



CS 341

Software Design

Project Assignment 3

Design Extension

Due: Nov. 13, in class

Objectives

- To do a feasibility study comparing Java 3D/Maya and Processing APIs
- To design how you will build your project
- To gain experience in project planning

Assignment

Feasibility Study

Currently, 3 user interfaces are under consideration for the Risk program:

- Models built with Maya and manipulated using the Java 3D API
- 3D Models built programmatically and manipulated by the API available from www.processing.org
- 2D user interface

A major decision needs to be made about which user interface direction to take. The Java 3D / Maya approach would probably lead to the best graphics. The API is very complicated and needs to be learned in a limited amount of time.

The Processing API looks much simpler. While you have some experience with it, it still needs to be learned more thoroughly. There is also a question of whether it provides the functionality that you need.

A 2D user interface would be simpler to implement but not as flashy.

To make a decision between these three approaches, you should develop a small program that manipulates a single 3D object in a simple way, but in a way that you would like to use in the game. By doing this you will learn how easy/difficult it is to work with each system. You should use this information to make a decision about which approach to use.

Design

The design work for this assignment should focus on the game logic, ignoring user interface issues. You should identify the major classes, their responsibilities, and how they relate to each other. It would be good, though, to indicate how your classes participate in the Observer pattern.

Your design should be done to enough detail that you are convinced that you understand what the classes are and how they fit together. You should identify important attributes and operations for your classes.

After completing your design, formulate a schedule for completing the code (and testing it, of course). Code is due on November 20, December 4 and December 11. Things that you should keep in mind when formulating your schedule:

- Consider how long the early programming assignments took. Evaluate the complexity of your classes compared to those assignments. Use that comparison to help you estimate how much effort each class will take.
- User interface code always takes longer than you think it should, so keep this in mind when doing your planning. This will be particularly true if you are using parts of Swing you have never used before.
- You should break up the work among yourselves but keep in mind that you will need some time to make sure that it works together.
- Select the order in which you implement your application based upon how critical the features are to your application and ease with which you can test parts of an incomplete application. Refer back to your priority list from the first assignment so that you focus on the highest priority pieces of functionality.
- Include in your schedule time that you need to learn new technologies (like 3D API, Swing, etc.).

What you should turn in

For the feasibility study, you should submit a textual document describing the feasibility study that you did, the decision that you made and why. Your discussion should make it clear that you understand how to use the API that you select (basically what the previous assignment requested).

Your design documentation should include a textual description, UML diagrams, and javadoc documentation as appropriate to help clarify your design.

Your schedule should identify:

- What functionality you plan to complete by each due date. This could be that you plan to have a user interface complete, but with most of the components doing nothing, or specific commands working, requiring partial implementation of multiple classes. Or you might have a bottom-up plan where you will have specific classes built and thoroughly tested with JUnit, but limited end-user functionality, or some combination of these.
- What classes (or parts of classes) must be implemented to provide that functionality.

Try to come up with a schedule that you believe you can meet. If, when doing the scheduling, you realize the project is too ambitious, come talk to me and we can reconsider the goals of the project.

Grading

The feasibility study will replace the Existing System Design assignment. Its grade will replace the Existing System Design assignment grade. It will be graded as follows

Description of feasibility study	15 points
Explanation of the choice you make	15 points
Demonstration of your understanding of how to use the system within your project. This may involve class diagrams, sequence diagrams, and text.	70 points

The design extension portion of this assignment will be graded as follows:

Design completeness	15 pts
Design consistency	15 pts
Design understandability	10 pts
Appropriate use of design techniques (inheritance vs. composition, immutability, design patterns)	30 pts
Good use of UML	15 pts
Schedule	15 pts

Turning in your work

Please turn in a paper document for this assignment.