Pseudo-code virtual machine. A project proposal

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Abstract

Teaching and student interaction depends on a large number of menial tasks, such as material preparation, setting up of assignments, quizzes, exercises, and exams, tractability of example/exercise problems, correct weighting of problems towards the course objectives and difficulty level, etc. Further, electronically available examples, exercise and experimentation opportunities, and tutorials promise to be of tremendous help specifically within the mature fields of basic teaching. In this project, various tools for in classroom and off classroom teaching and administrative work will be created. Their creation will require creativity, good overview to understand complex, but repetitive tasks, and a good sense for useful and interesting experimentation.

One of the biggest hurdles for GUC engineering students in their first semester is to understand the mechanics of simple algorithms. The learning curve of an actual programming language such as Java is steep, so it is not suitable for starting to teach the concepts of algorithms. Pseudo code on the other hand is abstract, no execution environment is available, and the only feedback the student receives is the marks on his or her assignments.

To really understand the ideas of algorithms, experimentation with immediate feedback is extremely helpful. In this task, a visualizing interpreter for a modified pseudo-code will be built, that allows for entering, editing, and step-by-step executing of mini-code while observing the effects of statements and control-flow as they happen.