Code Assignment 2
Arrays and Loops

CS152 – Computer Programming Fundamentals

Instructor: M. Wolverton

Items Due

- **Completed Code 2-1**
- **Completed Code 2-2**
- **Completed Code 2-3**

Instructions

Complete the coding directive in an Intellij IDEA project with the assignment name (e.g. Code 1-2) and package name cs152. Compress each completed project separately into a .zip file and upload it to your account on the file server at cec-code-lab.aps.edu in a folder named CS152. Code will be downloaded and archived for grading on the assignment due date.

Directive

Complete the following three short demonstrations which involve copying and sorting tasks with arrays. Although convenient alternatives exist in the core Java API, you will complete these objectives by programming your own algorithms.

Your solutions must be general enough to work for any size array.
[Hint: Use `arrayName.length` instead of literal values in your loops.]

Do not use methods from the Arrays or Collections classes and instead write the array sorting and copying code yourself using for loops, while loops and comparisons (such as if, else-if and ternary)**.**

Code 2-1

Summary

The template for Code 2-1 contains a block of code that looks as though it makes a copy of `arrayA` named `arrayB`. However, changes to `arrayA` affect `arrayB`, and vise versa. Rewrite the central block of `main()` to copy `arrayA` into `arrayB` such that they are independent.

Requirements

- Rebuild the IntelliJ project by importing the project template for Code 2-1 from the CS152 assignment page.
- Add or modify code in the locations where the comments indicate.
- Do not use methods from the `Arrays` or `Collections` classes.

Code 2-2

Summary

Sorting values is a common step in many data processing programs. Create a program which generates an array of 25 random floating point values. Sort this array from smallest to largest, then output the results. Some ‘easy to program‘ sorting algorithms include selection sort, bubble sort and insertion sort.

Requirements

- Use Math.random() or Random.nextFloat() to store 25 random values with a loop.
- Floating point values should range from -50 to 50.
- Sort the array by reordering it from least to greatest.
- Your code should actually change the array, not just print values in order.

Code 2-3

Summary

An array with 25 int values is created in the Code 2-3 template. Output the indices of the values in this array from the least value to the greatest value. e.g. if valueArray[5] is the smallest and valueArray[13] is the next smallest, then 5 should be the first output and 13 should be the second.

Requirements

- Rebuild the IntelliJ project by importing the project template for Code 2-3 from the CS152 assignment page.
- Do not alter the array declaration in the template. Note it is declared final meaning it cannot be changed at run-time.
- You may introduce other arrays or data structures if you’d like, including copies of the original or other data types.
- Output each index on a new line.