##### CSC380: Intro to Software Engineering

This document is a summary of the project description, system requirements, user stories, along with use cases, sequence diagrams, traceability matrix, and UML class and sequence diagrams, for “Questioneers”.

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##### Table Of Contents

1. Project Description
2. System Requirements
3. User Stories
4. Use Cases
   1. High level use cases
   2. Detailed use cases
   3. Use case diagram
5. Traceability Matrix
6. UML Diagrams
   1. Sequence diagrams
   2. Class diagrams

##### Project Description

This project will be a desktop game, whose gameplay will consist of answering questions, and voting on other players answers. This game will pit 2-16 players against each other to find who has the funniest responses to the questions given. The gameplay will be as follows. Consider a game with 4 players. In any given round, players 1&2 will get a certain random question, players 2&3 will get another random question, 3&4 another, and finally players 1&4 will get the same question. This means that for any given round, players will answer 2 distinct question, each of which will also be answered by another player. Once each player submitted both of their answers, every player will get to vote on each question that was given in the round. This means that each player will vote for each of the 4 questions that was given in the round. At the end of each voting round, all players will see a current leaderboard., The game will continue for however many rounds was decided by the host upon the games creation.

Upon opening the application, the user will have 2 options: create game, and join game.

1. Upon pressing the create game button, the user will be brought to a screen which gives them a few options, including setting the number of rounds, max number of players, etc.., along with a field to enter their own name, and a button to actually launch the game (make the lobby available for others to join). The host will then be brought to a waiting screen which will display which users are currently in the lobby, along with a button to start the game, bringing all users to the gameplay previously described.
2. Upon pressing the join game button, the user will be brought to a screen which has text fields for their name, and port number, along with a button for them to "join" whatever game was created by the host in bullet point 1. Once the user joins the game, they will be brought to the waiting screen along with the host, but will not be given the button to start the game. These users will also be brought to the gameplay as previously described

At the completion of the game, a leaderboard will be shown, and a winner will be declared.

##### SYSTEM REQUIREMENTS

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| **Identifier** | **Priority** | **Requirements** |
| REQ1 | 1 | The system shall connect all users to the appropriate ngrok server port(which will be specified by the host after port forwarding localhost:4122) |
| REQ2 | 1 | The system shall create a new instance of a game |
| REQ3 | 1 | The system shall create new users when a new thread connects to the server |
| REQ4 | 4 | The system shall run on any computer with java installed |
| REQ5 | 1 | The system shall create a “client socket” for each user |
| REQ6 | 1 | The system shall create a “serverSocket” for whoever is hosting the game, and will connect the host using a “client socket” |
| REQ7 | 5 | The system shall allow the host to add own questions/question packs to the game |
| REQ8 | 2 | The system shall allow the game to complete rounds of gameplay |
| REQ9 | 3 | The system shall allow the host to select game settings |
| REQ10 | 3 | The system shall display the username of all players connected to the lobby while in the “Pre game lobby” page |
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| REQ11 | 4 | The system will begin gameplay once all players have hit the “Ready Up” button |
| REQ12 | 3 | The system will display the current question, and question number for each round of play |
| REQ13 | 3 | The system will not allow users to submit blank responses to questions |
| REQ14 | 2 | The system will allow users to vote on which question they found more entertaining |
| REQ15 | 2 | The system will keep track of how many votes a certain answer received |
| REQ16 | 3 | The system will display a leaderboard between rounds |
| REQ17 | 2 | Once the host has created a lobby, there will be a text label which will contain the “room code” which will be entered by players joining the game while on the join game page. |
| REQ18 | 2 | The system will give users the appropriate question depending on which round of gameplay the game is currently in |
| REQ19 | 3 | The system shall give random questions to each pair of users, which will be taken from a large set of questions |
| REQ20 | 2 | The system will have GUI’s to display all of the games content |
| REQ21 | 2 | The system will allow users to answer questions |
| REQ22 | 4 | The system shall give each player 1 point per vote received |
| REQ23 | 4 | The system will display the names of players as they enter the game |
| REQ24 | 5 | The system shall allow users to enter messages in a public chat log |
| REQ25 | 5 | The system shall allow users to send messages privately to specific players in the game |
| REQ26 | 5 | The system will display all public messages on everyone’s chat log |
| REQ27 | 5 | The system will display private messages on the logs of only the player who sent the message and the player that was sent the message |

\*Note: Priority 1 indicates most important, while 5 is least important

##### USER STORIES

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| Identifier | User Story | Size |
| ST-1 | As a host, I can create a game lobby | 15 pts |
| ST-2 | As a user who wants to join an existing lobby, I can join an existing lobby by typing in the room code (port number) | 15 pts |
| ST-3 | As a host, I can start the game from the pregame lobby screen | 15 pts |
| ST-4 | As any user, I can enter in my username | 5 pt |
| ST-5 | As a host, I can see who has joined my lobby | 10 pts |
| ST-6 | As a host, I can select the settings for the game | 3 pts |
| ST-7 | As a player, I can see which question I need to answer | 5 pts |
| ST-8 | As a player, I can vote on other peoples answers | 5 pts |
| ST-9 | As a player, I can see the leaderboard at the end of every round | 3 pts |
| ST-10 | As a player, I can type my response to my question | 4 pts |
| ST-11 | As a player, I can send messages in the public chat log | 5 pts |
| ST-12 | As a player, I can send private messages to players | 3 pts |
| ST-13 | As a player, I can see all messages in the public chat log as well as messages sent privately to me | 5 pts |

