VIT®

Vellore Institute of Technology

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Computer Science & Engineering

CSE2006

Microprocessor and Interfacing

LAB ASSIGNMENT 3

Submitted to **Prof. SANJAY R**

TOPIC: ASSEMBLY LANGUAGE PROGRAMMING

NAME: PUNIT MIDDHA

REG.NO: 19BCE2060

SLOT: L43+L44

DATE: 21/10/2021

➢ *Task – 1*

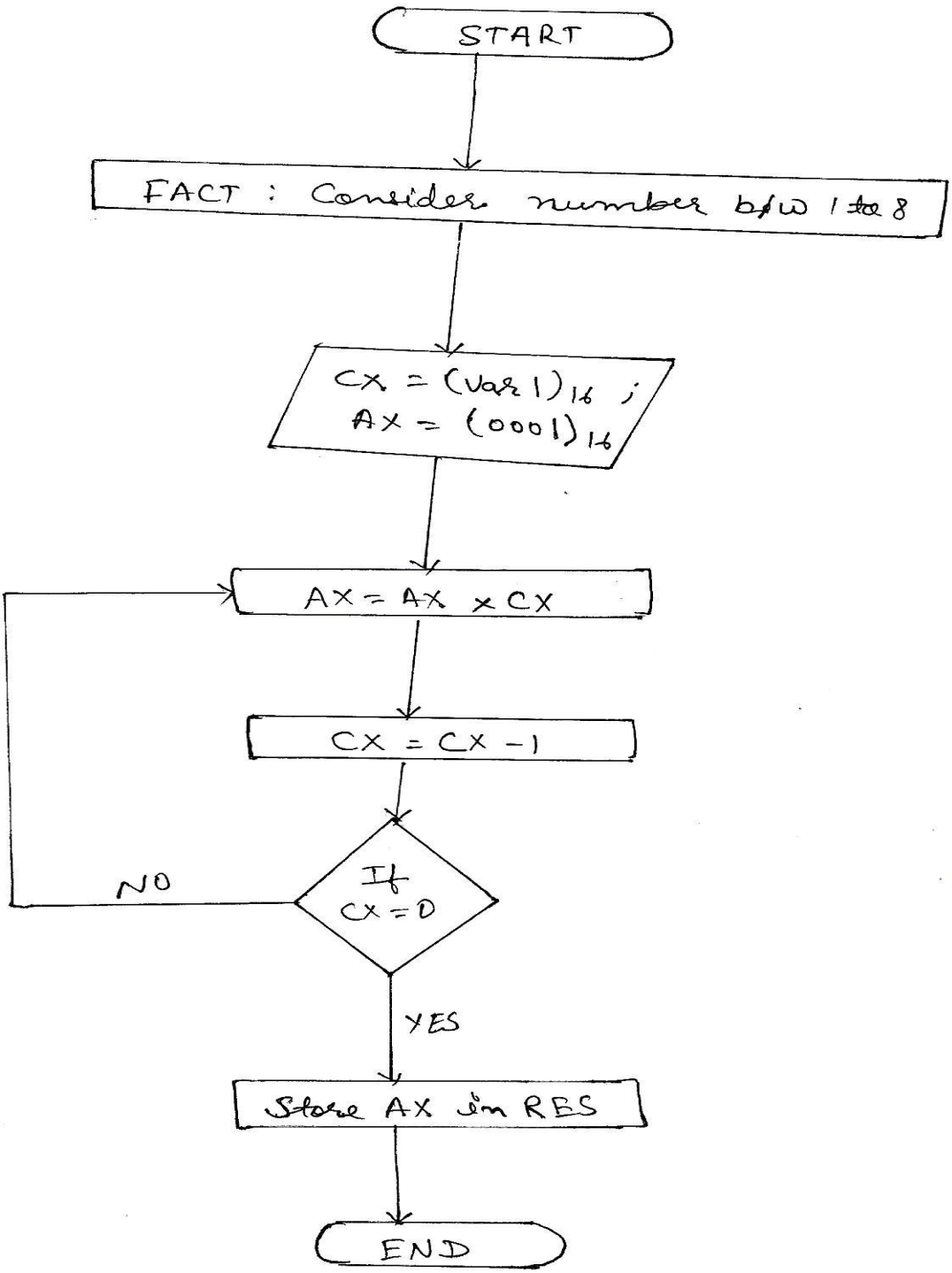
1. Write the ALP to find the factorial of the given number.

