The assignment is to write both the iterative and recursive versions of the binary search method:

public static int binarySearchRec(int[] arr, int from, int to, int key)
public static int binarySearchIter(int[] arr, int from, int to, int key)

The output of both methods will be the index of the element that was found to match the **key**.

If the matching element is not found then the return value is: -**shouldBeIndex - 1**.

You should write the two methods described above as well as the main() method which will test the two methods (they should produce the same results). The main method will:

1. Generate an array of 100 random integers in the range [0, 500).

2. Sort this array using the method **Arrays.sort(array)**. This method will replace the elements of the unsorted array with the ordered elements.

3. Create another array of 20 random integers in the same range as above.

4. For each of these values, search the **array** from step 2 using the value as the **key**. Use both sorting methods and compare the results. Hopefully you will have both found and unfound elements to test both parts of the algorithms. Display your results.