###### USE CASES

###### 4a- high level use cases

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| **Actor** | **Actors Goal** | **Use case ID** |
| Host | Create a lobby | CreateLobby (UC-1) |
| Non-Host Player | Join an existing game by using a room code | JoinGame (UC-2) |
| Host | Launch Game from pregame lobby | StartGame (UC-3) |
| Host | See the current players in the lobby | ViewUsers (UC-4) |
| Host | Edit the settings for the current game | EditSettings (UC-5) |
| General Player | Can view the question I am supposed to answer | ReceiveQuestion (UC-6) |
| General Player | Vote on other players answers | Vote (UC-7) |
| General Player | I can see the Scoreboard at the end of each round | ShowScoreboard (UC-8) |
| General Player | I can respond to the question I am supposed to answer | Submit (UC-9) |
| General Player | I can send messages in the public chat log | SendPublicMessage (UC-10) |
| General Player | I can send private messages by using ‘@’ | SendPrivateMessage (UC-11) |
| Host | I can edit the question pack to be used in-game | EditQuestionPack(UC-12) |

###### 4B - Detailed use cases:

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| **Use Case ID: 1** | **CreateLobby** |
| Related Requirements | REQ1, REQ2, REQ3, REQ5, REQ6, REQ9, REQ10, REQ17, REQ20 |
| Initiating actor | Host |
| Actors Goal | To start a new server for a game so that others can join. |
| Participating Actors | N/A |
| Preconditions | -System must be started  -Host player must be running “ngrok tcp 4122” through terminal |
| Post-Conditions | -There is a server session that is accepting client connections.  -The host is connected to the server.  -The host is in the waiting lobby as a client connection |
| Flow of events for Main Success Scenario | 1. Host starts application and clicks “Create Lobby” button 2. The host types in the correct ngrok port number 3. System creates a new server and connects host as a client 4. The host is in the waiting lobby |

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| **Use Case ID: 2** | **JoinGame** |
| Related Requirements | REQ1, REQ3, REQ5, REQ20 |
| Initiating actor | Non-Host Player, and Host Player |
| Actors Goal | Join an existing game by using a room code. |
| Participating Actors | N/A |
| Preconditions | -There must be a server that the user can connect to.  -The player must know the port to use to connect. |
| PostConditions | -They are in a lobby with the host and anyone else that joined. |
| Flow of events for Main Success Scenario | 1. Non-Host Player clicks “Join Game” button 2. System asks for lobby/port number 3. Non-Host Player enters the lobby/port number   Or  1. Host player hits “Create Game” button  2. Host enters port number  3. Host is in the waiting lobby that they just made |

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| **Use Case ID: 3** | **StartGame** |
| Related Requirements | REQ2, REQ3, REQ4, REQ11, REQ19, REQ20 |
| Initiating actor | General Player |
| Actors Goal | Launch Game from pregame lobby. |
| Participating Actors | N/A |
| Preconditions | -The host must have created a new server.  -There must be the people in the lobby. |
| PostConditions | -All players connected to the server will be in a game  -All players will see the first question they are supposed to answer |
| Flow of events for Main Success Scenario | 1. Host has created a lobby 2. Other players have joined the hosts lobby 3. All Player have hit the “Ready up” button in the waiting lobby 4. System creates a game object with all users in the lobby as players 5. System gives all players their questions |

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| **Use Case ID: 4** | **ViewUsers** |
| Related Requirements | REQ3, REQ5, REQ10, REQ20, REQ23 |
| Initiating actor | Host |
| Actors Goal | See the current players in the lobby. |
| Participating Actors | Non Host Players |
| Preconditions | -The host must have created a new server/lobby  -There must be user(s) connected to the server. |
| PostConditions | -The players that are connected to the server are listed for everyone in the lobby to see |
| Flow of events for Main Success Scenario | 1. Host creates new server 2. Non-Host Player(s) connect to the existing lobby 3. System displays the users connected to the server in the waiting lobby |

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| **Use Case ID: 5** | **EditSettings** |
| Related Requirements | REQ2, REQ9, REQ20 |
| Initiating actor | Host |
| Actors Goal | Edit the settings for the game. |
| Participating Actors | N/A |
| Preconditions | -The host must be have pressed the “Create Lobby” option from the homescreen |
| PostConditions | -The settings for the server session are saved  -The game has the appropriate number of rounds and max number of players  -Host is sent to the waiting lobby |
| Flow of events for Main Success Scenario | 1. Host is on the “Create Game” page 2. The host toggles the available settings |

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| **Use Case ID: 6** | **ReceiveQuestion** |
| Related Requirements | REQ3, REQ8, REQ12, REQ18, REQ19 |
| Initiating actor | General Player |
| Actors Goal | The Player can view the question they are supposed to answer |
| Participating Actors | System |
| Preconditions | -The host has created a server  -Players have joined the lobby  -The game has given each players the correct questions they need to answer  -The player is on the screen to answer their question |
| PostConditions | -The correct question will be displayed to each user with a spot to type an answer. |
| Flow of events for Main Success Scenario | 1. The host creates a lobby 2. Other players connect to the lobby 3. Every player hit ready up 4. The player takes the list of players and number of rounds chosen by the host, and gives each player the correct questions 5. Each player can view their question |

