

COMPUTER ORGANIZATION AND ARCHITECTURE

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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          ; Origin for COM file format (starts at 100h)
; Display message: "Enter a single digit: "
MOV AH, 09h       ; Function 09h is used to display a string
MOV DX, OFFSET msg_input ; Load the address of the input message into DX
INT 21h          ; DOS interrupt to display message
; Read single character input from the user
MOV AH, 01h       ; Function 01h is used to read a character from input
INT 21h          ; DOS interrupt to get the character from the user
MOV BL, AL        ; Save the input character in BL for later use
; Check if the entered character is a valid digit (between '0' and '9')
CMP AL, '0'       ; Compare with '0'
JL InvalidInput   ; If input is less than '0', it's invalid
CMP AL, '9'       ; Compare with '9'
JG InvalidInput   ; If input is greater than '9', it's invalid
; If valid digit, print the entered digit
; Display message: "The entered digit is: "
MOV AH, 09h       ; Function 09h is used to display a string
MOV DX, OFFSET msg_output ; Load the address of the output message into DX
INT 21h          ; DOS interrupt to display message
```

```

; Print the valid digit

MOV DL, BL      ; Move the valid character from BL to DL (for printing)

MOV AH, 02h     ; Function 02h is used to print a single character

INT 21h        ; DOS interrupt to print the character

JMP EndProgram  ; Jump to EndProgram to terminate successfully

InvalidInput:

MOV AH, 09h     ; Function 09h is used to display a string

MOV DX, OFFSET msg_error ; Load the address of the error message into DX

INT 21h        ; DOS interrupt to display error message

EndProgram:

MOV AH, 4Ch     ; Function 4Ch is used to terminate the program

INT 21h        ; DOS interrupt to exit

msg_input DB 'Enter a single digit: $' ; Input prompt message

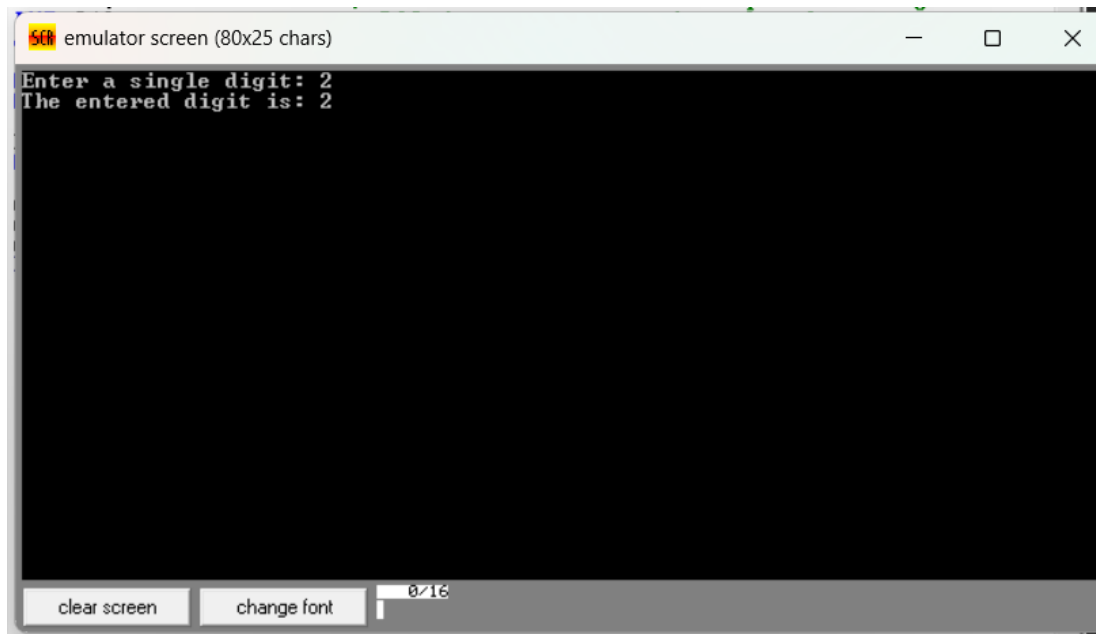
msg_output DB 0Dh, 0Ah, 'The entered digit is: $' ; Output message with newline

