Lab Programs

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CSE-F

① Write a C program for insertion sort algorithm.

Prog

```
#include <stdio.h>

Void main()
{
   int n, A[20], i, j, temp;
    Printf("Enter no of elements\n");
     scanf("%d", &n);
      Printf("Enter the elements");
       for(i=0; i<n; i++)
           scanf("%d", &A[i]);
        for(i=1; i<=n-1; i++)
        {
            j=i;
         While (j>0 && A[j-1]>A[j])
          {
                temp=A[j];
                 A[j]=A[j-1];
                   A[j-1]=temp;
          }     j--;
        }
       Printf("Sorted elements are: \n");
        for(i=0; i<=n-1, i++)
            Printf("%d\n", A[i]);
}
```

(2) Write a C program for selection Sort algorithm.

Prog

```
#include<stdio.h>
Void main(){
int i, j, count, temp, A[20];
  Printf("Enter no of elements\n");
   scanf("%d", &count);
    Printf("Enter the elements\n");
     for(i=0; i<count; i++)
          scanf("%d", A[i]);
     for(i=0; i<count; i++){
          for(j=i+1; j<count; j++){
               if(A[i]>A[j]){
                    temp = A[i];
                     A[i] = A[j];
                      A[j] = temp;
               }
          }
     }
Printf("sorted elements:");
 for(i=0; i<count; i++)
      Printf("%d", A[i]);
}
```

(3) Write a C program for Bubble Sort algorithm.

Prog

```
#include <Stdio.h>
Void main(){
    int n, temp, i,j , A[20];
    Printf("enter no of elements");
    Scanf("%d", &n);
    Printf("enter the elements\n");
    for (i=0; i<n; i++)
        Scanf("%d",&A[i]);
    for (i=n-2; i>=0; i--){
        for (j=0;j<=i; j++){
            if (A[j]>A[j+1]){
                temp = A[j];
                A[j]= A[j+1];
                A[j+1]= temp;
            } } }
Printf("Sorted elements: ");
  for (i=0; i<count ; i++)
      Printf("%d", A[i]);
}
```

(4) Write a C program for Merge sort algorithm.

Prog

```
#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 the elements");
    for (i=0; i<n ; i++)
        scanf ("%d", & a[i]);
      mergesort (a, 0, n-1);
      Printf ("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;
        mergsort (a, i, mid);
        mergsort (a, mid+1, j);
        merge (a,i,mid+1, j);
    }
}
Void merge (int a[], int i1, int j1, int i2, int j2)
{   int temp[20];
    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];
}.
```