

Catan Frontend Application Documentation

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1 Introduction

This document provides a comprehensive overview of the Catan Frontend Application, developed using JavaFX. The frontend is designed to provide a rich and interactive user interface for the Catan board game, integrating seamlessly with the backend services.

2 Architecture

The frontend is built using Java with JavaFX, a platform for creating rich internet applications. The architecture is modular, with distinct components for different aspects of the game such as the game board, player controls, and game logic. In order to update the view we keep track of the "state" of the game. GameState component consists of the Board and Player components. We update this state using GameController component and using this state we maintain the user interface(mainly BoardView class).

2.1 Game Board

The game board is a central component, represented graphically using JavaFX shapes and animations. It dynamically adjusts to game states and player interactions.

2.2 Player Interface

The player interface includes components for displaying player information, resources, and available actions. It interacts with the game logic to reflect the current state of the game.

2.3 Event Handling

JavaFX's event handling mechanisms are used to capture and respond to user inputs, such as mouse clicks and drags, facilitating a dynamic and interactive gaming experience.

3 User Interface Design

The user interface is designed to be intuitive and visually appealing, enhancing the overall user experience.

4 Integration with Backend

The frontend communicates with the backend through HTTP requests, handling game logic, player actions, and state synchronization.

4.1 Network Communication

Java's networking capabilities are employed for sending and receiving data from the backend. This ensures that the game state is consistent across different client instances.

5 Gameplay Mechanics

The gameplay mechanics are implemented in accordance with the rules of the Catan board game.

5.1 Resource Management

Players can manage their resources through the UI, with actions like trading and building reflected immediately on the game board.

5.2 Player Actions

Player actions such as building roads, settlements are implemented. The game logic validates these actions based on the current game state.

6 Testing and Quality Assurance

Automated unit and integration tests are written to ensure the reliability of the application. JavaFX's testing frameworks are used to simulate user interactions and validate UI components.

7 Deployment and Distribution

The application is packaged and distributed as a standalone Java application, allowing easy installation and execution on various platforms.

8 Conclusion

This document outlines the key components and design considerations of the Catan Frontend Application. It serves as a guide for developers and contributors, ensuring a clear understanding of the project's structure and functionalities.