Architecture Presentation

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Project Overview

- ❏ Turn Based Artillery Video Game
  - ❏ LAN based multiplayer
  - ❏ Turn based strategy game.

  - ❏ Players will take turns firing at one another until the other players health bar depletes. The object of the game is to destroy your opponent. Once the other player is destroyed the last tank standing wins.

  - ❏ Each player must strategically place their shots using the appropriate angle and power

  - ❏ There will be different types of ammunition that you may pick from at the beginning of the match which will help you strategize more and defeat your opponent with different tactics.

  - ❏ Movement will be allowed for a certain distance during your turn but if you move during that turn you cannot shoot

  - ❏ Each player will have health pools which will decrease when damaged by the other player.

Key Architectural Drivers

- ❏ Requirements
    - ❏ Updates going to all other players on the network with current game status
    - ❏ A system that reacts to events such as players being within the damage radius, the collision of objects and the terrain or tanks

- ❏ Specific Network Requirements
    - ❏ Connecting the two players through a LAN connection.
    - ❏ Recognize the end of a player action
    - ❏ Passing the information back and forth between the player.
    - ❏ Updating all players information on screen with adjustments made by the player 1

Architectural Style Choices

❏ Peer to Peer Architecture
  ❏ Peer to Peer is a candidate for our architecture style because it is easy to connect each player over a peer to peer based system. Transferring data this way may cause a slight delay but since our game is turn based it wouldn't matter too much.
  ❏ A peer to peer game has no central entity to control the game state, so every peer must control its own game state, communicating any changes or important actions such as shooting/dying to the others.

❏ Client-Server Architecture
  ❏ Client Server architecture would be a good candidate for our project if we ever did decide to implement AI, because the server could control the AI.
  ❏ The clients will be the players and each player's game will be updated every 10 milliseconds from the host (server)

Peer-to-Peer Architecture
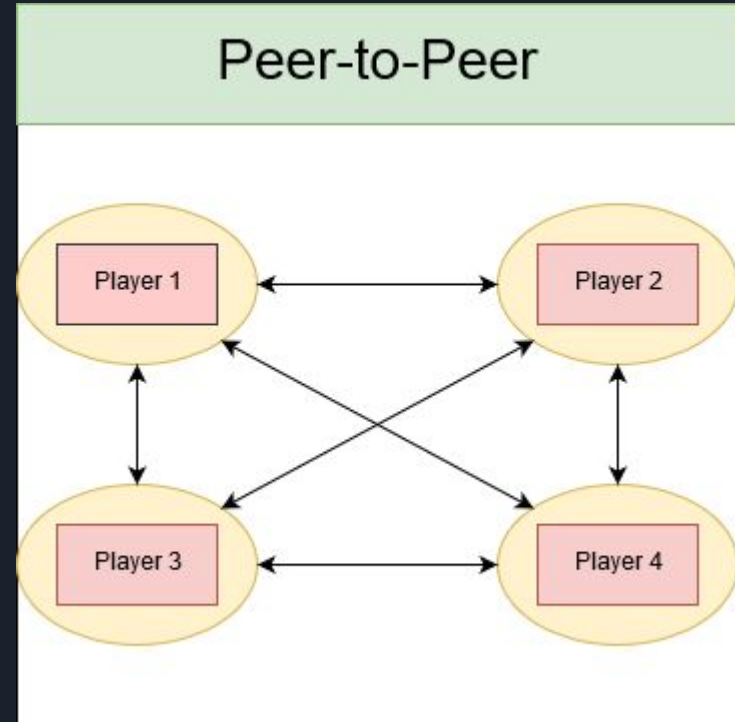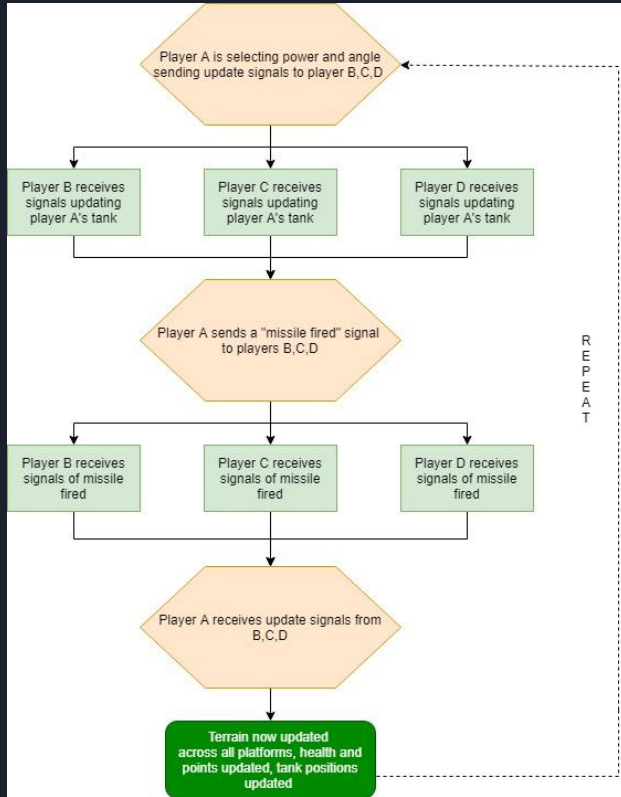
Conclusion

- ❏ Peer-To-Peer Architecture
    - ❏ We have decided to go with the Peer-to-peer Architecture for our project as it would allow the players to easily start a game with each player taking part in the hosting of the connection.
    - ❏ It will allow us to structure our turn-based game off of each player and their inter-communicating connections which will allow for slightly faster run-time of the game.

- ❏ Issues and Risks
    - ❏ The possible issues with this architecture include possible moments of slow information sharing as well as the restriction of the game to currently only be able to run online multiplayer (no AI)
    - ❏ A risk to this architecture includes vulnerability to secure information and files.
    - ❏ Game ending prematurely due to connection loss.
    - ❏ Game coming to a standstill if one player does not complete response.

- ❏ Further Concerns
    - ❏ Possibility of client server working out better in the long run?