COMPUTER SCIENCE 12B (FALL, 2020)
ADVANCED PROGRAMMING TECHNIQUES IN JAVA

PROGRAMMING ASSIGNMENT 3

Program Description:

This assignment tests your understanding of everything covered so far, including arrays.

You should limit yourself to the Java features covered in class so far (lecture 7).

Modularity in your code is very important, YOU MUST USE STATIC METHODS.

Problem 1:

Write a method called `isUnique` that accepts an array of integers as a parameter and returns a `boolean` value indicating whether or not the values in the array are unique (`true` for yes, `false` for no). The values in the list are considered unique if there is no pair of values that are equal. For example, if passed an array containing {3, 8, 12, 2, 9, 17, 43, -8, 46}, your method should return `true`, but if passed {4, 7, 3, 9, 12, -47, 3, 73}, your method should return `false` because the value 3 appear twice.

You should also write the `main` method, which interacts with the user, calls the static method `isUnique`, and prints the result.

Problem 2:

Write a method called `longestSortedSequence` that accepts an array of integers as a parameter and returns the length of the longest sorted (nondecreasing) sequence of integers in the array. For example, in the array {3, 8, 10, 1, 9, 14, -3, 0, 14, 207, 56, 98, 12}, the longest sorted sequence in the array has four values in it (-3, 0, 14, 207), so you method would return 4 if passed this array. Your method should return 0 if passed an empty array.

You should also write the `main` method, which interacts with the user, calls the static method `longestSortedSequence`, and prints the result.

Problem 3:

Write a method called `priceIsRight` that mimics the guessing rules from the game show *The Price is Right*. The method accepts as parameters an array of integers representing the contestants' bids and an integer representing a correct price. The method returns the element in the bids array that is closets in value to the correct price without being larger than that price. For example, is an array called bids stores the value {200, 300, 250, 1, 950, 40} the call of `priceIsRight(bids, 280)` should return 250, since 250 is the bid closets to 280 without going over 280. If all bids are larger than the correct price, your method should return -1.

You should also write the `main` method, which interacts with the user, calls the static method `priceIsRight`, and prints the result.

Grading:

You will be graded on

- **External Correctness:** The output of your program should match exactly what is expected. Programs that do not compile will not receive points for external correctness.
- **Internal Correctness:** Your source code should follow the stylistic guidelines linked in LATTE. Also, remember to include the comment header at the beginning of your program.

Submission:

Create a folder containing your Java source code (programs). Compress (zip) the folder and upload it to Latte by the day it is due. For late policy check the syllabus.