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| **Use Case ID: 7** | **Vote** |
| Related Requirements | REQ14, REQ15, REQ16, REQ19, REQ20, REQ22 |
| Initiating actor | General Player |
| Actors Goal | Vote on other players answers. |
| Participating Actors | General Player |
| Preconditions | -All answers to questions have been received. |
| PostConditions | -The votes for each answer have been tallied by the game |
| Flow of events for Main Success Scenario | 1. The host player has created a game lobby 2. Other players have joined the lobby 3. Every player has hit the “Ready Up” button 4. The system gives each player their questions to answer 5. Each player answers their questions for that round 6. Players are brought to the screen where they see both answers for each question that was answered in the round 7. Players toggle the voting button below the answers and then hit the submit button to record their answer |

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| **Use Case ID: 8** | **ShowScoreboard** |
| Related Requirements | REQ14, REQ15, REQ16, REQ20, REQ22 |
| Initiating actor | General Player |
| Actors Goal | I can see the Scoreboard at the end of each round. |
| Participating Actors | System |
| Preconditions | -All players have submitted their answers and all players have voted on all of the answers |
| PostConditions | -A leaderboard has been displayed, and players move on to the next round of answering questions, or the game ends if there are no rounds left |
| Flow of events for Main Success Scenario | 1. The host player has created a game lobby 2. Other players have joined the lobby 3. Every player has hit the “Ready Up” button 4. The system gives each player their questions to answer 5. Each player answers their questions for that round 6. Players are brought to the screen where they see both answers for each question that was answered in the round 7. Players toggle the voting button below the answers and then hit the submit button to record their answer 8. The system brings each player to the leaderboard screen 9. The system sorts players by the number of votes received, and displays relevant information on the screen |

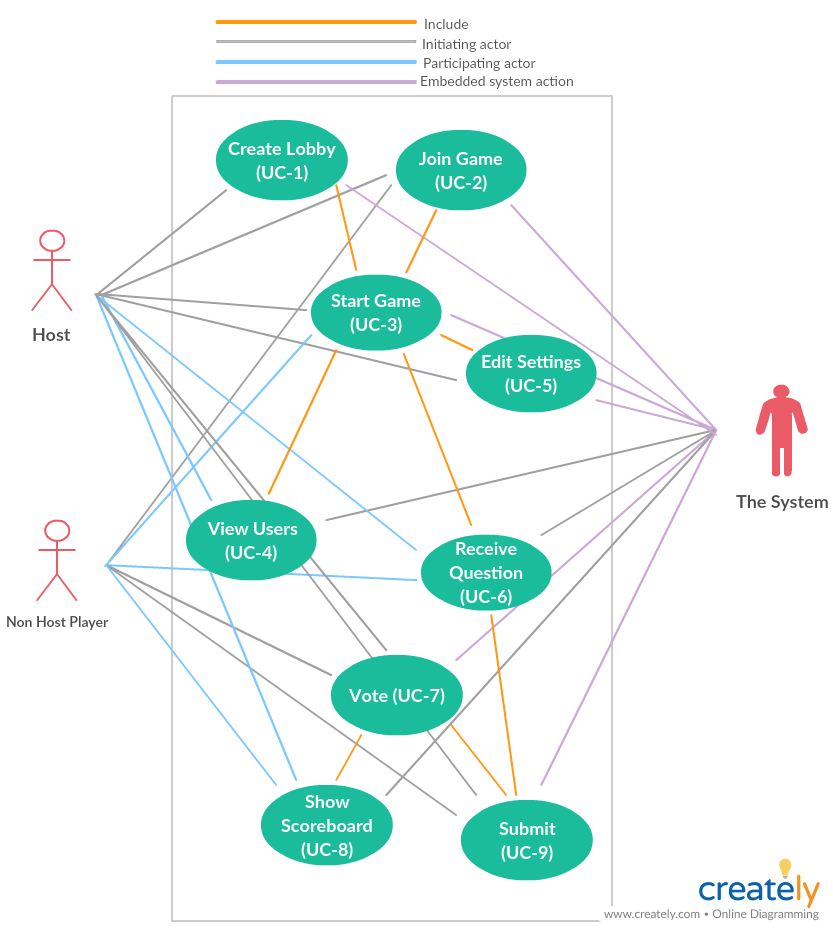
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| **Use Case ID: 9** | **Submit** |
| Related Requirements | REQ8, REQ12, REQ13, REQ18, REQ19, REQ20, REQ21 |
| Initiating actor | General Player |
| Actors Goal | I can respond to the question I am supposed to answer and submit it |
| Participating Actors | N/A |
| Preconditions | -Users must have the question they are supposed to answer on the screen  -Users must have the text field to type their answer |
| PostConditions | The “submit” button will turn dark blue |
| Flow of events for Main Success Scenario | 1. The host player has created a game lobby 2. Other players have joined the lobby 3. Every player has hit the “Ready Up” button 4. The system gives each player their questions to answer 5. Each player sees the question they are supposed to answer |

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| **Use Case ID: 10** | **SendPublicMessage** |
| Related Requirements | REQ1, REQ3, REQ24, REQ25 |
| Initiating actor | General Player |
| Actors Goal | I can send a text message to the other players located in the chat log |
| Participating Actors | N/A |
| Preconditions | -Users must be connected to the server  -Users must have the text field to type a message |
| PostConditions | The message will display in the chat for all users |
| Flow of events for Main Success Scenario | 1. The host player has created a game lobby 2. The system accepts all player’s usernames |

