Challenges and Proposed Solutions of CoverageBased Testing Tools

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Abstract

Automated test generation for object-oriented software typically consists of producing sequences of calls aiming at high code coverage. Test coverage is sometimes

used as a way to measure how thoroughly software is tested. Coverage is used by software

developers and sometimes by vendors to indicate their confidence in the readiness of their

software. This survey studies and compares 7 coverage-based testing tools focusing on, but

not restricted to coverage measurement. We also survey additional features, including

program prioritization for testing, assistance in debugging, automatic generation of test

cases, and customization of test reports. Such features make tools more useful and practical, especially for large-scale, real-life commercial software applications. This paper

discusses the technical challenges that are testing tools need to address when handling Java

classes coming from real-world open source projects, and when producing JUnit test suites

intended for real users.

Keywords: Unit testing, Automated test generation, Search-based testing, Testing classes

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