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An Optimization of Cardinality of a Test Cases Set for Random Testing Process*

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Abstract

The paper discusses the problem of determining the cardinality of a test cases set in the process of computer program testing using the random testing method. General rules that should be taken into account in the process of preparing a test cases set for program testing are described. On the basis of a formal description of the testing process, the methods of determining the size of a set are discussed. The cardinality of the test cases set constituting the basis for the program testing process is proposed to be determined as a result of solving the two-criteria optimization problem. Received solution to such problem allows both maximization of the probability of covering all executable paths of the tested program and minimizing the cost of the testing process implementation. The presented considerations are illustrated with a numerical example.

Keywords: program testing, random testing, set of test cases

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