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| **Use Case ID: 11** | **SendPrivateMessage** |
| Related Requirements | REQ1, REQ3, REQ26, REQ27 |
| Initiating actor | General Player |
| Actors Goal | I can send a text message to a specific player of my choosing |
| Participating Actors | General Player |
| Preconditions | -Users must be connected to the server  -Users must have the text field to type a message  -The username of the player receiving the message must exist |
| PostConditions | The message will display in both the sender and the recipient’s chat log |
| Flow of events for Main Success Scenario | 1. The host player has created a game lobby 2. The system accepts all player’s usernames 3. The system can find the desired recipient of the private message |

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| **Use Case ID: 12** | **EditQuestionPack** |
| Related Requirements | REQ7, REQ9 |
| Initiating actor | Host |
| Actors Goal | I can edit the questions in the question pack to be used in-game |
| Participating Actors | N/A |
| Preconditions | -Hosts must be able to open the application  -Hosts must be able to click on “Pack Manager” and select a question pack |
| PostConditions | The system will use the changes that the host made to the questions |
| Flow of events for Main Success Scenario | 1. The host player has opened that application 2. The host player has selected the question pack to edit 3. The system displays all of the questions in that pack |

###### 4c Use case diagram

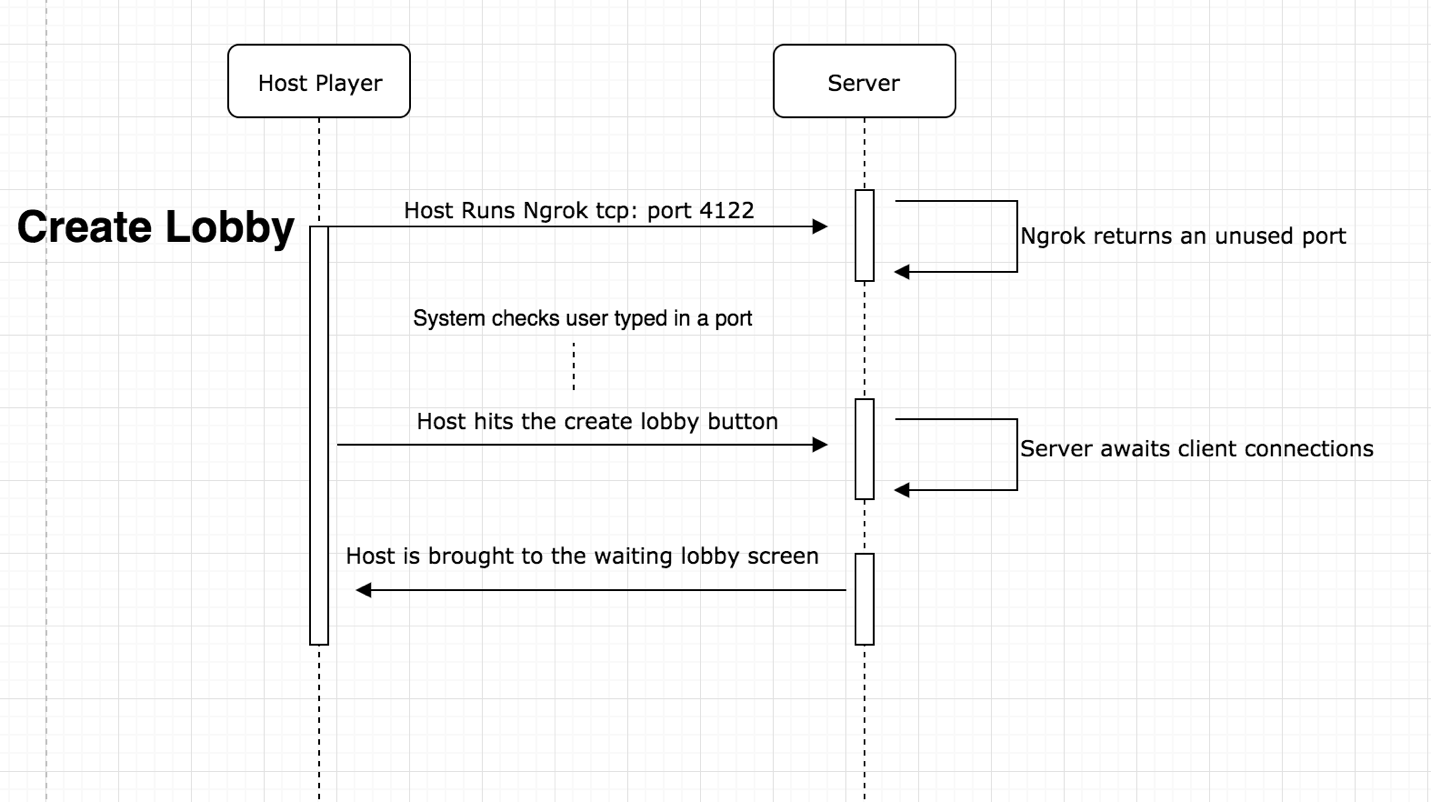


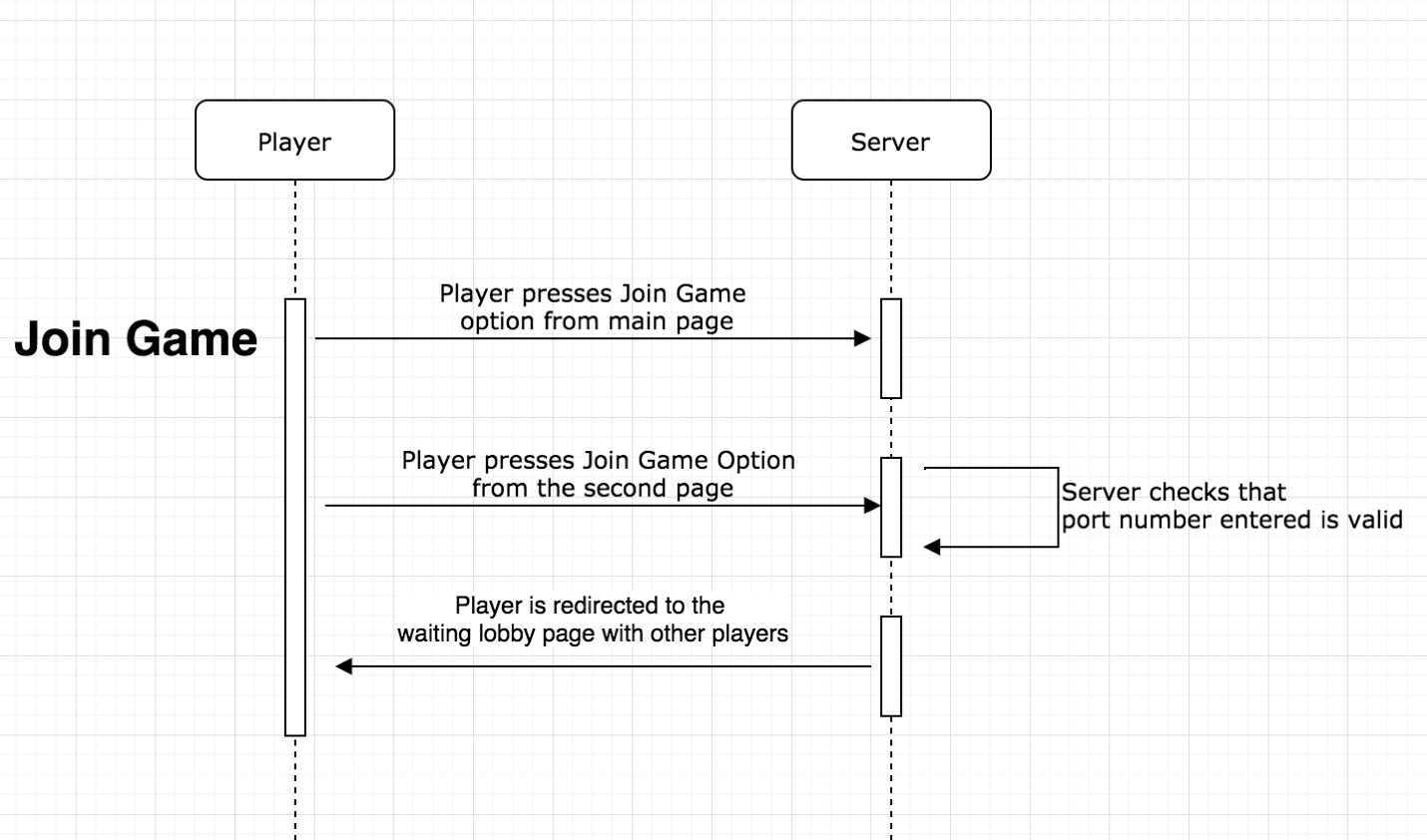
##### Traceability matrix

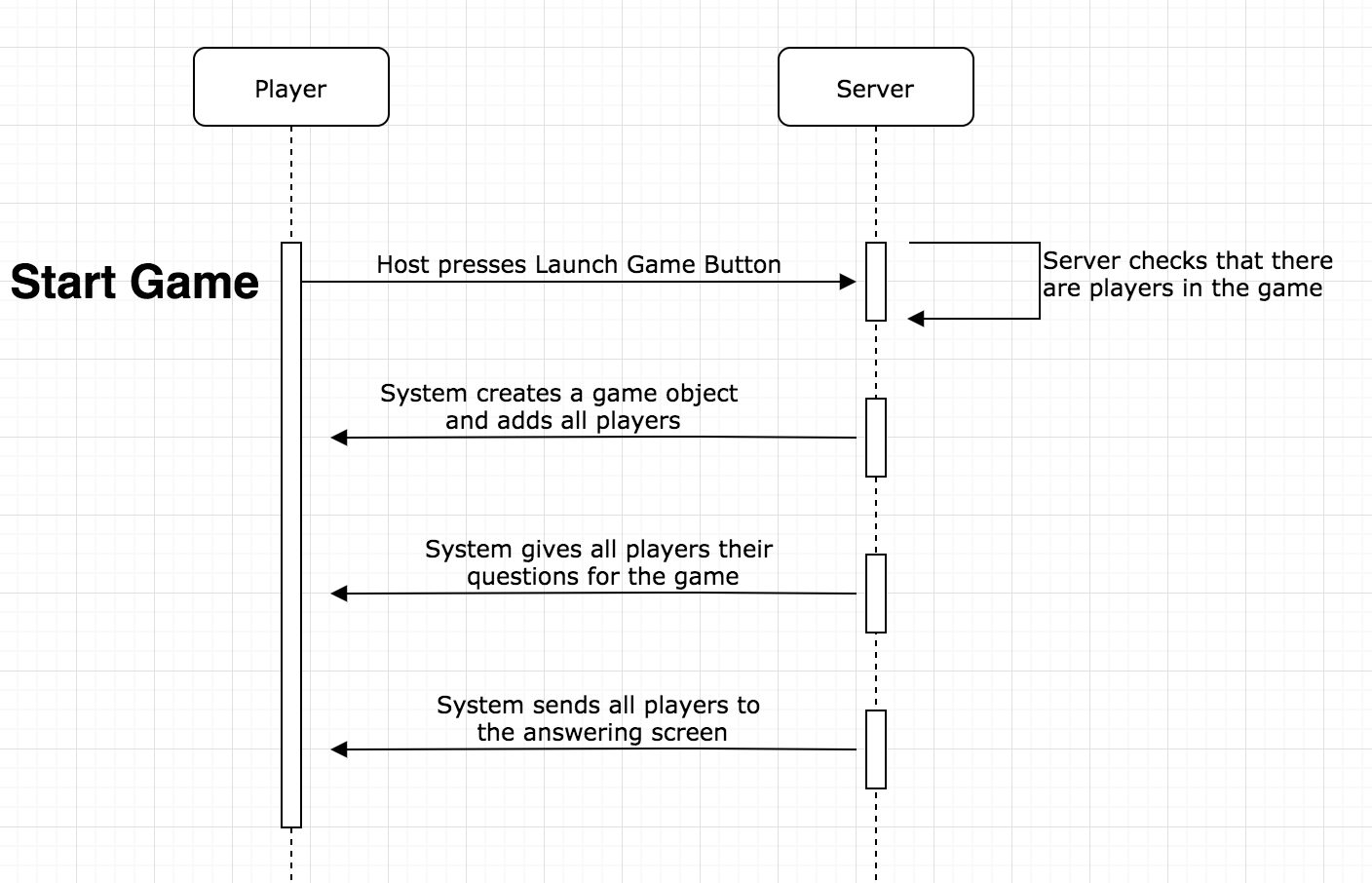
Traceability matrix can be found in the attached spreadsheet (For now)

