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Tower Hopscotch

Project Design



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# Project Management

|  |  |
| --- | --- |
| Current Iteration | Iteration #5 [Construction Phase]  20. November 2017 – 01. December 2017 |
| Previous Iteration | **Iteration #4 [Elaboration Phase]**  06. November 2017 – 17. November 2017 |

## Previous Activities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Iteration #4 | | | | | |
| **Elaboration Phase** | | 06.11.2017 | | 17.11.2017 | |
| **No.** | **Task** | **Assignee** | **Expected Time [h]** | | **Effective Time [h]** |
| 1 | Project Management | N. Eckhart | 4hrs | |  |
| 2 | Compile all Artifacts from Iteration #3 into design document. | P. Meier | 6hrs | |  |
| 3 | Add additional descriptions required for design document diagrams. | S. Bösch | 6hrs | |  |
| 4 | Define UI Prototype parameters for implementation in the next iteration. | R. Emberger | 8hrs | |  |
| 5 | Create game class with game loop. | N. Eckhart | 5hrs | |  |
| 6 | Create map class that can load a simplified map from a file with only path and non-path tiles. (Only one layer.) | P. Meier, S. Bösch | 12hrs | |  |
| 7 | Update Glossary as needed | Team | 2hrs | |  |

## Time Comparison

Our effective time expenditures were in expected ranges so we did not need to take any actions to compensate for lost time.

