Program 5: Trivia Game!

Team Number: 12

Class Section: 11:00am-12:15pm

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For our group project we will be using JavaFX to implement the Trivia Game using client and server socket communication. Each player will answer 10 questions from pool of trivia questions. After all of the questions are answered, the game will rank the players based on their score. Each question answered correctly is worth 1 point. In order to play this game, there must be 4 players/clients to be connected to the server. The game will only begin once there are 4 players. Each client will be notified when each client connects to the server with their usernames. After all 4 of the players are connected, the game will begin. The server will send a question to the clients and the client will choose one of the 3 answers. Then, the client send their score to the server. The server will keep track of the points for all players.

The user interface for the client program will have the user be prompted to enter an ip address and port number, then a button to connect to the server. After connecting to the server, the client will be prompted to choose a unique username. After choosing a username, the directions of the game will be player and all of the clients usernames' that are connected to the server. When all 4 players are connected, a question will be displayed with a 3 buttons that has the multiple choice answers. After the question is answered, the client will be notified if their answer was correct with a image of the correct answer.

The server program's user interface will display welcome text and instructions on how to play the game. It will then ask the user to connect to a server with a port number. Once the input has been validated, the server will be connected to that port. Clients may then begin connecting. The server will keep a live count of how many players have connected. Once 4 players have established their connections, their games will begin. The current question number will also be displayed. After all 4 players have their answers selected for each question, the server will update the score ranking for each player using their name, and how many points they have. At the end of the game, a final winner will be displayed (if there is one with a greater score than the other 3), or else it will just give the final ranks for all the players.

The client program will extract from a text file to get the questions and list of multiple choice answers that corresponds to each question and insert it into a hashmap. The hashmap *key* will be the question and the *value* will be the ArrayList<String> of multiple choice answers. The client will receive a question from the server program, so client program will know which question to display on the GUI and to retrieve the ArrayList from the hashmap. There will be an ArrayList<Integer> that will contain 0,1, and 2 in the list. That list will be shuffled every time the server sends a question. After retrieving the ArrayList from the hashmap, the program will traverse the ArrayList<integer to retrieve the multiple choice answer to set the button texts. Once the client chooses an answer, the client program will see if the client answered the question correctly to give the client their score and then their score to the server. Thus, Client program will only communicate with the server when the client chooses a username to check if its not taken and to send their score to the server.

The server program will extract a questions from a text file and insert it into a hashmap as the *value*, the key value will be a integer. The server will randomly choose a number 1 through the number of trivia questions to retrieve the question where the random number is mapped to on the hashmap. The server will record each random number that is used in some sort of collection, so no questions are repeated in one game. Once the question is retrieved, the server will send it to the client program. The server will receive data from all of the clients once all of the clients answered the question to keep track of everyone's scores. Once the game is over, the server will send the players ranks to all of the clients. Thus, Server program will only communicate with client program, to check if the username is unique, to choose a trivia question , to keep track of all of the player's scores when the client sends data after they've answered a question, and send players ranking once the game is over.