Team 22 : Memoji

Sprint 1 Planning Doc

Team Members

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Overview

During this sprint, our main focus is completing the core components of our game communication. Our goal is to set up server, host, and player communication. We will also work towards game initialization and developing the proper protocol for our network communication. Another goal we have is creating and finding assets for the game. Our team will spend time to get familiar with the game engine Godot, as many team members are unfamiliar with the tool, and a majority of the gameplay development will be taking place in future sprints.

We expect to face a few challenges this sprint that pose a risk to our budgeted time. Mainly, we will be working with our networking components heavily this sprint in order to build the backbone of our applications. Many other components will rely on the networking working correctly in order to be implemented, so we need to get it working in order to move on. Networking is generally known for being difficult and complicated with the potential for confusing bugs when done incorrectly. It is possible that these bugs may take a significant effort to iron out, and it is hard to tell how many we will face (possibly even zero of them).

Aside from this, Godot and GDScript are new for most members of our team, so we will have to budget some of our time towards learning the most important skills needed for our project. Similarly, the overall structure of the applications differ slightly from typical object-oriented approaches because all objects are stored in a hierarchy of nodes and nested nodes without actually being inherited in most cases.

Lastly, source control may be a challenge to handle if we do not successfully divide the code up into independent components to be worked on. A team of five has a large potential for merge conflicts.

Jonathan Poholarz will be the SCRUM Master for this sprint as he has the most experience with Godot (our game engine) and GDScript (its programming language), and he will be able to lead our initial development efforts as well as pick up any stories as needed.

<u>Meeting Plan</u>: Wednesday (6:00 pm-7:30 pm), Friday (3:00 pm-6:00 pm)

Sprint Details

Sprint Story #1 (N8) - As a developer, I would like to become familiar with Godot			
#	**Task**	**Time**	**Owner**
1	Complete engine introduction tutorials	8 hr - 2 ea	Maxwell, Manoj, Andrew, Delun
2	Complete UI tutorials	6 hr - 1.5 ea	Maxwell, Manoj, Andrew, Delun
3	Complete Signal tutorials	6 hr - 1.5 ea	Maxwell, Manoj, Andrew, Delun
#	**Acceptance Criteria**		
1	Given teammates are familiar with the Godot editor layout, when using the editor, then they can navigate among code windows, file windows, and scene windows.		
2	Given teammates understand the basic canvas nodes, when working on UI components, then they can construct our typical UI window using canvas elements such as HorizontalBoxContainers and Buttons.		
3	Given teammates understand signals, when coding our applications, then they can connect signals when appropriate using the Godot editor or code		

Sprint Story #2 (F35) - As a developer, I would like to maintain a server for which host computers can obtain a letter code for their game lobbies			
#	**Task**	**Time**	**Owner**
1	Create persistent Server application	4 hr	Maxwell
2	Implement ABCD code generation	0.5 hr	Maxwell
3	Implement Server capability to accept Host connections	2 hr	Maxwell
4	Implement data structure to store Host connection	1 hr	Maxwell

#	Task	Time	Owner
	information		
5	Implement ABCD code distribution to connected Hosts	0.5 hr	Maxwell
6	Test single Host connection to the Server	1 hr	Maxwell
7	Test multiple simultaneous Host connections	1 hr	Maxwell
8	Implement disconnection of a Host	1 hr	Maxwell
#	**Acceptance Criteria**		
1	Given that the Server is running, when a Host connects to the Server, then the Server accepts the connection.		
2	Given that the Server is running, when a Host connects to the Server, then an ABCD code will be generated.		
3	Given that the Server is running, when a Host connects to the Server, then the Server creates a unique Host object that contains all relevant information.		
4	Given that the Server is running, when a Host connects to the Server, then the Server adds the Host and ABCD code pair into its "Host" dictionary.		
5	Given that the Server is running, when a Host sends a message to the Server, then the Server will receive the message.		
6	Given that the Server is running, when another Host connects to the Server, then an ABCD code will be generated that is unique to any other ABCD code currently created.		
7	Given that the Server is running, when a Host disconnects from the server, then the "Sost" dictionary entry is removed, and the ABCD code is removed.		

Sprint Story #3 (F37) - As a developer, I would like to maintain a server which will connect player phones to the correct host computer lobby for each respective letter code			
#	**Task**	**Time**	**Owner**
1	Implement Server capability to accept Player connections	2 hr	Maxwell
2	Implement data structure to store Player connection information	1 hr	Maxwell
3	Implement organization of connected Players on the Server to connect them to the correct Host lobby	1 hr	Maxwell

#	Task	Time	Owner
4	Test single Player connection to the Server	1 hr	Maxwell
5	Test multiple Player connections to a single Host lobby	1 hr	Maxwell
6	Test Player connections among multiple Host lobbies	2 hr	Maxwell
7	Test Player connection with invalid ABCD code	0.5 hr	Maxwell
8	Test Audience member connection to the Server	1 hr	Maxwell
#	**Acceptance Criteria**		
1	Given the Server is running, when a Player connects to the Server with a correct ABCD code, then the Server accepts the connection.		
2	Given the Server is running, when a Player connects with an invalid ABCD code, then the Server does not accept the connection and sends a message back to the Player.		
3	Given the Server is running, when a Player connects to the Server, then the Server stores relevant information about the Player.		
4	Given the Server is running, when a Player connects to the Server, then the Server associates the Player with the correct Host-code pair.		
5	Given the Server is running, when multiple Players connect to the Server, then the Server handles each connection properly.		
6	Given the Server is running and there are multiple Hosts connected to the Server, when a Player connects, then the Server associates the Player with the correct Host-code pair.		
7	Given the Server is running and a Host's Player slots are full, when a Player connects to the Server, then the Player will be added as an audience member.		

Sprint Story #4 (F36) - As a developer, I would like to maintain a server to facilitate communication between the host computer and player devices in each lobby			
#	**Task**	**Time**	**Owner**
1	Implement Server capability to forward messages from Players to Hosts and from Hosts to Players	3 hr	Maxwell
2	Implement Server capability to forward certain messages between Audience and Host.	2 hr	Maxwell
3	Implement message parser to decode messages on the Host side of communication	4 hr	Jonathan

#		Time	Owner
4	Implement message parser to decode messages on the Player side of communication	4 hr	Jonathan
3	Test that a Host can send messages to a Player	2 hr	Delun
4	Test that a Player can send messages to a Host	2 hr	Delun
5	Test that a Host can send messages to the Audience	1 hr	Delun
6	Test that the Audience can send messages to the Host	1 hr	Delun
#	**Acceptance Criteria**		
1	Given the Server is running and the Players and Host are connected, when the Host sends a message to all Players, then it reaches all connected Players.		
2	Given the Server is running and the Players and Host are connected, when the Player sends a message to the Host, then it is received successfully.		
3	Given the Server is running and the Players and Host are connected, when the Host sends messages to the Players, then the messages are parsed properly.		
4	Given the Server is running and the Players and Host are connected, when the Players send messages to the Host, then the messages are parsed properly.		

Sprint Story #5 (F1) - As a host, I would like to create a game lobby and display the lobby's server generated letter code on-screen			
#	**Task**	**Time**	**Owner**
1	Create Title Screen Host UI	5 hr	Andrew
2	Create Setup Screen Host UI	3 hr	Andrew
3	Implement basic Host networking to connect to the Server	6 hr	Jonathan
4	Implement Host networking API to emit signals for other parts of the application	4 hr	Jonathan
5	Integrate lobby creation and UI with networking node	3 hr	Delun
6	Implement Host Title Screen functionality	3 hr	Delun
7	Implement Host Setup Screen functionality	2 hr	Delun
8	Test that the displayed letter code on Host matches the generated code the Server provides	1 hr	Delun

#		Time	Owner
9	Test that users can input settings on the Setup screen	2 hr	Delun
10	Test that users are able to see whether or not the Host is connected via the UI (Displays if it can't reach Server)	1 hr	Delun

#	Acceptance Criteria
1	Given the Host has opened the application, when the application opens, then a title UI will be displayed.
2	Given the Host has reached the title screen, when a Server is to be hosted, then a setup screen should be displayed.
3	Given the Host has entered setup details, when the host game button has been pressed, then the Host should connect to the server.
4	Given the Host has completed lobby setup details, when the game is hosted, then the Host screen should display the Lobby UI.
5	Given the host has opened the application, when the Title Screen is displayed, then the Host should be able to advance to the setup screen.
6	Given the Host has advanced to the setup screen, when the Host interacts with the Setup Screen UI, the UI should be functional for creating a game session.
7	Given a game lobby has been created, when the Host's letter code is displayed on the screen, it should match the letter code stored for the Host on the Server.

