**CS335 Spring 2009 Final Project General Specifications**

The final project for this class will be to design and implement a Java program which demonstrates your understanding of and ability to use many of the concepts and topics discussed over the course of the semester in class and section. It is worth 20% of your overall class grade, and is broken down below.

**Teams and Options**

This semester the project will be done in teams of four students (working alone or in larger or smaller teams is prohibited).Your group will choose projects from the options below. Each project will have its own project write-up, grading criteria, and assigned section leader.

* **MUD** – An epic adventure that challenges your imagination and literacy.
* **Risk** – The classic game of world domination and megalomania.
* **Rube Goldberg Machine** – A physics simulation that models fun but ridiculous solutions to simple tasks.
* **Trading Sim** – A turn-based economy game that allows designers to develop their own ruleset.

**Grade Breakdown**

The grade breakdown for the final project is as follows.

* 33% Common Spec (this document)
* 55% Individual Project Specification
* 12% Meetings with Graders   
   6% Initial UML Class Diagram and UML Sequence Diagram Meeting  
   6% Mid-Project Meeting
* +15% max Extra Credit (Grader-approved)

No late days may be used on any part of the final project. Projects not turned in on time will be counted as a 0. The project must be written in Java and submitted as an Eclipse project for grading. Each member of the team is expected to do an equal amount of work, and is expected to understand the entire system well enough to be quizzed on how the pieces fit overall after the project is submitted. AGAIN, LATE WORK WILL NOT BE ACCEPTED OR GRADED – so be mindful of all deadlines, broken down below.

**Extra Credit**

A maximum of 15 points of extra credit features are available in the final project. Extra credit features have been suggested for each project. In addition, your team may come up with other extra features as long as they are approved by the grader (points subject to grader discretion) at the Checkpoint 1 meeting. A good implementation of extra credit features is usually made easier when the project is designed well in the beginning, and thus teams should consider which extra features they will attempt, as well as how they will attempt them, in the first stages of the project design. Graders will assign points for extra credit features based upon correct and robust implementations, so all suggested points are maximums. **Poorly implemented features or features that were not pre-approved by the grader will score 0 points.**

**Checkpoints**

The project is divided into 3 major checkpoints. Deadlines are detailed further below.

1. Initial Planning

a. *Planning Meeting* – You will meet with your grader to go over material before you turn it in. You will sign up for a team meeting on 4/7. The meetings will be held 4/10-4/13. An important goal of this meeting is to produce a schedule and deliverables for the midpoint meeting (Checkpoint 2). Bring a UML class diagram, list of model classes, GUI sketches, work distribution plan, schedule, and questions to the meeting. Your grade will be based on your preparedness. If your group intends to attempt any extra credit, that will also be discussed at this meeting. Meetings will be held in the GS930 lab, unless otherwise agreed upon.

b. *UML* – Develop a UML class diagram of the entire system including extra features, UML sequence diagram of inner loop of project and Java Doc of model class(es) due in class (4/16). The UML sequence diagram details the main loop of your project that keeps it running until the user quits the game. Your design may change after this point, but you must keep your JUnit tests, UML diagrams and Java Doc updated as they must be turned in at the end as well.

2. Midpoint Progress Check

Sign up for the second team meeting on 4/16; meetings will be held 4/24-4/27. At the meeting, you are expected to be able to demonstrate a working model (based on earlier, agreed-upon deliverables). A first draft of your JavaDoc is to be generated and electronically submitted by this meeting. Again, your grade for this meeting will be based upon preparedness. Meetings will be held in the GS930 lab, unless otherwise agreed upon.

3. Final Turn in and Review Meeting

The final project will be submitted no later than 11:59pm on 5/6. The following will be included in your final submission:

* Your complete system in working order
* JavaDoc – fully generated JavaDoc located in the project folder
* Design Doc(let) – a 3-5 page brief located in the project folder

Sign up for review meeting on 5/5; meetings will be held 5/8-5/10. Meetings will be held in the GS930 lab, unless otherwise agreed upon.

