

CSSE2003

Software Engineering Studio

Assignment 3

Semester 2, 2009

School of Information Technology and Electrical Engineering
The University of Queensland

The purpose of assignments is to help students master the material in CSSE2003 (learning by doing). Assignments serve the additional purpose of demonstrating students' mastery of the material, thereby establishing a basis for evaluation.

- Goals:**
1. Give students experience modifying part of a large body of Java code written by other people.
 2. Provide students with an opportunity to develop UML diagrams as part of their design documentation.
 3. Give students practice at developing tests at both the unit and system level.
 4. Give students experience preparing and presenting a technical talk.
 5. Share the collective knowledge about these Java programs within each tutorial class.
 6. Encourage students to reflect on their learning activities and relate software design theory and practice.
 7. Provide a significant task for cooperative learning.

Deadline: *Presentation:* Tutorial classes in week 13
Document: 5 pm, Friday 30 October 2008 (week 13)

Submission

The assignment is to be submitted via the web assignment submission page located at:

<http://submit.itee.uq.edu.au/>

Only one member of each assignment team should submit. Multiple submissions are accepted but only the final one is kept. The submission must contain two files. The first file must be a file containing the presentation used in the tutorial class presentation. The name of the first file must start with "team-presentation" where team is to be replaced by your team identifier (e.g. m2b-resentation.ppt). The second file can be either:

1. a single file containing a composite document incorporating all parts of the assignment. The format of the document should be PDF and should use standard 11-point fonts with at least 2 cm margins on all sides. The name of this file must start with "team-documentation" where team is to be replaced by your team identifier (e.g. m2b-documentation.pdf), **or**
2. a zip file containing a collection of HTML web pages representing an online document. The name of this file must start with "web" where team is to be replaced by your team identifier (e.g. m2b-web.zip). Your web pages should not contain any unnecessarily fancy features such as applets. The root web page is to be named "index.html". Note: since your web pages are to be copied, make sure that all your internal links are relative, not absolute.

Your submission should clearly identify the team and its members (including the tutorial class day and time). In addition, a paper copy of the CSSE2003 Assignment 3 coversheet must be submitted to your tutor in the week 13 tutorial with the administrative and contribution sections completed. The

coversheet must specify the percentage contribution for each team member (such that the sum of the percentages equals 100 and satisfies the limits specified on the course profile). All team members must sign the cover sheet to indicate their agreement that the percentages represent an equitable division consistent with their individual contributions. Any controversy over the allocation of contribution percentages should be referred to the team's tutor and then, as a last resort, to the course co-ordinator.

To submit a late assignment, see the course co-ordinator. If the team's performance has been adversely affected by exceptional circumstances, the team may apply to the course co-ordinator for special consideration. Suitable documentary evidence (such as a doctor's certificate) should be supplied where appropriate.

What you have to do

Since this assignment extends Assignment 2, we expect that your submission may include parts of your Assignment 2. This assignment should clearly identify all parts that are reused from Assignment 2 and how they have been modified (if at all).

There are five deliverables for this assignment:

1. **Source code changes and accompanying descriptions.** Each team is expected to make additions and/or changes to the source code of their Java program. These modifications can be to add functionality, to correct existing defects or to improve the quality of the existing code (refactoring). These changes do not need to be those proposed in Assignment 2 but in this case some discussion is expected of why they are not. It is expected that a reasonable amount of new or modified code is about 250-500 lines of non-comment code but remember that size is not the primary criteria.

A "before and after" listing of the source code changes should be included in your assignment report. Look for ways to highlight the differences your team has made. Description of and justification for the changes is required – where teams make use of known software design patterns, the patterns should be documented by showing how the program classes map to the generic pattern participants. Any changes to build files should also be documented and explained.

2. **UML documentation.** Before and after UML class and sequence diagrams that highlight how the Java source has been modified. Both class and sequence diagrams should be provided.
3. **Testing information.** The assignment should demonstrate how the changes to the Java program have been tested. The test documentation should describe precisely how the testing was performed including JUnit test cases and any other test scaffolding, and the input test data, the expected outputs and the actual outputs. Tests at both the unit and the system level are expected.
4. **Tutorial presentation.** Tutorial presentation is composed of two parts:

(a) **Code change explanation:** Each team is to prepare a *10-minute* presentation about the internals of their Java program to explain:

- the overall program structure
- the subset studied in detail
- UML diagrams developed
- any patterns identified
- extensions or refactorings performed
- testing related to extensions or refactorings

(b) **Code change demonstration:** Each team **MUST** commit their final code changes with test code to its team SVN repository prior to the tutorial presentation in week 13. At the tutorial presentation, each team will be given a *5-minute* demonstration time to run and test the program to demonstrate the code changes and how they have been tested.

- 5. Team learning journal.** The team is to continue to keep a journal of their activities, experiences and ideas over the course of this assignment. Learning requires integrating theoretical knowledge from lectures and reading with practical skills. The team learning journal provides an opportunity to “keep track” of your learning and experiences. It can be used to track the progress of the team but it should be much more than just a factual record of “who did what”. The team should engage in regular sessions that require all team members to reflect on their activities, knowledge, and feelings. The team can use these reflective sessions to guide subsequent actions. A size limit of 10,000 words applies to this component of the assignment (note: this includes the team learning journal from Assignment 2 – clearly identified as such).

Use the following questions as a guide for what to include in your team journal.

- a. How, in your opinion, does the theory of software design help with the practical task of changing the internal workings of a large software system?
- b. What resources have you found useful? (How and why).
- c. What, if anything, did the team do differently compared to Assignment 2?
- d. What advice would you provide to students required to undertake a similar project in the future?
- e. For your team, to what extent have the goals of this assignment been achieved?

Timetable:

A suggested timetable is:

- Week 10: Plan the changes to the Java program and start implementing changes to the source code and developing corresponding design documentation.
- Week 11: Continue implementing changes to the source code and developing corresponding design documentation.
- Week 12: Prepare draft assignment report and presentation.
- Week 13: Complete and submit assignment and give presentation.

Evaluation:

This assignment is worth 20% of the final grade - the assessment criteria is provided on the assignment cover sheet.