Sprint Story #6 (F16) - As a player, I would like to connect to a game lobby using my phone through the Player application			
#	Task	Time	Owner
1	Create Title Screen Player UI	6 hr	Manoj
2	Create Lobby Screen Player UI for after successfully connecting	6 hr	Manoj
3	Implement basic Player networking to connect to the Server	6 hr	Jonathan
4	Implement Player networking API to emit signals for other parts of the application	4 hr	Jonathan
5	Implement Player Title Screen functionality	6 hr	Andrew
6	Implement Player Lobby Screen functionality	6 hr	Andrew

#		Time	Owner
7	Integrate lobby connection UI with networking code	6 hr	Manoj
8	Add "Cannot Connect to Server" pop-up when Server down	4 hr	Manoj
9	Add "Invalid Host" pop-up when Host down or ABCD code is incorrect	4 hr	Manoj
10	Test that Player application can connect to valid Host	3 hr	Manoj
11	Test that Player application receives an error when trying to connect to an invalid Host or ABCD code.	3 hr	Manoj

#	Acceptance Criteria
1	Given that the user is a Player, when the application is launched on their device, then the Title Screen is displayed.
2	Given the Player has filled out the connection information, when the Player attempts to connect to the Server with a specific Host code, then the Player is connected to the lobby they have requested if it exists.
3	Given that the server is not functional or not responding, when the Player attempts to connect to the Server, then the Player receives an unresponsive Server error message.
4	Given that the Player enters the wrong ABCD code or is trying to connect to an Invalid Host, when the Player attempts to connect to the Server, then the Player is displayed an incorrect code error message.
5	Given that the Server is running and the Host the Player will connect to is running, when the Player connects to the given Host, then the Player is taken to the next screen of the application.

Sprint Story #7 (F3) - As a host, I would like to display a lobby screen while waiting for players to join			
#	Task	Time	Owner
1	Create Lobby Screen UI	5 hr	Delun
2	Integrate Lobby Screen with Networking in order to show connected Players	5 hr	Delun
3	Display connected Players' names and chosen avatars	2 hr	Delun
4	Test that displayed Players' avatars and names match the actual values chosen by the users	1 hr	Delun

5	Test that displayed Players and names change in response to players connecting or entering their information	1 hr	Delun
#	**Acceptance Criteria**		
1	Given that the Host application is open and the Server is running, when a game session is hosted, then the lobby screen is displayed to the user.		
2	Given that the Host has hosted a game session, when the Lobby Screen is shown, then the ABCD code should is visible to Players.		
3	Given that the Host has hosted a game session, when the Lobby Screen is shown, then the number of Players, their names, and avatars should be displayed accurately.		
4	Given that the Host lobby screen is showing, when a Player connects to the game using the displayed code, then the Host screen updates to reflect this connection.		
5	Given that the Host lobby screen is showing, when a Player enters their username or avatar, then the screen updates to reflect this, displaying the new username or avatar.		

Sprint Story #8 (F18) - As a player, I would like to quit the game in-between rounds if desired, releasing my spot in the player list for a new player to join			
#	**Task**	**Time**	**Owner**
1	Implement Server functionality to remove a Player from a lobby upon request	2 hr	Maxwell
2	Implement networking functionality to request and demand Player removal	2 hr	Jonathan
3	Integrate Player disconnect to disconnect button on the Player Lobby Screen UI	2 hr	Andrew
4	Integrate Player disconnect networking signal into Host lobby screen	2 hr	Andrew
5	Test that Players are capable of leaving a game that has not yet started	1 hr	Andrew
#	**Acceptance Criteria**		
1	Given the Server is running, when a Player is requested to be removed from the lobby, then the Player is removed from the Host-code pair in the "Host" dictionary and disconnected from the Server.		

2	Given a round has not started yet, when a game session is active and the Player is connected to the lobby, then the Player's UI displays a disconnect button.
3	Given a game session is active and a round has not started, when the Player presses the disconnect button, then a message is sent to the Server requesting to remove the Player from the lobby.