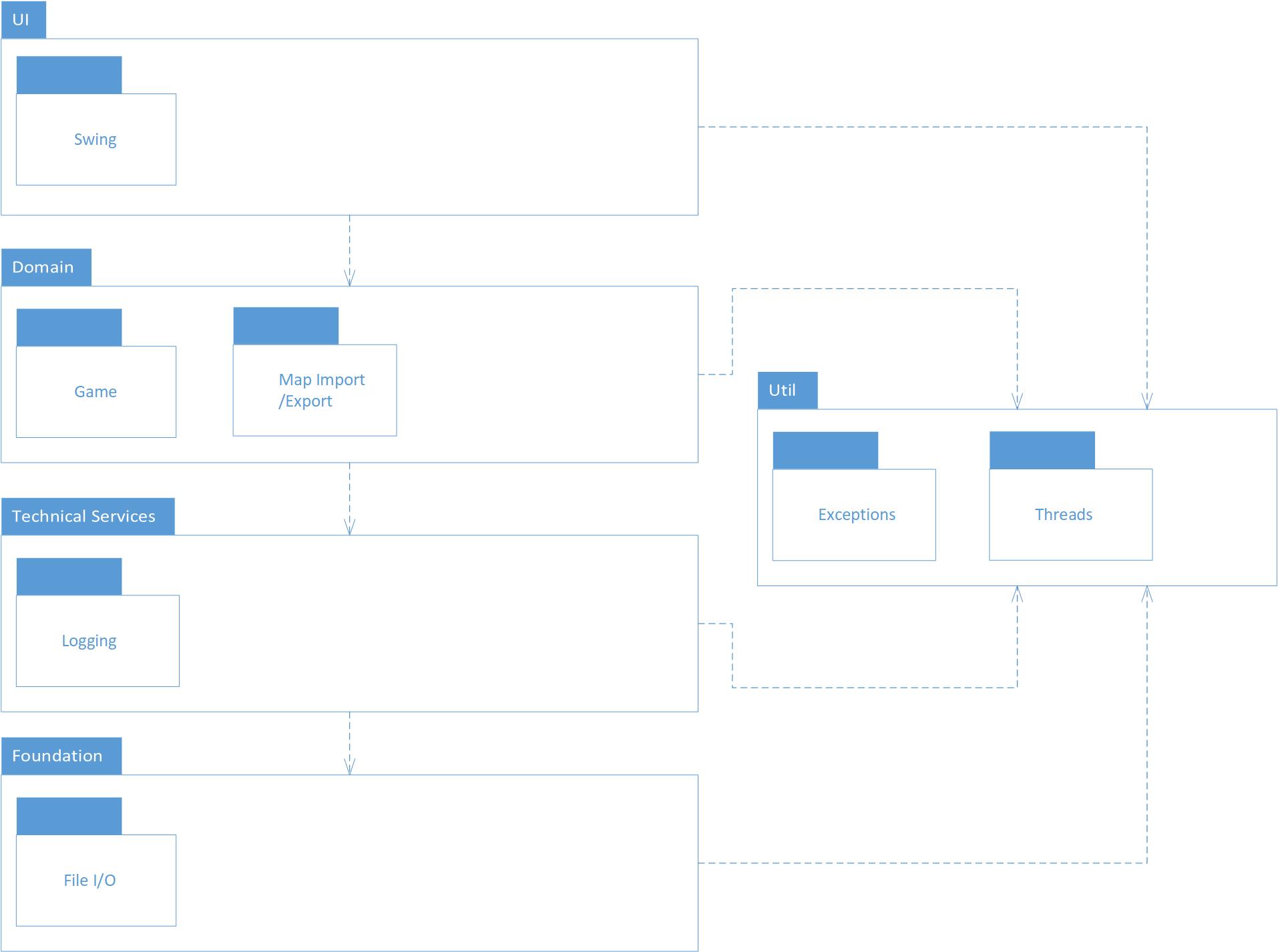
## Risk List

|  |  |  |  |
| --- | --- | --- | --- |
| Risk | Counter Measure | Likelihood of occurrence | Impact on Project |
| Code becomes hard to understand or maintain. | Follow clean code guidelines and have code reviews. | Low | Medium |
| Project complexity exceeding expectations resulting in increased time consumption. | Thorough analysis and detailed iteration planning. | Low | High |
| Lacking technical knowledge of one or more team members in a certain area resulting in increased time consumption. | Regular sharing of gained knowledge and assign tasks based on the developer’s skills. | Medium | Low |
| Loss of one developer for an extended period due to unexpected circumstances such as illness. | None | Low | High |

# Architecture

Tower Hopscotch is going to be a standalone desktop application. Data persistence required for features such as custom maps will be accomplished with text files that the program reads from and writes to on the file system. The user interface will be two-dimensional in the game’s first iteration.

## First Package Architecture Concept



## Programming Language

As Programming Language, we have chosen Java, because the Team has the most common experience in Java. The only framework that will be used is JavaFX to help with the user interface.

# Class Diagram

# Class Responsibilities

# Interaction Diagram

# Glossary

|  |  |
| --- | --- |
| Term | Definition |
| Fortress | The players central structure, the defense of which is the games main objective. |
| Tower | Any of a variety of defensive or offensive building created by the player to hinder or destroy incoming enemies. |
| Wave | A wave refers to a group of enemies. A game encompasses multiple waves that need to be defeated. |
| Layer | Each map has three layers that simultaneously spawn incoming enemies that may jump between these layers. |

# GUI-Design

Much of the screen will be taken up by the three layers. In the example above all three look the same, but in the proper version there will be different ground textures and path layouts.

On the bottom left there are buttons for each of the towers the player can build. Once clicked, the player can hover his mouse over any part of the map, and there will be a square overlaid at the mouse pointer. This square is green if the tower may be built at that position. If the player does not have the gold, there is already a tower there or he is hovering above a path tile, then the square is red.

If the square is green, then the player can use another left click to build the tower at his mouse’s current position. He or she may also at any time cancel his build action by right clicking.

Next to the tower buttons, there are two none-interactive labels that show the players remaining hit points as well as his accumulated gold.

On the bottom right, there are two large buttons that are both unclickable by default. The call next wave button gets enabled once all enemies of the current wave have been destroyed. Clicking on it prompts the next wave to begin.

The tower upgrade button gets enabled when the player has selected a tower on one of the layers by left clicking on it and he or she has enough gold to afford the tower upgrade.

