CS206- ADVANCED SOFTWARE TESTING AND ANALYSIS PROJECT
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Tcas:

Test Suite	Size of the test suite	Number of Faults
Original test suite (universe.txt)	1590	41/41
Random branch coverage	12	14/41
Random statement coverage	5	9/41
Total Branch coverage	13	14/41
Total statement coverage	4	10/41
Additional Branch coverage	11	14/41
Additional Statement Coverage	4	10/41

Totinfo:

Test Suite	Size of the test suite	Number of Faults
Original test suite (universe.txt)	1026	23/23
Random branch coverage	5	16/23
Random statement coverage	6	16/23
Total Branch coverage	5	14/23
Total statement coverage	5	13/23
Additional Branch coverage	5	18/23
Additional Statement coverage	5	14/23

Schedule:

Test Suite	Size of the test suite	Number of faults
Original test suite (universe.txt)	2634	9/9
Random branch coverage	12	5/9
Random statement coverage	8	2/9
Total Branch coverage	8	4/9

Test Suite	Size of the test suite	Number of faults
Total statement coverage	3	3/9
Additional Branch coverage	7	5/9
Additional Statement coverage	3	3/9

Schedule2:

Test Suite	Size of the test suite	Number of Faults
Original test suite (universe.txt)	2679	9/9
Random branch coverage	11	3/9
Random statement coverage	5	4/9
Total Branch coverage	7	6/9
Total statement coverage	1	4/9
Additional Branch coverage	5	3/9
Additional Statement coverage	1	4/9

Printtokens:

Test suite	Size of the test suite	Number of faults
Original test suite (universe.txt)	4072	7/7
Random branch coverage	18	5/7
Random statement coverage	10	3/7
Total Branch coverage	7	5/7
Total statement coverage	6	6/7
Additional Branch coverage	6	4/7
Additional Statement coverage	5	4/7

Printtokens2:

Test suite	Size of the test suite	Number of faults
Original test suite (universe.txt)	4057	9/9
Random branch coverage	17	8/9
Random statement coverage	13	8/9
Total Branch coverage	6	8/9

Test suite	Size of the test suite	Number of faults
Total statement coverage	4	7/9
Additional Branch coverage	4	7/9
Additional Statement coverage	4	7/9

Replace:

Test Suite	Size of the test suite	Number of Faults
Original test suite (universe.txt)	1590	41/41
Random branch coverage	27	16/31
Random statement coverage	18	13/31
Total Branch coverage	21	20/31
Total statement coverage	13	11/31
Additional Branch coverage	11	17/31
Additional Statement coverage	9	7/31

Observations from the outputs:
Test suite size-> For each of the benchmarks, the test suites created by the implemented test prioritization strategies random, total, and additional statement are less than the original test suite. For instance, the original test suite for the "printtokens" benchmark has 4072 test cases. In contrast, the size of the reduced test suite created by random-statement, random-branch, total-statement, total-branch, additional-statement, and additional-branch techniques is 18, 10, 7, 6, 6, and 5 correspondingly. Therefore, the resulting test suite is much less than the original.

Coverage criteria on test suite size-> Branch coverage criteria create more test cases than statement coverage requirements for the majority of test-prioritization approaches. This is due to the fact that whether or not to take a branch has more options than whether or not to take a statement. As a result, to ensure 100 percent branch coverage, more test cases are likely to be required than statement coverage.

Coverage criteria on fault Detection-> In the majority of benchmarks, Branch Coverage criteria tend to discover more errors than statement level criteria. As there are more test cases in the branch coverage test suite and they may follow various pathways, we are more likely to uncover more errors than with the statement coverage test suite. However, this cannot be guaranteed 100 percent, since there are outliers.