Aim:

To find the factorial of the given number.

Handwritten Flow Chart:

1.



Handwritten Program:

1.

```
; Name: PUNIT MIDDHA
; Regno: 19BCE2060

ASSUME CS:CODE, DS:DATA

DATA SEGMENT
FACT DW 07H
RES DW ?
DATA ENDS

CODE SEGMENT
START: MOV AX, DATA
       MOV DS, AX
       MOV CX, FACT
       MOV AX, 01H
LO1 :  MUL CX
       LOOP LO1

MOV RES, AX

CODE ENDS
END START
```

Snapshots of typed program and Output:

edit: C:\Users\Punit Middha\Desktop\Micro\assign3_a.asm

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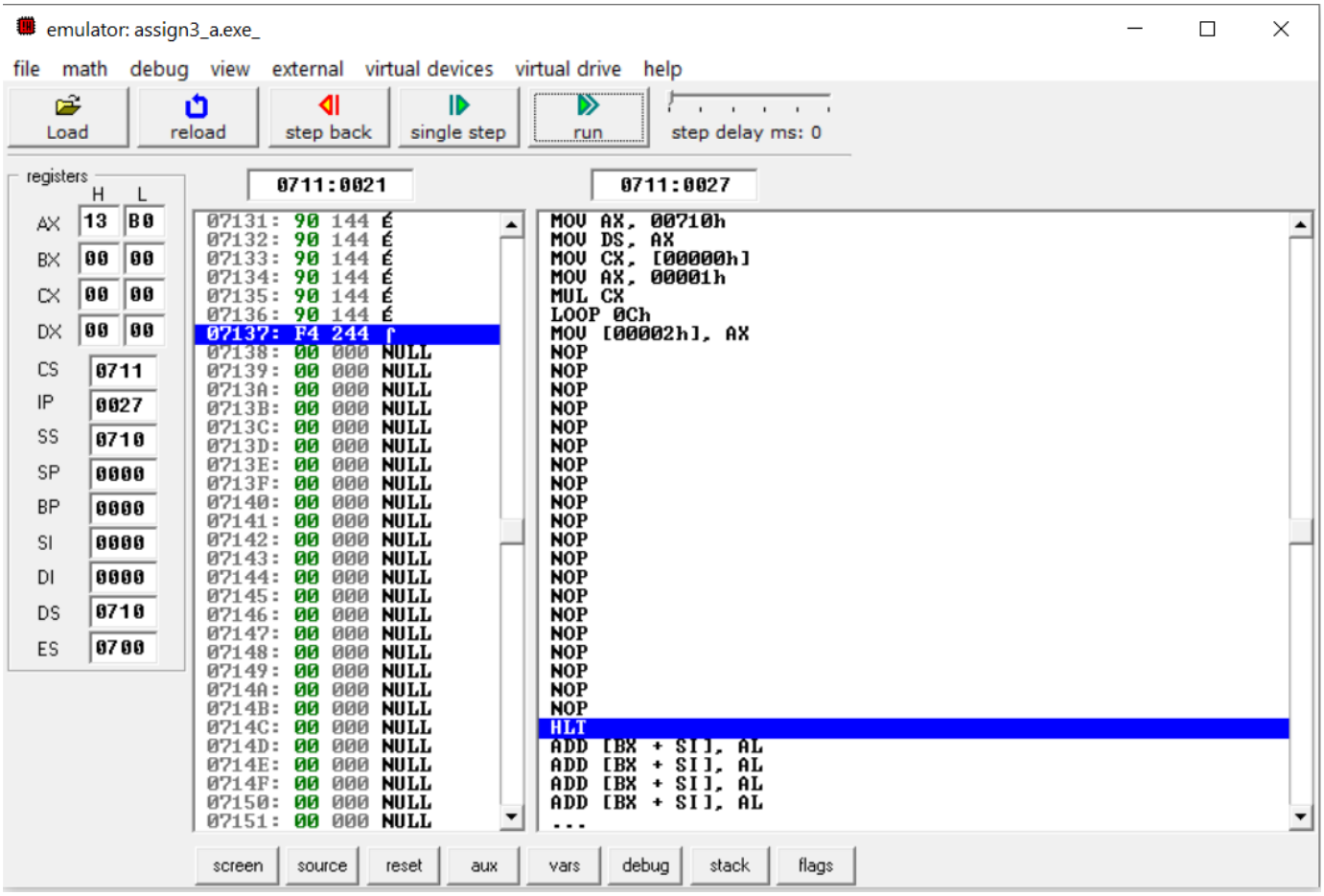
```
01
02 ; You may customize this and other start-up templates;
03 ; The location of this template is c:\emu8086\inc\0_com_template.txt
04
05 ; Name: PUNIT MIDDHA
06 ; Regno: 19BCE2060
07
08 ASSUME CS:CODE, DS:DATA
09
10 DATA SEGMENT
11 FACT DW 07H
12 RES DW ?
13 DATA ENDS
14
15 CODE SEGMENT
16
17 START: MOV AX,DATA
18        MOV DS,AX
19        MOV CX,FACT
20        MOV AX,01H
21 LO1: MUL CX
22     LOOP LO1
23
24 MOV RES,AX
25
26 CODE ENDS
27 END START
```



