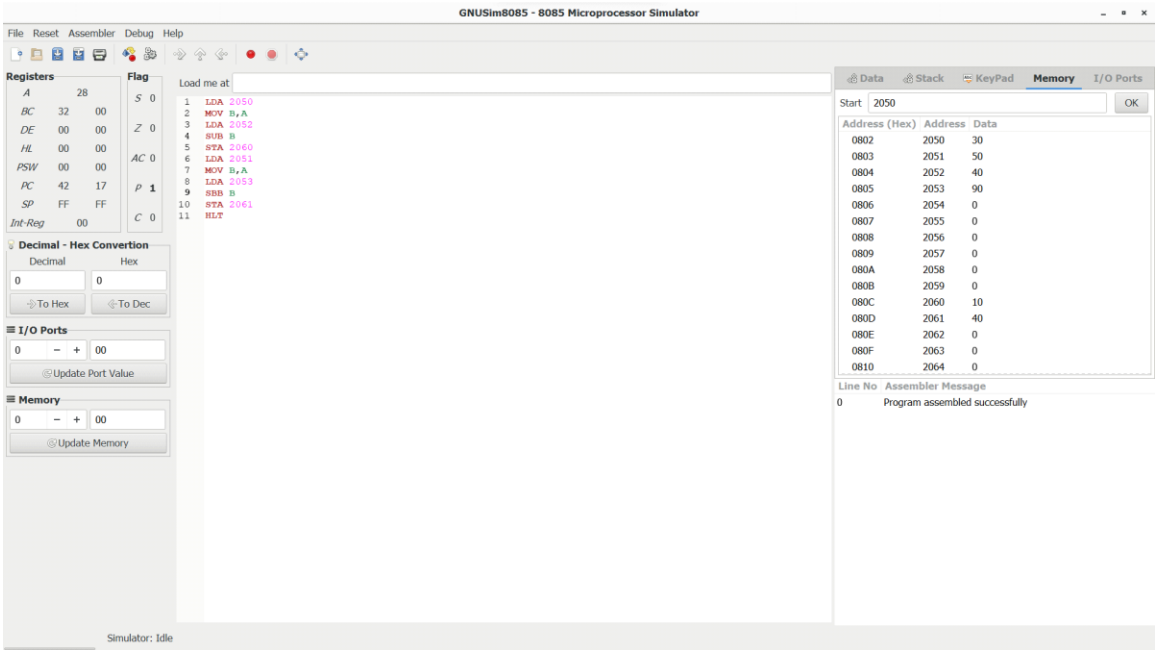
MOV B,A

LDA 2053

SBB B

STA 2061

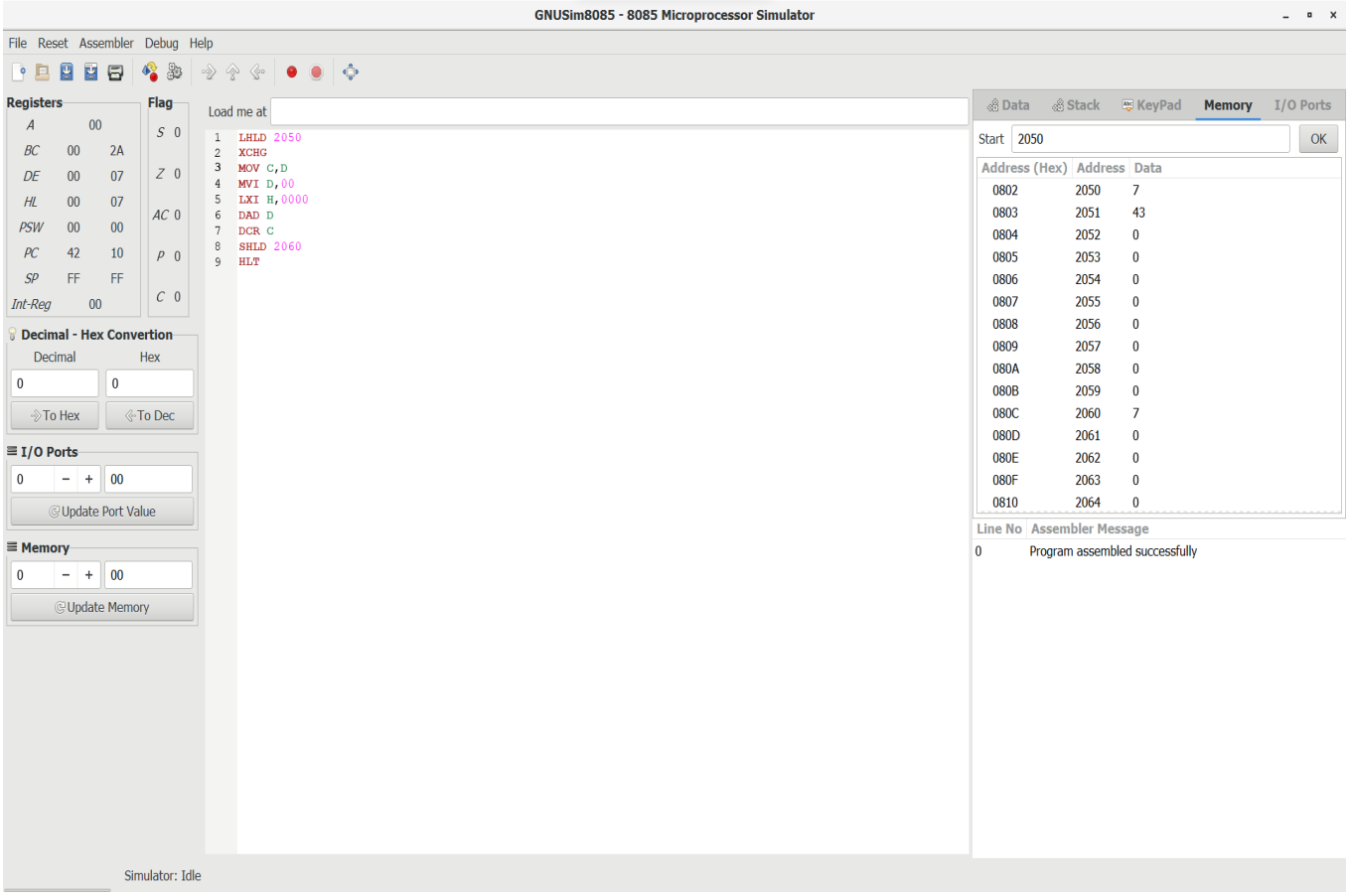
HLT



5. Write an assembly language program for multiplication of two 8-bit data A7 A6 A5 A4 A3 A2 A1 A0 and B7 B6 B5 B4 B3 B2 B1 B0 using 8085 processor

PROGRAM:

```
LHLD 2050
XCHG
MOV C,D
MVI D 00
LXI H 0000
DAD D
DCR C
SHLD 2060
HLT
```



6. Write an assembly language program for division of two 8-bit data A7 A6 A5 A4 A3 A2 A1 A0 and B7 B6 B5 B4 B3 B2 B1 B0 using 8085 processor.

PROGRAM:

