Marked lab exerises – Exercise 2

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1 Purpose

This will allow students to practise use of arrays, conditionals, iterations, defining methods and the use of binary search tree algorithm.

Exercise 2

Complete the missing functions in **Exercise2.java**:

```java
import java.util.Random;

public class Exercise2 {

    public static void main(String[] args) {
        int [] arr = createArray(10);
        System.out.println("the array not sorted ");
        printArray(arr);
        arr = sortArray(arr);
        System.out.println("the array  sorted ");
        printArray(arr);
        System.out.println(binarySearch(arr,50));
    }

    // function takes an array of integers as an argument and prints all the element of the array
    public static void printArray(int [] a){



    /*  createArray  takes an integer n as argument and returns
     *  an array of size n containing random number from from 1 to 100
     */
    public static int [] createArray(int n){

    }

    //sorteArray takes an array of integers returns the array sorted in ascending order.
    public static int [] sortArray(int a[]) {

    }

    /*  binarySearch  takes an array of integers a and an integer n and uses
     *  binary search algorithm check if n is contained in a.
     * it returns true if n i contained in a and false otherwise.
     */
    public static boolean binarySearch(int a[], int n) {

    }
}
```

(1) **printArray** takes an array of integers as an argument and prints all the element of the array

(2) **createArray** takes an integer n as argument and returns an array of size n containing random numbers between from 1 to 100

(3) **sorteArray** takes an array of integers returns the array sorted in ascending order.

(4) **binarySearch** takes an array of integers a and an integer n and uses binary search algorithm check if n is contained in a. it returns true if n i contained in a, as well as printing the number of decision made and false otherwise.

The output should be as follows:

- if the value is found:

```
The array not sorted
{ 50, 56, 90, 87, 49, 52, 63, 77, 94, 57}
The array  sorted
{ 49, 50, 52, 56, 57, 63, 77, 87, 90, 94}
 it took 2 times to find that the value 50 is contained the array
true
```

- if the value is not found:

```
The array not sorted
{ 96, 44, 38, 36, 12, 14, 19, 38, 65, 25}
The array  sorted
{ 12, 14, 19, 25, 36, 38, 38, 44, 65, 96}
The vaslue 50 is not contained in a
false
```