DATA STRUCTURE AND ANALYSIS OF ALGORITHM

KCA 253 : Session 2020-21

EXPERIMENT _ 12

PROGRAAM TO IMPLEMENT

BUBBLE SORT

INSERTION SORT

SELECTION SORT

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#define MAX 15
void main()
{
   int a[MAX],n;
   char ch;
   void inputarray(int [],int);
   void outputarray(int [],int);
   void bubblesort(int[],int);
   void selectionsort(int[],int);
   void insertionsort(int[],int);
   void swap(int[],int,int);
   while(1)
   {
      printf("\n.....");
      printf("\n1.Bubble Sort.\n2.Seletion Sort.\n3.Insertion Sort.\n4.Exit.\n");
      printf("Enter Your choice: ");
```

```
scanf("%d",&ch);
switch(ch)
{
   case 1:
   printf("\nEnter array Size: ");
   scanf("%d",&n);
   if(n<MAX)
   {
      printf("\nEnter the values of array :\n");
      inputarray(a,n);
      printf(".....\n");
      printf("Entered array values are :\n");
      outputarray(a,n);
      printf("\nBubble sorted array is :\n");
      bubblesort(a,n);
      outputarray(a,n);
   }
   else
   {
      printf("Array size is greater than MAX.");
   }
   break;
   case 2:
   printf("Enter array Size: ");
   scanf("%d",&n);
   if(n<MAX)
   {
      printf("Enter the values of array :\n");
```

```
    inputarray(a,n);
    printf(".....\n");
    printf("Entered array values are :\n");
    outputarray(a,n);
    printf("\nSelection sorted array is :\n");
    selectionsort(a,n);
    outputarray(a,n);
}
else
{
    printf("Array size is greater than MAX.");
}
break;
case 3:
printf("Enter array Size: ");
scanf("%d",&n);
if(n<MAX)
{
    printf("Enter the values of array :\n");
    inputarray(a,n);
    printf(".....\n");
    printf("Entered array values are :\n");
    outputarray(a,n);
    printf("\nInsertion sorted array is :\n");
    insertionsort(a,n);
    outputarray(a,n);
}
else
```

```
        {
           printf("Array size is greater than MAX.");
        }
        break;
        case 4:
        exit(1);
        default :
        printf("\nPlease enter correct choice.");
      }
   }
}
void inputarray(int arr[],int n)
{
   int i;
   for(i=0;i<n;i++)
   {
      scanf("%d",&arr[i]);
   }
}
void outputarray(int arr[],int n)
{
   int i;
   for(i=0;i<n;i++)
   {
      printf("%d ",arr[i]);
   }
}
void bubblesort(int arr[],int n)
```

```
{
   int i,j,temp;
   for(i=0;i<n-1;i++)
   {
      for(j=i+1;j<n;j++)
      {
         if(arr[j]<arr[i])
         {
            temp=arr[i];
            arr[i]=arr[j];
            arr[j]=temp;
         }
      }
   }
}
void swap(int arr[],int i,int j)
{
   int temp;
   temp=arr[i];
   arr[i]=arr[j];
   arr[j]=temp;
}
void selectionsort(int arr[],int n)
{
   int i,j,min,minindex,temp;
   for(i=0;i<n-1;i++)
   {
      min=arr[i];
```

```
        minindex=i;
        for(j=i+1;j<n;j++)
        {
          if(arr[j]<min)
          {
            min=arr[j];
            minindex=j;
          }
        }
        if(minindex!=i)
        {
          swap(arr,i,minindex);
        }
    }
}
void insertionsort(int arr[],int n)
{
   int i,j,key;
   for(i=1;i<n;i++)
   {
      key=arr[i];
      j=i-1;
      while(j>0 && key<arr[j])
      {
        arr[j+1]=arr[j];
        j=j-1;
      }
      arr[j+1]=key;
```

```
    }
}
```

OUTPUT

.....

1.Bubble Sort.

2.Seletion Sort.

3.Insertion Sort.

4.Exit.

Enter Your choice: 1

Enter array Size: 5

Enter the values of array :

7

5

3

4

9

.....

Entered array values are :

7 5 3 4 9

Bubble sorted array is :

3 4 5 7 9

.....

1.Bubble Sort.

2.Seletion Sort.

3.Insertion Sort.

4.Exit.

Enter Your choice: 2

Enter array Size: 5

Enter the values of array :

7

9

1

3

5

.....

Entered array values are :

7 9 1 3 5

Selection sorted array is :

1 3 5 7 9

.....

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1.Bubble Sort.

2.Seletion Sort.

3.Insertion Sort.

4.Exit.

Enter Your choice: 3

Enter array Size: 5

Enter the values of array :

4

9

6

7

5

.....

Entered array values are :

4 9 6 7 5

Insertion sorted array is :

4 5 6 7 9

.....

1.Bubble Sort.

2.Seletion Sort.

3.Insertion Sort.

4.Exit.

Enter Your choice: 4

COMPILED BY YASH AGRAWAL MCA 2 B