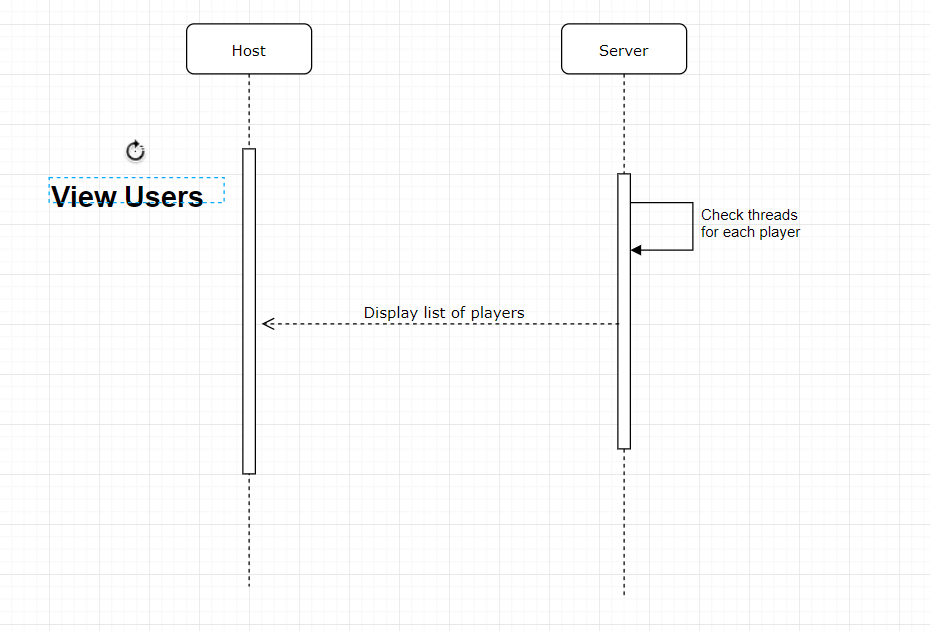
##### UML Diagrams

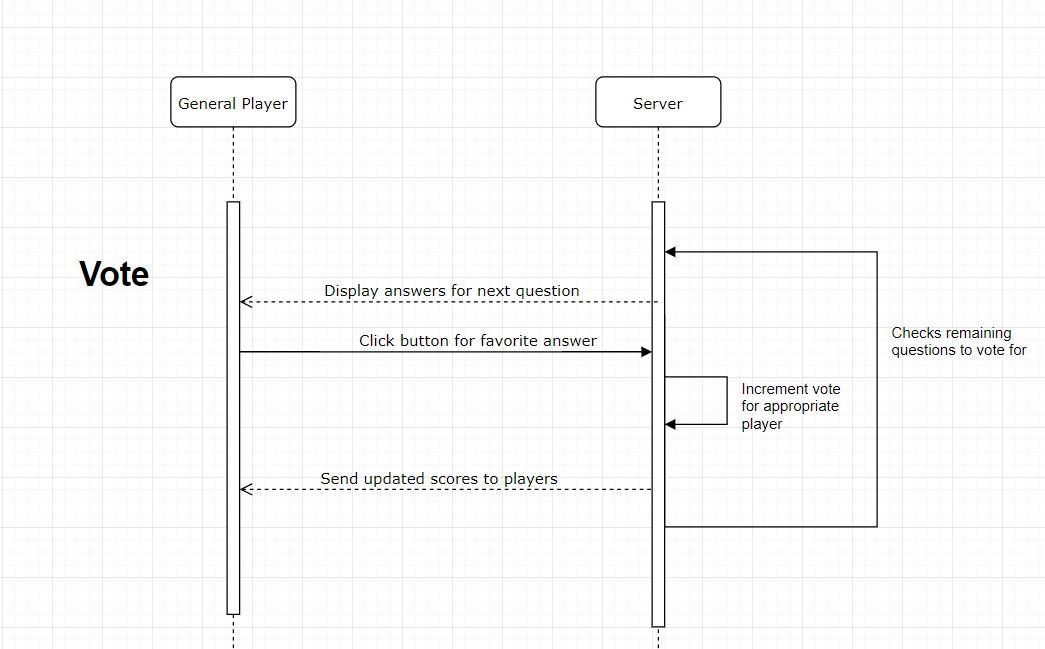
