CS 1632 - DELIVERABLE 5: Static Analysis

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Github URL: https://github.com/Ningyou134679/CS1632_Deliverable5
Download URL: https://github.com/Ningyou134679/CS1632_Deliverable5.git

Summary

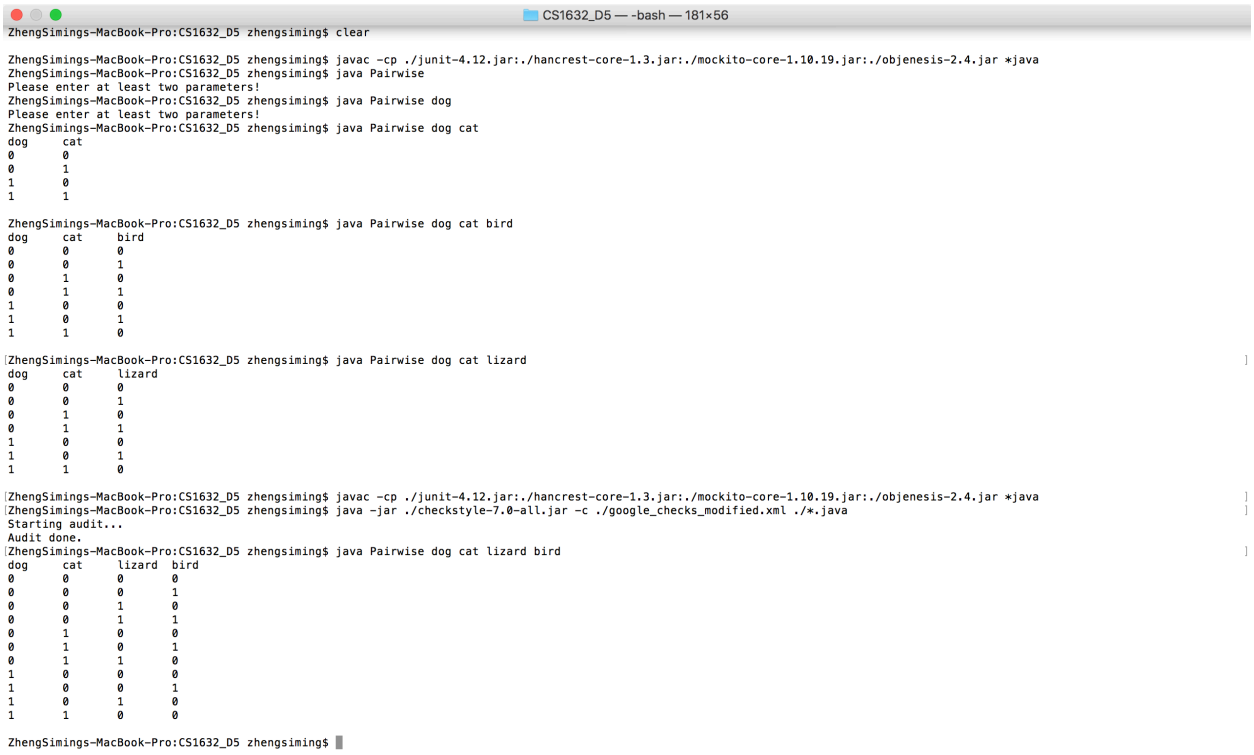
First of all, my output for the program is not an optimal solution, meaning that the covering array generated does not contain the minimal necessary test cases. However, I confirmed with Dr. Laboon and an optimal solution for this program is unnecessary for this assignment.

Other than that, there is no outstanding issues with the program, according to the requirement. All bugs in findBugs are fixed, checkstyle does not report an error. See screenshot in later pages for details.