Sprint Story #9 (F17) - As a player, I would like to choose my in-game username and avatar emoji

#	Task	Time	Owner
1	Create avatar selection UI	4 hr	Andrew
2	Implement emoji avatar selection	4 hr	Andrew
3	Integrate username and avatar selection with Player information stored in the host	2 hr	Andrew
4	Test that username and avatar selection update locally and on the hosted lobby	2 hr	Jonathan

#	Acceptance Criteria
1	Given the lobby is running, when the Player joins a game, then the Player can see the UI for choosing an avatar and setting their username.
2	Given the Player has opened the UI, when the Player select their avatar and input their username, then the Player can see their selections.
3	Given the Player has joined, when the Player selects an avatar and name, the information is sent to the server and host to be displayed.
4	Given the Player has chosen a username and avatar, when the information is sent to the Host, then the information is stored to be used throughout the game session.

Sprint Story #10 (F10) - As a host, I would like to exit the game properly, disconnecting all players and blocking further connections to the defunct game lobby

#	Task	Time	Owner
1	Implement Host functionality to end a game session, notifying the Server to close the lobby	3 hr	Delun

#	Task	Time	Owner
2	Implement Server functionality to send disconnect messages to connected Players	2 hr	Maxwell
3	Implement Server functionality to remove a lobby that has been closed by the Host	2 hr	Maxwell
4	Implement Player networking to force a disconnect	1 hr	Jonathan
5	Integrate disconnect with Player UI to return to the Title Screen after displaying a disconnected from Host pop-up	3 hr	Manoj
6	Test that Defunct Host and Player data are removed from the Server when lobbies are closed	1 hr	Delun
7	Test that Players are forcibly removed from lobbies when the lobbies are closed	1 hr	Delun
8	Test that Players cannot connect to closed lobbies	1 hr	Delun

#	Acceptance Criteria
1	Given the Host application is open and currently on the lobby screen, when a user clicks on a quit button or exits the application, then the Host should notify the server to close the lobby.
2	Given that Players are connected to the server, when the Server sends a disconnect message to Players, then the Players are disconnected from the Server and Player data is removed from the Server.
3	Given a Host is connected to the server, when the Host sends a disconnect message to the Server, then the Server disconnects the Host and removes any corresponding Host data.
4	Given that a Server has closed a lobby, when a new Player tries to connect using that lobby's ABCD code, then the new Player will be unable to connect and receive an error message.
5	Given the Server forces a disconnect, when the Player receives the disconnect code, then the appropriate disconnect pop-up to the Player is shown, and the Player is returned to the Title screen.

Sprint Story #11 (F11) - As a host, I would like to allow audience members to join at any time after the main players have connected			
#	Task	Time	Owner
1	Implement Host ability to tag users as audience members	1 hr	Andrew

	instead of just another Player.		
2	Integrate audience connections with Lobby UI to display the count of audience members.	2 hr	Andrew
3	Implement Server ability to selectively forward messages to either players or the audience, excluding the other.	2 hr	Maxwell
4	Implement Server ability to automatically accept further connecting clients as audience members after the maximum number of players has joined.	2 hr	Maxwell
5	Test that audience members join the game once all Player slots have been filled or the game has started.	2 hr	Manoj
6	Test that the Server can send messages to just the Players and not the Audience members and vice-versa	2 hr	Manoj
#	**Acceptance Criteria**		
1	Given that the game is running and a round has already started, when a Player connects to the Server, then they will be added as an audience member.		
2	Given that the game is running, when there are audience members present, then the number of audience members currently connected is displayed on the Host.		
3	Given there are Players and audience connected, when the Server receives a message from the host, then the server forwards the Player messages to Players and audience messages to audience.		
4	Given the Host's player slots are full, when a Player connects to the server, then the Player will be added as an audience member.		

Sprint Story #12 (F40) - As a developer, I would like to view crash messages in case of errors when possible			
#	**Task**	**Time**	**Owner**
1	Implement Server Error Messages	3 hr	Maxwell
2	Implement Networking Error Messages	4 hr	Jonathan
3	Implement outputting errors to some error.txt file	5 hr	Jonathan
4	Test that errors are logged correctly in a text file	1 hr	Maxwell
#	**Acceptance Criteria**		

1	Given that the server is running, when a server error occurs, then a useful error message prints.
2	Given that the application is running, when a communication error occurs between Host, Server, and/or Player, then an error message should be shown to the host or Player and logged in the Server.
3	Given that the Server is running, when an error occurs, then error messages should be logged in a text file.

