

EXPERIMENT NO:14

TITLE: Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of real numbers

PROGRAM:

```
#include <stdio.h>
#include <math.h>
void main()
{
    int i, n;
    float x[10], *p, m, sd, sum=0, sum1=0;
    printf("Enter the number of terms\n");
    scanf("%d", &n);
    printf("Enter %d terms \n", n);

    for (i = 0; i < n; i++)
    {
        scanf("%f", &x[i]);
    }
    p=x; /* pointer p is assigned by base address to access elements of an array */
    for (i = 0; i < n; i++)
    {
        sum = sum + *p;
        p++; /* Address arithmetic */
    }
    printf("Sum = %.2f\n", sum);
    m = sum / n;
    printf("Mean = %.2f\n", m);
    p=x; /* pointer p is assigned by base address to access elements of an array */
    for (i = 0; i < n; i++)
    {
        sum1 = sum1 + pow((*p - m), 2);
        p++; /* Address arithmetic */
    }
    sd = sqrt(sum1 / n);
    printf("Standard Deviation = %.2f\n", sd);
}
```

OUTPUTS:

- Enter the number of elements
5
Enter the array elements
10 6 22 4 7
Sum=49.00
Mean=9.80
Standard Deviation=6.40

- Enter the number of elements

6

Enter the array elements

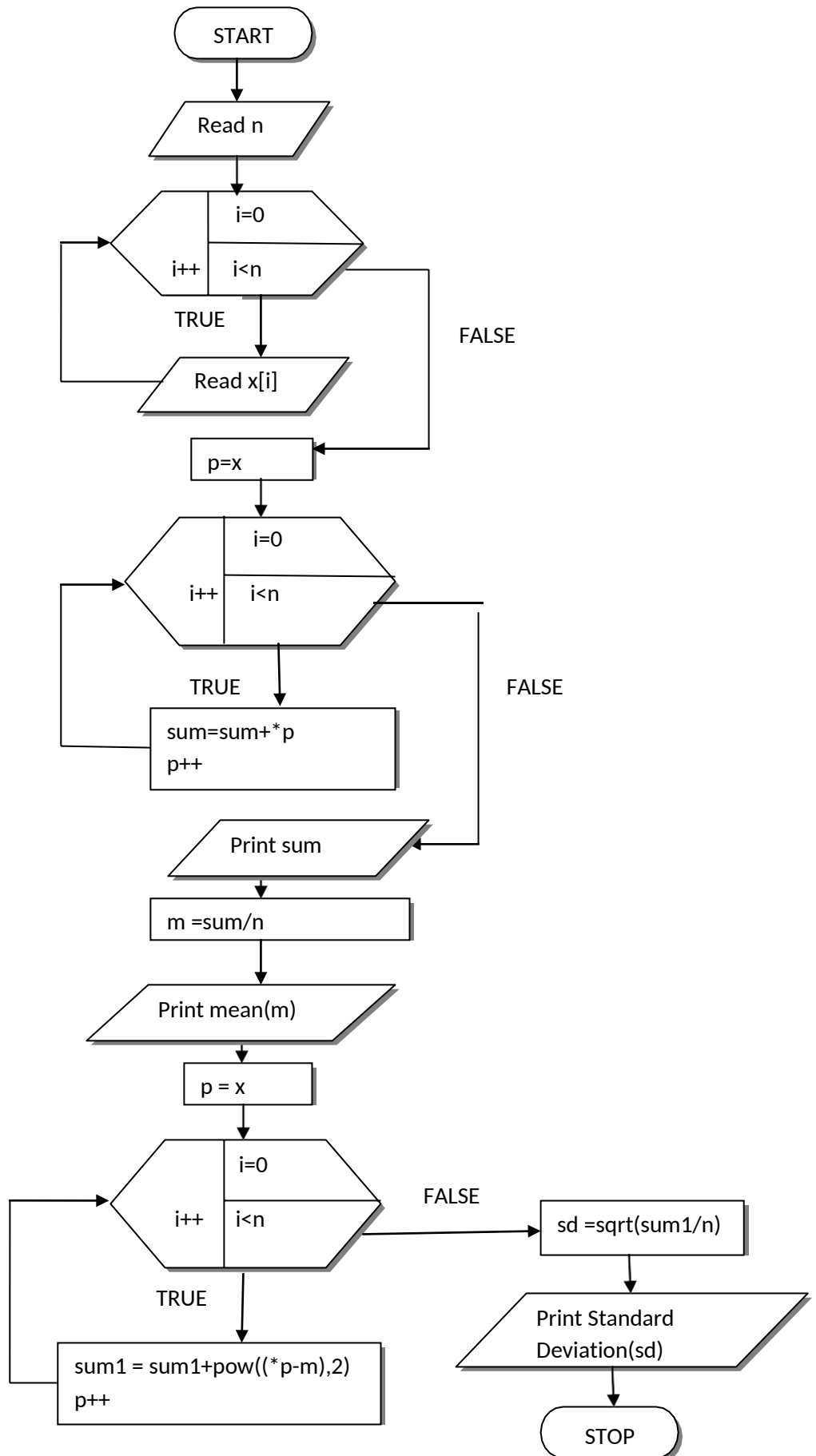
12 13 19 5 20 1

Sum=70.00

Mean=11.67

Standard Deviation=6.87

FLOWCHART:



ALGORITHM:

STEP 1: START

STEP 2: Initialize sum=0 and sum1=0

STEP 3: READ n

STEP 4: READ n values to the array a

STEP 5: Initialize pointer variable to array name

p = x

STEP 6: Calculate sum

```
for(i=0;i<n;i++)  
{  
    sum=sum+*p  
    p++  
}
```

STEP 7: PRINT sum.

STEP 8: Calculate mean

m=sum/n

STEP 9: PRINT mean.

STEP 10: Initialize pointer variable to array name

p = x

STEP 11: Calculate sum1

```
for(i=0;i<n;i++)  
{  
    sum1=sum1+pow((*p-m),2)  
    p++  
}
```

STEP 12: Calculate std

sd = sqrt(sum1/n)

STEP 13: PRINT Standard deviation(sd)

STEP 14: STOP