Project 4 ByteMe

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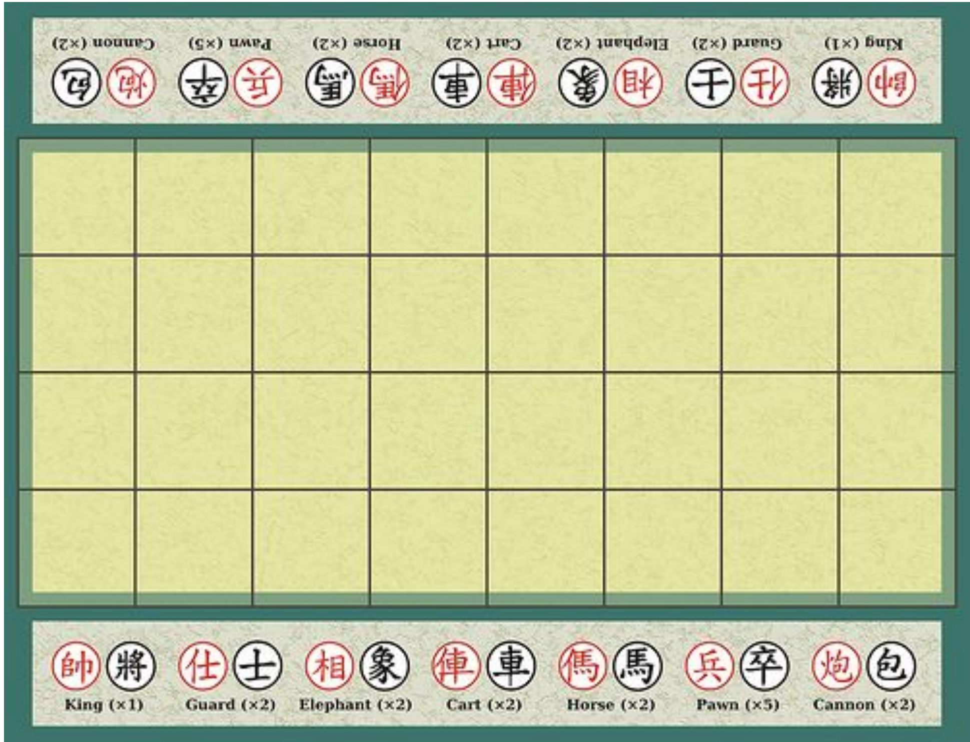
Banqi Rules

- Two player game
- A valid move can be:
  - Flipping a piece over
  - Moving one space
  - Capturing an enemy piece
- Moves can only be up/down/left/right (no diagonal movements)
- Host starts first by flipping over any piece
  - The color of the piece the host turns over is the color of their pieces for the game
- A piece can only capture another of equal or lower rank
  - Exception: General cannot capture soldiers, but soldiers can capture the General
- A player loses when they lose all their pieces and can no longer make any moves

Banqi Board Setup

- 4x8 game board
- 32 total pieces (16 red, 16 black)
- Pieces placed randomly face down
- Pieces have different ranks
- Name, Number per Color of pieces
  - General, 1
  - Advisor, 2
  - Elephant, 2
  - Chariot, 2
  - Horse, 2
  - Cannon , 2
  - Soldier, 5