###### 6a- Sequence diagram

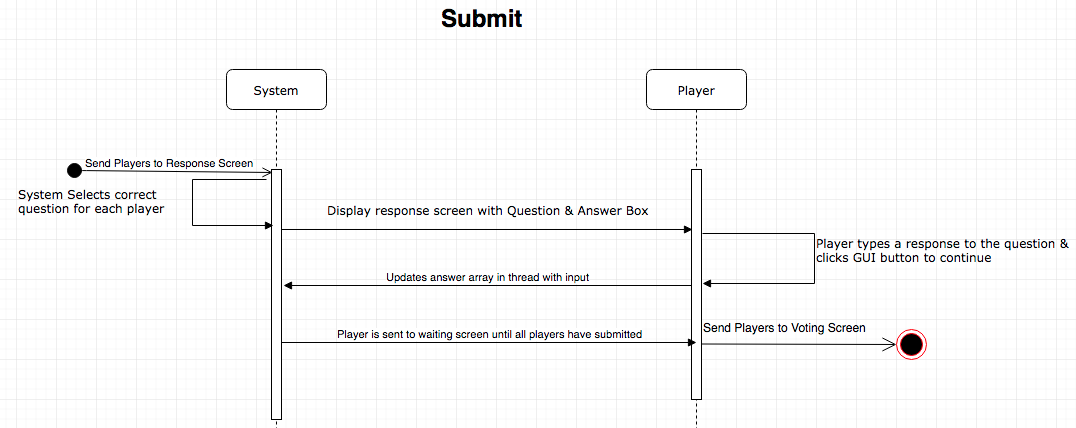
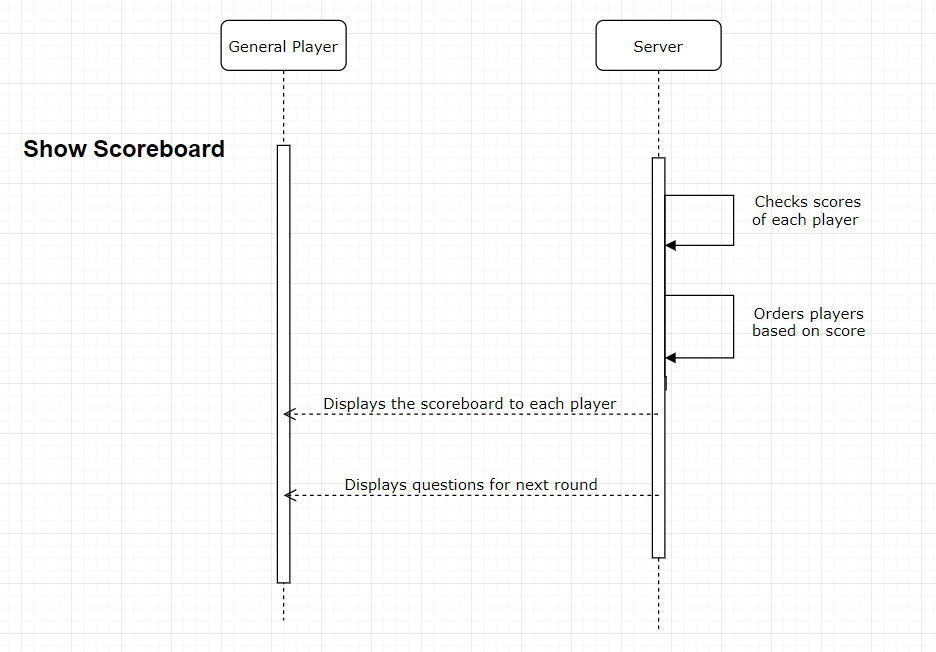


