Homework 5 — Settlers of _____

Due Thursday November 15th, Friday November 30th, Wednesday December 12th
at 8:00pm

(5, 45, 150 points)

Late submissions will not be accepted for the due date on December 12th

Credit:
- `checkpoint0.pdf` (checkpoint 0, due by end of day, Thursday, November 15th)
- `checkpoint1.pdf`, `prototype.pdf`, `settlers.zip` (checkpoint 1)
- `settlers.zip` (final deadline)

Instructions:

You may work with a partner for this assignment. You must store your code in a private repository if you are working with a partner. All students must complete interview grading after their final submission has been turned in.

Your job is to design and implement a game based on Settlers of Catan. [wikipedia] [how-to video] [play online for free] [play online for free (Xplorers, wait period for registration)]

Gameplay requirements (minimum):
1. Your game must have a consistent theme. What will it be?
2. You must have at least **3** different types of resource. What are they?
3. Players must be able to acquire resources. How?
4. You must have at least **2** different buildings/structures. What are they?
5. You must have at least **1** other mechanic (cards, a robber, trading, etc). What is it?
6. Your interface must be legible. What kind do you plan?
   a. This *must* be a graphical UI.
   b. You must produce a low-fidelity prototype and conduct user testing. The game should be easily playable.
7. Your game must be multiplayer. How many players?
8. The computer must be able to control any number of the players (including all players). What is the basic computer strategy?
9. Your game must have well-defined begin and end states. What are they?
10. Your board must not always be the same. How will you generate your board? What will it look like?
11. (Do you have any other features that you are hoping to incorporate?)

Analytics requirements (minimum):
1. Your GUI must include an analysis panel.
2. This panel must display at least all of the following information (you may choose exactly how to display it):

      a. Total resources distributed so far.
      b. Resources distributed to each player so far.
      c. Resources used by each player so far.
      d. Graph of player points over time.
3. This panel *may* display other statistics of your choice.
4. You *must* implement this panel simultaneously with your game--it will serve as one way of testing and tracking your game state.

Technical requirements:
1. You must build your game in c++, using Qt.
2. You should plan on separating your objects into separate files as makes semantic sense.
3. You must use and implement **1** of the following design patterns: flyweight, iterator, factory, and prototype.
4. You must have an appropriate inheritance relationship between at least 2 objects.

Checkpoint 0 (Thursday, November 15th at 8:00pm):
`checkpoint0.pdf`
1. Your name & your partner's name (if you have a partner).
2. If you have a partner, invite Felix to collaborate on your private repository.
3. Address the gameplay requirements. For each requirement, answer the question at the end of the item.
4. What is your design proposal for the underlying object models for your project? (include design pattern and inheritance relationship proposals here)
5. What do you planned to have completed for Checkpoint 1? This should be a <u>detailed</u> list. Make sure to address what a user should be able to see/do by the this checkpoint.

Checkpoint 1 (Friday, November 30th at 8:00pm):
`names_prototype.pdf` (can be turned in on paper before the end of day on the 30th)
1. Low-fidelity prototypes & feedback from at least 2 people not in your group.
`names_checkpoint1.pdf`
2. What you planned on doing for this homework deadline. (Copy + pasted from CP 0)
3. What you actually accomplished for this deadline.
      a. Note any differences and explain why they occurred. Prefer honesty over excuses.
4. What you have left to complete before the final deadline.
5. Screenshots of where your program is currently at. They don't have to be exhaustive but they should adequately depict the current state of your project running.
`names_settlers.zip`
- Your commented code up until this point.
- Include a README with instructions as to how to build and run your project.

Final Deadline (Wednesday, December 12th at 8:00pm):

```
names_settlers.zip
```
   - Your commented code, fully implemented.
   - Include a README with instructions as to how to build and run your project.

Interview Grading and Project Presentations
   - Interview grading will occur during the final week of classes and finals week.
   - All projects will be presented on the final day of class, in which we will award prizes to the projects for different categories (to be revealed later).