LXI H,2050

MOV B,M

MVI C,00

INX H

MOV A,M

CMP B

SUB B

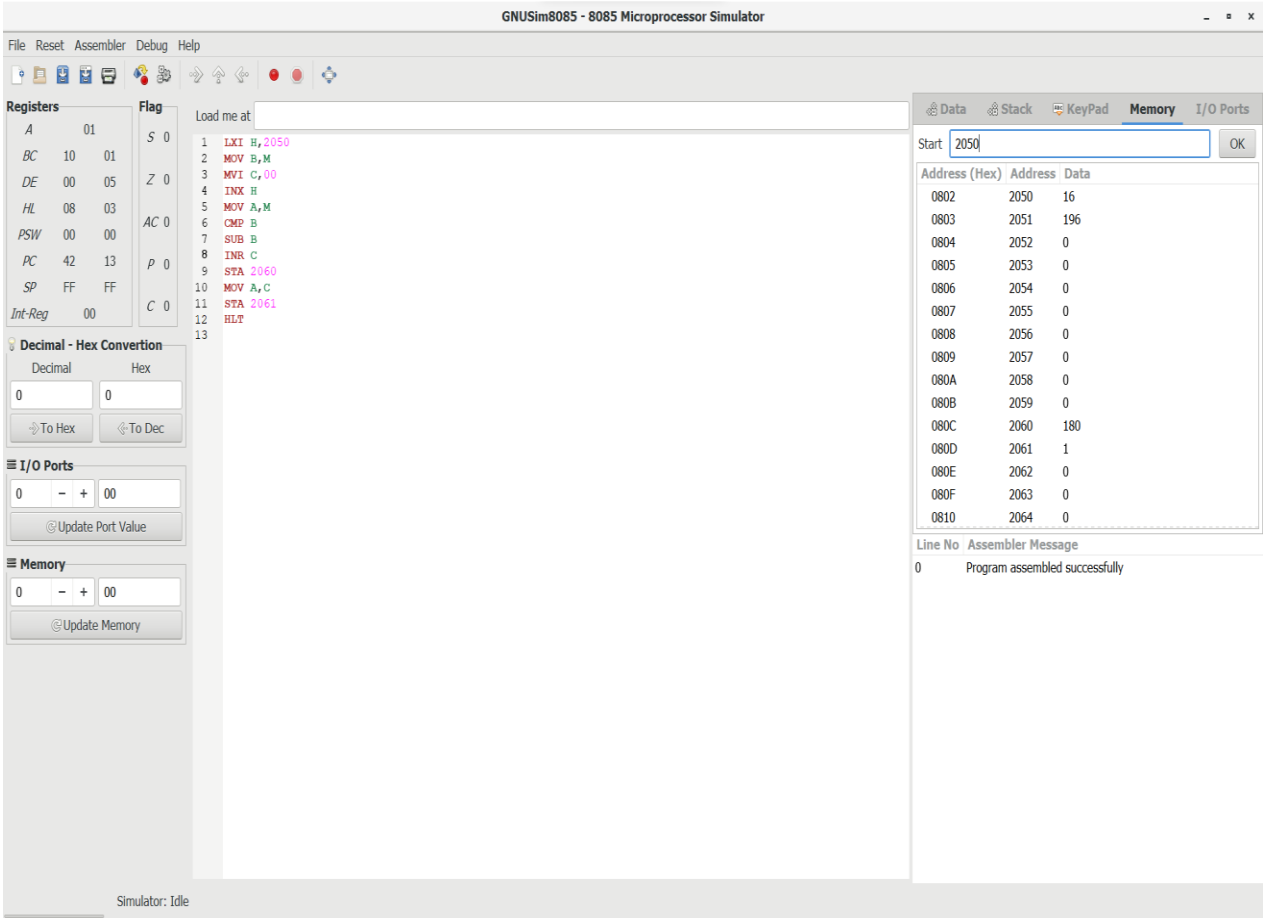
INR C

STA 2060

MOV A,C

STA 2061

HLT



7. Write an assembly language program for multiplying two 16-bit data using 8086 processor.

PROGRAM:

LHLD 2050

SPHL

LHLD 2052

XCHG

LXI H,0000H

LXI H,0000H

DAD SP

INX B

DCX D

MOV A,E

ORA D

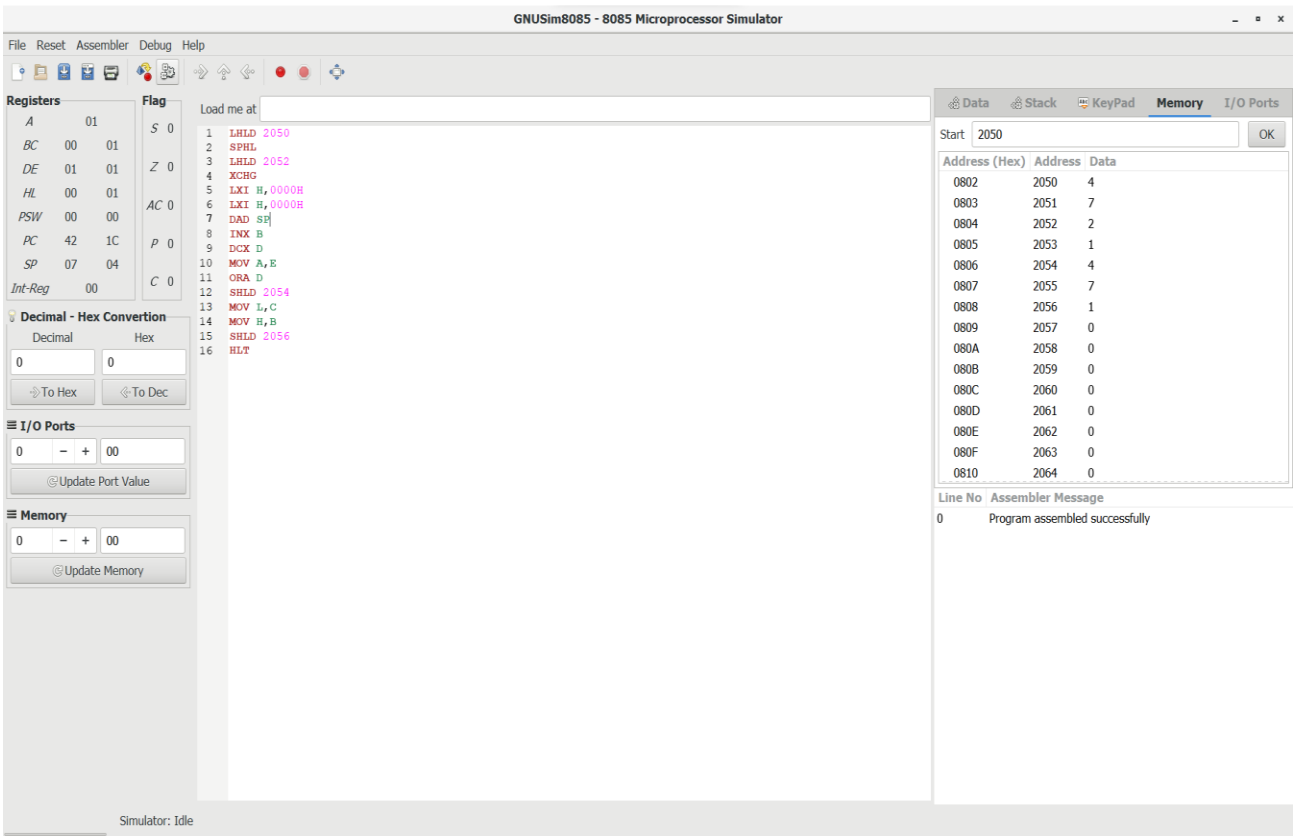
SHLD 2054

MOV L,C

MOV H,B

SHLD 2056

HLT

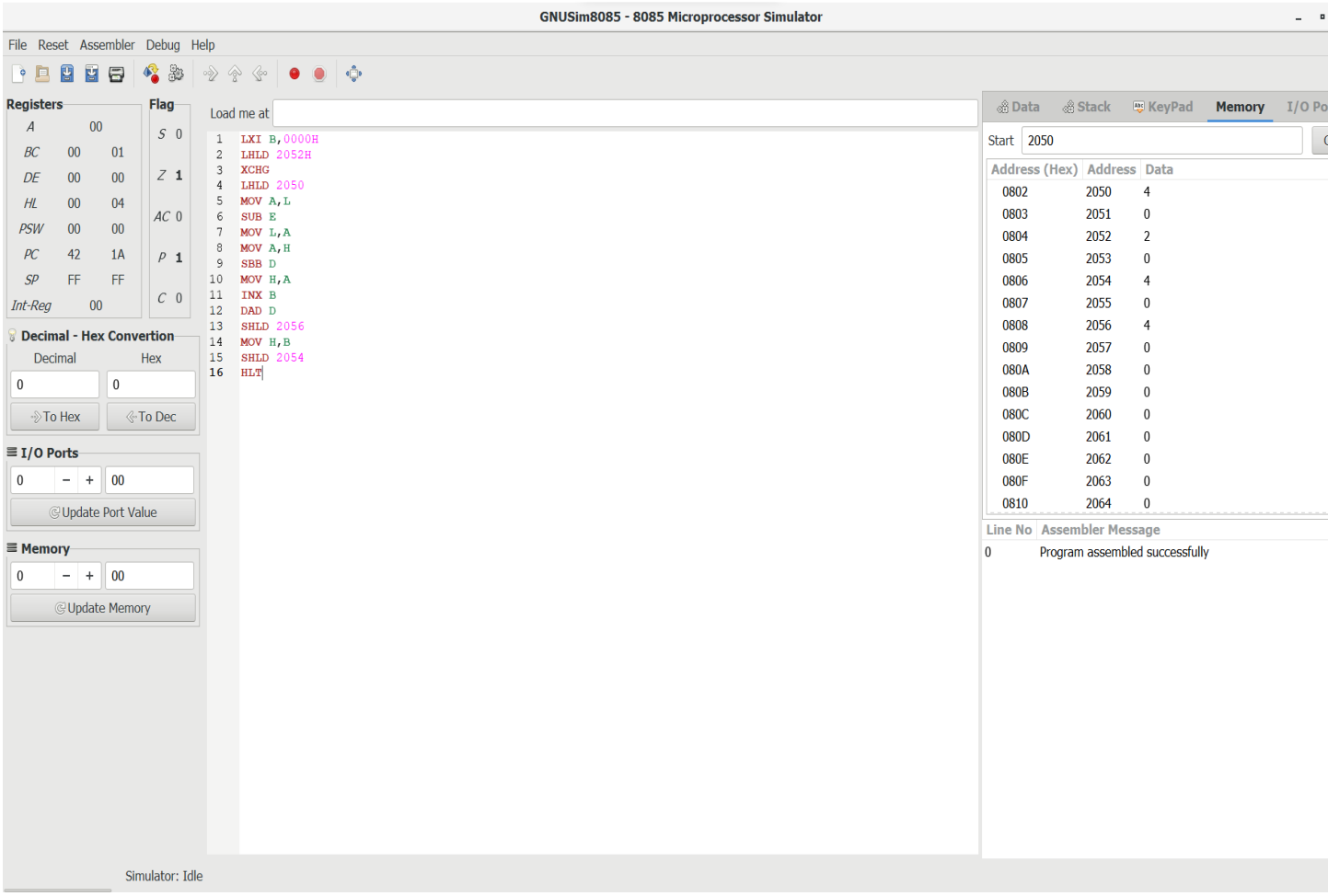


8. Write an assembly language program for dividing two 16-bit data using 8086 processor.

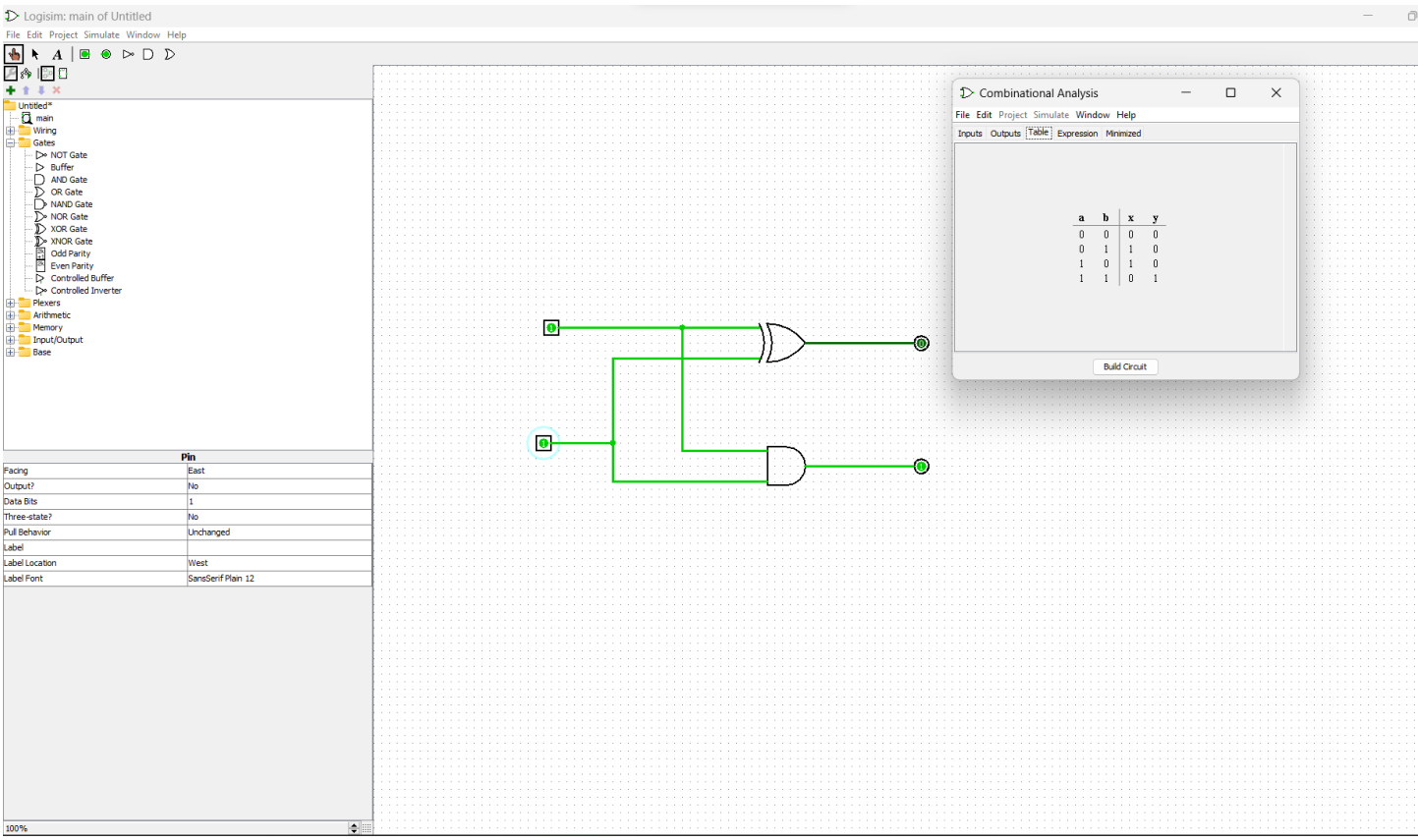
PROGRAM:

LXI B,0000H

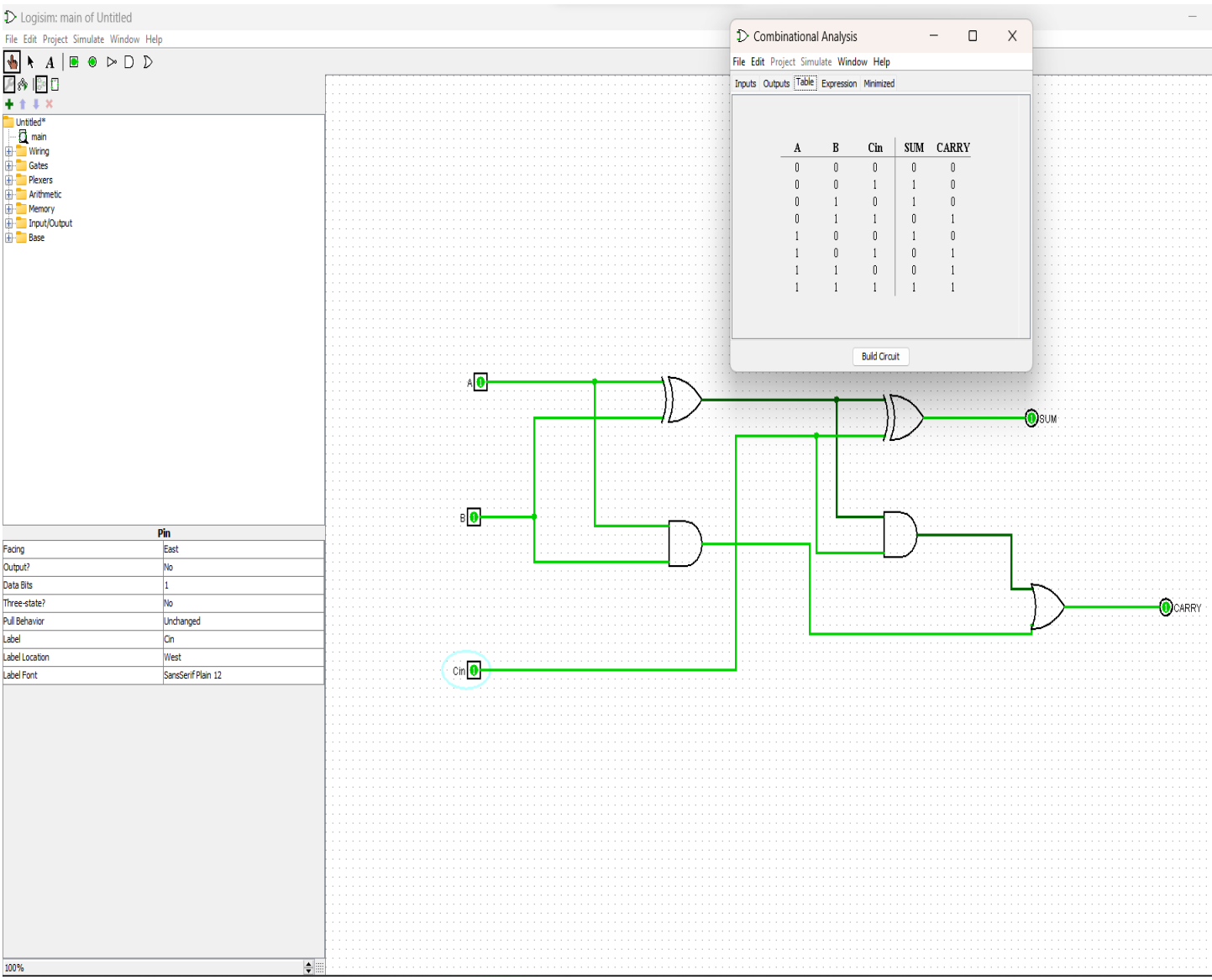
```
LHLD 2052H
XCHG
LHLD 2050
MOV A,L
SUB E
MOV L,A
MOV A,H
SBB D
MOV H,A
INX B
DAD D
SHLD 2056
MOV L,C
MOV H,B
SHLD 2054
HLT
```



