1.Write a program for the Insertion sort algorithm.

```
#include <stdio.h>
void main()
{
  int n, array[1000], i, j, t;
  printf("Enter number of elements\n");
  scanf("%d", &n);
  printf("Enter %d integers\n", n);
  for (i = 0; i < n; i++)
    scanf("%d", &array[i]);
  for (i = 1 ; i <= n - 1; i++) {
    j = i;

    while ( j > 0 && array[j-1] > array[j])
    {
      t          = array[j];
      array[j]   = array[j-1];
      array[j-1] = t;

      j--;
    }
  }

  printf("Sorted array in ascending order:\n");
  for (i = 0; i <= n - 1; i++)
  {
    printf("%d\n", array[i]);
  }
}
```

2.Write a program for the Selection sort algorithm.

```
#include <stdio.h>
void main()
{
  int array[100], n, i, j, position, temp;
  printf("Enter number of elements\n");
  scanf("%d", &n);
```

```
  printf("Enter %d integers\n", n);
  for (i = 0; i < n; i++)
    scanf("%d", &array[i]);

  for (i = 0; i < (n - 1); i++)
  {
    position = i;

    for (j = i + 1; j < n; j++)
    {
      if (array[position] > array[j])
        position = j;
    }
    if (position != i)
    {
      temp = array[i];
      array[i] = array[position];
      array[position] = temp;
    }
  }

  printf("Sorted array in ascending order:\n");

  for (i = 0; i< n; i++)
    printf("%d\n", array[i]);
}
```

3.Write a program for Bubble sort algorithm.

```
#include <stdio.h>
void main()
{
  int array[100], n, i, j, temp;
  printf("Enter number of elements\n");
  scanf("%d", &n);
  printf("Enter %d integers\n", n);
  for (i = 0; i < n; i++)
    scanf("%d", &array[i]);

  for (i = 0 ; i < n - 1; i++)
  {
```

```
    for (j = 0 ; j < n - i - 1; j++)
    {
      if (array[j] > array[j+1])
      {
        temp       = array[j];
        array[j]   = array[j+1];
        array[j+1] = temp;
      }
    }
  }
  printf("Sorted list in ascending order:\n");
  for (i = 0; i < n; i++)
     printf("%d\n", array[i]);
}
```

4.Write a program for the Merge sort algorithm.

```
#include<stdio.h>

void mergesort(int a[],int i,int j);
void merge(int a[],int i1,int j1,int i2,int j2);

int main()
{
     int a[30],n,i;
     printf("Enter no of elements:");
     scanf("%d",&n);
     printf("Enter array elements:");

     for(i=0;i<n;i++)
          scanf("%d",&a[i]);

     mergesort(a,0,n-1);

     printf("\nSorted array is :");
     for(i=0;i<n;i++)
          printf("%d ",a[i]);

     return 0;
}
```

```
void mergesort(int a[],int i,int j)
{
     int mid;

     if(i<j)
     {
          mid=(i+j)/2;
          mergesort(a,i,mid);
          mergesort(a,mid+1,j);
          merge(a,i,mid,mid+1,j);
     }
}

void merge(int a[],int i1,int j1,int i2,int j2)
{
     int temp[50];
     int i,j,k;
     i=i1;
     j=i2;
     k=0;

     while(i<=j1 && j<=j2)
     {
          if(a[i]<a[j])
               temp[k++]=a[i++];
          else
               temp[k++]=a[j++];
     }

     while(i<=j1)
          temp[k++]=a[i++];

     while(j<=j2)
          temp[k++]=a[j++];


     for(i=i1,j=0;i<=j2;i++,j++)
          a[i]=temp[j];
}
```