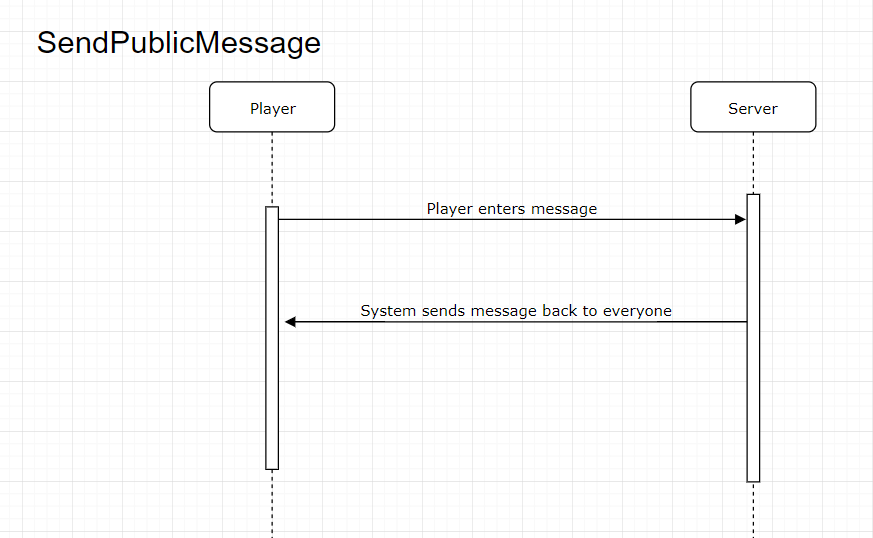


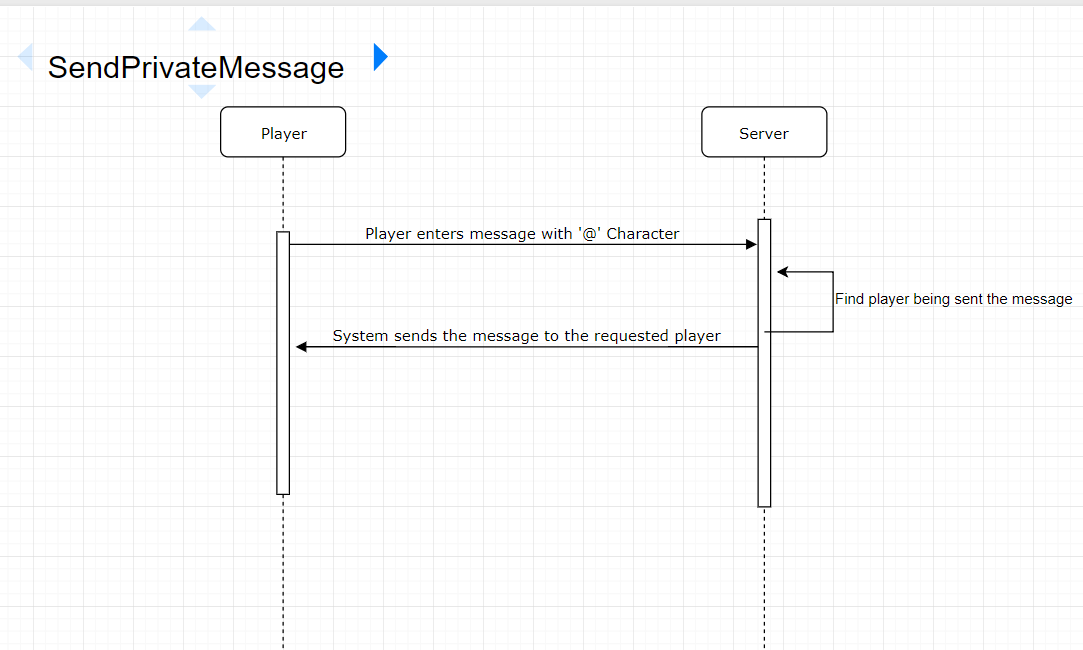


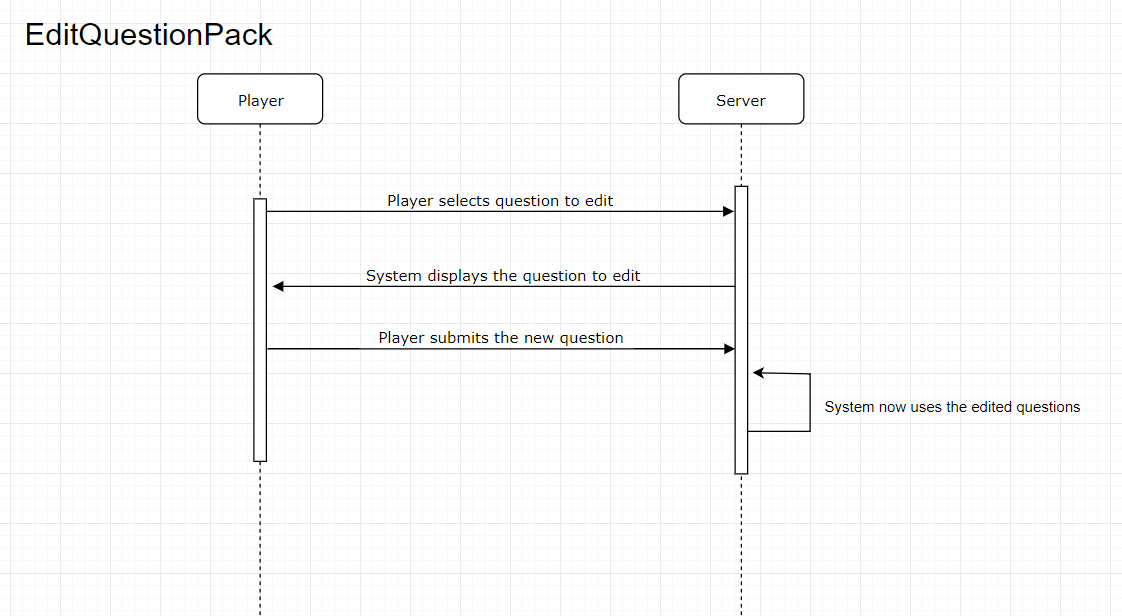












##### 6b- Class Diagrams

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