1. Write a program for the Insertion sort algorithm.

```
#include <stdio.h>
void main()
{
   int n, array[1000], a, b, p;
   printf("Enter number of elements\n");
   scanf("%d", &n);
   printf("Enter %d integers\n", n);
   for (a = 0; a < n; a++)
     scanf("%d", &array[a]);
   for (a = 1 ; a <= n - 1; a++) {
       b = a;
        while (b > 0 && array[b-1] > array[b]) {
            p = array[b];
            array[b] = array[b-1];
            array[b-1] = p;
            b--;
        }
}
printf("Sorted array in ascending order:\n");
for (a = 0; a <= n - 1; a++) {
      printf("%d\n", array[a]);
      }
}
```

2. Write a program for the Selection sort algorithm.

```
#include <stdio.h>
void main()
{
  int array[100], n, a, b, pos, temp;
  printf("Enter number of elements\n");
  scanf("%d", &n);
  printf("Enter %d integers\n", n);
  for (a = 0; a < n; a++)
     scanf("%d", &array[a]);
  for (a = 0; a < (n - 1); a++)
 {
    pos = a;
    for (b = a + 1; b < n; a++)
    {
      if (array[pos] > array[b])
         pos = b;
     }
    if (pos != a)
   {
     temp = array[a];
     array[a] = array[pos];
     array[pos] = temp;
     }
  }
   printf("Sorted array in ascending order:\n");
    for (a = 0; a < n; a++)
```

```
    printf("%d\n", array[a]);
  }
```

3. Write a program for Bubble sort algorithm.

```
#include <stdio.h>
void main()
{
  int array[100], n, a, b, temp;
  printf("Enter number of elements\n");
    scanf("%d", &n);
   printf("Enter %d integers\n", n);
   for (a = 0; a < n; a++)
       scanf("%d", &array[a]);
   for (a = 0 ; a < n - 1; a++)
   {
     for (b = 0 ; b < n - a - 1; b++)
      {
       if (array[b] > array[b+1])
       {
          temp = array[b];
           array[b] = array[b+1];
           array[b+1] = temp;
```

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

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(“\n Sorted 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+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];
}
```