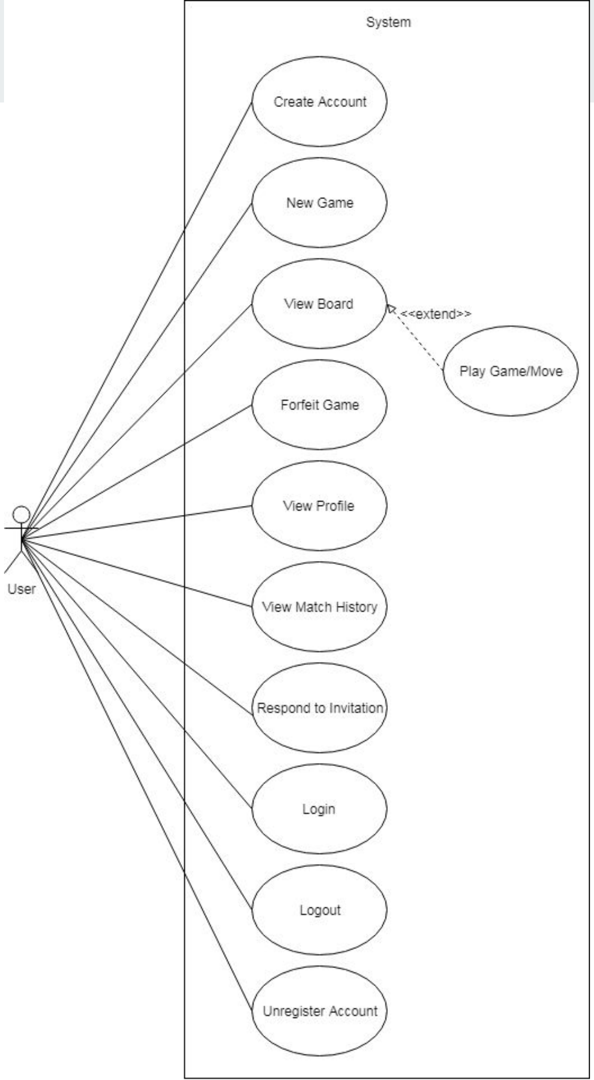
Development Manual

Manual sections:

1. Software required to build/run/test the system
2. Downloading the repository
3. Working on the code of the project
4. Run the main Banqi Game program in single-device/two-device mode
5. Testing the program

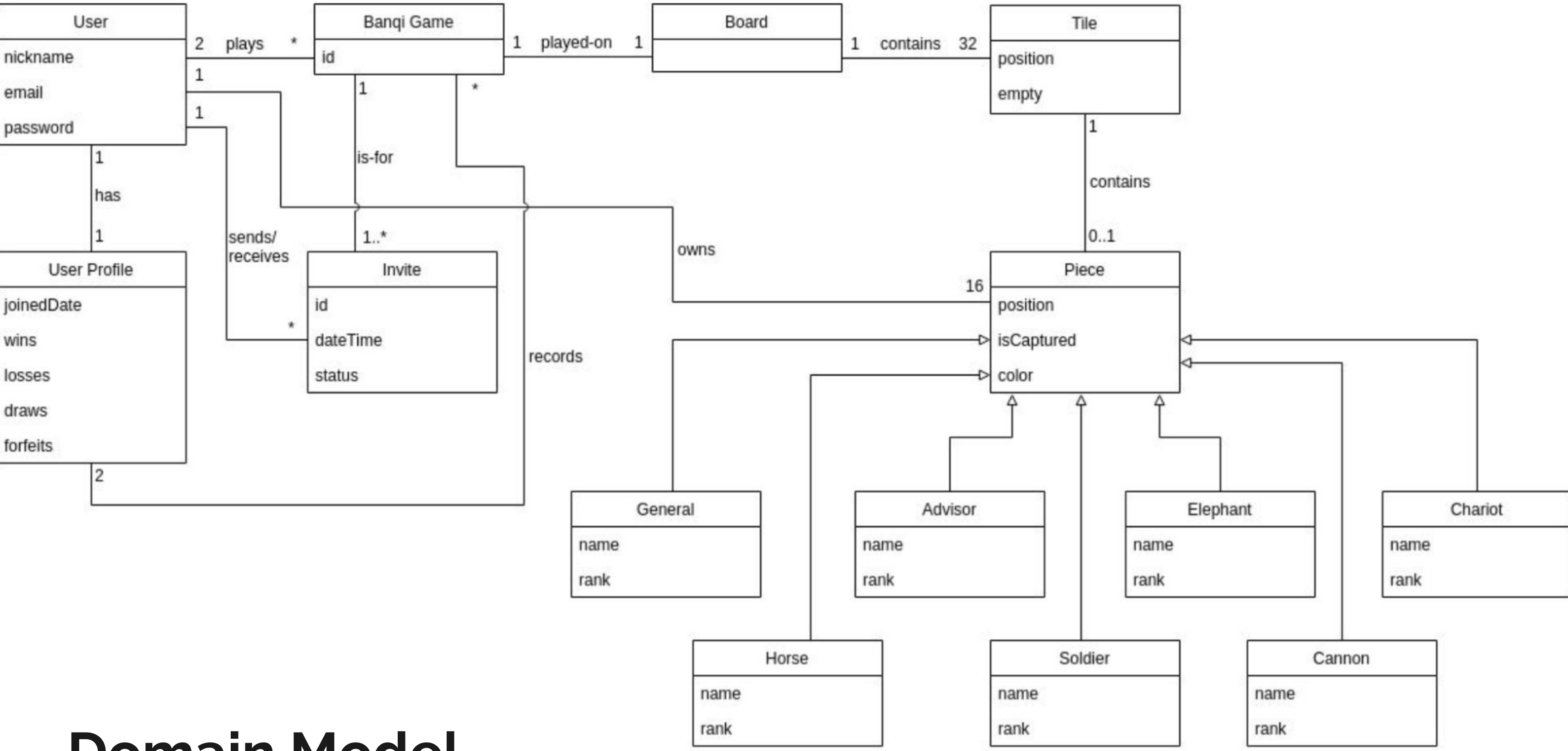
Manual:
https://github.com/FoxXix/cs414-f18-001-ByteMe/blob/master/Sprint%204/Development%20Manual.md

