

COMPUTER ORGANIZATION AND ARCHITECTURE

1. Write a program in assembly language to take two single-digit numbers as input and display whether they are equal or not.

CODE:

```
ORG 100h

; Display the message "Enter the first digit: "
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

; Compare the two digits
CMP BL, CL       ; Compare the two digits
JE digits_equal  ; Jump if equal
```

```
; Display message for not equal
MOV DX, OFFSET msg_not_equal
MOV AH, 09h
INT 21h
JMP end_program
digits_equal:
; Display message for equal
MOV DX, OFFSET msg_equal
MOV AH, 09h
INT 21h
end_program:
; 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: $'
msg_equal DB 0Dh, 0Ah, 'The digits are equal.$'
msg_not_equal DB 0Dh, 0Ah, 'The digits are not equal.$'
END
```

OUTPUT:



```
56h emulator screen (80x25 chars)
Enter the first digit: 2
Enter the second digit: 2
The digits are equal.
clear screen  change font  0/16
```

2. Write a program in assembly language to check whether a single-digit number is odd or even.

CODE:

```
ORG 100h

; Display the message "Enter a single-digit number: "
MOV DX, OFFSET msg_input
MOV AH, 09h
INT 21h

; Read the digit from the user
MOV AH, 01h
INT 21h

SUB AL, '0'      ; Convert ASCII to integer
; Check if the digit is between 0 and 9
CMP AL, 0        ; Check if less than 0
JB  invalid_input ; If below 0, jump to invalid input
```

```

CMP AL, 9      ; Check if greater than 9
JA  invalid_input ; If above 9, jump to invalid input
; Check if the number is odd or even
AND AL, 1      ; AND with 1 to check the least significant bit
JZ  even_number ; If result is 0, it's even
; Display message for odd
MOV DX, OFFSET msg_odd
MOV AH, 09h
INT 21h
JMP end_program

even_number:
; Display message for even
MOV DX, OFFSET msg_even
MOV AH, 09h
INT 21h
JMP end_program

invalid_input:
; Display invalid input message
MOV DX, OFFSET msg_invalid
MOV AH, 09h
INT 21h

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

; Data section with messages
msg_input  DB 'Enter a single-digit number: $'

```

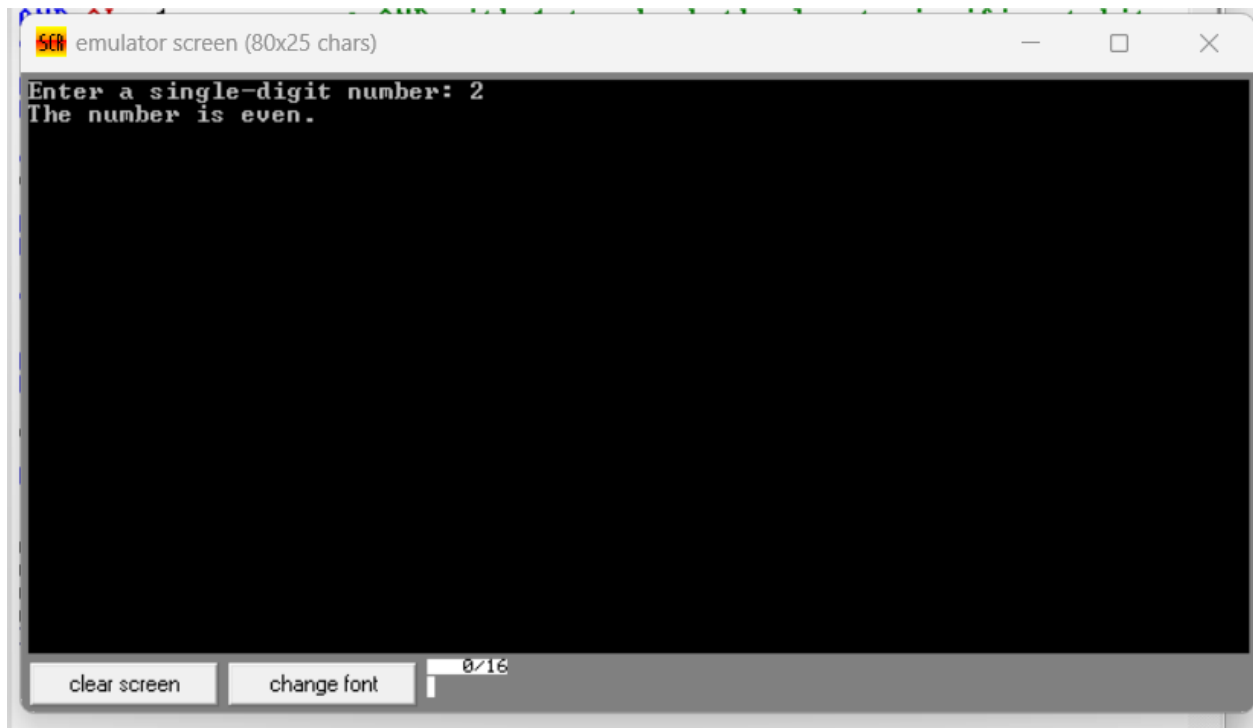
msg_even DB 0Dh, 0Ah, 'The number is even.\$'

msg_odd DB 0Dh, 0Ah, 'The number is odd.\$'

msg_invalid DB 0Dh, 0Ah, 'Invalid input. Please enter a single-digit number (0-9).\$'

END

OUTPUT:



GITHUB LINK: <https://github.com/vishnupriyavayya/COA-LAB-TASK-9>

The screenshot shows the GitHub repository page for **COA-LAB-TASK-9** by user **vishnupriyavayya**. The repository is public and currently has 0 stars, 0 forks, and 1 watcher. The main branch is **main**, and there is 1 branch and 0 tags. The repository contains two files: **mycode1.lab task 9.asm** and **mycode2.lab task 9.asm**, both added via upload. The **README** section is currently empty, 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).