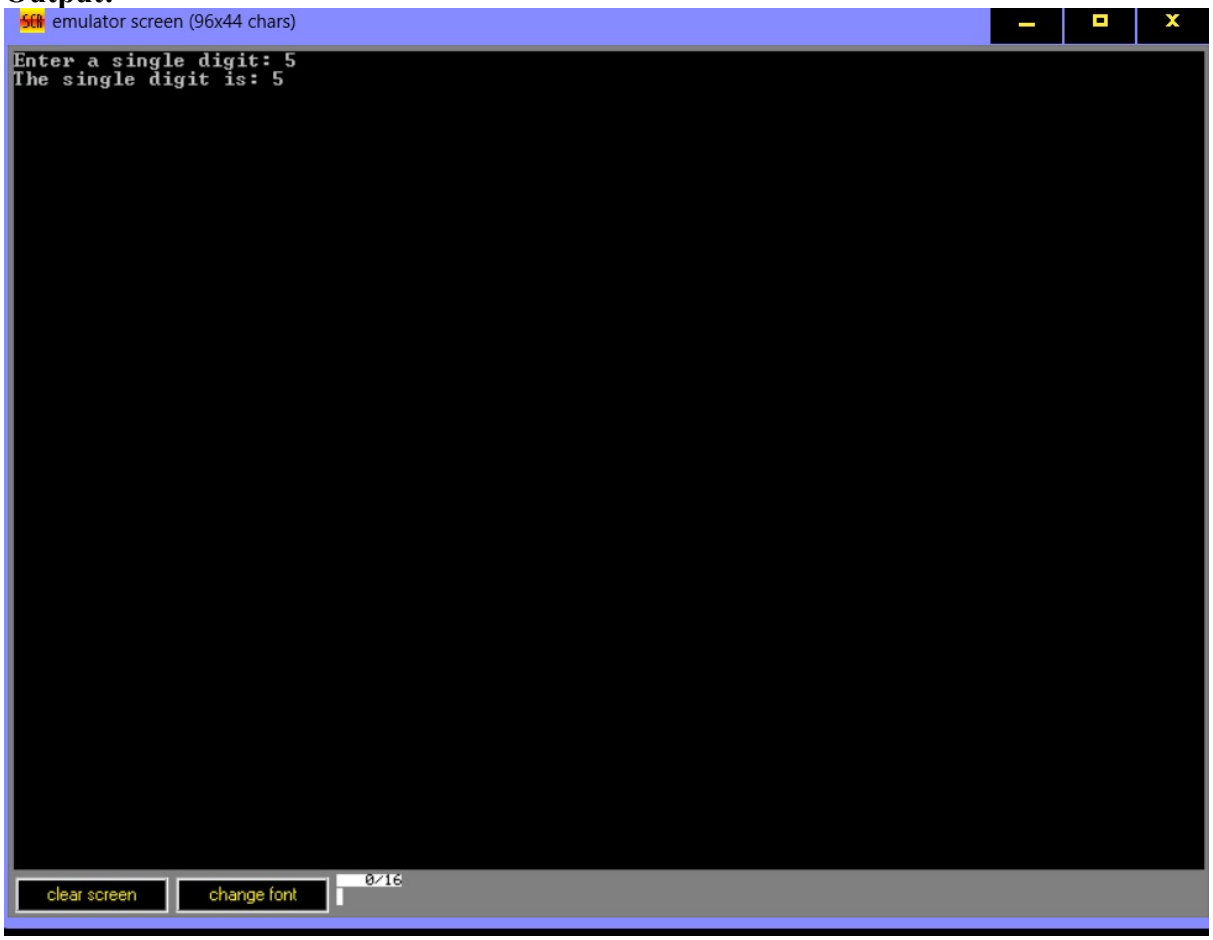
# Computer Organization and Architecture -Lab-07

1. Write a program in assembly language to take a single-digit integer from the user and print it on the screen.

Code:

```
ORG 100h

MOV DX, OFFSET msg_input
MOV AH, 09h
INT 21h

MOV AH, 01h
INT 21h
MOV BL, AL

CMP AL, '0'
JL NotDigit
CMP AL, '9'
JG NotDigit

MOV DX, OFFSET msg_output
MOV AH, 09h
INT 21h

MOV DL, BL
MOV AH, 02h
INT 21h
JMP EndProgram

NotDigit:
MOV DX, OFFSET msg_error
MOV AH, 09h
INT 21h

EndProgram:
MOV AH, 4Ch
INT 21h

msg_input  DB 'Enter a single digit: $'
msg_output DB 0Dh, 0Ah, 'The single digit is: $'
msg_error  DB 0Dh, 0Ah, 'Error: Not a digit! $'

END
```

**Output:**




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

## Code:

```
ORG 100h

start:
  MOV DX, OFFSET msg_input1
  MOV AH, 09h
  INT 21h

  MOV AH, 01h
  INT 21h
  CMP AL, '0'
  JL InvalidInput
  CMP AL, '9'
  JG InvalidInput
  SUB AL, '0'
```

```
    MOV BL, AL

    MOV DX, OFFSET msg_input2
    MOV AH, 09h
    INT 21h

    MOV AH, 01h
    INT 21h
    CMP AL, '0'
    JL InvalidInput
    CMP AL, '9'
    JG InvalidInput
    SUB AL, '0'
    MOV BH, AL

    MOV DX, OFFSET msg_result
    MOV AH, 09h
    INT 21h

    SUB BL, BH

    JS NegativeResult

    ADD BL, '0'
    MOV DL, BL
    MOV AH, 02h
    INT 21h
    JMP EndProgram

NegativeResult:
    MOV DL, '-'
    MOV AH, 02h
    INT 21h

    NEG BL
    ADD BL, '0'
    MOV DL, BL
    MOV AH, 02h
    INT 21h
    JMP EndProgram

InvalidInput:
    MOV DX, OFFSET msg_error
    MOV AH, 09h
    INT 21h
    JMP EndProgram
```

```
EndProgram:
   MOV AH, 4Ch
   INT 21h

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

END
```

**Output:**