Use Case Diagram



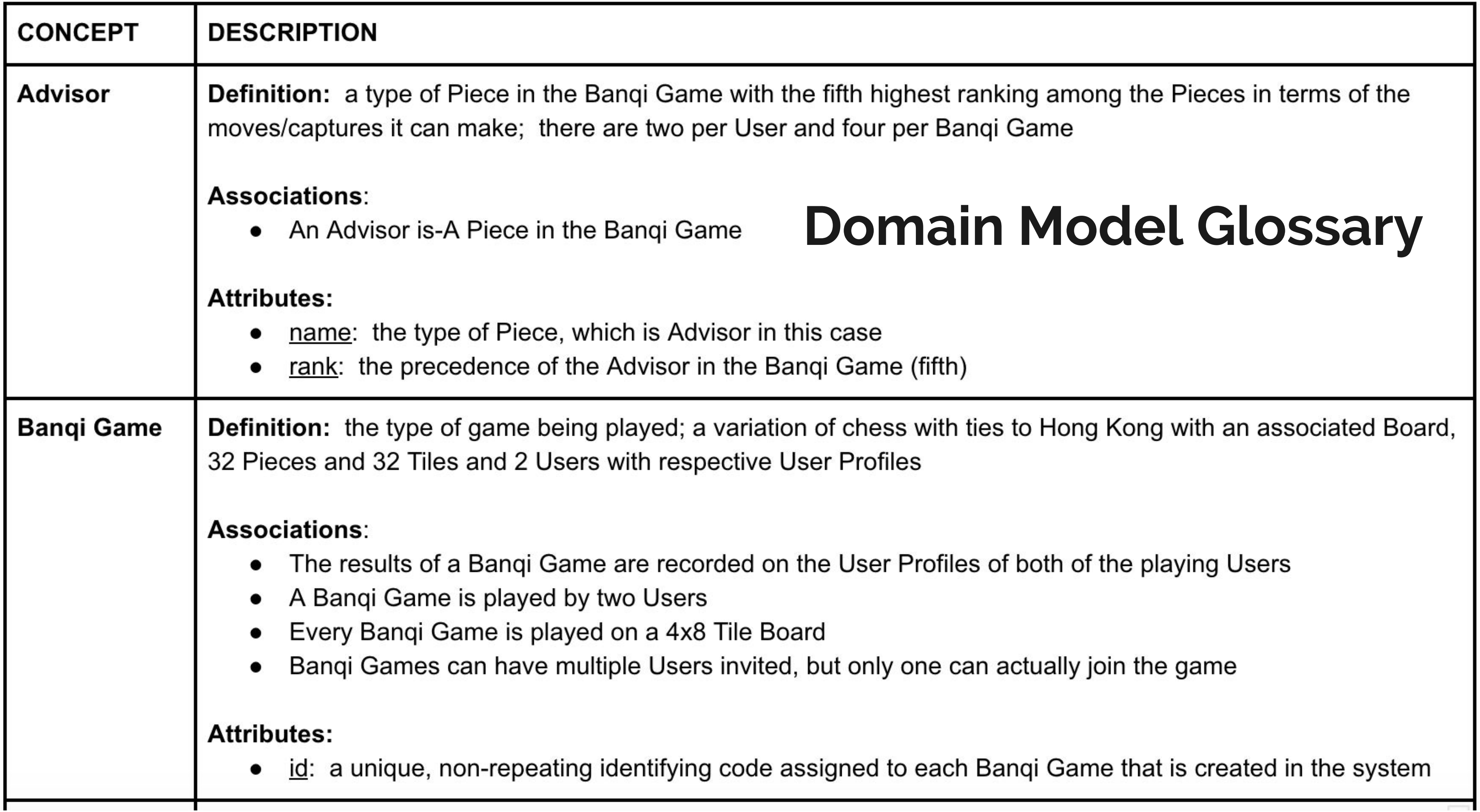
Use Case Document

https://github.com/FoxXix/cs414-f18-001-ByteMe/blob/master/Sprint%204/ByteMe%20Use%20Cases%20v3.0.pdf



