Lab-6 :C Programming on break , continue statements and one dimensional arrays

1. Write and execute a C program to read 'n' positive values using keyboard and calculate its average using break and continue statements and display the result.

```c
#include<stdio.h>

void main()
{
    int n,sum=0,count=0;
    float avg;
    while(1)
    {
    printf("enter the no.=");
    scanf("%d",&n);
    if(n<0)
        {
        break;
        }
    sum=sum+n;
    count ++;
    }
avg=(float)sum/count;
printf("average of given no is =%f",avg);

}
```

2. Write and execute a C program to read a one dimensional array of 10 floating point numbers using keyboard . Display the smallest number and its position in the one dimensional array.

```c
#include<stdio.h>
int main()
{
  float a[10],Smallest, Position;
  int Size, i;

  printf("\nPlease Enter the size of an array (MAX=10)\n");
  scanf("%d",&Size);

  printf("\nPlease Enter %d elements of an array: \n", Size);
  for(i=0; i<Size; i++)
   {
       scanf("%f",&a[i]);
   }

  Smallest = a[0];
  for(i=1; i<Size; i++)
   {
    if(Smallest > a[i])
     {
       Smallest = a[i];
       Position = i;
        }
   }

  printf("\nSmallest element in an Array = %f", Smallest);
  printf("\nIndex position of the Smallest element = %f", Position+1);

  return 0;
}
```

----

3. Write and execute a C program to read numbers using keyboard, find the mean, variance and standard deviation of the numbers in an array..

```c
#include <stdio.h>
#include <math.h>
#define MAXSIZE 10

void main()
{
    float x[MAXSIZE];
    int  i, n;
    float mean, variance, std_deviation, sum = 0, sum1 = 0;

    printf("Enter the value of N \n");
    scanf("%d", &n);
    printf("Enter %d real numbers \n", n);
    for (i = 0; i < n; i++)
    {
        scanf("%f", &x[i]);
    }

    for (i = 0; i < n; i++)
    {
        sum = sum + x[i];
    }
    mean = sum / (float)n;

    for (i = 0; i < n; i++)
    {
        sum1 = sum1 + pow((x[i] - mean), 2);
    }
    variance = sum1 / (float)n;
    std_deviation = sqrt(variance);
    printf("Mean of all elements = %.2f\n", mean);
    printf("variance of all elements = %.2f\n", variance);
    printf("Standard deviation = %.2f\n", std_deviation);
}
```

4. Write and execute a C program to read two numbers using keyboard, find GCD and LCM of two numbers using a do-while loop and display the result

```c
#include <stdio.h>
void main()
{
    int num1, num2, gcd, lcm, remainder, numerator, denominator;
    printf("Enter two numbers\n");
    scanf("%d %d", &num1, &num2);
    if (num1 > num2)
    {
        numerator = num1;
        denominator = num2;
    }
    else
    {
        numerator = num2;
        denominator = num1;
    }
    remainder = numerator % denominator;
    while (remainder != 0)
    {
        numerator   = denominator;
        denominator = remainder;
        remainder   = numerator % denominator;
    }
    gcd = denominator;
    lcm = num1 * num2 / gcd;
    printf("GCD of %d and %d = %d\n", num1, num2, gcd);
    printf("LCM of %d and %d = %d\n", num1, num2, lcm);
}
```