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Microprocessors and Interfacing

(CSE – 3002)

LAB EXPERIMENT– 5

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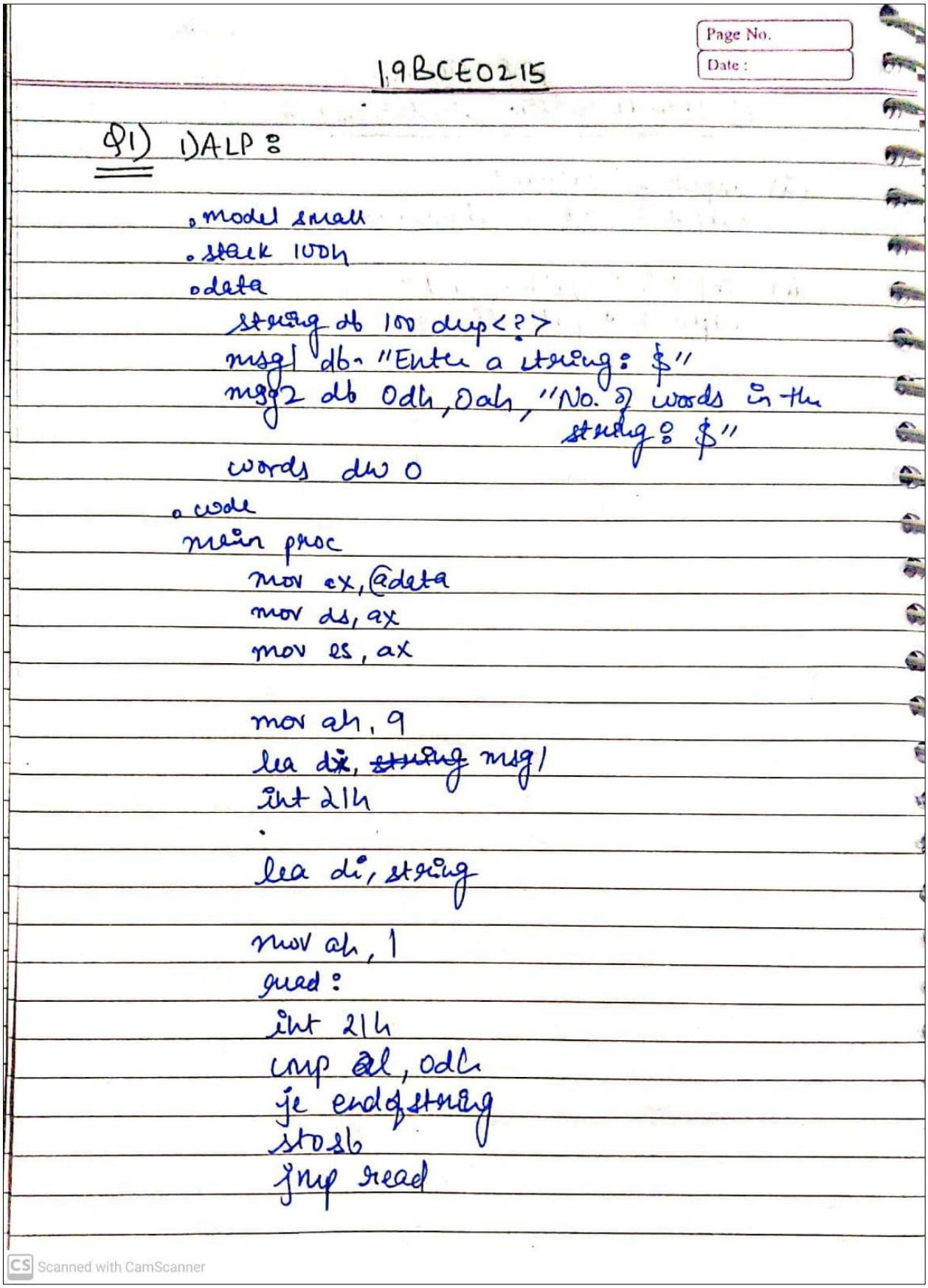
Reg. No: **19BCE0215**

