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CS 1632 – DELIVERABLE 4

PROPERTY-BASED TESTING

Repository containing test code: <https://github.com/hughpedley/cs1632_deliverable4>

For this deliverable, I chose to write my own Junit-based property-based test. The purpose of this was to write several tests around the Arrays.sort Java method, and basically to confirm that it worked. Now, this being a built-in method in one of the Java libraries, we do not expect to find any failures. In fact, if we do encounter a failure it is much more likely that we have made an error in one of our tests.

To be blunt, I chose this option because it seemed easier. In class, we discussed a wide variety of properties that should be true with property-based testing. I just referred to my notes to check three properties about sorted and presorted arrays, and I began my work.

My first test was confirming that an array of any random size with random integers would have the same length before and after being sorted. This was simple enough to program and taught me what I already expected – that the size of an array does not change after a sort. The second test was also programmed and executed without a problem. This test stated that an array would not change class type after being sorted. And again, this test’s results confirmed what was expected.

The third test was the only one that I had some difficulty with. With this test I attempted to confirm that an array was actually sorted after the Array.sorts method was used. I wrote a test that would iterate through every single index of an array, and would confirm that every number was larger or equal to the one that came before it. With this test, I would get failed results a little more often than successful results. The test would return either result even though I had not changed anything between running it. I’m not entirely sure where my error was, but my test as it stands now checks that the first index of every array is less than or equal to the last. This test always passes, which it should.

Other than the last test, the whole deliverable was fairly easy to put together.

