**WRITE A PROGRAM IN JAVA IMPLEMENTING THE BINARY SEARCH ALGORITHM**

package searching;

import java.util.Arrays;

import java.util.InputMismatchException;

import java.util.Scanner;

public class BinarySearch {

public int binarySearch(int arr[], int low, int high, int key) {

if(low <= high) {

int mid = low + (high-low)/2;

if(key == arr[mid]) {

return mid;

}

else if(key > arr[mid]) {

return binarySearch(arr, mid+1, high, key);

}

else {

return binarySearch(arr, low, mid-1, key);

}

}

return -1;

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

BinarySearch obj = new BinarySearch();

try {

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

int size = sc.nextInt();

int arr[] = new int[size];

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

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

arr[i] = sc.nextInt();

}

Arrays.sort(arr);

System.out.println("Sorted array: ");

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

System.out.println(arr[i]);

}

System.out.println("Enter the value to be searched: ");

int key = sc.nextInt();

int index = obj.binarySearch(arr, 0, size-1, key);

if(index == -1) {

System.out.println(key+" is not found");

}

else {

System.out.println(key+" is found at index "+index);

}

} catch (InputMismatchException e) {

System.out.println("Invalid input");

}

catch(Exception e) {

System.out.println(e.getMessage());

}

sc.close();

}

}