

Erik Poole

CS 6015

Assignment 7 - Differential Testing

I tested Will Marringa's implementation against my fuzzer and originally discovered numerous discrepancies based on different understandings of how the program was supposed to handle empty files. It was my understanding that an empty file would produce an error, while Will simply left blank files without an output. After conferring with John it was decided that Will's implementation was correct and I changed my program slightly to be in line with his.

After that was rectified we tested again and discovered 870 discrepancies out of 10,000 tests. All of those came from random input points and our two programs disagreeing on error 3: crossing line segments. We both had major errors in our implementation and after a number of attempts by each of us to correct our implementations without success we both turned to the webpage <https://www.geeksforgeeks.org/check-if-two-given-line-segments-intersect> that was used by many others in the class for their implementations and modified the code there to fit in with our own programs. It's difficult to say exactly how many bugs were fixed by either of us because both code sets were woefully inadequate. However, we did discover one additional bug related to Will's trapezoid classification which he has now fixed. After final testing we were able to come to 100% agreement when tested with my fuzzer.

Sarah Schuster-Johnson tested my code against her fuzzer and found the same subset of errors that I had discovered while testing Will's project. Sarah's implementation was mostly correct from the start, the only code that she needed to change was to account for and properly classify quadrilaterals with inputs of both clockwise and counter-clockwise orientations, which has been somewhat vague from the start of the project. After that single bug was weeded out we were able to achieve 100% agreement as well!

My Repository - https://github.com/erikpoole/quadrilateral_tester/

Will's Repository - <https://github.com/pyrabt/cs6015-assignment4>

Sarah's Repository - <https://github.com/schusterjohnson/quadrilateral>