

COMPUTER ORGANIZATION AND ARCHITECTURE

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

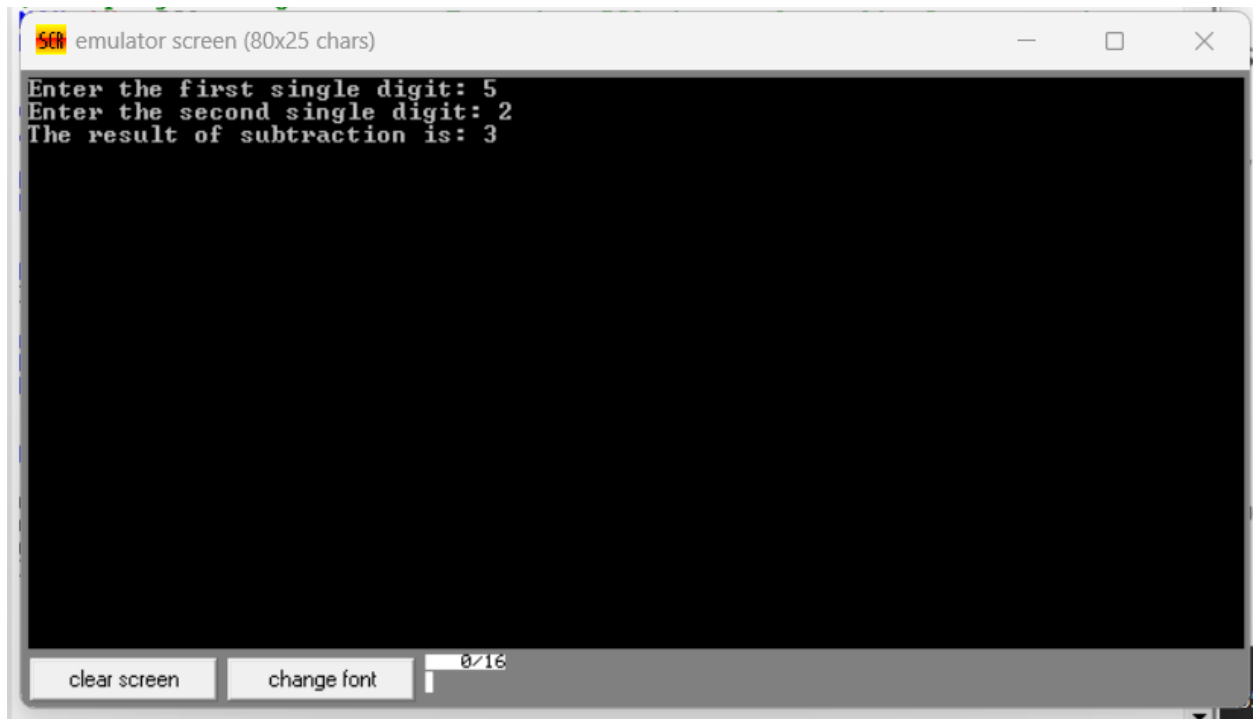
MOV DX, OFFSET msg_output ; Load the address of the output message into DX

```

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:



The image shows a screenshot of a terminal window titled "emulator screen (80x25 chars)". The terminal displays three lines of text: "Enter the first single digit: 5", "Enter the second single digit: 2", and "The result of subtraction is: 3". At the bottom of the window, there is a control bar with two buttons: "clear screen" and "change font". To the right of these buttons is a small text field showing "0/16".

```
emulator screen (80x25 chars)
Enter the first single digit: 5
Enter the second single digit: 2
The result of subtraction is: 3

clear screen  change font  0/16
```

GITHUB LINK: <https://github.com/Nikitha2341/COA-LAB-TASK-7>

The screenshot shows a GitHub repository page for 'COA-LAB-TASK-7' by user 'Nikitha2341'. The repository is public and has 1 branch and 0 tags. The main branch is 'main'. The repository contains two files: 'mycode1.lab task 7.asm' and 'mycode2.lab task 7.asm', both added via upload. The repository has 1 commit. The repository is currently being watched by 1 person and has 0 forks. The repository has no releases or packages published. The repository has a README section with a button to 'Add a README'.

COA-LAB-TASK-7 Public

main 1 Branch 0 Tags

Go to file

Add file <> Code

About

No description, website, or topics provided.

Activity

0 stars

1 watching

0 forks

Releases

No releases published

Create a new release

Packages

No packages published

Publish your first package

README

Add a README

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

Add a README