

# COMPUTER ORGANIZATION AND ARCHITECTURE

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REG: AP22110010390

CLASS: CSE-F

1) Write an assembly language program to perform addition of 8-bit data.

org 100h

num1 db 24h

num2 db 29h

start:

mov al, num1

add al, num2

mov bl, al

mov ah, al

and ah, 0F0h

shr ah, 4

add ah, 30h

cmp ah, 39h

jle print\_first\_digit

add ah, 7

print\_first\_digit:

mov dl, ah

mov ah, 02h

int 21h

mov ah, bl

and ah, 0Fh

add ah, 30h

cmp ah, 39h

jle print\_second\_digit

add ah, 7

print\_second\_digit:

mov dl, ah

mov ah, 02h

int 21h

mov ah, 4Ch

int 21

## RESULT:



2. Write a program in assembly language to perform addition of 16-bit data.

ORG 100h

NUM1 DW 1234h ; Define first 16-bit number

NUM2 DW 5678h ; Define second 16-bit number

START:

MOV AX, NUM1 ; Move NUM1 to AX register

ADD AX, NUM2 ; Add NUM2 to AX register (AX = NUM1 + NUM2)

; Convert result to ASCII and display

MOV BX, AX ; Copy result to BX for further processing

; Process higher byte of the result

MOV AH, BH ; Move higher byte of result to AH

SHR AH, 4 ; Shift right by 4 to get upper nibble

ADD AH, 30h ; Convert to ASCII

CMP AH, 39h ; Compare if less than '9'

JLE PRINT\_HIGH\_NIBBLE

ADD AH, 7 ; Convert to ASCII letter if necessary

PRINT\_HIGH\_NIBBLE:

MOV DL, AH ; Move AH to DL for printing

MOV AH, 02h ; BIOS interrupt to display character

INT 21h

; Process lower nibble of the higher byte

MOV AH, BH ; Move higher byte of result to AH

AND AH, 0Fh ; Mask upper nibble

ADD AH, 30h ; Convert to ASCII

CMP AH, 39h ; Compare if less than '9'

JLE PRINT\_LOW\_NIBBLE

ADD AH, 7 ; Convert to ASCII letter if necessary

PRINT\_LOW\_NIBBLE:

MOV DL, AH ; Move AH to DL for printing

MOV AH, 02h ; BIOS interrupt to display character

INT 21h

; Process upper nibble of the lower byte

MOV AH, BL ; Move lower byte of result to AH

SHR AH, 4 ; Shift right by 4 to get upper nibble

ADD AH, 30h ; Convert to ASCII

CMP AH, 39h ; Compare if less than '9'

JLE PRINT\_HIGH\_NIBBLE2

ADD AH, 7 ; Convert to ASCII letter if necessary

PRINT\_HIGH\_NIBBLE2:

MOV DL, AH ; Move AH to DL for printing

MOV AH, 02h ; BIOS interrupt to display character

INT 21h

; Process lower nibble of the lower byte

MOV AH, BL ; Move lower byte of result to AH

AND AH, 0Fh ; Mask upper nibble

ADD AH, 30h ; Convert to ASCII

CMP AH, 39h ; Compare if less than '9'

JLE PRINT\_LOW\_NIBBLE2

ADD AH, 7 ; Convert to ASCII letter if necessary

PRINT\_LOW\_NIBBLE2:

MOV DL, AH ; Move AH to DL for printing

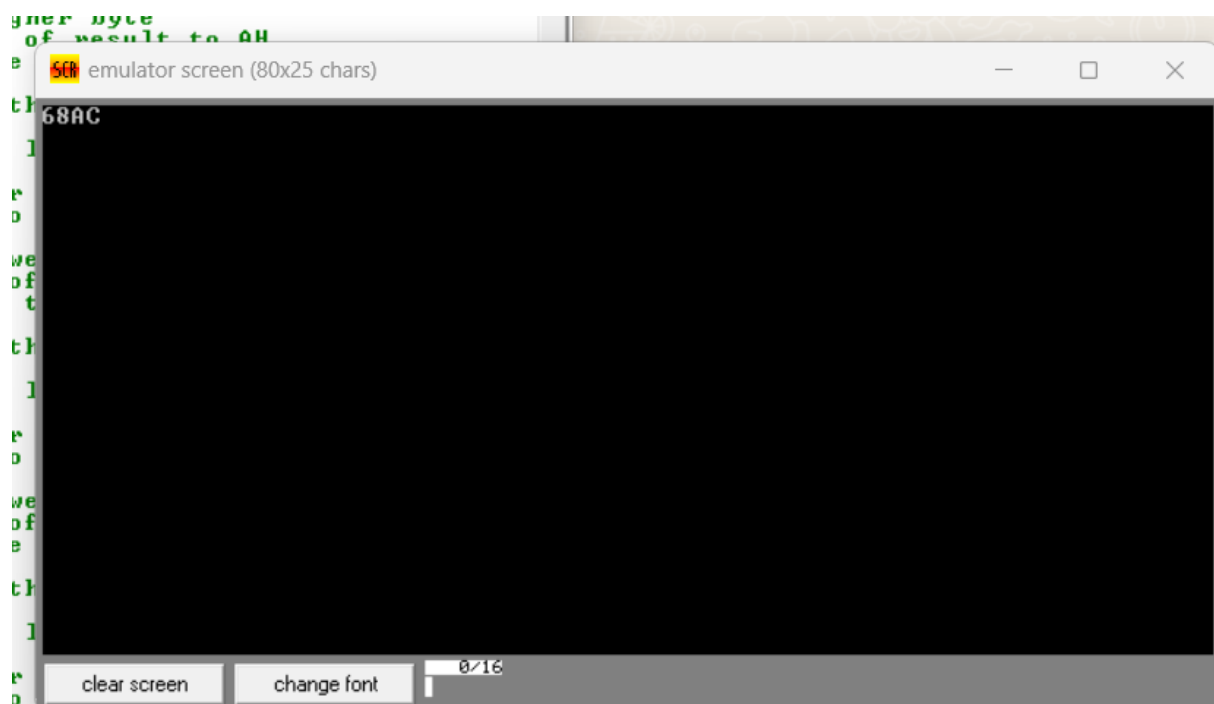
MOV AH, 02h ; BIOS interrupt to display character

INT 21h

MOV AH, 4Ch ; Terminate program

INT 21h

## RESULT:



GITHUB LINK: <https://github.com/vishnupriyavayya/COA-LAB-TASK-2>

