Improving Individual Commitment and Assessment in the Module Compiler Construction

Dmitry Ivanov 1 Florian Meyer 2

1Institute for Software Systems  2Institute of Telematics

Initial Situation

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<th>Purpose</th>
<th>Promotion</th>
<th>Assessment</th>
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Table 1. How changes map onto objectives.

Problem Definition

1. Difficult individual assessment due to:
   - large project groups (up to 4 students in each)
   - time pressure of the interviews (18 min. per group, or 4 min. per student)
2. Difficulties with Project 3 (Code Generation with LLVM):
   - the LLVM API, the library used in the project, is complicated for beginners
   - the suggested starting point (Kaleidoscope tutorial) does not help every group according to the previous experience

Objectives

1. Make sole commitment more measurable
2. Promote individual engagement in the project work
3. Provide a more gentle introduction to LLVM API

Didactic Concept

Promote and Assess Individual Commitment

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Introduction to LLVM

Students will be introduced to the Kaleidoscope tutorial and will have to work on a small track involving LLVM during a PBL [1] session before Project 3. During this session students will get the initial knowledge of LLVM and make their first attempt of applying it under supervision, which allows them to identify the knowledge gaps and tackle common problems before the project starts.

Evaluation Design

We plan to evaluate all aspects of our didactic concept, namely introducing individual assignments, using DOMjudge, working in GitLab, and the PBL session on LLVM.

CheckING

The CheckING questionnaire will be used for assessing the usability of the technical part (DOMjudge and GitLab) and learning impact of the teaching novelties (individual assignments and PBL). The questions include both a series of “To what extent do you agree with the following statements?” questions and an open-ended questions for detailed feedback.

Semi-Structured Interviews

We are also going to evaluate the effect of DOMjudge, GitLab, and the PBL session deeper through semistructured interviews [2] asking the following questions:

1. What were the difficulties in using DOMjudge as the testing tool?
2. How did GitLab help working on projects in a group?
3. How did the PBL session improve your knowledge and help working on Project 3?

Conclusion

The present didactic concept can scale in two ways:

1. increasing the allowed group size
2. increasing the number of groups

The first approach may reduce the learning effect and requires more effort: one has to come up with new individual subtasks and tests for them. On the other hand, for the second approach one needs to reserve additional time for the assessment interviews and adjust the number of DOMjudge judge hosts. Therefore, we recommend increasing the number of student groups for a larger number of course participants.

References