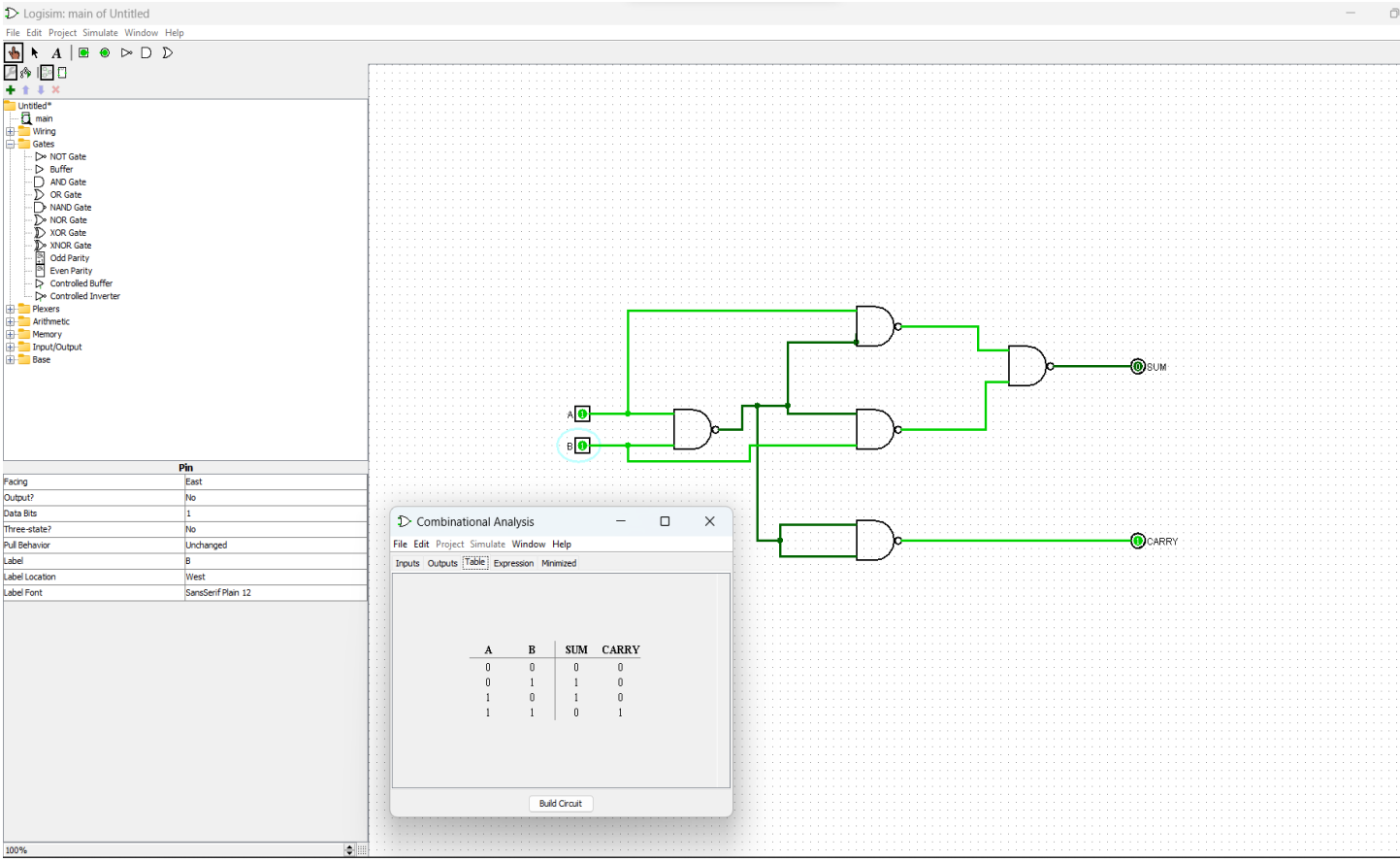
9. Design and implement 2-bit half adder using logisim simulator.



10. Design and implement 3-bit full adder using logisim simulator.



11. Design and implement 2-bit half adder with NAND using logisim simulator.



25. Write an assembly language program to swap two 8-bit data using 8085 processor

PROGRAM:

LDA 0000

MOV B,A

LDA 0001

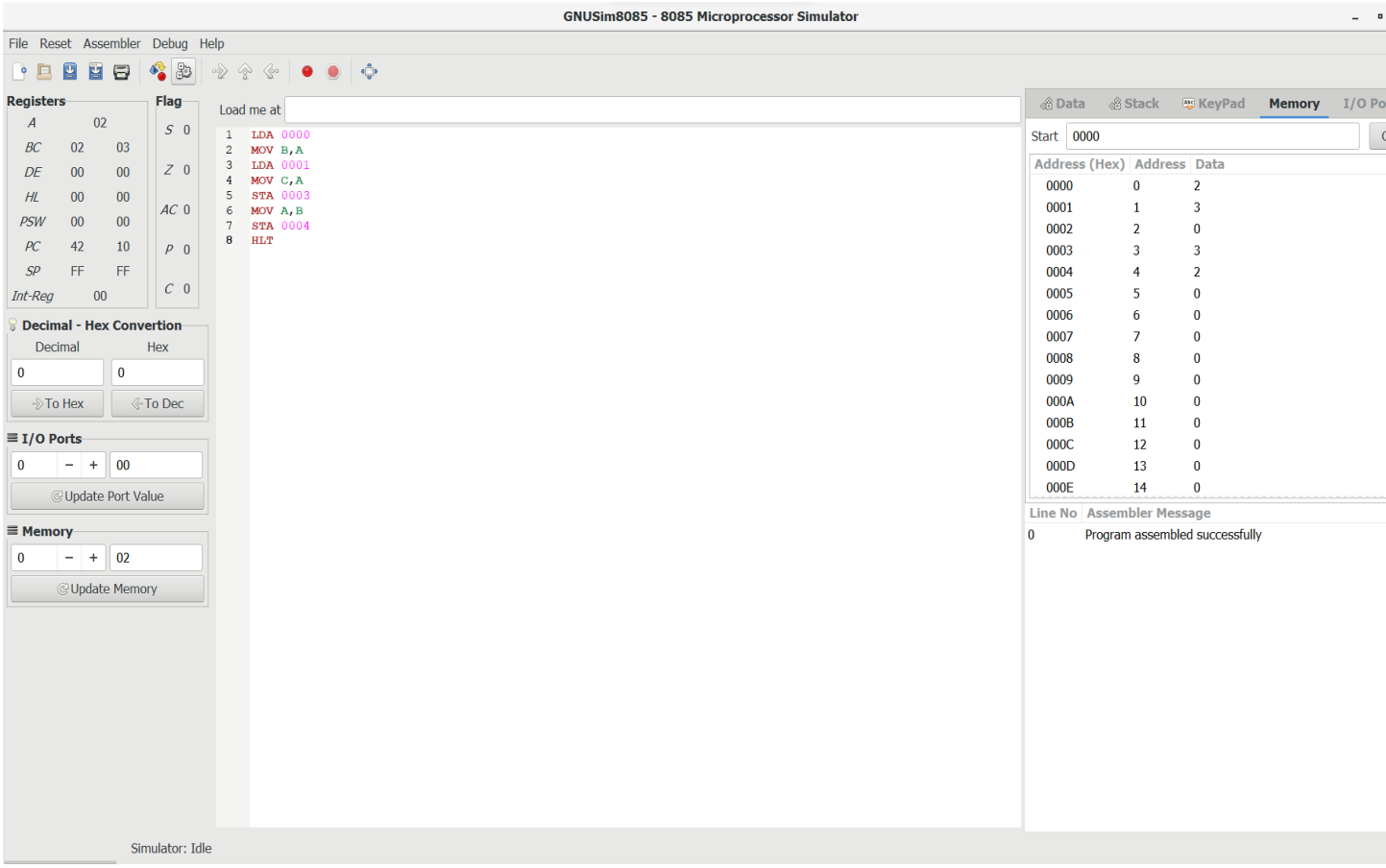
MOV C,A

STA 0003

MOV A,B

STA 0004

HLT



20. Write an assembly language program to find 1's and 2's complement of 8 bit number

PROGRM:

LDA 3000

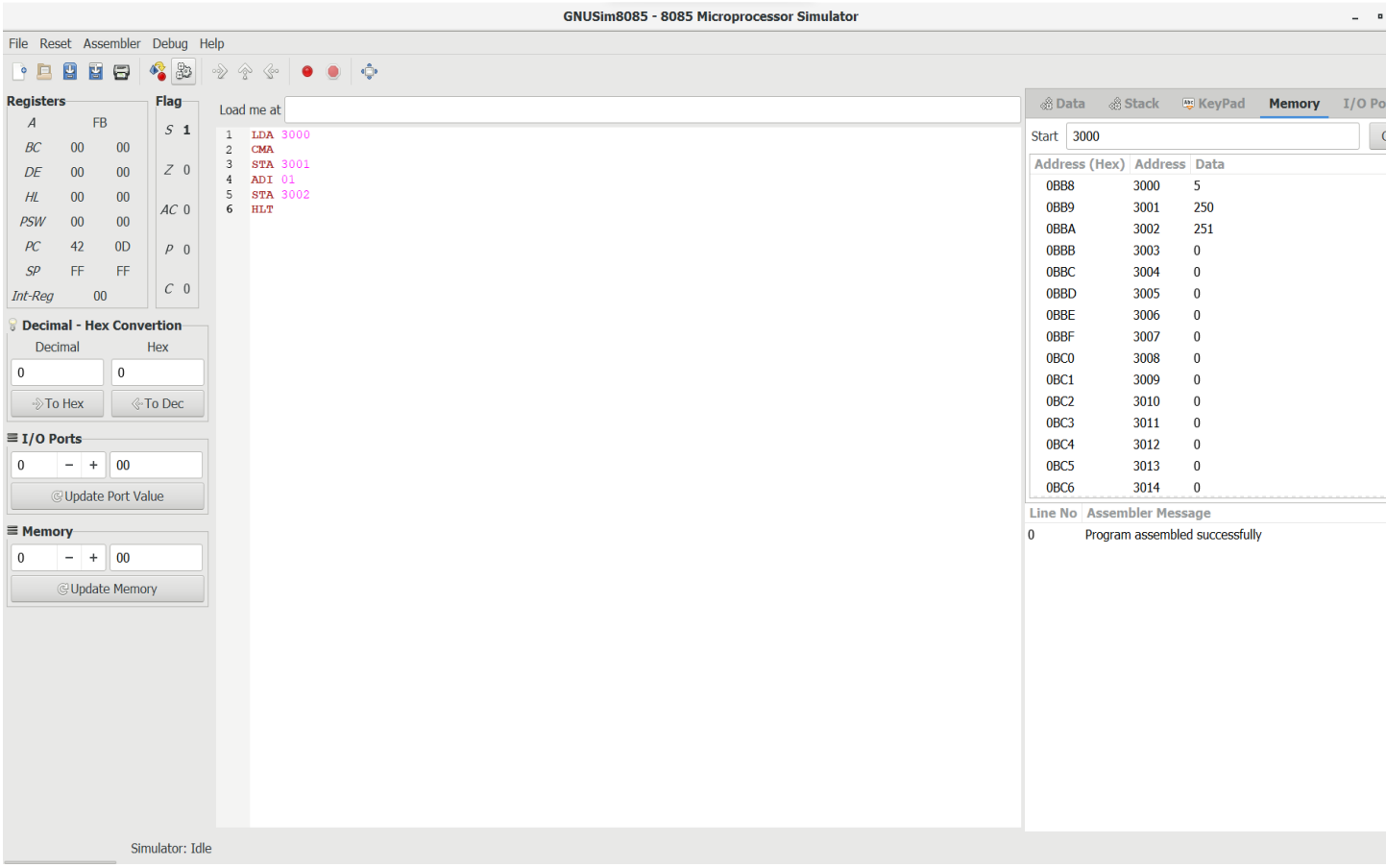
CMA

STA 3001

ADI 01

STA 3002

HLT

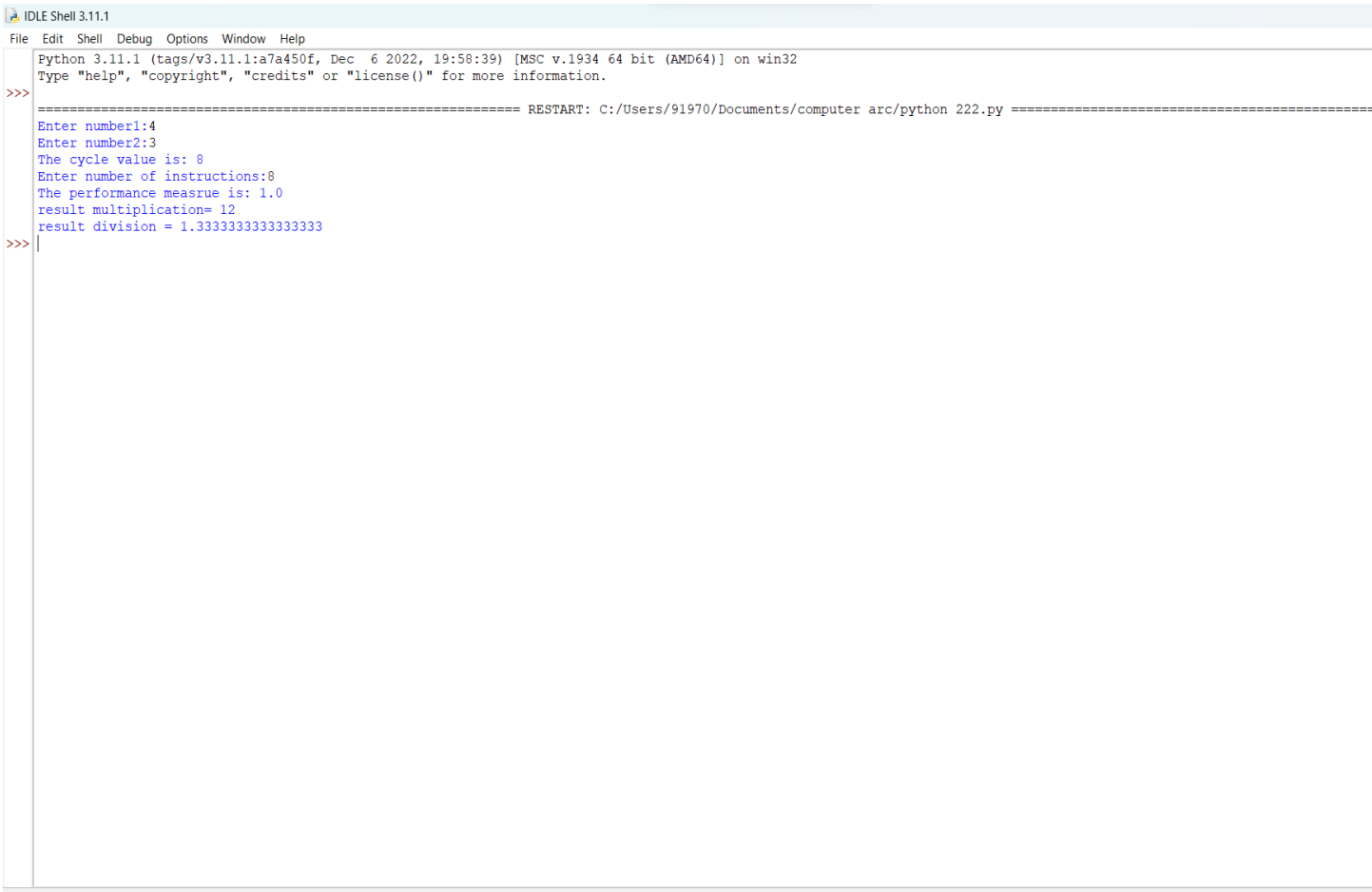


16. Design of 4 stage pipeline for multiplication and division of two numbers using any high level language.

PROGRAM:

```
a=int(input("Enter number1:"))

b=int(input("Enter number2:"))

c=8

mul=a*b

div=a/b

print("The cycle value is:",c)

ins=int(input("Enter number of instructions:"))

print("The performance measrue is:",ins/c)

print("result multiplication=",mul)
```

print("result division =",div)



15. Design of 3 stage pipeline for AND, OR, NAND of two numbers using any high level language.

PROGRAM:

```
a=int(input("Enter number 1:"))

b=int(input("Enter number 2:"))

c=4

rand=a&b

ror=a|b

rnand=~rand

print("The cycle value is",c)
```

```
ins=int(input("Enter no of instructions:"))

print("The Performance Measure:",ins/c)

print("result and=",rand)

print("result or=",ror)

print("result nand=",rnand)
```

python 222.py - C:/Users/91970/Documents/computer arc/python 222.py (3.11.1)

File Edit Format Run Options Window Help

```
a=int(input("Enter number 1:"))
b=int(input("Enter number 2:"))
c=4
rand=a&b
ror=a|b
rnand=~rand
print("The cycle value
ins=int(input("Enter no
print("The Performance
print("result and=",ran
print("result or=",ror)
print("result nand=",rn
```