msg_error DB 0Dh, 0Ah, 'Error: Invalid input! $' ; Error message with newline

END            ; End of program

```

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
```

```
; Display message: "Enter the first single digit: "
```

```
MOV AH, 09h      ; Function 09h is used to display a string
```

```
MOV DX, OFFSET msg_input1 ; Load the address of the input message into DX
```

```
INT 21h          ; DOS interrupt to display message
```

```
; Read the first single digit from the user
```

```
MOV AH, 01h      ; Function 01h is used to read a character from input
```

```
INT 21h          ; DOS interrupt to get the character
```

```
SUB AL, '0'       ; Convert ASCII digit to actual number
```

```
MOV BL, AL        ; Store the first digit in BL
```

```
; Display message: "Enter the second single digit: "
```

```
MOV AH, 09h      ; Function 09h is used to display a string
```

```
MOV DX, OFFSET msg_input2 ; Load the address of the input message into DX
```

```
INT 21h          ; DOS interrupt to display message
```

```

; Read the second single digit from the user

MOV AH, 01h      ; Function 01h is used to read a character from input
INT 21h          ; DOS interrupt to get the character

SUB AL, '0'      ; Convert ASCII digit to actual number

MOV BH, AL       ; Store the second digit in BH

; Subtract the second digit from the first

SUB BL, BH       ; Subtract BH (second digit) from BL (first digit)

; Display message: "The result of subtraction is: "

MOV AH, 09h      ; Function 09h is used to display a string
MOV DX, OFFSET msg_output ; Load the address of the output message into DX
INT 21h          ; DOS interrupt to display the message

; Check if the result is negative

CMP BL, 0        ; Compare the result with 0

JGE PrintResult  ; If result is >= 0, jump to print result

; If the result is negative, print the minus sign

MOV DL, '-'      ; Load the minus sign into DL

MOV AH, 02h      ; Function 02h to print a single character
INT 21h          ; DOS interrupt to print the minus sign

; Convert the negative result to positive

NEG BL           ; Negate the result to make it positive

PrintResult:

; Convert result to ASCII and print

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

MOV DL, BL       ; Move result into DL for printing

MOV AH, 02h      ; Function 02h is used to print a single character
INT 21h          ; DOS interrupt to print the result

; End the program

```

MOV AH, 4Ch ; Function 4Ch is used to terminate the program

INT 21h ; DOS interrupt to exit

msg_input1 DB 'Enter the first single digit: \$'

msg_input2 DB 0Dh, 0Ah, 'Enter the second single digit: \$'

msg_output DB 0Dh, 0Ah, 'The result of subtraction is: \$'

END

OUTPUT:



```
sch emulator screen (80x25 chars)
Enter the first single digit: 8
Enter the second single digit: 3
The result of subtraction is: 5
clear screen change font 0/16
```

GITHUB LINK: <https://github.com/vishnupriyavayya/COA-LAB-TASK-7>

The screenshot shows the GitHub repository page for **COA-LAB-TASK-7** by user **vishnupriyavayya**. The repository is public and currently has 0 stars, 0 forks, and 1 watch. The main branch is **main** with 1 branch and 0 tags. The repository contains two files: **mycode1.lab task 7.asm** and **mycode2.lab task 7.asm**, both added via upload 2 minutes ago. A **README** file is missing, with a prompt to "Add a README" and a button labeled "Add a README". The right sidebar shows sections for **About** (no description), **Activity** (0 stars, 1 watching, 0 forks), **Releases** (no releases published), and **Packages** (no packages published).

COA-LAB-TASK-7 Public

main 1 Branch 0 Tags

Go to file

Add file <> Code

vishnupriyavayya Add files via upload b79ced4 · 2 minutes ago 1 Commit

File	Action	Time
mycode1.lab task 7.asm	Add files via upload	2 minutes ago
mycode2.lab task 7.asm	Add files via upload	2 minutes ago

README

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Help people interested in this repository understand your project by adding a README.

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About

No description, website, or topics provided.

Activity

0 stars

1 watching

0 forks

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No releases published

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