Teacher: **Mr. Konguvel E.**

1. Write and execute ALP to prompt the user to input a string and print how many words in the entered string.



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Q1) 1)ALP :

```
.model small
.stack 100h
.data
    string db 100 dup(?)
    msg1 db "Enter a string: $"
    msg2 db 0dh,0ah,"No. of words in the
                        string: $"
    words dw 0
.code
main proc
    mov ax,@data
    mov ds,ax
    mov es,ax

    mov ah,9
    lea dx,msg1
    int 21h
    .
    lea di,string

    mov ah,1
    read:
    int 21h
    cmp al,0dh
    je endofstring
    stosb
    jmp read
```

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```
end of string:
    mov dl, "$"
    add dl

    xor bx, bx
count:
    mov al, string[bx]
    cmp al, "$"
    je exit
    cmp al, " "
    je word_completed
    inc bx
    jmp count

word_completed:
    inc words
    inc bx
    jmp count

exit:
    inc words

    mov ah, 9
    lea dx, msg2
    int 21h

    mov ah, 2
    mov dx, words
    add dx, 30h
    int 21h
    main endp
end main
```

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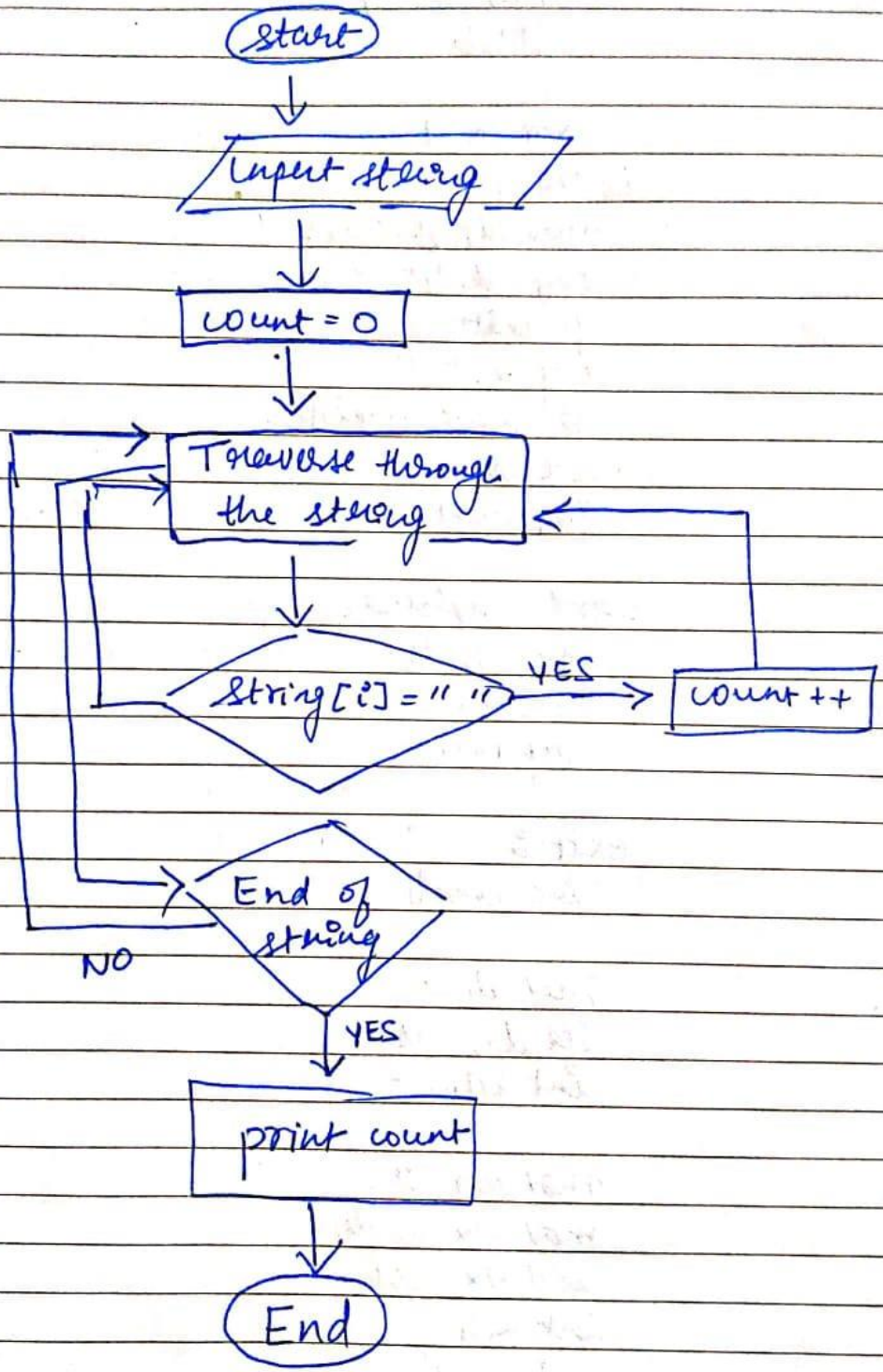
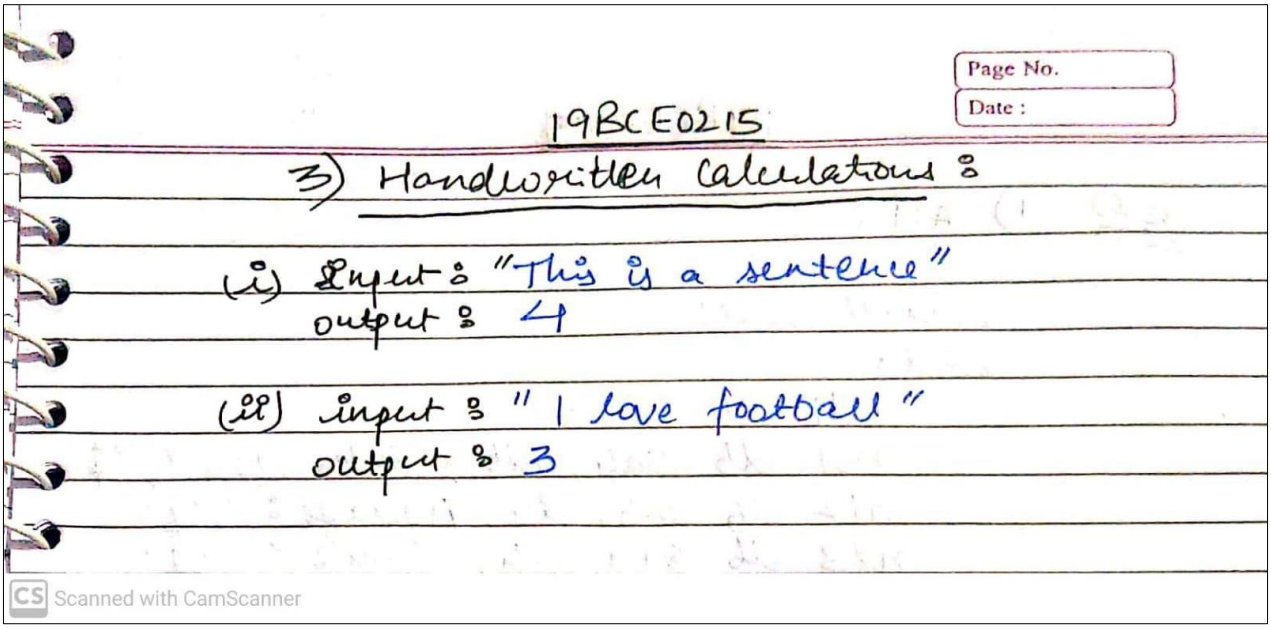
2) Flowchart:





Screenshot of ALP:

edit: C:\Users\Vibhu\OneDrive - vit.ac.in\Desktop\Fall Semester 21-22\Micro\ELA\LAB-5\no_of_words.asm

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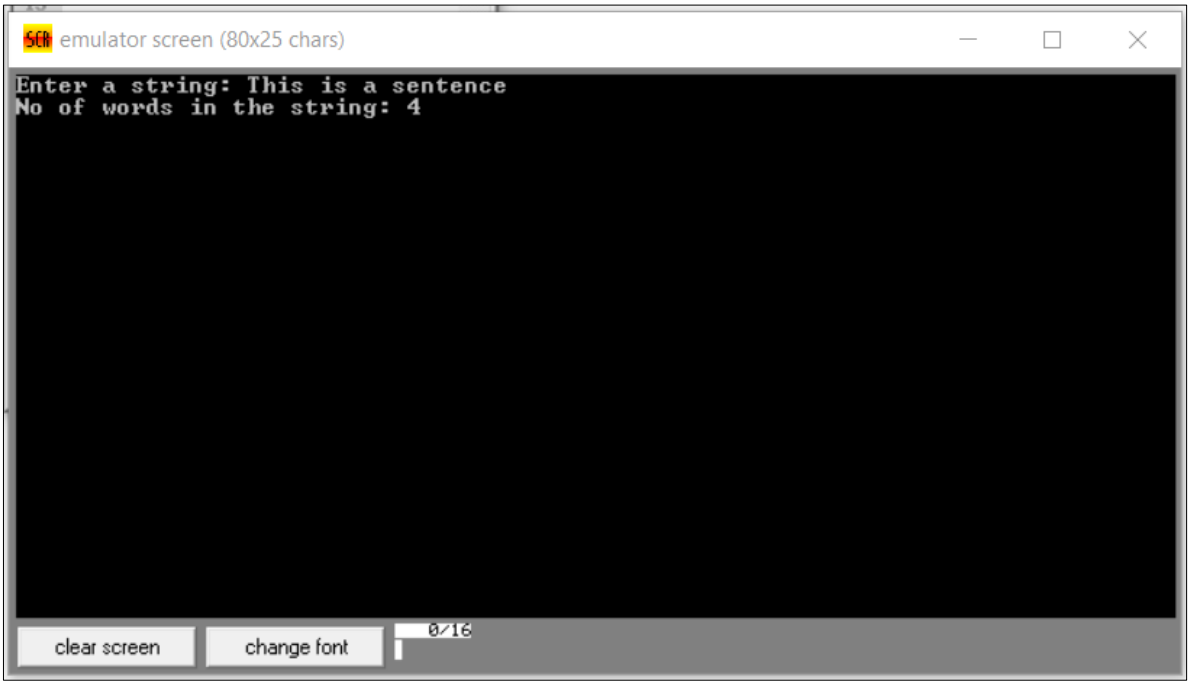
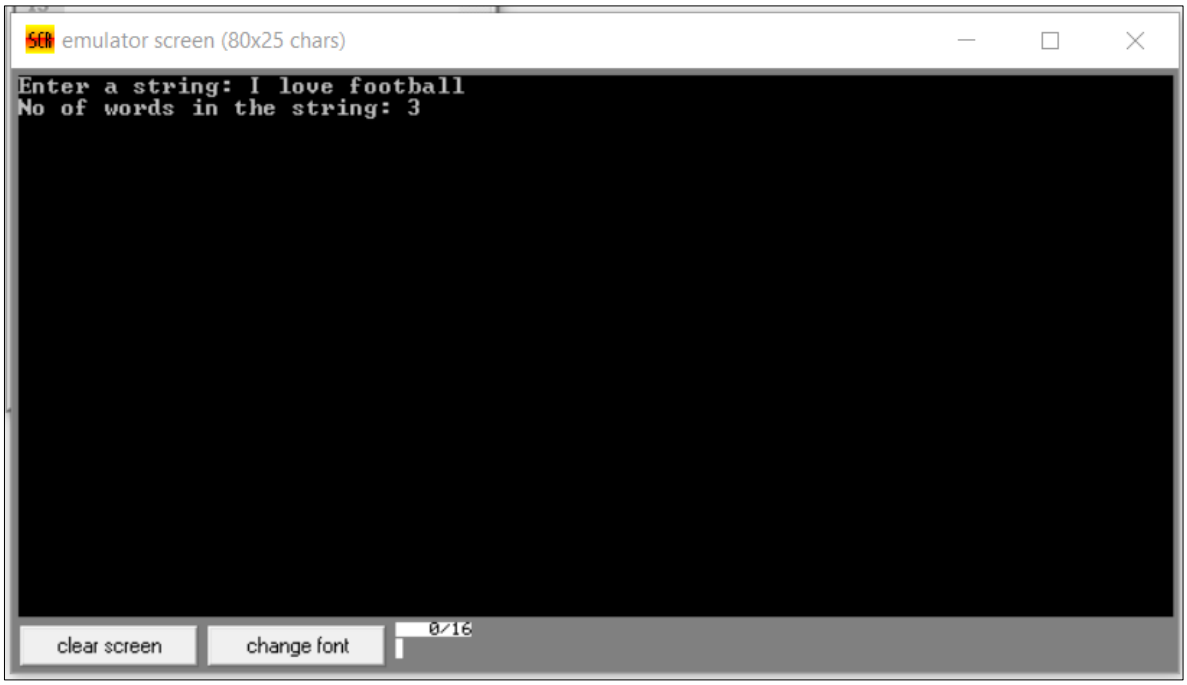
```
.model small
.stack 100h
.data
string db 100 dup(?)
msg1 db "Enter a string: $"
msg2 db 0dh, 0ah, "No of words in the string: $"
words dw 0
.code
main proc

      mov ax, @data
      mov ds, ax
      mov es, ax

      mov ah, 9
      lea dx, msg1
      int 21h

      lea di, string

      mov ah, 1
      read:
      int 21h
      cmp al, 0dh
      je endofstring
      stosb
      jmp read

      endofstring:
      mov al, "$"
      stosb

      xor bx, bx

      count:
      mov al, string[bx]
      cmp al, "$"
      je exit
      cmp al, " "
      je word_completed
      inc bx
      jmp count

      word_completed:
      inc words
      inc bx
      jmp count

      exit:
      inc words

      mov ah, 9
      lea dx, msg2
      int 21h

      mov ah, 2
      mov dx, words
      add dx, 30h
      int 21h
```

Screenshot of Output:

(i) Input: “This is a sentence”



(ii) Input: “I love football”



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2. Write and execute ALP to repeatedly prompt the user to enter 5 integers and display the Sum and Average of entered values.

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Q2) 1) ALP:

```
.model small
.data
    val1 db ?
    nl1 db 0ah,0dh,'Enter NO: ','$'
    nl2 db 0ah,0dh,'Average: ','$'
    nl3 db 0ah,0dh,'Sum: ','$'
.code

main proc
    mov ax,@data
    mov ds,ax

    mov al,05h
    mov cl,al
    mov bl,al
    mov al,00
    mov val1,al

lbl1:
    lea dx,nl1
    mov ah,09h
    int 21h

    mov ah,01h
    int 21h
    sub al,30h

    add al,val1
    mov val1,al
    loop lbl1
```

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```
lbl2 :
        lea dx, nl3
        mov ah, 09h
        int 21h

        mov ax, 00
        mov al, val1
        add ax, 3030h
        mov dx, ax
        mov ah, 02h
        int 21h

        lea dx, nl2
        mov ah, 09h
        int 21h

        mov ax, 00
        mov al, val1
        div bl
        adel ax, 00
        add al, val1
        div bl
        add ax, 3030h
        mov dx, ax

        mov ah, 02h
        int 21h

        mov ah, 4ch
        int 21h
main endp
    end main
```

