COMPUTER ORGANIZATION AND ARCHITECTURE

1. Write a program in assembly language to display a two-digit number on the screen. The Two-digit number is required to be taken in the program itself.

```
ORG 100h
; Two-digit number to be displayed
MOV AL, 90    ; Load the two-digit number into AL
; Split the number into tens and units
MOV BL, 10        ; Set divisor to 10 to separate tens and units
DIV BL            ; Divide AL by 10, AL = quotient (tens), AH = remainder (units)
; Store the quotient (tens) and remainder (units)
MOV BH, AL        ; Store the tens digit in BH
MOV BL, AH        ; Store the units digit in BL
MOV DX, OFFSET msg_1
MOV AH, 09h
INT 21h
; Convert tens digit to ASCII
ADD BH, '0'       ; Convert the tens digit to ASCII
MOV DL, BH        ; Move the ASCII tens digit to DL for printing
MOV AH, 02h       ; DOS interrupt to print a character
INT 21h           ; Print the tens digit
; Convert units digit to ASCII
ADD BL, '0'       ; Convert the units digit to ASCII
MOV DL, BL        ; Move the ASCII units digit to DL for printing
MOV AH, 02h       ; DOS interrupt to print a character
INT 21h           ; Print the units digit
```

```
; Terminate the program
MOV AH, 4Ch       ; DOS interrupt to exit the program
INT 21h
msg_1  DB 'The two digit no is : $'
END
```

OUTPUT:

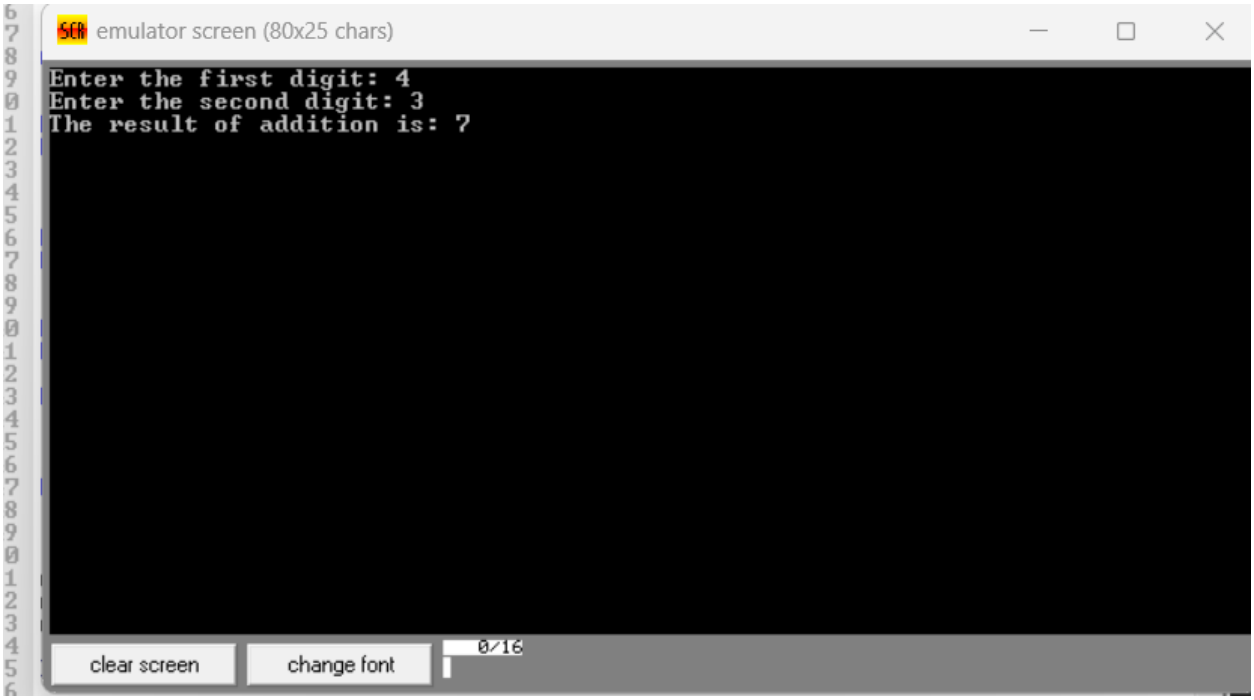
2. Write an assembly language program to take two single-digit integers from the user and print the result of addition on the screen.

```
ORG 100h

MOV DX, OFFSET msg_input1
MOV AH, 09h
```

```
INT 21h

; Read the first digit from the user
MOV AH, 01h
INT 21h
SUB AL, '0'        ; Convert ASCII to integer
MOV BL, AL         ; Store the first digit in BL

; Display the message "Enter the second digit: "
MOV DX, OFFSET msg_input2
MOV AH, 09h
INT 21h

; Read the second digit from the user
MOV AH, 01h
INT 21h
SUB AL, '0'        ; Convert ASCII to integer
MOV CL, AL         ; Store the second digit in CL

; Perform addition
ADD BL, CL         ; Add the two digits, result in BL

; Convert the result back to ASCII
ADD BL, '0'        ; Convert the sum to ASCII

; Display the message "The result of addition is: "
MOV DX, OFFSET msg_output
```

```
MOV AH, 09h
INT 21h

; Print the result
MOV DL, BL
MOV AH, 02h
INT 21h

MOV DL, 0Dh
MOV AH, 02h
INT 21h
MOV DL, 0Ah
INT 21h

; Terminate the program
MOV AH, 4Ch
INT 21h

; Data section with messages
msg_input1  DB 'Enter the first digit: $'
msg_input2  DB 0Dh, 0Ah, 'Enter the second digit: $'
msg_output  DB 0Dh, 0Ah, 'The result of addition is: $'

END
```

OUTPUT:



GITHUB LINK: https://github.com/vishnupriyavayya/COA-Lab-Task-8