Use Case 4: Initiate Game-Specific Matchmaking

Scope:
Covers how a player starts matchmaking by selecting a game (Checkers, Tic Tac Toe, or Connect 4) and using the corresponding rating to find an opponent.

Actors:

- Player (Primary)
- Matchmaking System (Supporting)

Preconditions:

- Player is logged in.
- The matchmaking system is operational.
- The player has an existing rating for the chosen game.

Trigger:

- The player selects "Find Match" and then chooses the specific game for which to be matched.

Main Flow:

1. The player accesses the "Find Match" interface.
2. The player selects the desired game (e.g., Checkers).
3. The system retrieves the player's rating for that game.
4. The matchmaking system initiates a search for an opponent with a similar rating.
5. If an opponent is found, the system sends a match invitation to both players.
6. If no opponent is found, the player is placed in the game-specific matchmaking queue.

Alternative Flows:

- **Rating Range Expansion:** After a timeout, if no match is found, the system gradually expands the acceptable rating range.
- **Cancellation:** If the player cancels the matchmaking request, the system removes them from the queue.

Postconditions:

- The player is either matched with an opponent for the selected game or remains queued in that game's matchmaking pool.

Use Case 5: Manage Pairing and Queueing

Scope:
Focuses on how the matchmaking system handles the queue—monitoring waiting players, pairing those with similar ratings, and updating the queue accordingly.

Actors:

- Player (Primary)
- Opponent (Supporting)
- Matchmaking System (Supporting)

Preconditions:

- The player has initiated matchmaking for a specific game and is in the queue.
- The system has access to current rating data for that game.

Trigger:

- The player is waiting in the queue after initiating matchmaking.

Main Flow:

1. The matchmaking system periodically scans the queue for players with similar ratings.
2. The system identifies two players within the acceptable rating range for the selected game.
3. The system pairs the players and sends a match invitation to each.
4. The system removes the paired players from the queue.

Alternative Flows:

- **Player Disconnects:** If a player disconnects while in the queue, the system removes that player immediately.
- **No Suitable Pair:** If no matching pair is found within a preset time, the system notifies the player or expands the acceptable rating range.

Postconditions:

- Both players are successfully paired, and the matchmaking queue is updated accordingly.

Use Case 6: Confirm Match and Start Game Session

Scope:
Describes the final steps in the matchmaking process where paired players confirm the match and join the game session.

Actors:

- Player (Primary)
- Opponent (Supporting)
- Matchmaking System (Supporting)

Preconditions:

- The system has paired two players for a match in a specific game.
- Both players have received a match invitation.

Trigger:

- The players receive a match confirmation notification.

Main Flow:

1. Both players receive details about the match (opponent, game type, etc.).
2. Each player confirms the match by accepting the invitation.
3. Upon receiving both confirmations, the system starts the game session for the specific game.
4. The matchmaking system logs the match event for later rating or match history updates.

Alternative Flows:

- **Decline/Timeout:** If one player declines or fails to respond in time, the system cancels the match and may return the remaining player to the queue.
- **Mid-Session Disconnect:** If a player disconnects during confirmation, the match is canceled and handled as a forfeit.

Postconditions:

- The game session is successfully initiated, and both players transition from matchmaking into active gameplay.