Inference:

Since, Factorial of any number is calculated as 1*2*3*.... *(n-1) *n. So, for the given number we have to run the loop from 1 to n and multiply in each iteration. We found the factorial of 07H, and the result, 13B0, which is stored in both AX and the RES variable.

➢ *Task – 2*

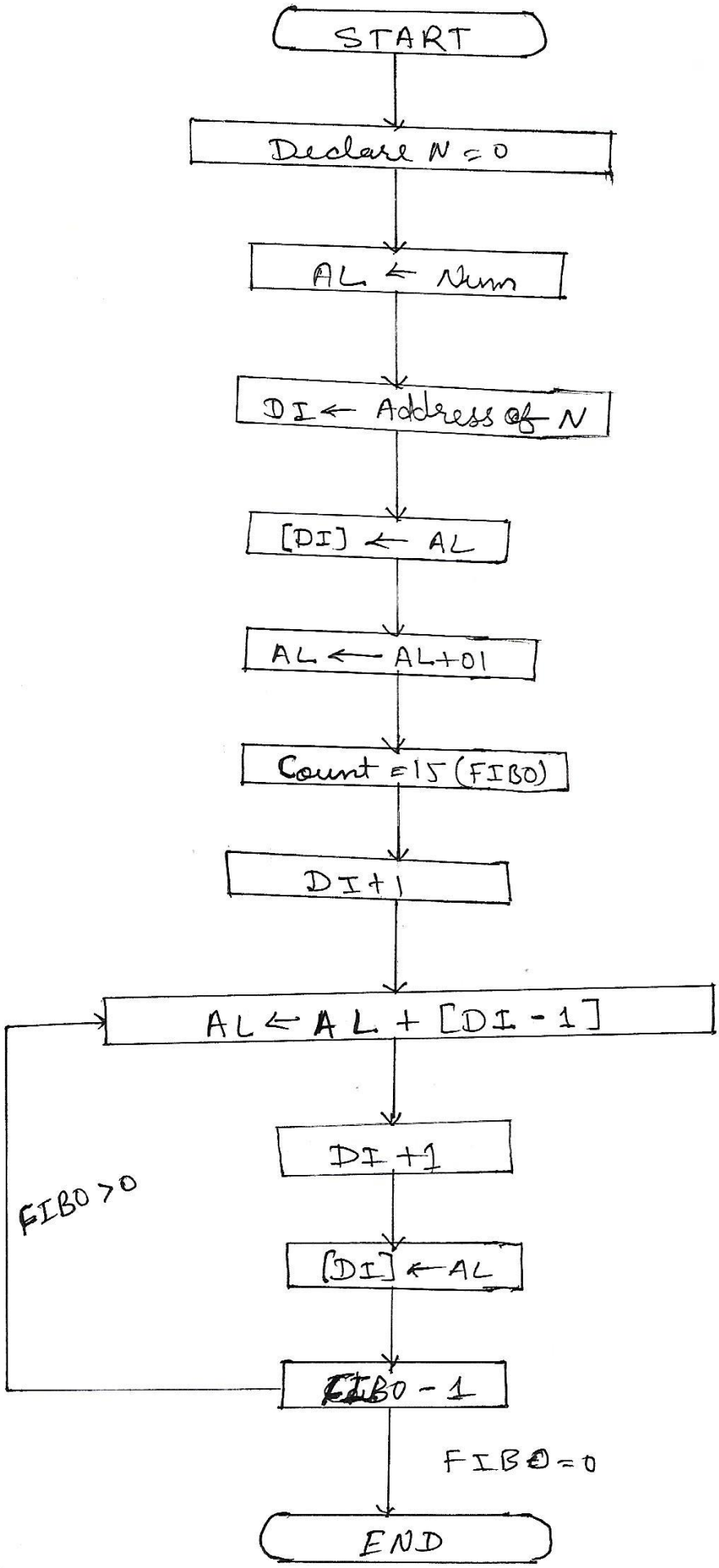
2. Write the ALP for the Fibonacci series (up to 15 numbers)