Domain Model

Domain Model Glossary

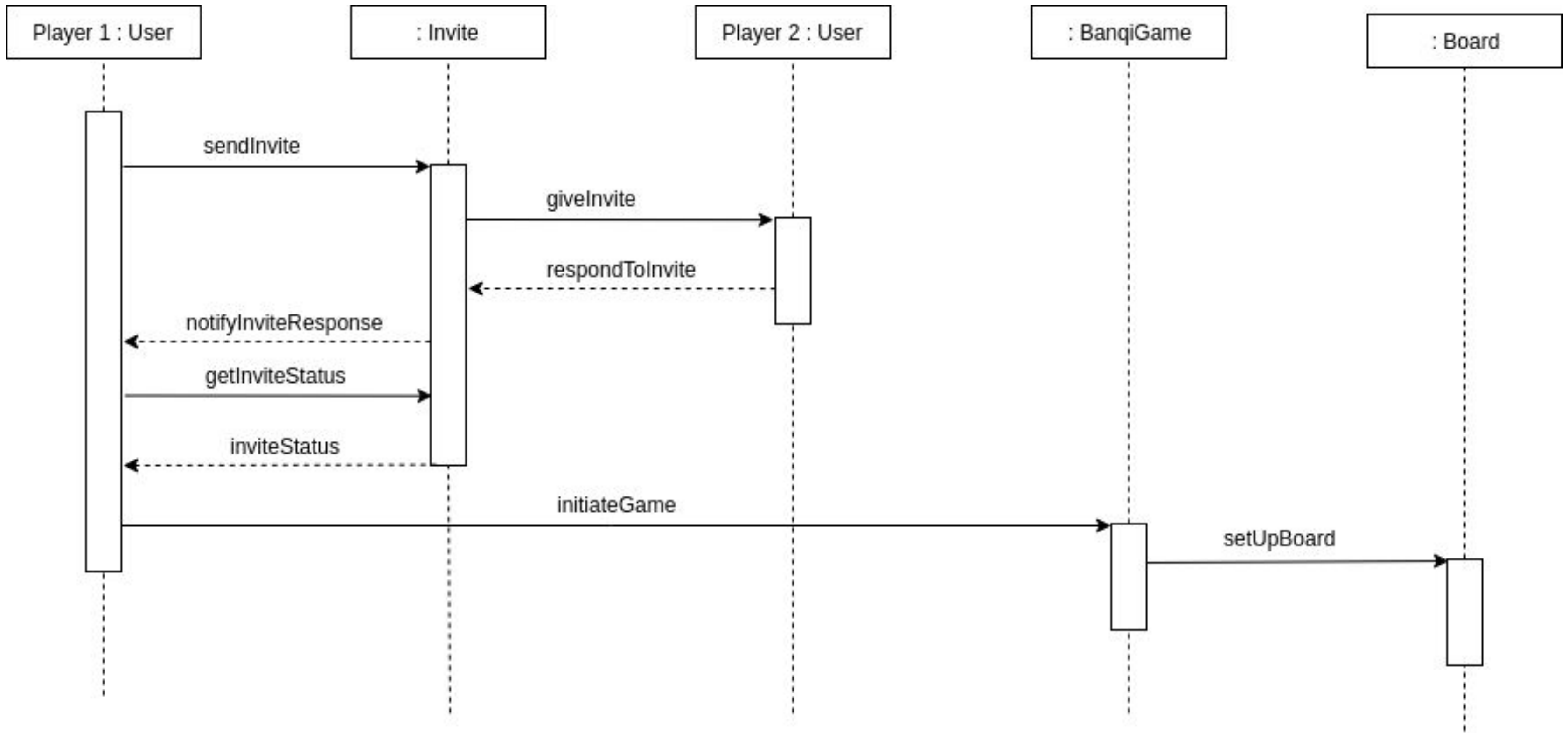


CONCEPT	DESCRIPTION
Advisor	**Definition:** a type of Piece in the Banqi Game with the fifth highest ranking among the Pieces in terms of the moves/captures it can make; there are two per User and four per Banqi Game **Associations**: ● An Advisor is-A Piece in the Banqi Game **Attributes:** ● name: the type of Piece, which is Advisor in this case ● rank: the precedence of the Advisor in the Banqi Game (fifth)
