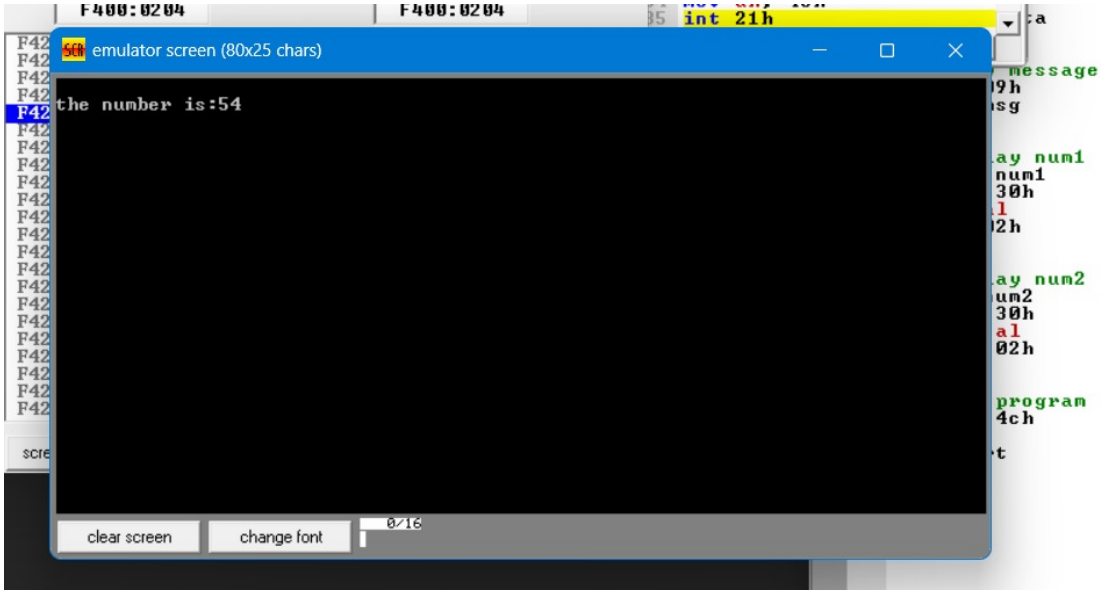
1. Write a program in assembly language to display a two-digit number on the screen. The two-digits number is required to be taken in the program itself.

```
//code
.model small
.stack 100h

.data
num1 db 5
num2 db 4
msg db 13 ,10,'the number is:$'

.code
start:
mov ax,@data
mov ds,ax

;display message
mov ah,09h
lea dx,msg
int 21h

 ;display num1
mov al, num1
add al, 30h
mov dl,al
mov ah,02h
int 21h

 ;display num2
mov al,num2
add al, 30h
mov dl, al
mov ah ,02h
int 21h

 ;exit program
mov ah, 4ch
int 21h
end start
```

output



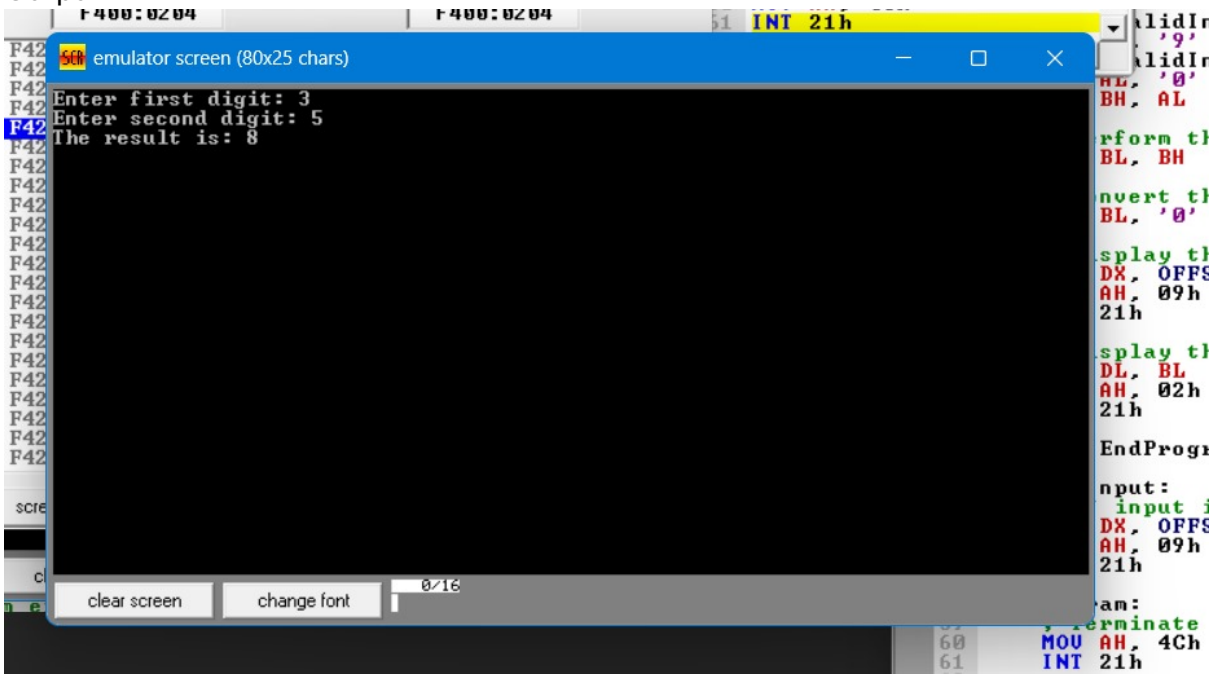
2. Write an assembly language program to take two single-digit integers from the user and print the result of addition on the screen.

//code

```
ORG 100h

_start:
  ; Display message "Enter first digit: "
  MOV DX, OFFSET msg_input1
  MOV AH, 09h
  INT 21h

  ; Get the first single-digit integer from the user
  MOV AH, 01h
  INT 21h
  CMP AL, '0'
  JL InvalidInput
  CMP AL, '9'
  JG InvalidInput
  SUB AL, '0'
  MOV BL, AL

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

```
    ; Get the second single-digit integer from the user
    MOV AH, 01h
    INT 21h
    CMP AL, '0'
    JL InvalidInput
    CMP AL, '9'
    JG InvalidInput
    SUB AL, '0'
    MOV BH, AL

    ; Perform the subtraction (BL - BH)
    ADD BL, BH

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

    ; Display the result message
    MOV DX, OFFSET msg_output
    MOV AH, 09h
    INT 21h

    ; Display the result of the Addition
    MOV DL, BL
    MOV AH, 02h
    INT 21h

    JMP EndProgram ; End program execution

InvalidInput:
    ; If input is not a valid digit, display an error message
    MOV DX, OFFSET msg_error
    MOV AH, 09h
    INT 21h

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

msg_input1 DB 'Enter first digit: $'
msg_input2 DB 0Dh, 0Ah, 'Enter second digit: $'
msg_output DB 0Dh, 0Ah, 'The result is: $'
msg_error DB 0Dh, 0Ah, 'Error: Invalid input! $'

END _start
```

Output


emulator screen (80x25 chars)
Enter first digit: 3
Enter second digit: 5
The result is: 8
clear screen
change font
0/16
INT 21h
MOV AH, 4Ch
INT 21h