**EXPERIMENT 1**

#include<iostream>

using namespace std;

int main()

{

int arr[20],n,i,m,pos,ele,ch,flag=0;

cout<<"Enter the size of array: ";

cin>>n;

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

{

cin>>arr[i];

}

cout<<"Enter choice: insertion\n2 deletion\n3 searching\n4 display";

cin>>ch;

while(ch!=0)

{

switch(ch)

{

case 1:

cout<<"Enter the position and element you want to insert\n";

cin>>pos>>ele;

m=n-pos-1;

for(i=n;i>=m;i--)

{

arr[i+1]=arr[i];

}

arr[pos]=ele;

n=n+1;

break;

case 2:

cout<<"Enter the position of element you want to delete\n";

cin>>pos;

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

{

arr[i]=arr[i+1];

}

n=n-1;

break;

case 3:

flag=0;

cout<<"\nEnter the element to search: ";

cin>>ele;

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

{

if(arr[i]==ele)

{

cout<<"\nPosition is: "<<i+1;

flag=1;

break;

}

}

if(flag==0)

cout<<"\nElement not found";

break;

case 4:

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

break;

}

cout<<"\nEnter choice again: ";

cin>>ch;

}

}

**EXPERIMENT 2**

#include<iostream>

using namespace std;

int main()

{

int arr[20],n,i,ele,flag=0;

cout<<"Enter the size of array: ";

cin>>n;

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

{

cin>>arr[i];

}

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

cout<<"\nEnter the element to search: ";

cin>>ele;

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

{

if(arr[i]==ele)

{

cout<<"\nPosition of "<<ele<<" is: "<<i+1;

flag=1;

break;

}

}

if(flag==0)

cout<<"\nElement not found\n";

return 0;

}

**EXPERIMENT 3**

#include<iostream>

using namespace std;

int main()

{

int arr[20],n,i,j,ele,flag=0,temp;

int mid,min,max;

cout<<"Enter the size of array: ";

cin>>n;

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

{

cin>>arr[i];

}

cout<<"Array is:\n";

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

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

{

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

{

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

{

temp=arr[j];

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

arr[j+1]=temp;

}

}

}

cout<<"\nAfter sorting the array: \n";

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

cout<<"\nEnter the element to search: ";

cin>>ele;

min=0;

max=n-1;

mid=(min+max)/2;

if(min<max)

{

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

{

if(arr[mid]==ele)

{

cout<<"Position of "<<ele<<" is: "<<mid+1;

flag=1;

break;

}

else if(arr[mid]>ele)

{

max=mid-1;

}

else if(arr[mid]<ele)

{

min=mid+1;

}

mid=(min+max)/2;

}

}

if(flag==0)

cout<<"Element not found ";

return 0;

}

**Experiment 4**

#include<iostream>

using namespace std;

int main()

{

int arr[20],n,i,j,ele,flag=0,temp;

int mid,min,max;

cout<<"Enter the size of array: ";

cin>>n;

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

{

cin>>arr[i];

}

cout<<"Array is:\n";

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

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

{

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

{

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

{

temp=arr[j];

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

arr[j+1]=temp;

}

}

}

cout<<"\nAfter sorting the array: \n";

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

{

cout<<arr[i]<<" ";

}

cout<<endl;

cout<<"\nEnter the element to search: ";

cin>>ele;

min=0;

max=n-1;

mid=(min+max)/2;

if(min<max)

{

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

{

if(arr[mid]==ele)

{

cout<<"Position of "<<ele<<" is: "<<mid+1;

flag=1;

break;

}

else if(arr[mid]>ele)

{

max=mid-1;

}

else if(arr[mid]<ele)

{

min=mid+1;

}

mid=(min+max)/2;

}

}

if(flag==0)

cout<<"Element not found ";

return 0;

}