Aim:

To find the Fibonacci series up to 15 numbers

Handwritten Flow Chart:

2.


START
Declare N = 0
AL ← Num
DI ← Address of N
[DI] ← AL
AL ← AL+01
Count = 15 (FIBO)
DI+1
AL ← AL + [DI - 1]
DI +1
[DI] ← AL
FIBO - 1
FIBO > 0
FIBO = 0
END

Handwritten Program:

2.

```
; Name : PUNIT MIDDHA
; Regno : 19BCE2060

ASSUME CS:CODE , DS:DATA

DATA SEGMENT
        FIBO DW 0EH
        N EQU 00H
        DATA ENDS

CODE SEGMENT
        START: MOV AX,DATA
               MOV DS, AX
               MOV CX, FIBO
               SUB CX, 0002H
               MOV AL, N
               MOV DI, OFFSET N
               MOV [DI] , AL
               INC DI
               ADD AL, 01H
               MOV [DI] , AL
        L01 : MOV AL, [DI-1]
              ADD AL, [DI]
              INC DI
              MOV [DI] , AL
              LOOP L01
              CODE ENDS

END START
```

Snapshots of typed program and Output:

edit: C:\Users\Punit Middha\Desktop\Micro\assign3_b.asm

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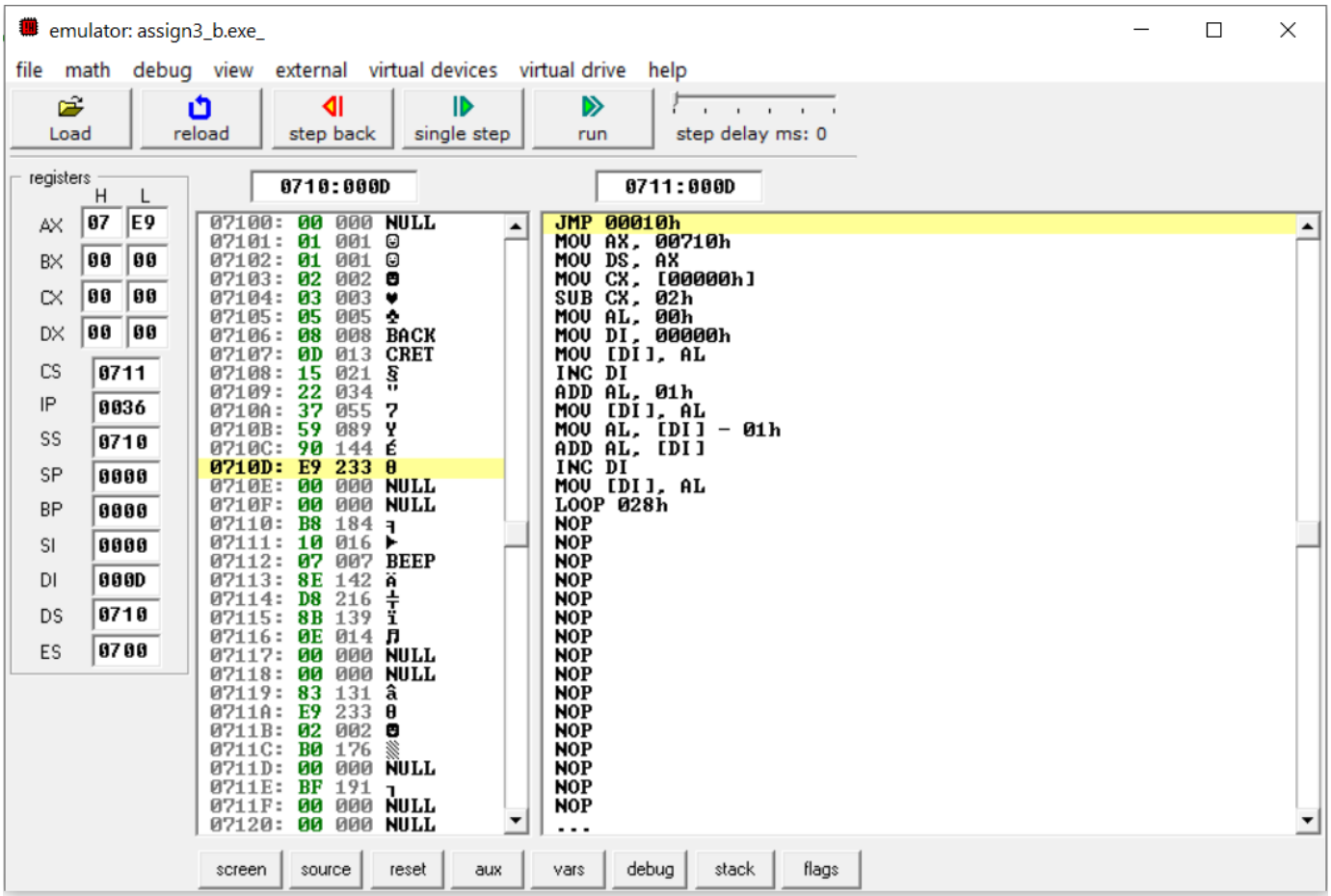
```
01
02 ; You may customize this and other start-up templates;
03 ; The location of this template is c:\emu8086\inc\0_com_template.txt
04
05 ; Name: PUNIT MIDDHA
06 ; Regno: 19BCE2060
07
08 ASSUME CS:CODE,DS:DATA
09
10 DATA SEGMENT
11     FIBO DW 0EH
12     N EQU 00H
13     DATA ENDS
14
15 CODE SEGMENT
16     START:MOV AX,DATA
17           MOV DS,AX
18           MOV CX,FIBO
19           SUB CX,0002H
20           MOV AL,N
21           MOV DI,OFFSET N
22           MOV [DI],AL
23           INC DI
24           ADD AL,01H
25           MOV [DI],AL
26
27        LO1:MOV AL,[DI-1]
28           ADD AL,[DI]
29           INC DI
30           MOV [DI],AL
31           LOOP LO1
32           CODE ENDS
33 END START
```



Inference:

Each number in the Fibonacci sequence is the sum of the two preceding ones. The series' first two numbers are 0 and 1. Addresses ranging from 0710:0000 to 0710:000D contain the series of up to 14 numbers.