

Experimental Results:

Size of the test suite:

	tcas	totinfo	schedule	schedule2	printtokens	printtokens2	replace
branch-random	13	9	12	9	15	19	22
branch-total	13	5	8	7	7	6	21
branch-additional	11	5	7	5	6	4	11
statement-random	5	8	6	2	12	14	14
statement-total	4	5	3	1	6	4	13
statement-additional	4	5	3	1	5	4	9

Number of faults exposed:

	tcas	totinfo	schedule	schedule2	printtokens	printtokens2	replace
branch-random	8	14	2	5	4	7	15
branch-total	13	13	3	5	5	7	19
branch-additional	13	13	5	2	4	6	13
statement-random	6	13	0	3	4	6	12
statement-total	9	12	2	3	6	6	10
statement-additional	9	12	4	3	4	5	4
baseline_suite	41	21	9	9	7	9	31

Observations:

More test cases in the branch test suit than in the statement test suit. Random has the most number of test cases. Additional Coverage Prioritization maximizes coverage with fewer test cases.

Branch coverage performs better than statement coverage. Total Coverage prioritization is the best test case prioritization technique. Random prioritization generates the most unstable result which can provide a good and awful test suit.

ChatGPT / LLMs Usage:

We use Chatgpt and Copilot to generate a basic code structure and write some basic functions, such as an argument code, opening a file, and reading from a list.