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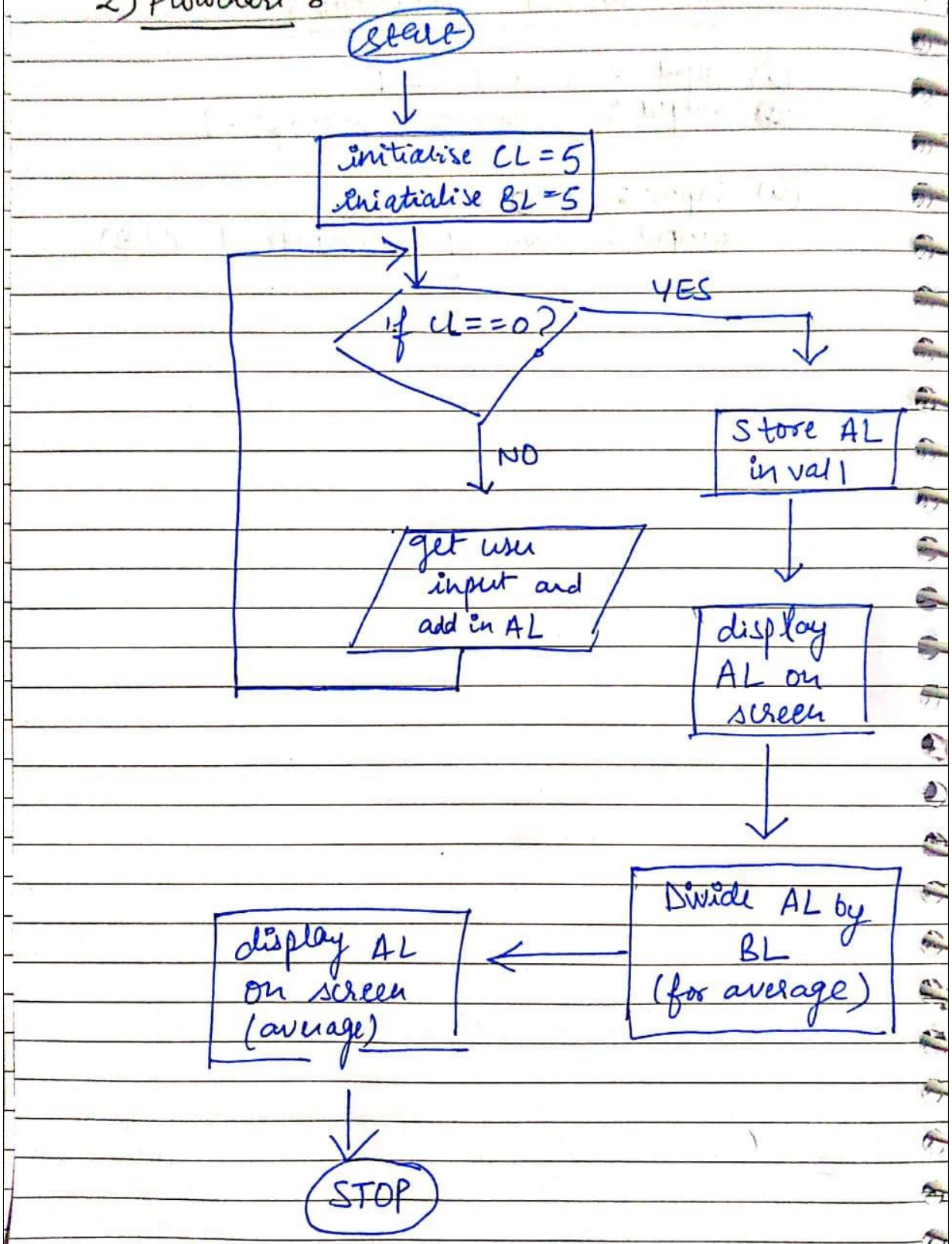
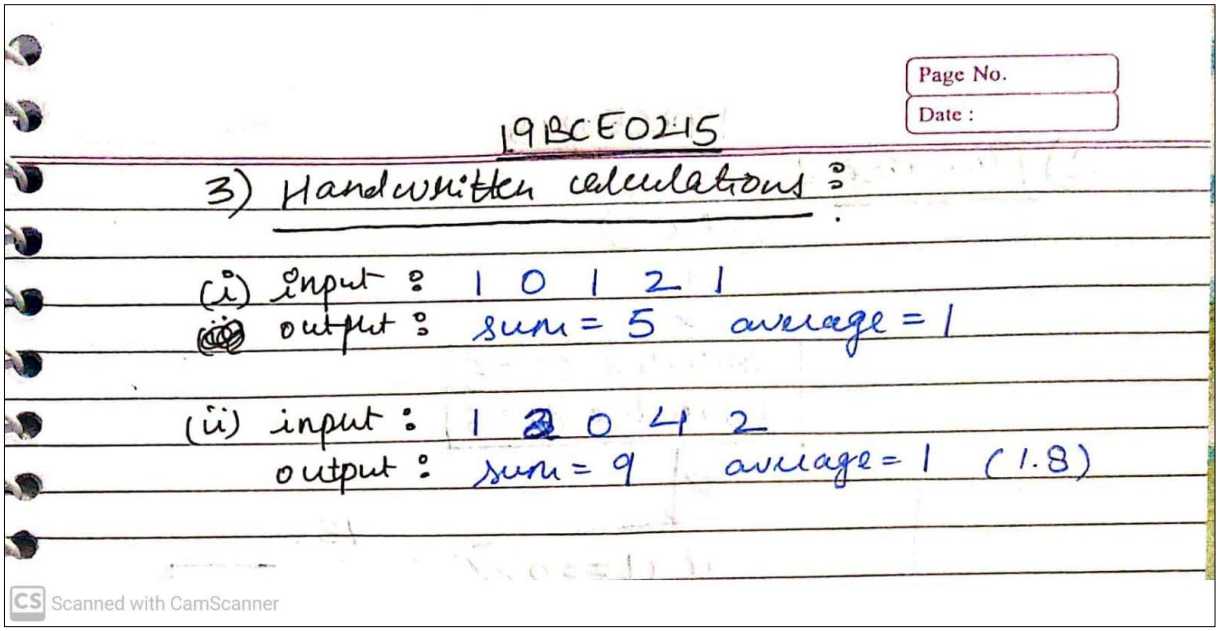
2) Flowchart :





