Responsibilities Document for Networking Team

Team Overview

The Networking Team is responsible for managing the multiplayer aspects of the Online Multiplayer Board Game Platform (OMG). This includes handling real-time interactions, server-client communication, and ensuring smooth synchronization between players. The team will simulate networking functionality using stubs, as the platform will not be hosted online for this project.

Key Responsibilities

1. **Real-Time Communication:**

   - Implement stubs for real-time game synchronization.
   - Ensure game state updates are broadcast to all players in a match.
   - Handle player inputs and synchronize them across clients.

2. **Matchmaking Integration:**

   - Simulate matchmaking functionality using stubs.
   - Ensure players are paired based on skill level and availability.
   - Handle match creation, player joining, and match termination.

3. **Session Management:**

   - Implement logic for session reconnection (e.g., restoring gameplay after a player disconnects).
   - Handle player disconnections and reconnections gracefully.

4. **Latency Compensation:**

   - Simulate mechanisms to handle network latency and fluctuations.
   - Ensure gameplay remains smooth even under unstable network conditions.

5. **Error Handling:**

   - Implement error recovery mechanisms for network failures.
   - Simulate edge cases, such as high latency, packet loss, and server downtime.

6. **Collaboration with Other Teams:**

   - Work with the **Authentication Team** to ensure seamless user login and session management.
   - Collaborate with the **Game Logic Team** to synchronize game states and player inputs.
   - Assist the **GUI Team** to integrate networking features into the user interface (e.g., lobby, matchmaking screen).
   - Support the **Integration Team** to ensure all components work together cohesively.

Team Roles

To ensure efficient task distribution, the Networking Team will be divided into sub-roles:

1. **Team Lead:**

   - Oversees the implementation of real-time game synchronization.
   - Ensures game state updates are broadcast correctly.

2. **Matchmaking Lead:**

   - Manages the simulation of matchmaking functionality.
   - Ensures players are paired appropriately and matches are created smoothly.

3. **Session Management Lead:**

   - Handles session reconnection logic and player disconnections.
   - Ensures players can rejoin games without data loss.

4. **Latency & Error Handling Lead:**

   - Implements latency compensation mechanisms.
   - Develops error recovery strategies for network failures.

5. **Integration Liaison:**

   - Acts as the primary point of contact for collaboration with other teams.
   - Ensures networking components integrate seamlessly with the broader system.

Deliverables

The Networking Team is responsible for delivering the following:

1. **P1 Deliverables (March 7th):**

   - Use case descriptions and diagrams for networking functionality.
   - Planning documents (Timeline, Roles & Responsibilities).
   - Initial stubs for server-client communication.

2. **P2 Deliverables (March 21st):**

   - Feedback document for another team's design.
   - Feature proposal document for networking functionalities.
   - Enhanced stubs for matchmaking, authentication, and game logic.

3. **P3 Deliverables (April 11th):**

   - Fully functional networking system using stubs.
   - Test cases and results for networking functionality.
   - Final demonstration video showcasing networking features.

- Comprehensive documentation, including API documentation and troubleshooting guide.

Accountability Measures

To ensure equal contribution and accountability, the Networking Team will:

- **Track Contributions:** Use GitLab commit logs to monitor individual contributions.
- **Hold Regular Meetings:** Conduct weekly standups to discuss progress and address issues.
- **Communicate regularly via discord:** Each member will try their best to update the team on any changes made via discord.
- **Peer Evaluations:** Members will evaluate each other's contributions at the end of each iteration.

Timeline

The Networking Team will follow the project timeline, with specific milestones for networking tasks:

- **Week 1 (March 1st - March 7th):** Define use cases, create diagrams, and draft planning documents.
- **Week 2 (March 8th - March 14th):** Begin implementing stubs for real-time communication and matchmaking.
- **Week 3 (March 15th - March 21st):** Enhance stubs, simulate latency compensation, and handle error recovery.
- **Week 4 (March 22nd - March 28th):** Complete core networking features and integrate with other teams.
- **Week 5 (March 29th - April 4th):** Finalize networking system and prepare for testing.
- **Week 6 (April 5th - April 11th):** Execute test cases, finalize documentation, and create the demo video.

Expectations

- **Equal Contribution:** All team members are expected to contribute equally to the project.
- **Communication:** Members must communicate regularly and attend all team meetings.
- **Deadlines:** Tasks must be completed by the assigned deadlines to avoid delays.
- **Collaboration:** Members should work closely with other teams to ensure seamless integration.