

## LAB PROGRAMS

1) Write a program for the Insertion sort algorithm

```
#include <stdio.h>
void main(){
int x,arr[50],i,y,temp;
printf("Enter the size of the array: ");
scanf("%d", &x);
printf("Enter %d numbers:\n",x);
for(i=0;i<x;i++){
scanf("%d",&arr[i]);
for(i=1;i<=x-1;i++){
y=i;
while(y>0&&arr[y-1]>arr[y]){
temp=arr[y];
arr[y]=arr[y-1];
arr[y-1]=temp;
y--;
}
}
printf("The Sorted ascending order array is in:\n");
for(i=0;i<=x-1;i++){
printf("%d\n",arr[i]);
}
}
```

2) Write a program for the Selection sort algorithm

```
#include <stdio.h>
int main(){
int arr[50],n,i,j,mark,temp;
printf("Enter the size of the array: ");
scanf("%d", &n);
printf("Enter %d Numbers:\n", n);
for(i=0;i<n;i++){
scanf("%d",&arr[i]);
for(i=0;i<n-1;i++){
mark=i;
for(j=i+1;j<n;j++){
if(arr[mark] > arr[j])
mark=j;
}
if(mark!=i)
```

```

{
temp=arr[i];
arr[i]=arr[mark];
arr[mark]=temp;
}
}
printf("The Sorted Array via selection sort is:\n");
for(i=0;i<n;i++)
printf("%d\n",arr[i]);
return 0;
}

```

3)Write a program for Bubble sort algorithm

```

#include <stdio.h>
void main(){
int arr[50],n,i,j,temp;
printf("Enter the size of the array: \n");
scanf("%d", &n);
printf("Enter %d numbers:\n", n);
for(i=0;i<n;i++)
scanf("%d",&arr[i]);
for(i=0;i<n-1;i++){
for(j=0;j<n-i-1;j++){
if(arr[j]>arr[j+1]){
temp=arr[j];
arr[j]=arr[j+1];
arr[j+1]=temp;
}
}
}
printf("Sorted list via in the bubble sort in ascending order:\n");
for(i=0;i<n;i++)
printf("%d\n",arr[i]);
}

```

4)Write a program for the Merge sort algorithm.

```

#include<stdio.h>
void mergingsort(int arr[], int x,int y);
void merge(int arr[], int x1, int x2, int y1, int y2);
void main(){
int arr[50],i,a;
printf("Enter the size of the array: ");

```

```

scanf("%d", &a);
for(i=0;i<a;i++){
    scanf("%d",&arr[i]);
mergesort(arr,0,a-1);
printf("The sorted array is: ");
for(i=0;i<a;i++){
    printf("%d", arr[i]);
}
}
}

void mergingsort(int arr[],int x, int y){
    int middle;
    if(x<y){
        middle=(x+y)/2;
        mergingsort(arr,x,middle);
        mergingsort(arr,middle+1,y);
        mergingsort(arr,x,middle,middle+1,y);
    }
}

void merge(int arr[],int x1, int x2, int y1, int y2){
    int swap[100];
    int a,b,c;
    a=x1;
    b=x2;
    c=0;
    while(a<=y1&& b<=y2){
        if(arr[a]<arr[b]){
            swap[c++]=arr[a++];
        }
        else{
            swap[c++]=arr[b++];
        }
    }
    while(a<=y1){
        swap[c++]=arr[a++];
    }
    while(b<=y2){
        swap[c++]=arr[b++];
    }
    for(a=x1,b=0;a<=y2;a++,b++){
        arr[a]=swap[b];
    }
}

```

}

B. Sridhar  
AP19110010447  
CSE-F