**Aim:**

To write a program to arrange a structured array using Insertion sort, Bubble sort & Exchange selection sort algorithm.

**Source Code:**

#include<iostream.h>

#include<conio.h>

#include<stdio.h>

#include<limits.h>

struct student

{

int rno;

char name[20];

void getdata()

{

cout<<"Enter roll no :";

cin>>rno;

cout<<"Enter name :";

gets(name);

}

void showdata()

{

cout<<"\nRoll no = "<<rno;

cout<<" Name = "<<name;

}

};

void selectionsort(student s[],int n)

{

clrscr();

int pos;

student small,temp;

cout<<"Selection Sort Algorithm \n\n";

for(int i=0;i<n;++i)

{

small=s[i];

pos=i;

for(int j=i+1;j<n;++j)

{

if(s[j].rno<small.rno)

{

small=s[j];

pos=j;

}

}

temp=s[i];

s[i]=s[pos];

s[pos]=temp;

cout<<"\nArray after the pass : "<<(i+1)<<" is" <<" > ";

for(j=0;j<n;++j)

{

s[j].showdata();

}

}

}

void bubblesort(int arr[],int n)

{

clrscr();

int temp;

cout<<"Bubble Sort Algorithm \n\n";

for(int i=0;i<n;++i)

{

for(int j=0;j<(n-1)-i;++j)

{

if(arr[j+1]<arr[j])

{

temp=arr[j+1];

arr[j+1]=arr[j];

arr[j]=temp;

}

}

cout<<"\nArray after the pass : "<<(i+1)<<" is" <<" > ";

for(int k=0;k<n;++k)

{

cout<<arr[k]<<" ";

}

}

}

void insertionsort(student s[],int n)

{

clrscr();

int i,j,k;

student temp;

s[0].rno=INT\_MIN;

cout<<"\nInsertion Sort Algorithm \n";

for(i=1;i<=n;++i)

{

temp=s[i];

j=i-1;

while(temp.rno<s[j].rno)

{

s[j+1]=s[j];

--j;

}

s[j+1]=temp;

cout<<"\nArray after the pass : "<<i<<" is" <<" > ";

for(int k=1;k<=n;++k)

{

s[k].showdata();

}

}

}

void main()

{

student s[100];

int size,ch,i,arr[100];

char ch1='y';

while(ch1=='y')

{

clrscr();

cout<<"\nSorting Program :";

cout<<"\n1.Exchange Selection Sort";

cout<<"\n2.Bubble Sort";

cout<<"\n3.Insertion Sort";

cout<<"\nEnter choice : ";

cin>>ch;

switch(ch)

{

case 1:

{

clrscr();

cout<<"Selection Sort ";

cout<<"\nEnter size of array ";

cin>>size;

cout<<"Enter elements of array :\n";

for(i=0;i<size;++i)

{ s[i].getdata();

}

selectionsort(s,size);

break;

}

case 2:

{

clrscr();

cout<<"Bubble Sort \n";

cout<<"\nEnter size of array ";

cin>>size;

cout<<"Enter elements of array :\n";

for(i=0;i<size;++i)

{

cin>>arr[i];

}

bubblesort(arr,size);

break;

}

case 3:

{

clrscr();

cout<<"Insertion Sort \n";

cout<<"\nEnter the size of array :";

cin>>size;

cout<<"Enter the array :\n";

for(i=1;i<=size;++i)

{

s[i].getdata();

}

insertionsort(s,size);

break;

}

}

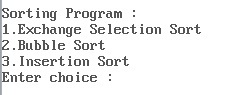
cout<<"\n\nDo you want to continue (y/n) :";

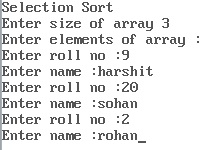
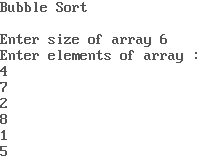
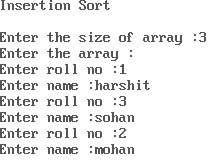
cin>>ch1;

}

}

**Output :**

****

**  **