Banqi Game	**Definition:** the type of game being played; a variation of chess with ties to Hong Kong with an associated Board, 32 Pieces and 32 Tiles and 2 Users with respective User Profiles **Associations**: ● The results of a Banqi Game are recorded on the User Profiles of both of the playing Users ● A Banqi Game is played by two Users ● Every Banqi Game is played on a 4x8 Tile Board ● Banqi Games can have multiple Users invited, but only one can actually join the game **Attributes:** ● id: a unique, non-repeating identifying code assigned to each Banqi Game that is created in the system

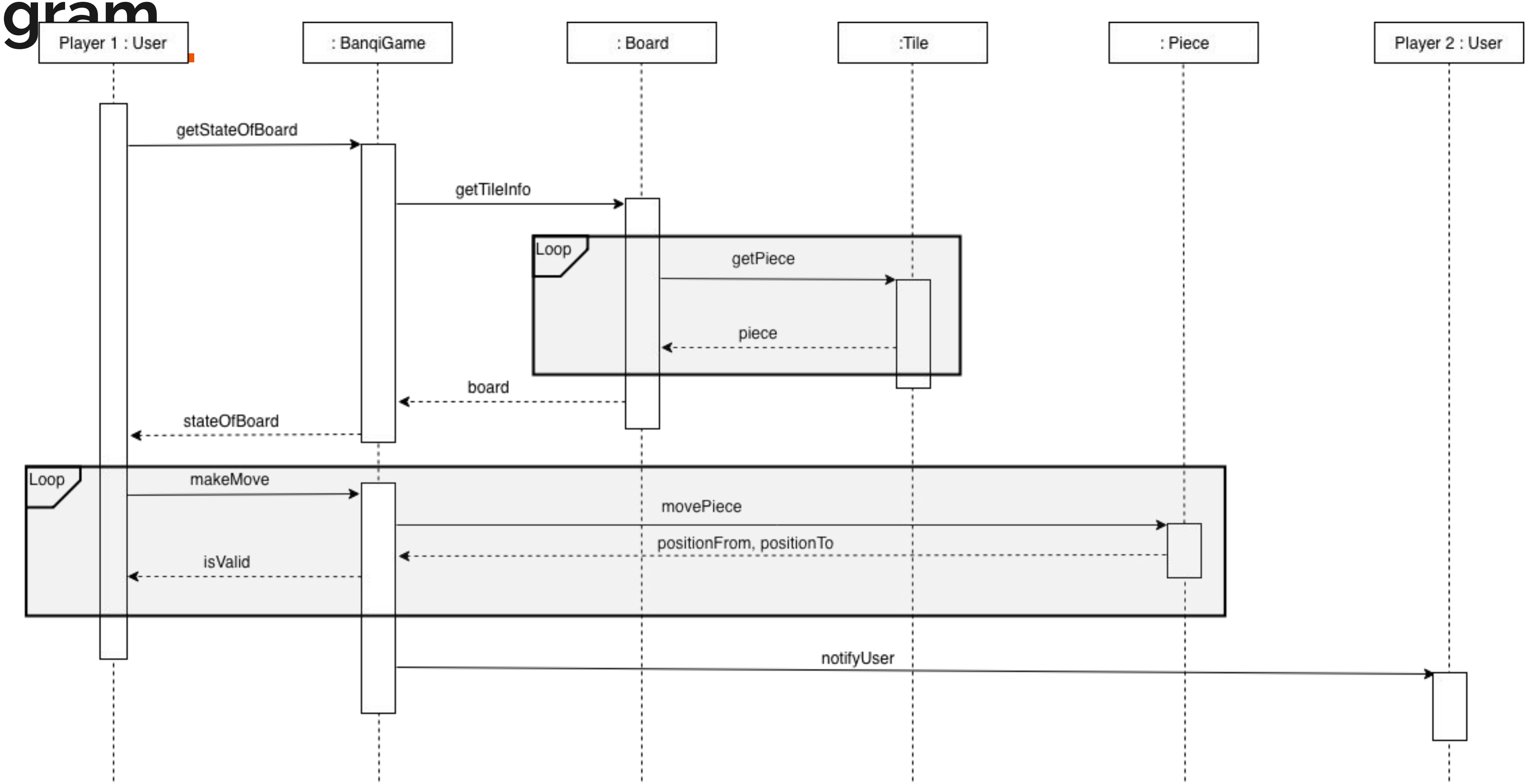
Design Document (Part I)

