

Practical Methods for Automatic MC/DC Test Cases Generation of Boolean Expressions

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Abstract : Modified Condition/Decision Coverage (MC/DC) is a structural coverage criterion that aims to prove that all conditions involved in a Boolean expression can influence the result of that expression. In the context of automotive, MC/DC is highly recommended and even required for most security and safety applications testing. However, due to complex Boolean expressions that often embedded in those applications, generating a set of MC/DC compliant test cases for any of these expressions is a nontrivial task and can be time consuming for testers. In this paper we present an approach to automatically generate MC/DC test cases for any Boolean expression. We introduce novel techniques, essentially based on binary trees to quickly and optimally generate MC/DC test cases for the expressions. Thus, the approach can be used to reduce the manual testing effort of testers.

Keywords : binary trees, MC/DC, test case generation, nontrivial task

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