Experiment:-04 Date:-

Roll No:-A046

Aim:- To calculate sum and average of an array

Theory :-

Array :- ~~Array~~

- Array is stored into the data segment hence each element having address.
- SI is the pointer for data segment.
- Need to assign offset address of an array to SI pointer.

Steps to create an array:-

-Create an array variable and put elements into it :- Arr db 04, 01, 07, 01H

-Assign offset address with SI pointer :- LEA si, Arr.

-Transfer first element of an array into reg :- Mov al, [si]

-For next element Mov al, [si+1] OR Inc si, Mov al, [si]

Program1:- WAP to calculate sum and average of an array

Algorithm:-

Step 1:- Initialize data segment.

Step 2 :- Get the array elements in AL

Step3:- Add all the elements in the array

Step4:- Display the sum of the elements of the array

Step5:- Divide the sum of array with total number of elements in array

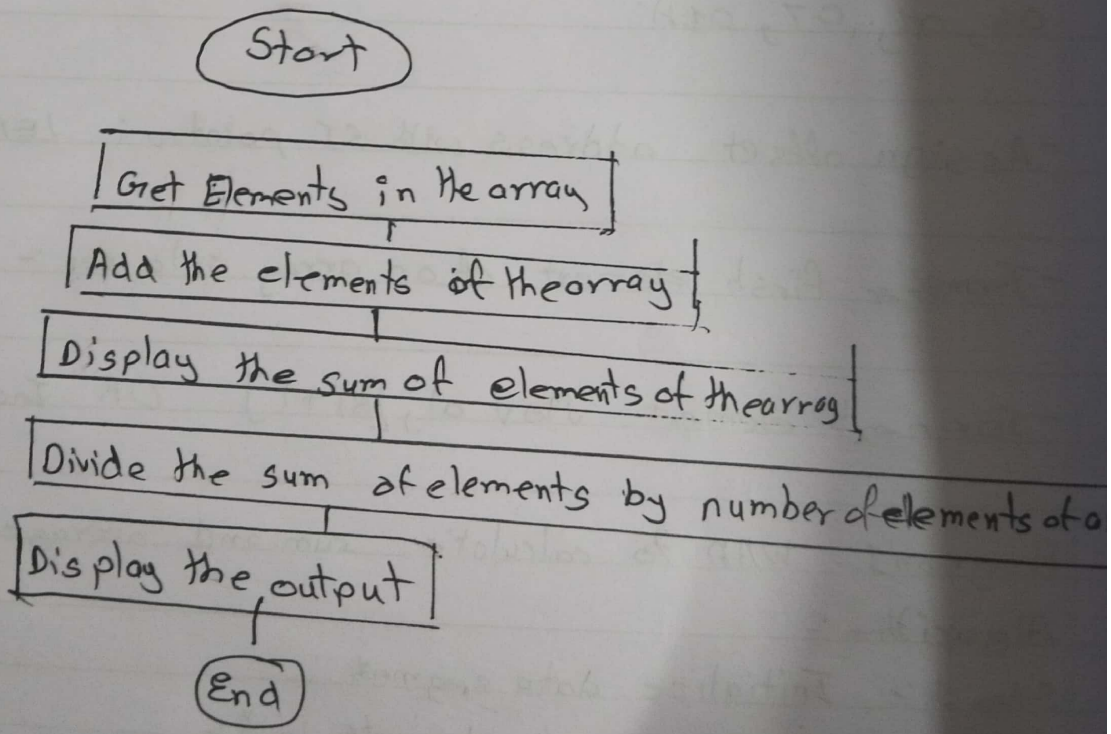
Array →

04	01	07	03
Element 1	Element 2	Element 3	Element 4
↑	↑	↑	↑
Address of element 1	Address of element 2	address of Element 3	Address of element 4
Si	Si + 1	Si + 2	Si + 3
[Si] = 04	[Si+1] = 01	[Si + 2] = 07	[Si + 3] = 03

Ds

Si	2001	04
Si + 1	2002	01
Si + 2	2003	07
Si + 3	2004	03

Flowchart:-



Step 6 :- Display the output
Step 7 :- End.

Program :-

```
.model small
.data
ars db 05, 03, 05, 02, 05H
.code
mov ax, @data
mov ds, ax
lea si, ars
mov dh, 05H
back: mov al, [si]
mov bl, 00H
back : mov al, [si]
Add al, [si+1]
mov al, 00H
back: add al, [si]
inc si
dec dh
jnz back
: mov ch, 02H
mov cl, 04H
mov bl, al
i2 : rol bl, cl
mov dl, bl
and dl, 0FH
cmp dl, 09H
jbe i4
add dl, 07
```

Steps to display Output

Tasm av.asm

Tlink av.obj

av

Output

20 4

```
I4 : add dl, 30H
mov ah, 02H
int 21h
dec ch
jnz I2
mov dl, ' '
mov ah, 02H
int 21H
Div mov bl, 05H
 Div bl.
mov ch, 02h    mov ch, 02H
mov cl, 04h    mov cl, 04H
mov jmp I5     mov bl, al
I2 : rol bl, cl
 mov dl, bl
and dl, 0FH
cmp dl, 09H
jbe I4
add dl, 07
I4 : add dl, 3cH
mov ah, 02H
int 21H
dec ch
jnz I2
mov ah, 4ch
 int 21H
end
```

Conclusion :- Hence we calculated the sum and average of an array.