Design Class Diagram (https://github.com/FoxXix/cs414-f18-001-ByteMe/blob/master/Sprint%204/Design%20Class%20Diagram.png)

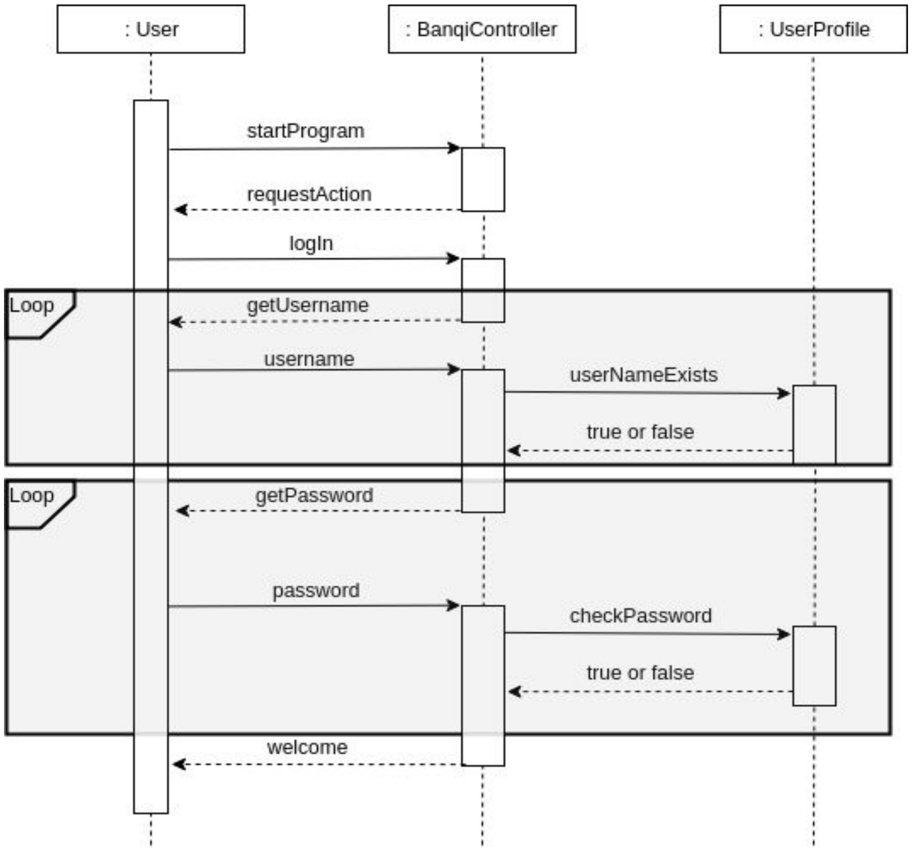
Design Document (Part II): Create User Sequence Diagram



