

Checkers Game Use Case Description

Actors:

- **Player 1:** The first player, usually assigned either the darker pieces or light pieces .
- **Player 2:** The second player, usually assigned either the lighter pieces or dark pieces. This can be a real player or an AI (CPU).
- **System:** The game system, which manages moves, validates actions, and enforces rules.

Preconditions:

- A checkerboard is set up with all pieces in their initial positions.
- Each player is either physically present (local game) or connected online.
- If playing against an AI, the system assigns CPU logic for Player 2.

Triggers:

- A player initiates a new game, selecting an opponent (real player or AI).
-

Main Flow:

1. **Game Initialization:**
 - The system initializes the game board with pieces in their correct starting positions.
 - Player 1 starts the game.
2. **Selecting Player 2:**
 - Player 1 chooses whether to play against another real player or the AI.
3. **Making Moves:**
 - Players take turns making moves.
 - The system validates moves according to standard Checkers rules:
 - Regular pieces move diagonally forward.
 - If a jump is available, it must be taken.
 - A piece reaching the opposite end of the board is promoted to a king, which can move both forward and backward.
 - If Player 2 is AI, it takes input from Player 1 and generates a response move.
4. **Undoing a Move:**

- A player can undo a move if needed but only if they didn't confirm it (if allowed by game settings).
 - 5. **Capturing Pieces:**
 - If a player's move results in capturing an opponent's piece, the system removes the captured piece.
 - 6. **Ending the Game:**
 - The game continues until one player captures all opposing pieces or blocks all available moves.
 - The system declares a winner and provides options for a rematch.
-

Alternative Flows:

- **Invalid Move:** If a player attempts an illegal move, the system alerts them and prevents execution.
 - **Resignation:** A player can choose to exit or resign, granting victory to the opponent.
 - **Draw:** If neither player can make a legal move, the game ends in a draw.
 - **Restarting the Game:** Players can restart the game from the beginning.
-

Postconditions:

- The game result is recorded if applicable.
 - Players can exit or start a new game.
-

Extensions (From the Diagram):

- **Move Pieces** extends to:
 - **Undo Move:** A player can reverse their last move.
 - **Capture Piece:** If a move results in capturing an opponent's piece, the system enforces the capture.
- **Takes Player 1 Input** extends to:
 - **Random Move (For AI):** If Player 2 is an AI, the system generates a random valid move.
- **Start Game** extends to:
 - **Restart Game:** Players have an option to restart after starting.
- **Selecting Player 2:** Determines whether Player 2 is a real player or the CPU.
- **Exit Game:** Ends the session.

Assumptions:

- Players have a basic understanding of Checkers rules.
- The system properly enforces game rules and AI logic (if applicable).
- The game interface functions without technical issues.
-