**UML Class Diagrams, Sequence Diagrams, JavaDoc and Design Doc**

The UML class diagrams and sequence diagram should be submitted in paper form. They should clearly show the names of each member of the team, as well as the name of the project being designed. JavaDoc should be generated and submitted electronically to the turnin folder by each of the given deadlines. If you have never generated JavaDoc before, be sure to generate a draft early to avoid last minute questions or delays. The Design Doc should be a brief (3-5 page) document that lists the team members, discusses design choices made, patterns used, where they were used and why you elected to use them. Also include any extra features attempted and how to find them as well as bugs, problems and explanations of the program that might not otherwise be clear.

**Team Dynamics**

These projects are designed to be challenging for 4 people. This means that if your team is not working well together it will probably be reflected in the quality of your work and ultimately in your grade. Each team member will receive the same grade on the project. It is each team member’s responsibility to make sure that everyone contributes their fair share of work. If you find that your team is experiencing serious problem that imperil the project, then you should immediately talk to the section leader responsible for that project. You may find it useful to assign one person to manage the schedule and keep track of coordinating the different parts of the project.

**Common Spec**

Regardless of the project you choose, each final project must demonstrate competency in the skills we have been learning and practicing in class. Therefore, a significant portion of the final project grade comes from following this common spec (On the next page). It is worth 33 points in total, and graders will assess credit (partial or full) on each item.

4 pts UML - Complete UML class diagram(s), sequence diagram of inner loop. Matches JavaDoc. Matches final submission. The class diagram should demonstrate well-thought-out structure and detail all interactions between classes.

4 pts Comments - JavaDoc of entire system. Must match UML class diagrams and as well as final submission of your actual code. Points may be deducted for inconsistencies. All code is well-commented. This includes comments for Classes, methods and internal (in-line) documentation for complex methods. All non-private methods and classes should be JavaDoc’d.

4 pts Design Doc – Includes Design Doc with team name and members listed. Describes how each portion of the spec has been implemented and identifies/justifies uses of each Design Pattern correctly. Describes and extra features, how to find them and any known problems.

10 pts Structure – Appropriate use of inheritance, abstract classes and class hierarchy. Is highly cohesive. Design demonstrates understanding of when to use “Is-a” vs. “Has-a”. Good separation of Model-View/Controller. Regardless of the project you do, code used to represent or interact with the model should not be located in the model. Project is event-driven.

4 pts Classes - Has at least 15 unique and meaningful classes.

6 pts Design Patterns - Project fully uses at least 6 design patterns.

1 pts Exceptions – User-made exceptions are logical and used only when appropriate.

**Calendar**

3/31 (Tues): This document and final project options handed out in class. Projects will be briefly discussed with Q&A.  
  
4/7 (Tues): Caucus is held – teams formed. Sign up for first set of meetings with project grader.   
  
4/10 – 4/13: **CHECKPOINT 1**: First meeting with project grader.   
  
4/16 (Thurs): Initial UML class diagram and sequence diagram of inner loop due in class. JavaDoc submitted electronically by beginning of class.  
 ALSO: Signups for midpoint meeting with graders are done in class.   
  
4/24 – 4/27: **CHECKPOINT 2**: Second meeting with project grader.   
  
4/23 (Thurs): Second midterm exam.   
  
5/1 (Fri): Sign up for final demonstrations of your project by email to Rick.   
  
5/5 (Tues): Last day of class. Sign up for final meeting with grader. Demos in class by those who want to present. Final UML class diagram and UML sequence diagram due in class. These must correlate with the code turned in.   
  
5/6 (Wed): **CHECKPOINT 3**: Final project with JavaDoc and Design Doc due by 11:59pm.   
  
5/8 – 5/10: Final meeting with project grader. Show off code, extra features, and discuss.

**Submissions**

* All code submissions are due by 11:59pm and must be submitted via the web turnin. Turnin folder name should be in the form:  
    
  FINAL\_(Checkpoint #)\_(Project name)\_(Last Name 1)\_(Last Name 2)\_(Last Name 3) \_(Last Name 4)   
    
  Project names are: MUD, RISK, RUBEGOLDBERG, TRADINGSIM  
  (For example, the Checkpoint 1 JavaDoc submission for Risk written by J. Doe, N. Drew, T. Sawyer and H. Finn would be turned in with the name FINAL\_1\_RISK\_DOE\_DREW\_SAWYER\_FINN.)
* JavaDoc is to be submitted electronically by above listed deadlines via the web turnin.
* UML diagram hard copies are due to the Section Leader in charge of your project by 3:30pm (the beginning of class).