Use Case 1: Find a Match

Actors:

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

Preconditions:

- The player is logged in.
- The matchmaking system is operational.

Trigger:

- The player selects **"Find Match"** from the UI.

Main Flow:

1. The **Player** requests a match.
2. The **Matchmaking System** retrieves the player's **skill level** and search criteria.
3. The system searches for an available opponent within a **similar skill range**.
4. If a match is found:
   o The system **pairs both players**.
   o A match **confirmation** is sent to both players.
   o The game session begins.
5. If no match is found:
   o The player is placed in a **queue**.
   o The system **reattempts matchmaking periodically**.

Alternative Flows:

- **Opponent Not Found:** The system **expands the skill range** after a timeout.
- **Player Cancels Matchmaking:** The system **removes the player** from the queue.
- **Player Disconnects While Searching:** The player is **removed from matchmaking**.

Postconditions:

- A new match is created and started.

- If no match is found, the player remains in the queue.

Use Case 2: Player Joins a Match

Actors:

- **Player** (Primary)

- **Matchmaking System** (Supporting)

- **Opponent Player** (Supporting)

Preconditions:

- The player is logged in.

- The player has been **matched with an opponent**.

Trigger:

- The matchmaking system **finds an opponent** and sends a **match confirmation**.

Main Flow:

1. The **Matchmaking System** notifies both players of a found match.

2. Each **Player** accepts the match.

3. The **Matchmaking System** starts the **game session**.

Alternative Flows:

- **Player Rejects Match:** The match is **canceled,** and the system searches for a new opponent.

- **Opponent Declines:** The system searches for another match.

- **Connection Issues:** If a player **disconnects before confirming**, the system cancels the match.

Postconditions:

- If both players accept, the match starts.

- If a player rejects, matchmaking continues.

Use Case 3: Queue System for Matchmaking

Actors:

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

Preconditions:

- The player is logged in.
- The player has **requested a match**.

Trigger:

- No immediate opponent is found.

Main Flow:

1. The **Matchmaking System** places the player in a **queue**.
2. The system **periodically searches for new opponents**.
3. If an opponent is found:
   o The system pairs them.
   o A match confirmation is sent.
4. If no match is found after a set time:
   o The system **expands the search criteria**.
   o The system may provide an option to **exit the queue**.

Alternative Flows:

- **Player Leaves Queue:** The player manually exits matchmaking.
- **Opponent Found Late:** If a match takes too long, the player may be given an option to cancel.

Postconditions:

- The player either **gets matched or remains in the queue**.