CS 1632 – DELIVERABLE 4

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PROPERTY-BASED TESTING

https://github.com/adf37/CS1632\_Projects/tree/master/Deliverable4

SUMMARY:

I chose to do the property-based testing of the Arrays.sort(int [] arr) method for my project. I chose this project to test various properties of a method that I use very often in other class projects and side projects that I work on to make sure that all properties are upheld. I tested five different properties that were discussed in class: idempotency, that the output array was the same size as a passed-in array, values were always increasing or staying the same, value in output array was never decreasing, and that every element in the input array is in the output array.

I went about doing this in separate test methods for each of the five properties that I tested. First I generated a hundred within a loop a hundred randomly sized arrays and made sure that sizes were not repeated throughout the iteration. Then each generated array was randomly filled with an integer value. A copy was then made of the now generated array and was sorted using the Arrays.sort method. Then each property was tested within their respective methods making different assertions and failure cases based on that test. For example, when checking to make sure the two arrays were the same size after using the sorting method a simple assertion was made that the two sizes of the arrays were equal with each iteration.

I didn’t run into any issues when writing these tests for the different properties. The tests appear straightforward and not very complicated. The few things I did have to account for was making sure that each generated array was not the same size as any of the previous arrays by just making a list of all the sizes that were used and checking to see if the randomly generated size had not previously been tested. The key was making sure that each array would have a random size and a wide variety of random values so as to make a more definite test that the sorting method was indeed working for each of the properties tested.

SCREENSHOT:

