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Abstract: The Virtual Pre-Testing Method

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Abstract

The traditional tests may be planned and designed at the early stages, but possible to execute test cases after implementing source code. Due to the great time difference between requirement & design stage and testing stage, it may be late to find software design & test error after software development. To solve this problem, this paper suggests a virtual pre-testing method to find software & testing error before development, that is, automatically generate and execute test cases with modeling and simulation (M&S) in a virtual environment before completely development. This method has basically two parts: one is to create test cases with state transition tree based on state diagram. Also for coverage, we use state, transition, instruction pair, and all paths coverages. Second part is to model and simulate a virtual target, and then pre-tests with test cases to the target. In other words, these generated test cases are automatically transformed into the event list, which simultaneously executes test cases to the simulated target within a virtual environment. As a result, it may be possible to find design and test error at early stage of development cycle, and to reduce development time and cost as much.

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