CPSC 224 Final Project

PROJECT PLAN

4 April 2024

Connect 4

The Women in Stem

<Insert Team Logo (if you have one)>

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1 Project Overview

1.1 Project Summary

Connect 4 is a strategy game where two players go head to head. Players choose yellow or red discs. They drop the discs into a grid, starting in the middle or at the edge to stack their colored discs upwards, horizontally, or diagonally. If a player gets four discs in a row they win the game.

2 Project Requirements

2.1 Major Features

Provide a description of the major features that must be implemented for a viable and useful product. Major features include broad feature areas, constraints that must be met, and other major items that must be completed for the project to be considered successful. You should have at least 4-5 major features.

Table 1: Major Features

Feature	*Description*
Place tokens	Players can choose where to place their tokens so they can make four in a row.
Grid	Players can see the grid to keep track of where everyone's tokens are.

Winner	A winner will be determined
Token	Tokens each have a different color, and have a position it was placed in.
Players	Each player has their own color of token.
Turn	Each player takes a turn placing a token until a four in a row is made.
Checker	Check if anyone has placed four tokens in a row.
Timer	Allows each player a limited amount of time to make their move. Once a player's turn begins, the timer starts counting down, and if the player fails to make a move within the allotted time, they forfeit their turn.

3 Project Game Design

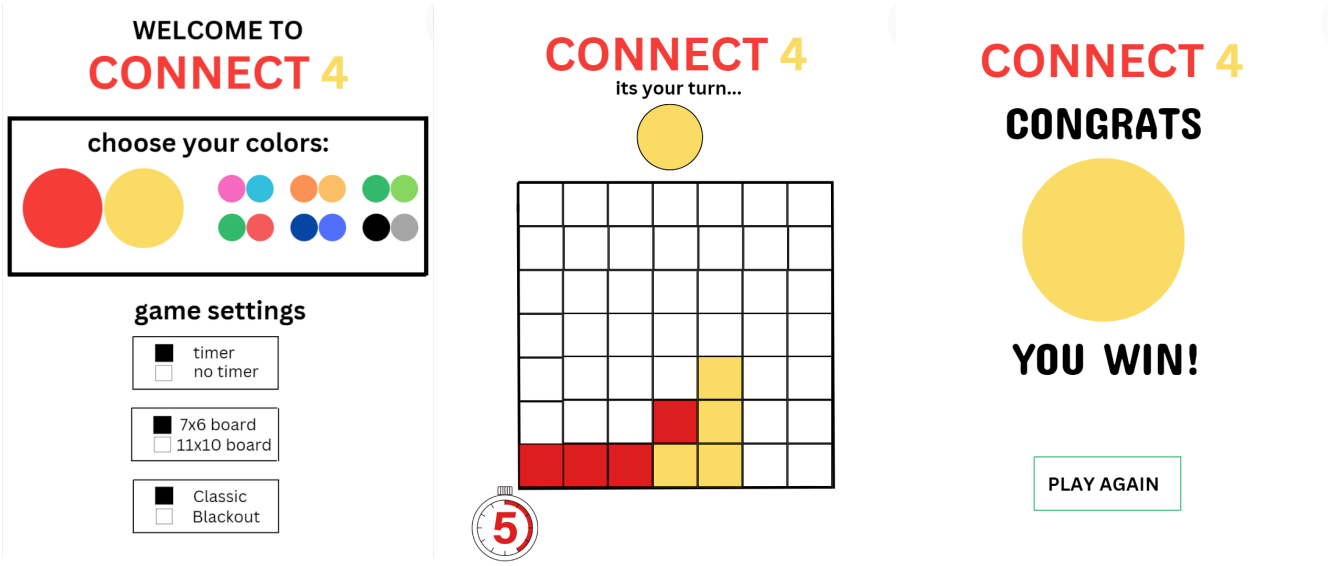
3.1 Initial User Interface Design

The main focus of the UI will be the grid where players can place their tokens. Each cell of the grid will represent a position where a token can be placed. Tokens will be represented by colored discs (yellow or red) to indicate the player's choice.

At the top of the screen, there will be an indicator showing whose turn it is. The indicator will display the color of the current player along with a message indicating whose turn it is (e.g., "Player 1's Turn").

Adjacent to the player turn indicator, there will be a timer. The timer will show the remaining time for the current player to make their move. If a player runs out of time, it will indicate that the turn is forfeited.

Design Mock-Up

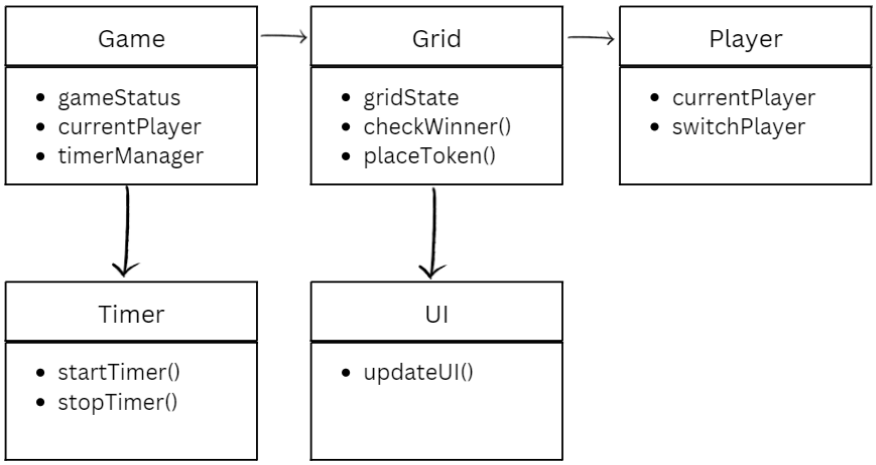


3.2 Initial Software Architecture

The game application will consist of several major components that work together to facilitate gameplay, manage the game state, and update the user interface. These components include:

