1. (a) Write a program in assembly language to find L.C.M of two

single-digit numbers.

Code

ORG 100h

.DATA

num1 DB 10

num2 DB 10

gcd\_res DB 0

lcm\_res DW 0

resultMsg DB 'The LCM is: $'

.CODE

main:

MOV AL, num1

MOV BL, num2

CALL gcd

MOV gcd\_res, AL

MOV AL, num1

MOV AH, 0

MOV DL, num2

MUL DL

MOV CL, gcd\_res

DIV CL

MOV lcm\_res, AX

LEA DX, resultMsg

MOV AH, 09h

INT 21h

MOV AX, lcm\_res

CALL PrintDecimal

MOV AH, 4Ch

INT 21h

gcd PROC

CMP BL, 0

JE end\_gcd

gcd\_loop:

MOV AH, 0

DIV BL

MOV AL, BL

MOV BL, AH

CMP BL, 0

JNE gcd\_loop

end\_gcd:

RET

gcd ENDP

PrintDecimal PROC

MOV CX, 10

MOV BX, 0

decimal\_loop:

XOR DX, DX

DIV CX

PUSH DX

INC BX

CMP AX, 0

JNE decimal\_loop

print\_digits:

POP DX

ADD DL, '0'

MOV AH, 02h

INT 21h

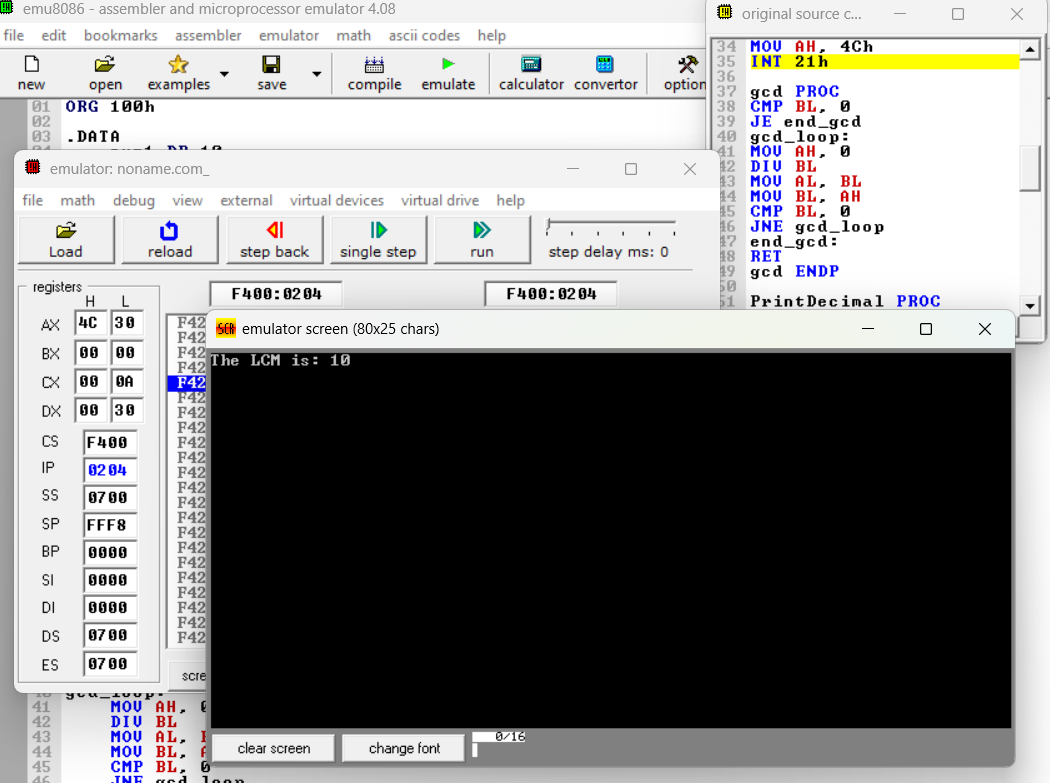
DEC BX

JNZ print\_digits

RET

PrintDecimal ENDP

Output:



(b) Write an assembly language program to display the nth term

of a fibonacci series. “n” must be a single digit number which may

be taken from the user.

Code

.model small

.stack 100h

.data

msg db 'Enter the value of n (0-9): $'

fib\_res db ?

n db ?

result\_msg db 0Dh, 0Ah, 'Fibonacci term: $'

result db '00$', 0Dh, 0Ah

.code

main:

mov ax, @data

mov ds, ax

mov ah, 09h

lea dx, msg

int 21h

mov ah, 01h

int 21h

sub al, '0'

mov n, al

mov al, n

cmp al, 0

je fib\_zero

cmp al, 1

je fib\_one

mov cl, al

mov al, 1

mov bl, 0

dec cl

fib\_loop:

mov ah, al

add al, bl

mov bl, ah

dec cl

jnz fib\_loop

mov fib\_res, al

display\_result:

mov ah, 09h

lea dx, result\_msg

int 21h

mov al, fib\_res

aam

add ah, '0'

add al, '0'

mov result[0], ah

mov result[1], al

jmp display\_final

single\_digit:

add al, '0'

mov result[0], al

mov result[1], '$'

display\_final:

lea dx, result

mov ah, 09h

int 21h

mov ah, 4Ch

int 21h

fib\_zero:

mov fib\_res, 0

jmp display\_result

fib\_one:

mov fib\_res, 1

jmp display\_result

Output:

A screenshot of a computer

Description automatically generated

Practice set:

2. Write an assembly language program to find the factorial of a

given single-digit number.

Code

ORG 100h

.DATA

result dw 1

msg\_prompt db 'Enter a single-digit number (0-9): $'

msg\_result db 0Dh, 0Ah, 'Factorial is: $'

error\_msg db 0Dh, 0Ah, 'Error: Enter a single-digit number.$'

.CODE

start:

mov ah, 09h

lea dx, msg\_prompt

int 21h

mov ah, 01h

int 21h

sub al, '0'

cmp al, 9

ja error

cmp al, 0

jl error

jmp calculate

error:

mov ah, 09h

lea dx, error\_msg

int 21h

jmp exit

calculate:

mov bl, al

mov ax, 1

factorial\_loop:

cmp bl, 1

jbe end\_factorial

mul bl

dec bl

jmp factorial\_loop

end\_factorial:

mov result, ax

mov ah, 09h

lea dx, msg\_result

int 21h

mov ax, result

call display\_number

exit:

mov ah, 4Ch

int 21h

display\_number proc

mov bx, 10

xor cx, cx

next\_digit:

xor dx, dx

div bx

add dl, '0'

push dx

inc cx

test ax, ax

jnz next\_digit

display\_loop:

pop dx

mov ah, 02h

int 21h

loop display\_loop

ret

display\_number endp

Output:

