SEARCHING AND SORTING IN AN ARRAY

Function to Search for an element from A by Linear Search

```
int Lsearch(int A[], int n, int Data)
{
for(int I=0; I<n; I++)
{
if(A[I]==Data)
{
cout << "Data Found at : " << I;
return;
}
}
cout << "Data Not Found in the array" << endl;
}
```

Function to Search an element from Array A by Binary Search

```
int bsearchasc(int a[], int n, int data)
{ int mid,lbound=0,ubound=n-1,found=0;
while((lbound<=ubound) && !(found))
{ mid=(lbound+ubound)/2;
if(data>a[mid])
lbound=mid+1;
else if(data<a[mid])
ubound=mid-1;
else
found++;
}
if(found)
return(mid+1);//returning 1ocation, if present
else
return(-1); //returning -1,if not present
}
```

Function to Sort the array A by Bubble Sort

```
void BSort(int A[], int n)
{
int I,J,Temp;
```

```
for(I=0;I<n-1;I++)
{ for(J=0;J<(n-1-I);J++)
if(A[J]>A[J+1])
{
Temp=A[J];
A[J]=A[J+1];
A[J+1]=Temp;
}
}
}
```

Function to Sort the array ARR by Insertion Sort

```
void ISort(int A[], int n)
{
int I,J,Temp;
for(I=1;I<n;I++) //sorting
{
Temp=A[I];
J=I-1;
while((Temp<A[J]) && (J>=0))
{
A[J+1]=A[J];
J--;
}
A[J+1]=Temp;
} }
```

Function to Sort the array ARR by Selection Sort

```
void SSort(int A[], int n)
{
int I,J,Temp,Small;
for(I=0;I<n-1;I++)
{
Small=I;
for(J=I+1;J<n;J++) //finding the smallest element
if(A[J]<A[Small])
Small=J;
if(Small!=I)
```

```
{
Temp=A[I]; //Swapping
A[I]=A[Small];
A[Small]=Temp;
}
}

}
```