NAME; CHIKKALA HARI PRIYA

SEC ; CSE-H

REG ; AP19110010531

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 the 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.Merge sort:

```
#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[20],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); //left recursion
mergesort(a,mid+1,j); //right recursion
merge(a,i,mid,mid+1,j); //merging of two sorted sub-arrays
}
}
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++];
//Transfer elements from temp[] back to a[]
for(i=i1,j=0;i<=j2;i++,j++)
a[i]=temp[j];
}
```