Claimed Hour Totals For Sprint 1	
Teammate	**Hours**
Jonathan Poholarz	42
Maxwell Jones	44.5
Manoj Polisetti	44
Andrew Ring	43
Delun Shi	43

Backlog

(Current Stories for this sprint highlighted)
Functional Requirements:
1. **As a host**, I would like to create a game lobby and display the lobby's server generated letter code on screen
2. **As a host**, I would like to begin the game once enough players have joined the lobby
3. **As a host**, I would like to display a lobby screen while waiting for players to join
4. **As a host**, I would like to display a waiting screen while players are inputting answers to prompts
5. **As a host**, I would like to ignore/skip players who have not submitted answers to prompts within the allotted time and continue the game
6. **As a host**, I would like to display a results screen for each prompt of each round
7. **As a host**, I would like to display a total results screen at the end of each round

8. **As a host**, I would like to display a final results screen and winner/credits screen after the game completes
9. **As a host**, I would like to play additional games after the first game without forcing all players to disconnect and reconnect to a new lobby
10. **As a host**, I would like to exit the game properly, disconnecting all players and blocking further connections to the defunct game lobby
11. **As a host**, I would like to allow audience members to join at any time after the main players have connected
12. **As a host**, I would like to set up additional game modes (if time permits)
13. **As a host**, I would like to hear sound effects throughout the game (if time permits)
14. **As a host**, I would like to experience animations that add a personality to the game (if time permits)
15. **As a host**, I would like to host the game via a web-player (if time permits)

16. **As a player**, I would like to connect to a game lobby using my phone through the game application
17. **As a player**, I would like to choose my in-game username and avatar emoji
18. **As a player**, I would like to quit the game in-between rounds if desired, releasing my spot in the player list for a new player to join
19. **As a player**, I would like to receive instructions and prompts from the host computer screen during play
20. **As a player**, I would like to view a prompt response screen on my device for each assigned prompt in each round
21. **As a player**, I would like to view a voting screen on my device for each round of prompt voting
22. **As a player**, I would like to view a waiting screen on my device in-between tasks in which the game requires no further inputs from me
23. **As a player**, I would like to input emojis in my responses to prompts easily via a straightforward GUI
24. **As a player**, I would like to edit my response before submission - adding, moving, or deleting emojis with the GUI
25. **As a player**, I would like to vote for answers to the prompts using the GUI
26. **As a player**, I would like to select multiple answers during the final round when needed
27. **As a player**, I would like to view the results of the votes on the host screen
28. **As a player**, I would like to view round summaries on the host screen
29. **As a player**, I would like to view visual confirmation on the host screen when my inputs and votes are properly received
30. **As a player**, I would like to reconnect to a running game after disconnecting and be able to continue playing as the same player with the same username and same avatar
31. **As a player**, I would like to experience a diverse set of prompts such that at least two consecutive games have little overlap in the prompts chosen
32. **As a player**, I would like to view the remaining time for a question on the host screen
33. **As a player**, I would like to view a synced-with-the-host remaining time counter during answer and voting rounds on my device (if time permits)

34. **As a player**, I would like to connect to the game via a web-player (if time permits)

35. **As a developer**, I would like to maintain a server for which host computers can obtain a letter code for their game lobbies
36. **As a developer**, I would like to maintain a server to facilitate communication between the host computer and player devices in each lobby
37. **As a developer**, I would like to maintain a server which will connect player phones to the correct host computer lobby for each respective letter code
38. **As a developer**, I would like to remove inactive/unresponsive lobbies from the table of hosts on the server
39. **As a developer**, I would like to handle mid-game disconnects such that players can resume their games
40. **As a developer**, I would like to view crash messages in case of errors when possible

Nonfunctional Requirements:
1. Code should be well organized and commented where necessary.
2. Scalability for each individual game session should not be an issue by setting an upper limit for how many players can participate.
3. Game will support Windows/OSX/(Linux if time permits) and Android/iOS
4. Application-server communication should operate responsively with low enough latency to not impact game participation (i.e. it doesn't take too long for answers to be sent)
5. Usability should be simple so that as wide an audience as possible is reached.
6. For security, inputs should be sanitized to prevent communication or usage of ill-formed data which may result in unintended effects
7. There should be a unifying theme across the applications and ports (if time permits)
   = = = = = = = Extra Stories we didn't have before = = = = = = =
8. **As a developer**, I would like to become familiar with Godot