

## 1. Setup Board

- **Actors:** Game Controller
  - **Description:** This use case initializes the game board by setting up the pieces in their starting positions for both players. This happens at the beginning of the game or after a "Play Again" action.
  - **Preconditions:**
    - The game has started or is being restarted.
  - **Main Flow:**
    - The Game Controller initializes an 8x8 board.
    - White pieces are placed on the bottom three rows of black squares, and black pieces on the top three rows of black squares.
    - The board state is displayed to the players.
  - **Postconditions:**
    - The board is set up correctly, and the game is ready to start.
  - **Alternative Flows:**
    - **Invalid Board Configuration:** If the board fails to initialize correctly, an error is displayed, and the setup is retried.
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## 2. Player Move on Click

- **Actors:** Player
- **Description:** This use case allows a player to select and move a piece on their turn. The selected piece must belong to the current player, and the destination must follow Checkers movement rules.
- **Preconditions:**
  - It must be the player's turn.
  - A valid piece has been selected by the player.
- **Main Flow:**
  - The player selects a piece by clicking on it or entering its coordinates.
  - The player clicks or selects a destination square.
  - The Game Controller checks if the move is valid according to Checkers rules.
  - If valid, the piece is moved to the new position.
  - If the move results in a capture, the opponent's piece is eliminated.
- **Postconditions:**
  - The selected piece has been moved to the desired position on the board.
  - The turn is prepared to be switched to the next player.
- **Alternative Flows:**

- **Invalid Move:** If the selected move is invalid, an error message is displayed, and the player is prompted to try again.
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### 3. Eliminate Piece

- **Actors:** Game Controller
  - **Description:** This use case occurs when a capture move is performed. The opponent's captured piece is removed from the board.
  - **Preconditions:**
    - A capture move is executed.
  - **Main Flow:**
    - The Game Controller identifies the opponent's piece that is being captured.
    - The captured piece is removed from the board.
    - The board state is updated and displayed to both players.
  - **Postconditions:**
    - The captured piece has been eliminated from the board.
  - **Alternative Flows:**
    - **Double Jump/Capture:** If the capturing piece has an additional capture available, the player can perform another capture move.
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### 4. Switch Player

- **Actors:** Game Controller
- **Description:** This use case handles switching turns between players after each move or capture. It ensures that the next player is notified and can start their turn.
- **Preconditions:**
  - The current player has completed a valid move or capture.
- **Main Flow:**
  - The Game Controller verifies that the turn is complete.
  - The active player is switched to the other player.
  - The game state is updated to reflect the new player's turn.
  - The new player is notified that it is their turn.
- **Postconditions:**
  - The turn has been switched to the other player.
- **Alternative Flows:**
  - **Double Jump/Capture:** If the current player has an additional capture, the turn is not switched, allowing the current player to take another move.

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## 5. End Game

- **Actors:** Game Controller
  - **Description:** This use case is triggered when one player has no remaining moves or pieces, ending the game. The Game Controller then determines the winner and displays the game outcome.
  - **Preconditions:**
    - One of the players has no legal moves left, no pieces left, or the game has been forfeited.
  - **Main Flow:**
    - The Game Controller checks the board state to determine if a player has won.
    - The game state is set to GAME\_OVER.
    - The winning player is determined and displayed.
    - An end-game screen with options (e.g., "Play Again" and "Exit") is shown.
  - **Postconditions:**
    - The game has ended, and the result has been displayed.
  - **Alternative Flows:**
    - **Forfeit:** If a player chooses to forfeit, the game ends immediately, and the other player is declared the winner.
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## 6. Create King

- **Actors:** Game Controller
  - **Description:** When a player's piece reaches the last row on the opponent's side of the board, it is promoted to a king, giving it enhanced movement capabilities.
  - **Preconditions:**
    - A piece reaches the last row of the board during a move.
  - **Main Flow:**
    - The Game Controller identifies that the piece has reached the last row.
    - The piece is promoted to a king, typically marked by a visual change.
    - The board state is updated, showing the promoted king.
  - **Postconditions:**
    - The selected piece is promoted to a king and can now move in both directions.
  - **Alternative Flows:**
    - **Invalid Promotion:** If a piece does not meet the criteria for promotion, it is not promoted.
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## 7. Play Again Button

- **Actors:** Player
  - **Description:** This use case allows the player to restart the game with a fresh board setup after the game has ended.
  - **Preconditions:**
    - The game has ended, and the "Play Again" button is available.
  - **Main Flow:**
    - The player clicks the "Play Again" button.
    - The Game Controller resets the game state to START.
    - The board is reinitialized by calling Setup Board.
    - The players are notified of the new game start.
  - **Postconditions:**
    - A new game is started with the board set to the initial configuration.
  - **Alternative Flows:**
    - **Game Not Reset:** If the game fails to reset, an error message is displayed, and the setup is retried.
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## 8. Exit

- **Actors:** Player
- **Description:** This use case allows the player to exit the game once it has ended.
- **Preconditions:**
  - The game is over.
- **Main Flow:**
  - The player clicks the "Exit" button.
  - The game application closes or returns to the main menu.
- **Postconditions:**
  - The game session is terminated, and any saved data is finalized.
- **Alternative Flows:**
  - **Confirmation Prompt:** If a confirmation prompt is enabled, the player confirms the exit before the game closes.