Distributed Multiplayer Bomberman Game

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Introduction:

This project aims to create a distributed multiplayer version of the classic Bomberman game, leveraging middleware technologies, specifically the MQTT protocol, to handle real-time communication between clients (players) and a central server. The game will involve multiple players navigating a 2D grid-like arena, placing bombs, and attempting to defeat opponents while avoiding bomb explosions and obstacles.

Objectives:

1. Develop a distributed Bomberman game where multiple players can connect and compete in real time.
2. Implement low-latency communication between players and the game server using MQTT for efficient message passing.
3. Ensure real-time synchronization of the game state across all players, including player movements, bomb placement, and explosions.
4. Ensure scalability and performance with multiple players and different game environments to ensure smooth gameplay.

Weekly Implementation Plan:

Week 1:
1. Define the game features and mechanics;
2. Define the architecture (outline), technologies, programming language.

Week 2:
1. Implement the basic game engine logic (grid, player movement, bomb placement) for a single player

Week 3:
1. Implement the basic game engine logic (grid, player movement, bomb placement) for a single player

Week 4:
1. Set up the MQTT broker and configure basic communication between the server and clients.
2. Implement message passing for player movement and bomb placement using MQTT.

Week 5:
1. Implement state synchronization across all clients, ensuring that each player sees the same game state (positions of all players, bombs, and explosions).
2. Develop the server-side logic for managing and broadcasting the global game state.

Week 6:
1. Bug corrections and enhancements
2. Tests

Week 7:

1. Prepare presentation