Chair of Programming Methodology
Master Thesis

Software Engineering modules for CS Talent Scout

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Introduction   The Computer Science Talent Scout[1] is a collection of Java-Applets (called "modules") with interactive tasks, puzzles and games which can be used as a kind of aptitude test for computer science. The problems to be solved assume a mathematical maturity typical of high school, but they do not depend on previously acquired knowledge. All modules illustrate some general concepts a student will encounter in a computer science course of study.

The goal of this master thesis   is to design and implement Software Engineering modules for the Computer Science Talent Scout in order to extend its current scope. The User Interface has a simple design, so that users don't need much time to acquaint themselves. An important aspect is the combination of interactive entertainment and education to increase the motivation of the users. We assume that the students have an instructed tutorial about the underlying problem before using these modules.

   The modules have to cover different topics in the broader field of Software Engineering. On the one hand that can include fundamental programming paradigms such as iteration or recursion, algorithmic strategies or programming languages. On the other hand this also includes specific subdisciplines of Software Engineering such as design (e.g. design patterns), testing or project management.

The minimum requirements   for successful (passing grade) completion of the thesis are:

1. Survey of existing learning applications

2. Define how to teach Software Engineering to high school students.

3. Develop two modules for Talent Scout from different areas of Software Enigeering.

4. Quality assurance:

   - Thorough documentation of all implementations
   - Test suite for the modules covering all non-trivial methods (JUnit)

5. Three presentations and a project report

Possible extensions:

- Develop a third module to cover another area of Software Engineering.

- Evaluation of modules

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References

[1] ETH Zürich. Computer Science Talent Scout. http://www.jn.inf.ethz.ch/cs-ts/.

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