IDLE Shell 3.11.1

File Edit Shell Debug Options Window Help

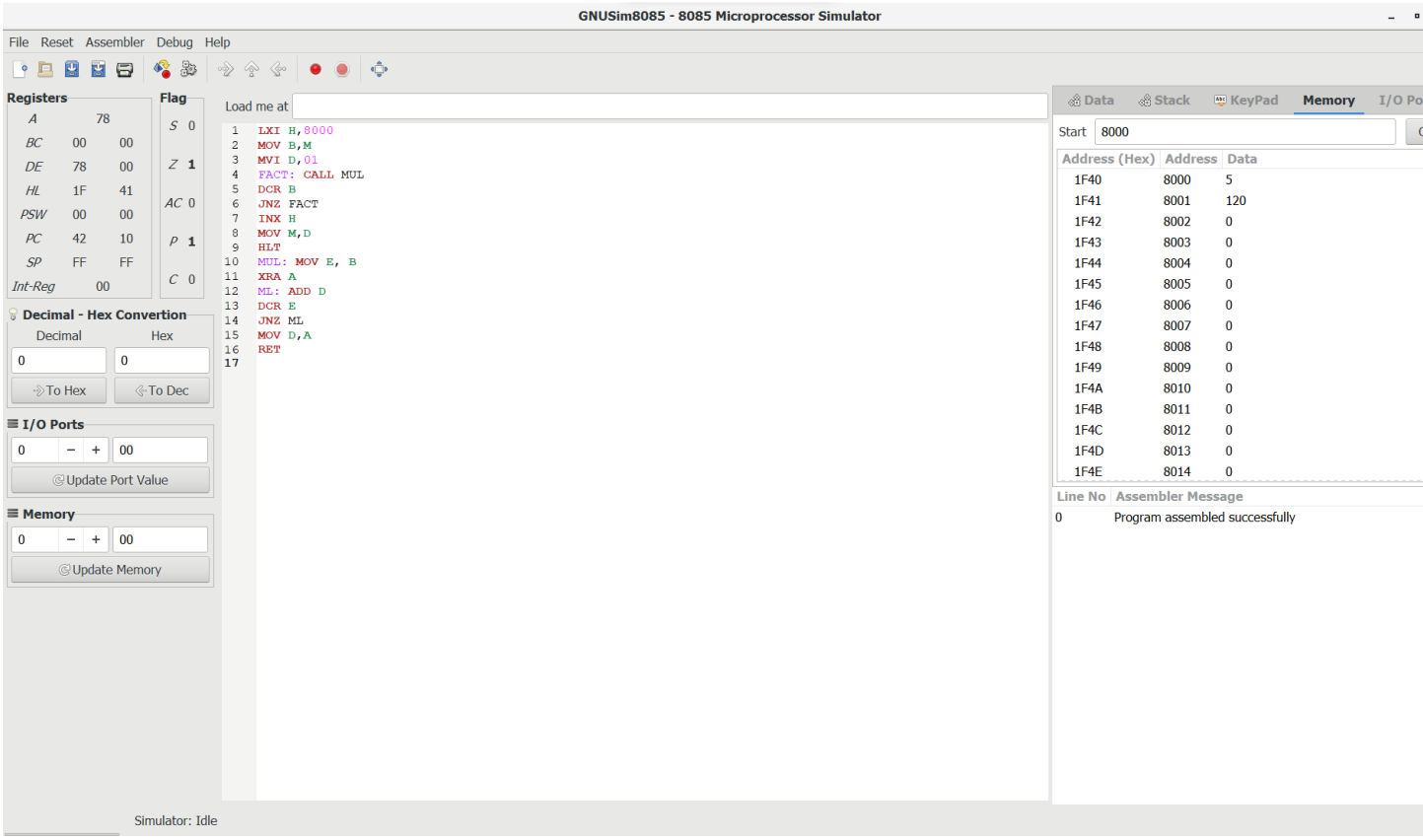
```
Python 3.11.1 (tags/v3.11.1:a7a450f, Dec  6 2022, 19:58:39) [MSC v.1934 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========= RESTART: C:/Users/91970/Documents/computer arc/python 222.py =========
Enter number 1:4
Enter number 2:3
The cycle value is 4
Enter no of instructions:2
The Performance Measure: 0.5
result and= 0
result or= 7
result nand= -1
>>>
```

Ln: 13 Col: 0

12. Write an assembly language program to find factorial of n in the given number.

PROGRAM:

```
LXI H,8000
MOV B,M
MVI D,01
FACT: CALL MUL
DCR B
JNZ FACT
INX H
MOV M,D
HLT
MUL: MOV E, B
XRA A
ML: ADD D
DCR E
JNZ ML
MOV D,A
RET
```



13. Write an assembly language program to find the largest number in an array.

PROGRAM:

LXI H,8000

MOV C,M

INX H

MOV B,M

DCR C

LOOP: INX H

MOV A,M

CMP B

JC SKIP

MOV B,A

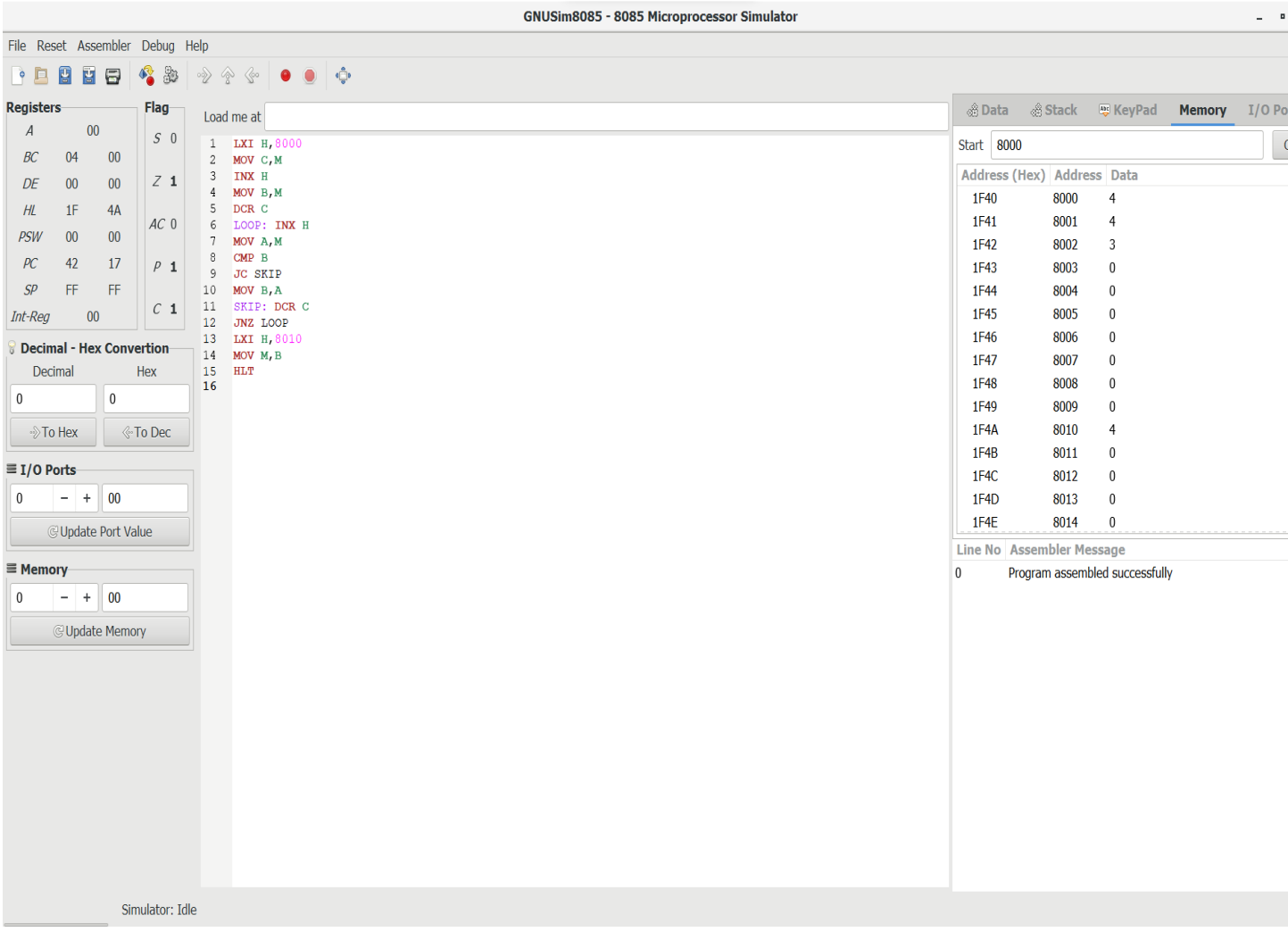
SKIP: DCR C

JNZ LOOP

LXI H,8010

MOV M,B

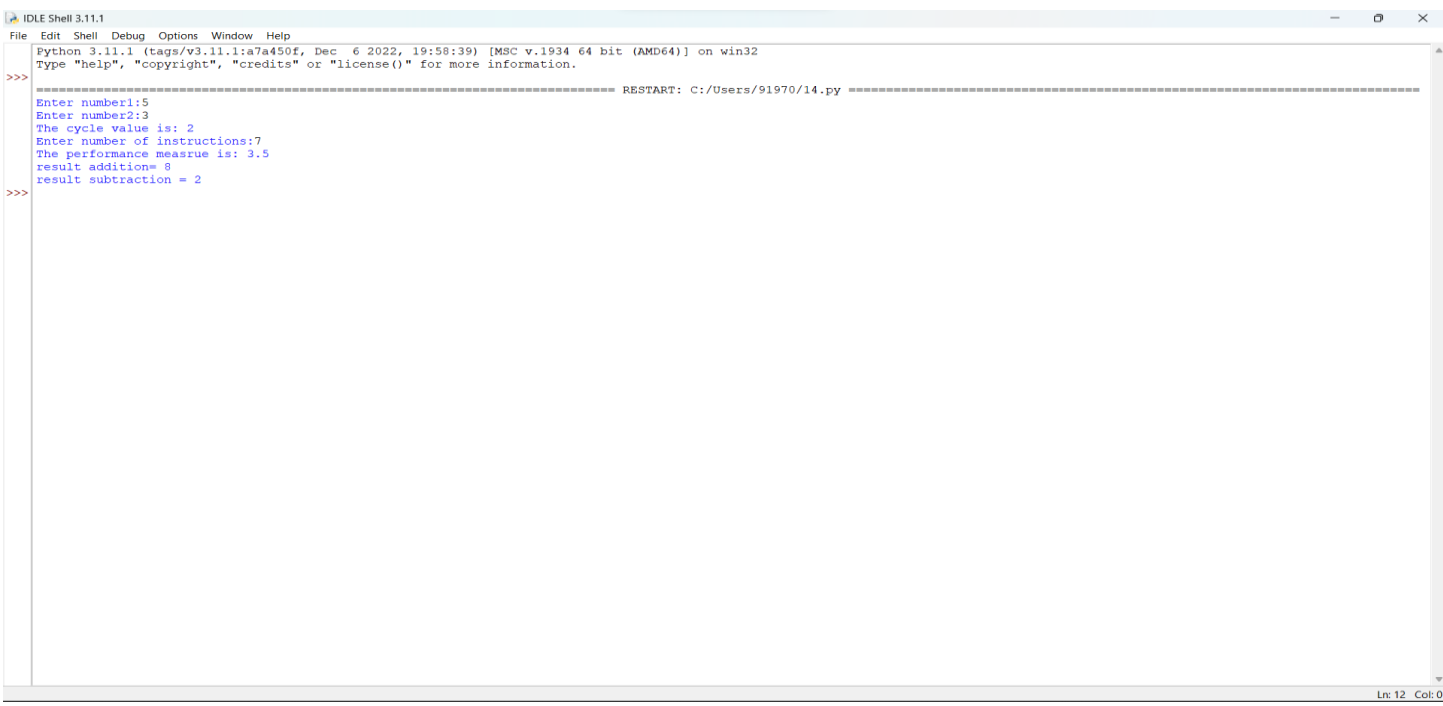
HLT



14. Design of 2 stage pipeline for addition and subtraction of two numbers using any high level language.

PROGRAM:

```
a=int(input("Enter number1:"))

b=int(input("Enter number2:"))

c=2

add=a+b

sub=a-b

print("The cycle value is:",c)

ins=int(input("Enter number of instructions:"))

print("The performance measrue is:",ins/c)

print("result addition=",add)

print("result subtraction =",sub)
```



24. Write a program to find the CPU performance of a processor using any high level language.

PROGRAM:

```
p=int(input("Enter no.of performance:"))

ct=[]

for i in range(0,p):

    cp=float(input("Enter the clock cycle per instruction:"))

    cr=float(input("Enter the clock rate in GHZ:"))

    a=1000*cp/cr

    ct.append(a)

    print("The proccessor has lowest execution:",ct)
```

19. Write a program to find the Hit ratio for the given number of Hits and Misses in Cache memory using any high level language.

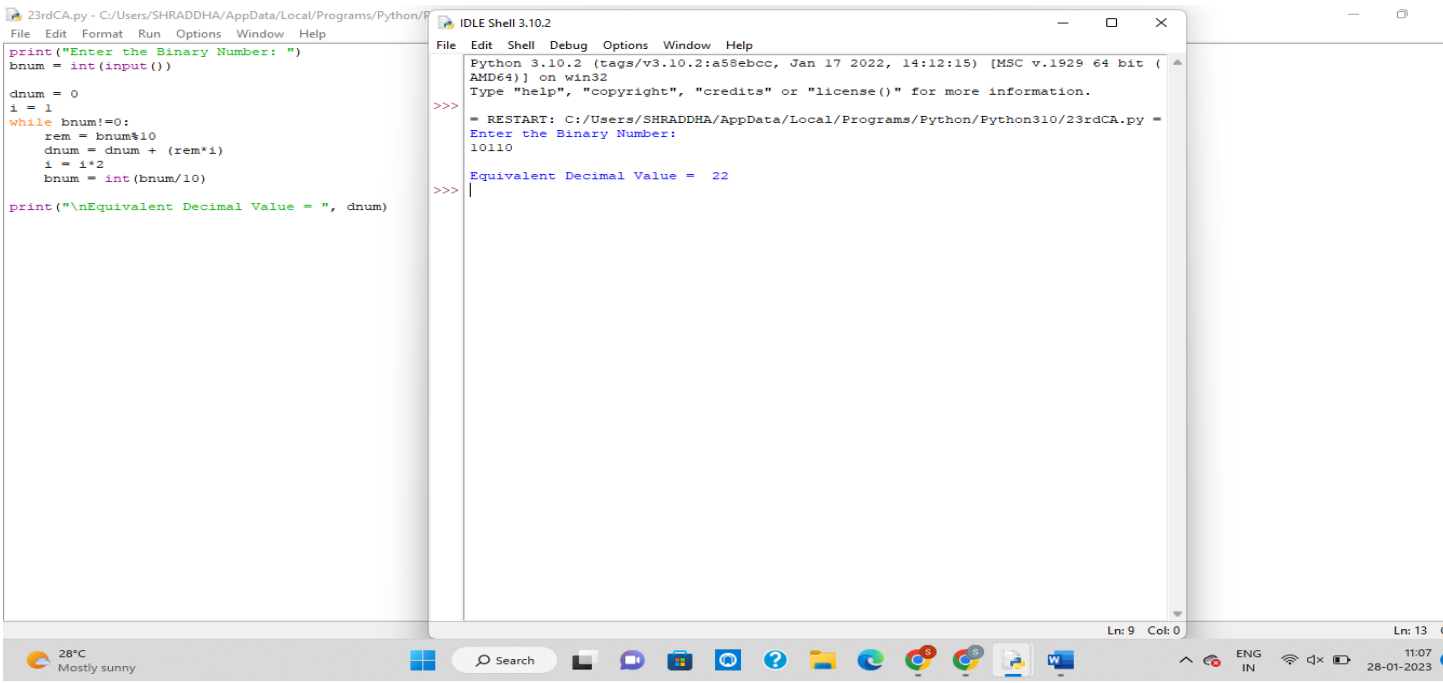
PROGRAM:

```
m=float(input("No of misses: "))

h=float(input("No of hits:"))

print("Ratio of no of hits=",h/(h+m))
```

23. Write a program to convert Binary number to Decimal number using any high level language.

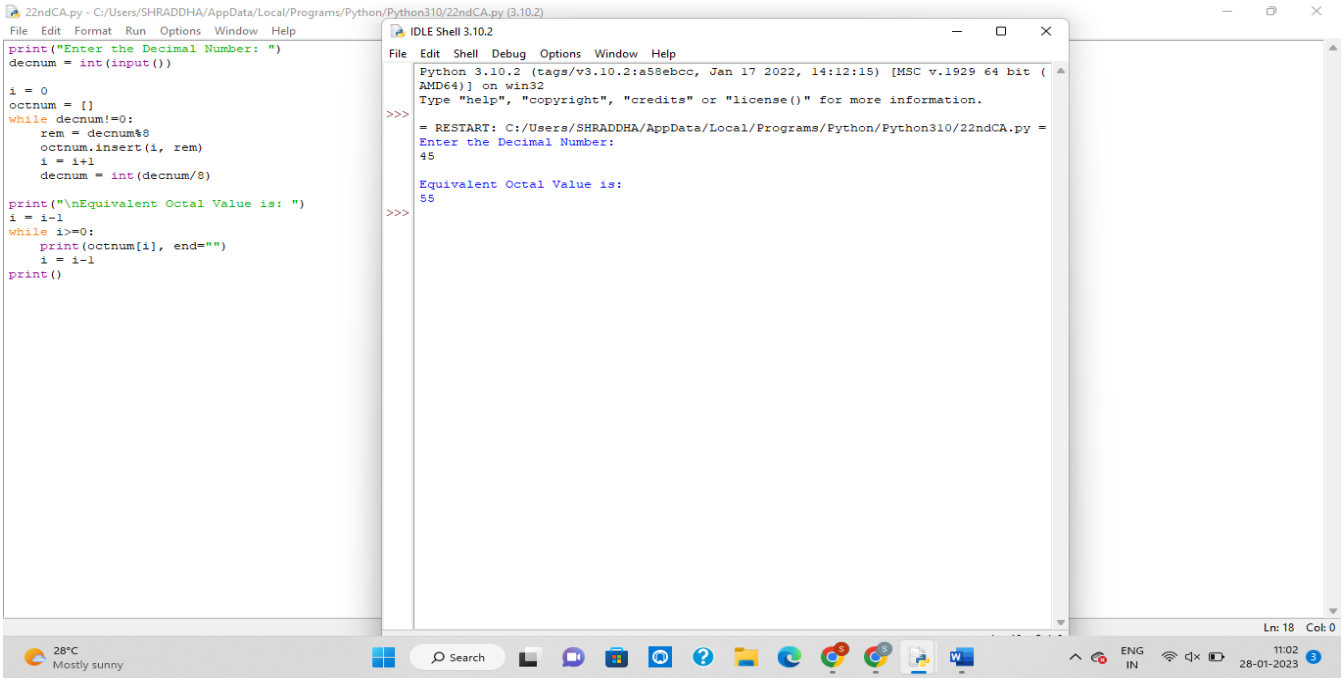
PROGRAM:

```
print("Enter the Binary Number: ")

bnum = int(input())

dnum = 0
i = 1
while bnum!=0:
    rem = bnum%10
    dnum = dnum + (rem*i)
    i = i*2
    bnum = int(bnum/10)

print("\nEquivalent Decimal Value = ", dnum)
```



