Abstract

Programming is a practical process; students need to write a lot of programs in order to master it. However, with large number of students, the assessment of programming exercises leads to extensive workload for teachers making it difficult for instructors to provide constructive and corrective feedback or even additional help when the students need it. In this work, we address the issue of automatic assessment for programming assignments. The goal of which is to provide immediate grading and comprehensible feedback to the learners, while taking some of the workload burden off the teachers. This paper proposes a system combining results from dynamic and static analysis to ensure a reliable and objective evaluation job. While dynamic analysis is based on unit testing framework, the static analysis will quantify the structural similarity between students’ programs and the solutions provided by the teacher. In order to perform such comparison, a suitable program representation and an adequate similarity measure will be presented.
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Index Terms

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Keywords

Programming assessment, dynamic analysis, static analysis, CFG similarity measure, automated grading.