import java.util.Scanner;

import java.io. \*;

class Binarys

{

public static void main(String args[])

{

int c,first,last,middle,n,search,array[];

boolean status=false;

Scanner s=new Scanner(System.in);

System.out.println("Enter number of elements:");

n=s.nextInt();

array=new int[n];

System.out.println("Enter"+n+"integer:");

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

array[c]=s.nextInt();

for (int i = 0; i < array.length; i++)

{

for (int j = i + 1; j < array.length; j++)

{

if (array[i] > array[j])

{

int temp = array[i];

array[i] = array[j];

array[j] = temp;

}

}

}

System.out.println("Enter value to find:");

search=s.nextInt();

first=0;

last=n-1;

middle=(first+last)/2;

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

{

if(first<=last)

{

if(array[middle]<search)

first=middle+1;

else if(array[middle]==search)

{

status=true;

}

else

{

last=middle-1;

}

middle=(first+last)/2;

}

}

if(status==true)

{

System.out.println(search+"found at location"+(middle+1));

}

else

System.out.println(search+"is not found in the list");

}

}

b). Write a JAVA program to sort for an element in a given list of elements using bubble sort.

import java.util.Scanner;

public class Bubblesort

{

public static void main(String[] args)

{

Scanner s=new Scanner(System.in);

System.out.println("enter the size of the array:");

int size=s.nextInt();

System.out.println("enter the values into the array:");

int arr[]=new int[size];

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

{

arr[i]=s.nextInt();

}

sorting(arr);

}

public static void sorting(int arr[])

{

int n=arr.length;

int temp=0;

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

{

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

{

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

{

temp=arr[j-1];

arr[j-1]=arr[j];

arr[j]=temp;

}

}

}

System.out.println("the sorted arraty is:");

for(int i=0;i<arr.length;i++)

{

System.out.print(arr[i]+"\t");

}

}

}

(c). Write a JAVA program to sort for an element in a given list of elements using merge sort.

import java.util.Scanner;

class merge

{

public static void main(String args[])

{

Scanner s=new Scanner(System.in);

System.out.println("enter size of the array:");

int size=s.nextInt();

int arr[]=new int[size];

System.out.println("enter elements into the array:");

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

{

arr[i]=s.nextInt();

}

int start=0;

int end=size-1;

sort(arr,start,end);

System.out.println("the sorted array is:");

for(int j=0;j<size;j++)

{

System.out.print(arr[j]+"\t");

}

}

public static void sort(int arr[],int start,int end)

{

if(start<end)

{

int middle=(start+end)/2;

sort(arr,start,middle);

sort(arr,middle+1,end);

merge(arr,start,middle,end);

}

}

public static void merge(int arr[],int start,int middle,int end)

{

int n1 = middle -start + 1;

int n2 = end - middle;

int L[] = new int [n1];

int R[] = new int [n2];

for (int i=0; i<n1; ++i)

{

L[i] = arr[start + i];

}

for (int j=0; j<n2; ++j)

{

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

}

int i = 0, j = 0;

int k = start;

while (i < n1 && j < n2)

{

if (L[i] <= R[j])

{

arr[k] = L[i];

i++;

}

else

{

arr[k] = R[j];

j++;

}

k++;

}

while (i < n1)

{

arr[k] = L[i];

i++;

k++;

}

while (j < n2)

{

arr[k] = R[j];

j++;

k++;

}

}

}