1. Game Controller: Orchestrates the overall flow of the game, including managing player turns, checking for a winner, and updating the UI accordingly.
2. Grid Manager: Handles the logic related to the game grid, such as placing tokens, checking for win conditions, and updating the grid state.
3. Player Manager: Keeps track of the players, their respective colors, and whose turn it is to play.
4. Timer Manager: Manages the timers for each player's turn, ensuring that players make their moves within the allotted time.
5. UI Handler: Responsible for updating the user interface based on game events and player actions.

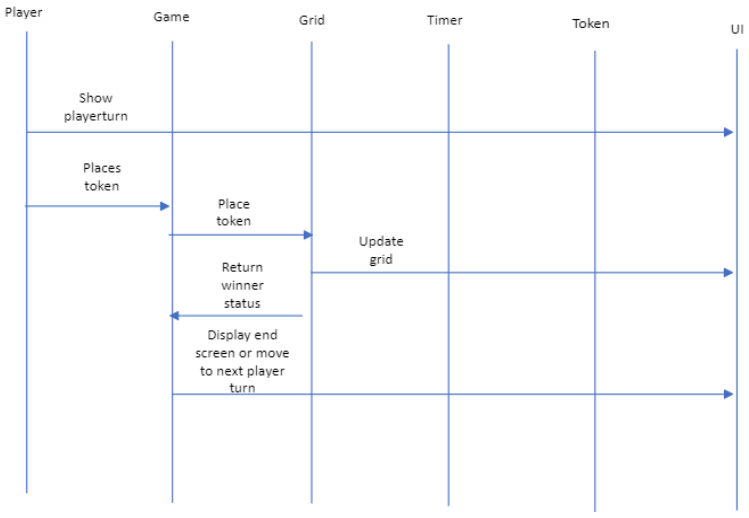
UML Class Diagram



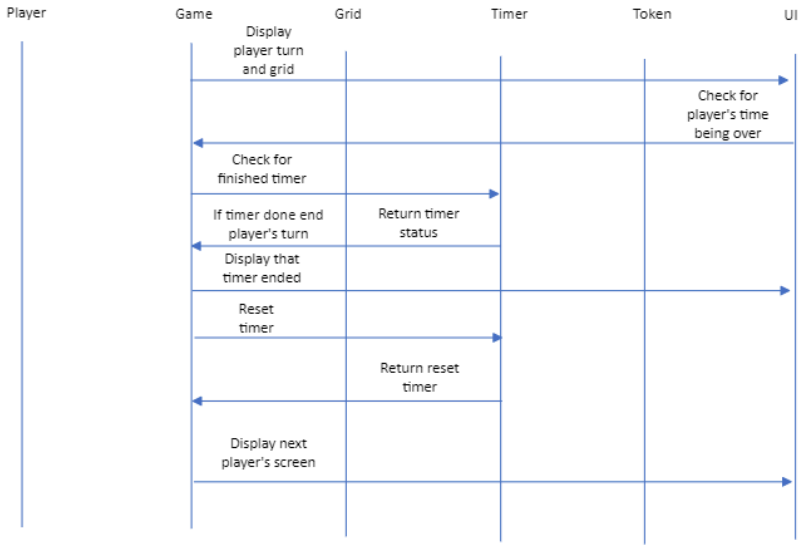
Sequence Diagrams:

1. Starting the Game:

2. Placing a Token:



3. Player runs out of time:



4 Project Schedule

Provide a description of the major scheduling dates of your project. For each schedule milestone dates, clearly describe the milestone (e.g., what features will be implemented) and when the milestone must occur by. Include the project plan, code complete, presentation, and final report dates.

Table 3: Major Scheduling Milestones

Milestone	*Description*	*Target Completion Date*
Basic Gameplay Implementation	Implement the core gameplay mechanics in Java, including grid management, token placement, and turn handling.	April 7, 2024
User Interface Design and Layout	Design the user interface layout and create graphical representations of game elements using Java Swing.	April 14, 2024

Timer Functionality Implemented	Integrate timer functionality using Java's Timer or other relevant libraries to enforce time constraints for player turns.	April 21, 2024
Winner Determination and Game Logic Refinement	Finalize the winner determination logic and refine game mechanics based on testing and feedback.	April 25, 2024
Bug Fixes and Optimization	Address any remaining bugs, optimize performance, and ensure code quality for a polished user experience.	April 28, 2024

Appendix

Provide additional supplemental information in an appendix as necessary.

Classes

- Game
- Player
- Grid
- UI
- Timer
- Turn?