Design Document (Part II): Make Move Sequence Diagram

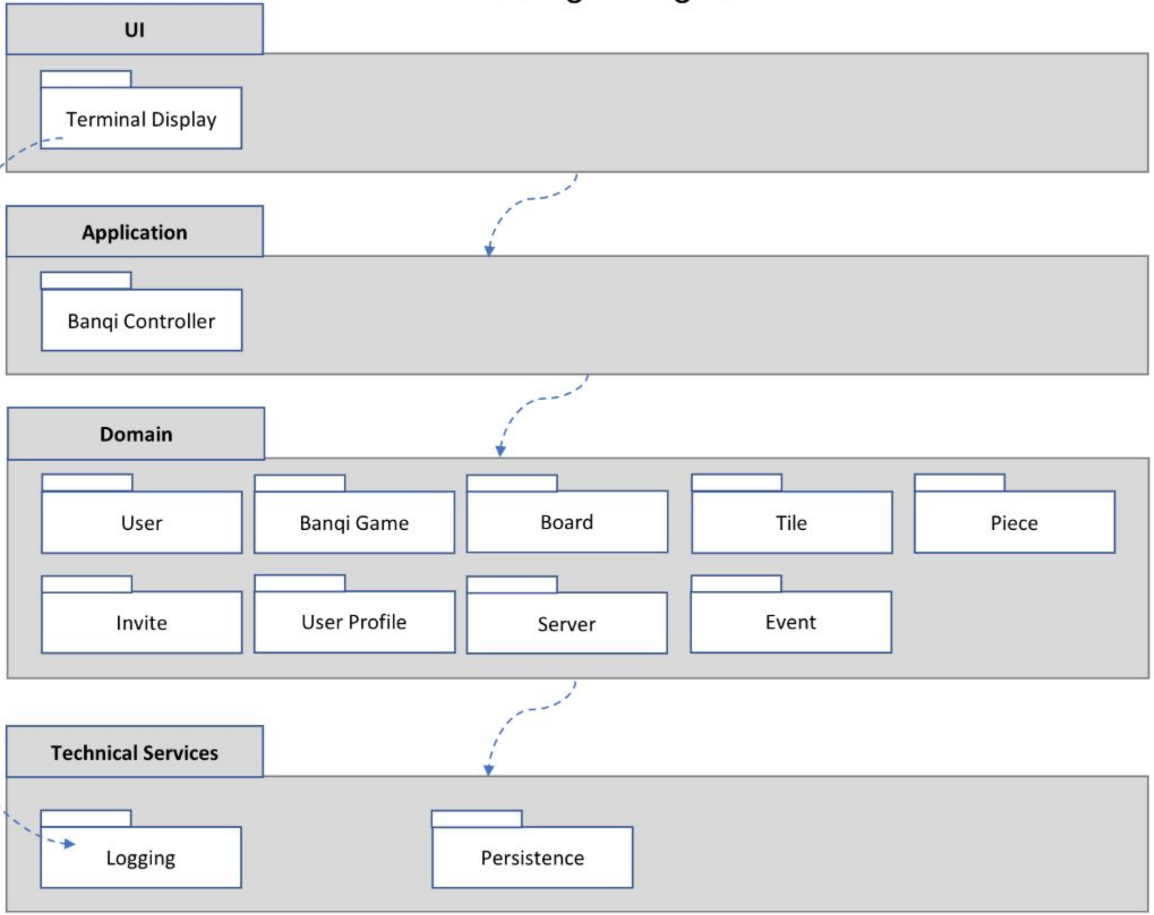


Design Document (Part II): Log In Sequence Diagram



Design Document (Part III)

CS414: Object-Oriented Design - Fall 2014
Package Diagram



UI

Terminal Display

Application

Banqi Controller

Domain

User

Banqi Game

Board

Tile

Piece

Invite

User Profile

Server

Event

Technical Services

Logging

Persistence

Traceability Link Matrix

https://github.com/FoxXix/cs414-f18-001-ByteMe/blob/master/Sprint%204/Traceability%20Link%20Matrix.pdf

Testing Document

https://github.com/FoxXix/cs414-f18-001-ByteMe/blob/master/Sprint%204/Testing%20Document.pdf

Refactoring and Design Patterns

Refactoring Operations:

1. Extracting methods
2. Moving features between objects
3. Replace error code with exception
4. Pull up method

Current Design Patterns:

1. Builder (Creational Design Pattern): BanqiController.java
2. Factory Method (Creational Design Pattern): EventFactory.java
3. MVC

Technologies Used

Eclipse

GitHub

Travis CI for Continuous Integration

ZenHub

An application of Distributed Systems (sockets)

Challenges Faced

- Addressing ambiguity in the project/x game specifications
- Allowing for gameplay on two computers
- Resolving minor bugs in the implementation of the gameplay logic
- Working as a group of 3

Lessons Learned

1. Adapting to change
2. Working with ambiguous specifications (not all features/functionality were completely clear from the start)
3. Continuous Integration
4. Using teamwork to collectively implement a system
5. Implementing refactoring operations and design patterns
6. How to play Banqi

Demo

Banqi is a two player game, thus, we will now demonstrate playing Banqi on two different computers!