Screenshot of ALP:

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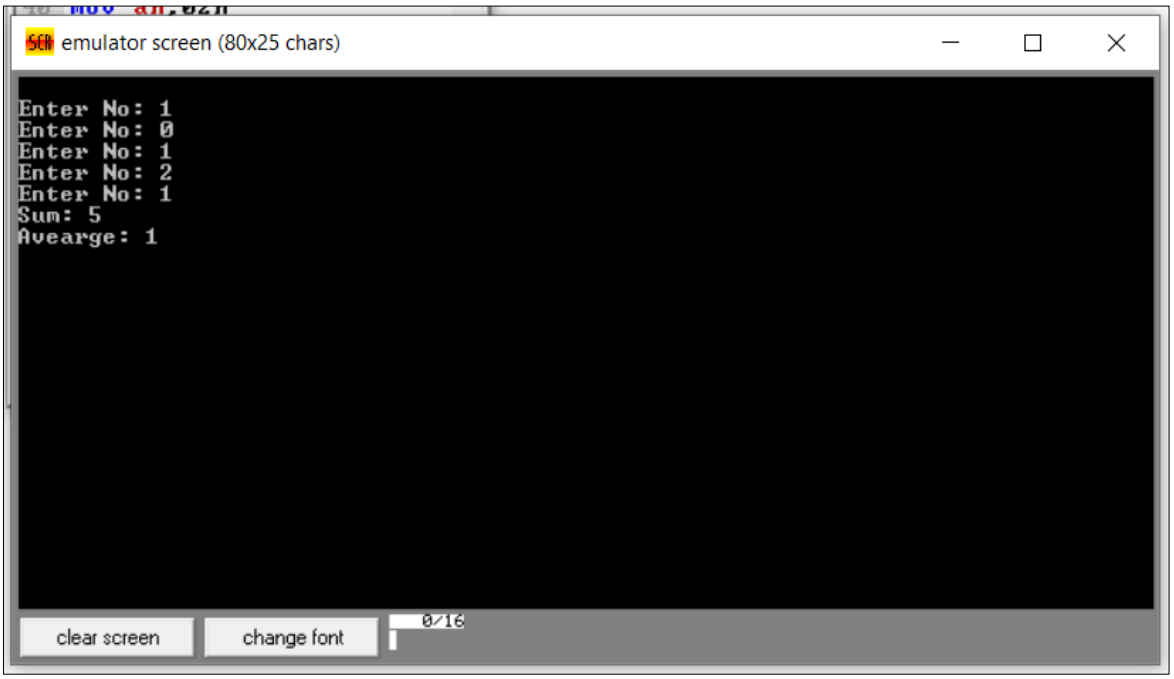
```
.model small
.data
        val1    db      ?
        nl1     db      0ah,0dh,'Enter No: ','$'
        nl2     db      0ah,0dh,'Avearge: ','$'
        nl3     db      0ah,0dh,'Sum: ','$'
.code
main    proc
        mov ax,@data
        mov ds,ax

        mov al,05h
        mov cl,al
        mov bl,al
        mov al,00
        mov val1,al

lbl1:
        lea dx,nl1
        mov ah,09h
        int 21h

        mov ah,01h
        int 21h
        sub al,30h

        add al,val1
        mov val1,al
        loop lbl1

lbl2:
        lea dx,nl3
        mov ah,09h
        int 21h

        mov ax,00
        mov al,val1
        add ax,3030h
        mov dx,ax
        mov ah,02h
        int 21h

        lea dx,nl2
        mov ah,09h
        int 21h

        mov ax,00
        mov al,val1
        div bl
        add ax,3030h
        mov dx,ax
        mov ah,02h
        int 21h

        mov ah,4ch
        int 21h

main    endp
        end     main
```

Screenshot of Output:

(i) Input: 1 0 1 2 1



(ii) Input: 1 2 0 4 2