22. Write a program to convert Decimal number to an Octal number using any high level language.
PROGRAM:

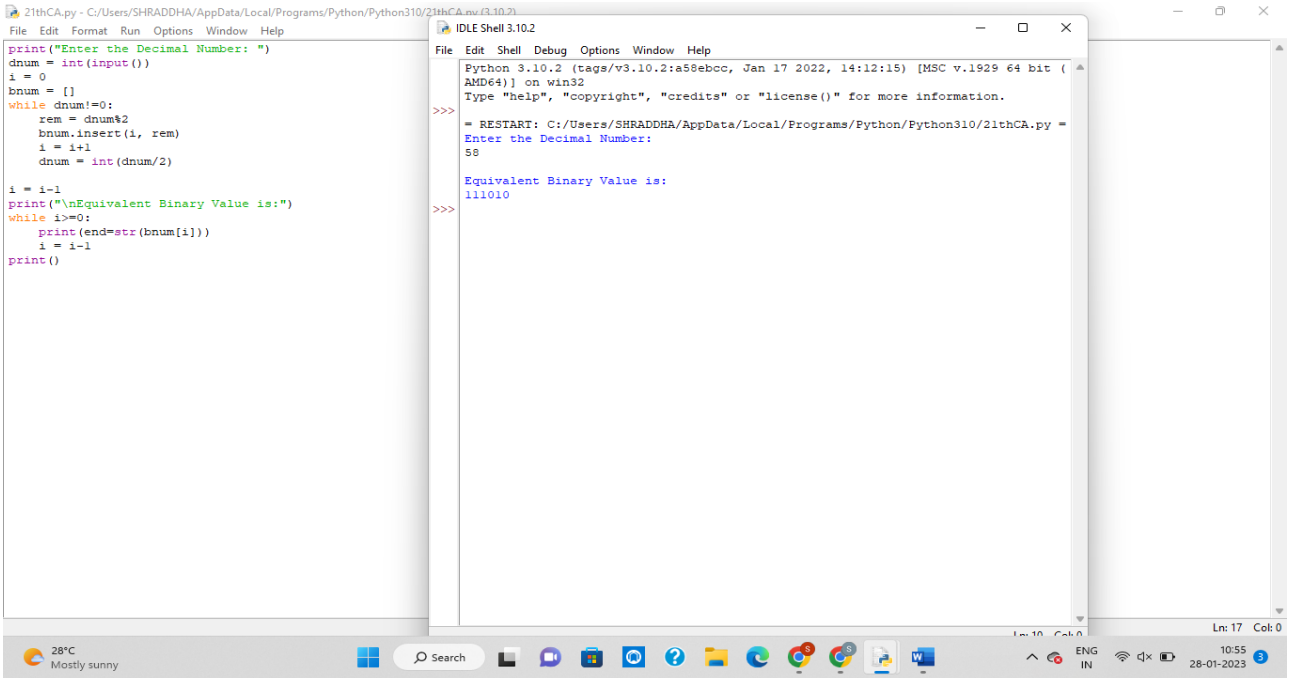
```
print("Enter the Decimal Number: ")
decnum = int(input())
i = 0
octnum = []
while decnum!=0:
        rem = decnum%8
        octnum.insert(i, rem)
        i = i+1
        decnum = int(decnum/8)
print("\nEquivalent Octal Value is: ")
i = i-1
while i>=0:
        print(octnum[i], end="")
        i = i-1
print()
```



21. Write a program to convert Decimal number to Binary number using any high level language.

PROGRAM:

```
print("Enter the Decimal Number: ")
dnum = int(input())
i = 0
bnum = []
while dnum!=0:
        rem = dnum%2
        bnum.insert(i, rem)
        i = i+1
        dnum = int(dnum/2)

i = i-1
print("\nEquivalent Binary Value is:")
while i>=0:
        print(end=str(bnum[i]))
        i = i-1
print()
```

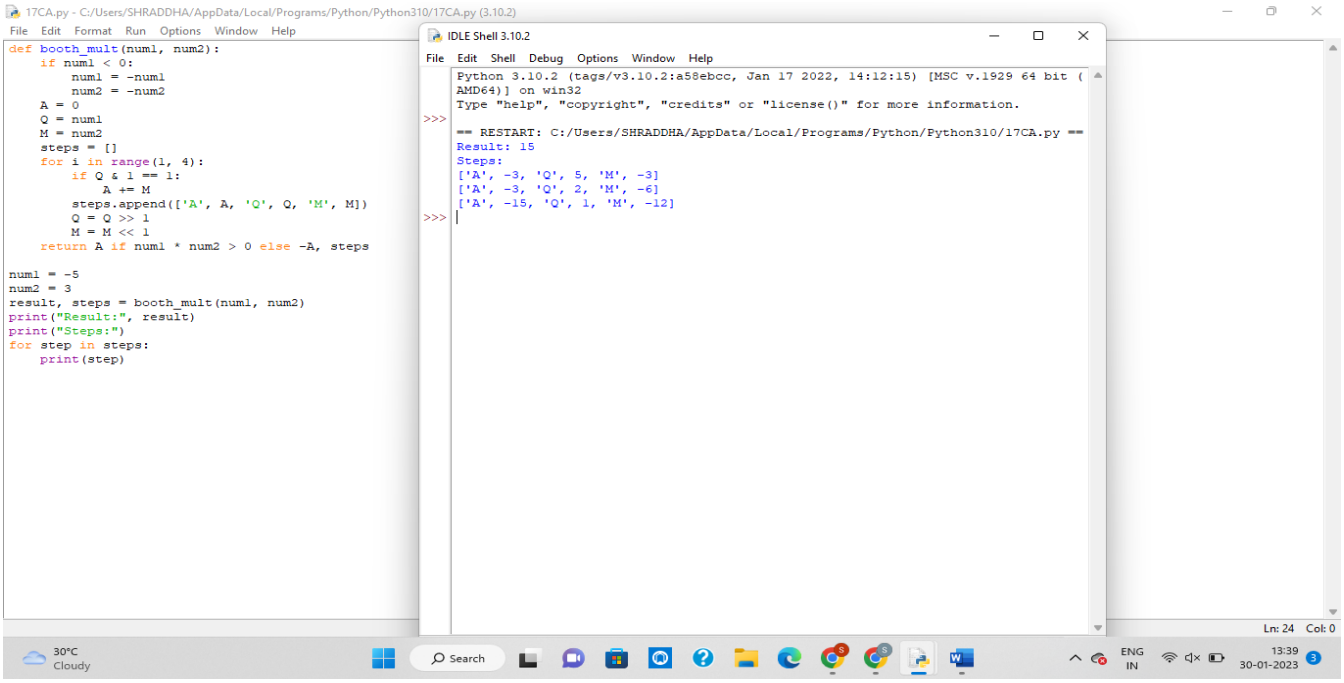


18. Write a program to perform Restoring Division of two numbers using any high level language.

PROGRAM:

```
def booth_mult(num1, num2):
    if num1 < 0:
        num1 = -num1
        num2 = -num2
    A = 0
    Q = num1
    M = num2
    steps = []
    for i in range(1, 4):
        if Q & 1 == 1:
            A += M
        steps.append(['A', A, 'Q', Q, 'M', M])
        Q = Q >> 1
        M = M << 1
    return A if num1 * num2 > 0 else -A, steps

num1 = -5
num2 = 3
result, steps = booth_mult(num1, num2)
```

```
print("Result:", result)
print("Steps:")
for step in steps:
    print(step)
```



17. Write a program to perform Booth's multiplication of two signed numbers using any high level language

PROGRAM:

```
def restoring_division(dividend, divisor):
    quotient = 0
    remainder = dividend
    while remainder >= divisor:
        quotient += 1
        remainder -= divisor
    return quotient, remainder


dividend =int(input("enter number:"))
divisor =int(input("enter number:"))
```

```
quotient, remainder = restoring_division(dividend, divisor)
print("Quotient: ", quotient)
print("Remainder: ", remainder)
```