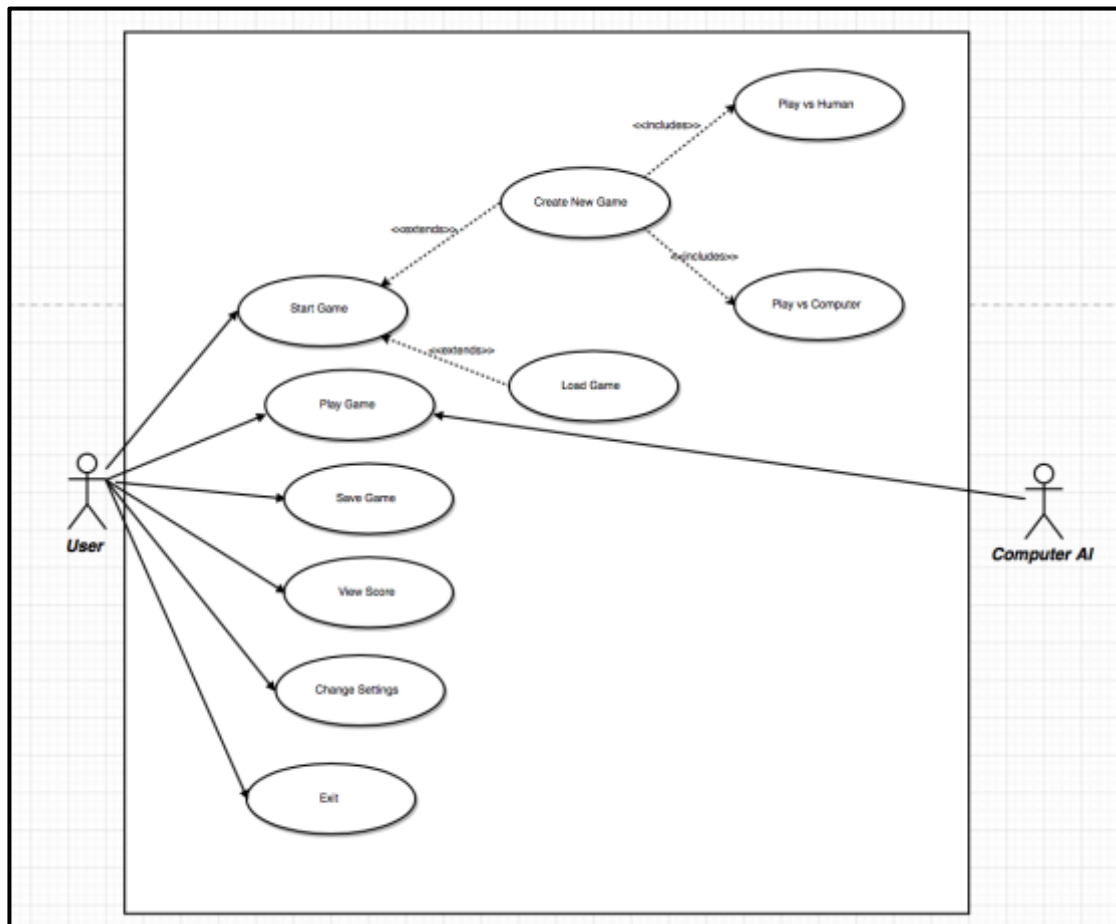# Use Case Diagram

Use cases

Start Game

- **Brief Description:** User starts a new game, or loads an existing one.
- **Actor:** Player
- **Precondition:** None
- **Trigger:** None
- **Flow of events**
  - **Normal flow**
    - User selects whether he wants to create a new game or load an existing one
    - User selects appropriate settings

- ▪ A game is started
    - o **Alternative flow**
        - ▪ The game player wants to load doesn't exist, or there is no game to be chosen. In this case the user should be notified and brought back to menu.
        - ▪ There is already another game running. In this case the user will be prompted whether he wants to save it first.
- • **Post condition:** A game has started, or the user remains in menu.

Play Game

- • **Brief Description:** User performs a move, or undoes his last move and performs a new one.
- • **Actor:** Player or Computer A.I.
- • **Precondition:** The game is running and it is actor's turn.
- • **Trigger:** None
- • **Flow of events**
    - o **Normal flow:**
        - ▪ User selects a tower he wishes to move or reverts the last round using the undo feature.
        - ▪ User moves his tower to target location.
    - o **Alternative flow**
        - ▪ The rules don't allow user's move to be executed, or there are no moves to be undone. The user should be notified and be able to select a different move.
- • **Post condition:** The move has been made and now it's the opponent's turn.

Save Game

- • **Brief Description:** User saved the progress of their game.
- • **Actor:** Player
- • **Precondition:** There is a game being played.
- • **Trigger:** Using the save button.
- • **Flow of events:**
    - o **Normal flow:** User saves the game currently in play.
    - o **Alternative flow:** The user can only save a game if there is one being played therefore there is no alternative flow.

- **Post condition:** Player returns to the game and can either quit or keep playing.

View Scoreboard

- **Brief Description:** Allows a user the view the scoreboard and general game statistics.

- **Actor:** User.

- **Precondition**: Users have played the game to populate the scoreboard.

- **Trigger:** Scoreboard button within main menu.

- **Flow of events**

    o **Normal flow:**

    ▪ General scoreboard is displayed

    ▪ User can choose to look at more specific data such as timing, most games played etc.

    o **Alternative flow:** If there have been no games played there should be an error message saying that there has been no games played to date.

- **Post condition:** The scoreboard should be displayed.

Change Settings

- **Brief Description:** Allows the user to change the current settings of the game.

- **Actor:** User.

- **Precondition**: none.

- **Trigger:** Change settings button.

- **Flow of events**

    o **Normal flow:** Opens up settings menu with different folders to be accessed.

    o **Alternative flow:** none.

- **Post condition**: The settings changed within the game should be changed.

Exit

- **Brief Description:** The user exits the game

- **Actor:** Player

- **Precondition:** None

- **Trigger:** The game has been terminated

- **Flow of events**

    o **Normal flow**

    ▪ User quits the game

    ▪ The program exits

- o **Alternative flow**
  - ▪ A game is currently in progress. The user should be notified whether he wants to save the progress before closing and then based on his choice the game should be either saved or not.
- • **Post condition:** The program exits.

Feature List

1. Start new game vs player
2. Start new game vs computer
3. Load one of the existing games
4. Be able to undo moves, but only vs. AI
5. Be able to save multiple games
6. View scoreboard
7. Multiple AI difficulty levels
8. Get hints when playing against AI
9. Ability to change the speed of game
10. Ability to only use keyboard input
11. Ability to input player's name
12. Ability to pick a player's colour.
13. AI should take up to 5 seconds to make move.
14. Possibility to play a game Best of 3, Best of 5, Best of 7, etc.
15. Preserve data and setting across multiple instances
16. Detect end game conditions.
17. Detect valid move.
18. Generate match report.

Feature Matrix

Start Game:	**1, 2, 3, 10, 11, 12, 14, 15**
Play Game:	**4, 10, 7, 8, 9, 13, 16, 17**
Save Game:	**5, 10, 15**
View Scoreboard:	**6, 10, 15, 18**
Change settings:	**7, 9, 10, 11, 15**
Exit:	**10, 15, 18**