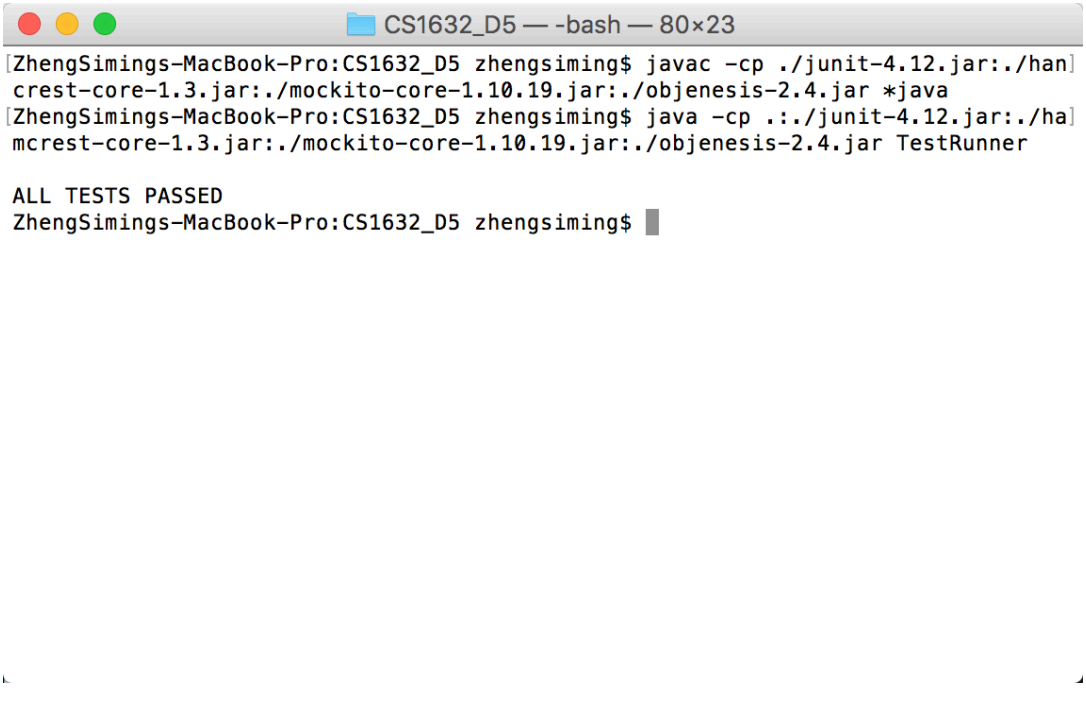
The algorithm of the program is as follows:

1. Inputting n number of arguments, where n >= 2
2. For number 0 to 2^(n) - 1, treat each number as a test case
    1. For example, 2 arguments will result in 0, 1, 2, 3, in total 4 test cases
3. Treat every pair of bits in the number as a pair of arguments
    1. For example, 2 stands for 010, then 01, 00, 10 will be 3 pairs
4. For every test case
    1. Skip if the same test case already exists in the covering array
    2. For every pair of bits in that test case, if a test case is not covered for a pair, add it to the covering array
        1. For example, say we are checking the 0th and 2nd index bit, then test case 010 and 000 both cover the same pair, and we can exclude one of them

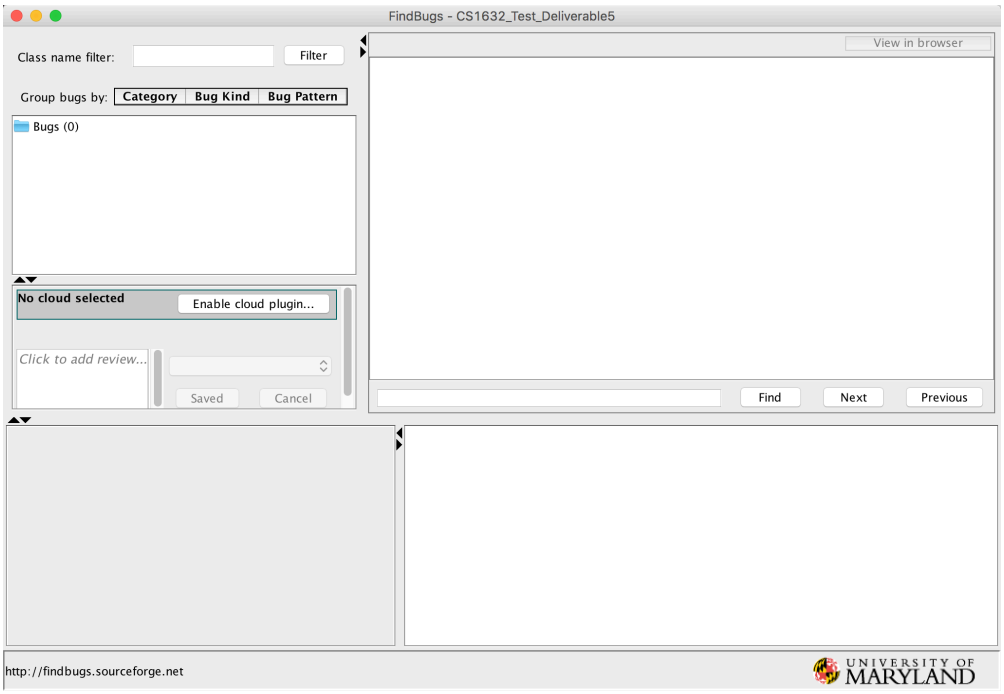
Program output



Test output



Find bugs



Checkstyle