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CSE- F
LAB PROGRAMS
1) Write a program for the Insertion sort algorithm

```
#include <stdio.h>
void main(){
int x,arr[50],j,y,temp; //initialized as variable x,j,y,temp and with an array of limit 50.
printf("Enter the size of the array: ");
scanf("%d", &x);
printf("Enter %d numbers:\n",x);
for(j=0;j<x;j++)
scanf("%d",&arr[j]);
for(j=1;j<=x-1;j++){
y=j;
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(j=0;j<=x-1;j++){
printf("%d\n",arr[j]);
}
}
```

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: ");    //Asking the size of array from user
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");//entered the size of array
scanf("%d", &n);
printf("Enter %d numbers:\n", n);
for(i=0;i<n;i++)   //using for loop we are incrementing the number
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;    //temp value will be stored in arr[j+1]
}
}
}
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,b;
printf("Enter the size of the array: ");
scanf("%d", &b);
for(i=0;i<b;i++){
 scanf("%d",&arr[i]);
mergesort(arr,0,b-1);
printf("The sorted array is: ");
for(i=0;i<b;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];
 }
}
```