

Research on applying symbolic execution in Unit testing on JUnit for the Java language

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Abstract: This topic aims to study and apply the symbolic execution method to the Unit testing process using the JUnit tool for the Java language. The context of the topic arises from the need to improve source code quality by enhancing the effectiveness of automated testing. The objective of the research is to build and deploy a new Unit testing system, based on symbolic execution, to automate the error detection process and increase the accuracy of test results. The research method includes both theoretical analysis of symbolic execution and practical application of this method in the Java environment. Through this, the topic hopes to contribute a new solution to the field of software testing and enhance the capacity for sustainable software development.

Keywords: Unit Testing, Symbolic Execution, JUnit, Java, Software Development