



Computer Networks

Project Report

Submitted by

Archit Sangal

IMT2019012



DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no previously published or written by another person or material which to a substantial extent has been accepted for the award of any other degree or diploma of the University or other Institute of higher learning, except where due acknowledgement has been made in the text.



Disclaimer

- A) It is assumed that the questions don't have any copyrights.
- B) I have tried to check the correctness of the questions but still I don't hold any responsibility of the correctness of the question.
- C) I don't intent to hurt the sentiments of any individual, community, sect or religion.



ACKNOWLEDGEMENT

I would like to express my sincere gratitude to my project guide **Prof. Tricha Anjali** for giving me the opportunity to work on this topic. It would never be possible for me to take this project to this level without her innovative ideas and her relentless support and encouragement.



ASSUMPTIONS

- a) Strictly speaking, winner is the one, who is the first player to get a score of 5 or above points(irrespective of how many questions were remaining). There is just one player who will win in this great "GAME SHOW".
- b) If no more questions are left and no one was able to get a score of 5 points or above, we have no winner in the quiz. Game continues even when some of the players have a large negative score as other player may win.
- c) There is a timer of 10 seconds to press the buzzer. The player who presses the buzzer first in 10 seconds will get a chance to answer the question. If he answers it correctly, he gets 1 point. In all other cases(including if he doesn't answer), score reduces by 0.5 and host moves forward to the next question. No other player gets a chance to answer the question.
- d) We here assume that user is patient and is smart enough to not to enter any garbage values. Though in most of the cases garbage values are handled by clearing the buffer before taking any input but some exception may occur due to the buffer bug in JDK 11.
- e) In Java JDK 11(LTS), this is a bug in buffer input related to garbage value, which is yet to be resolved in JDK 14(beta) so errors under this bug are NOT taken care of.



DESCRIPTION OF CODE

There are total 5 class of java in all.

- Client
- Server
 - a) Server
 - b) Buzzer
 - c) ServerThread
 - d) Question

Buzzer and ServerThread extends class “Thread” and are hence used for multithreading.

Question is a class which has a function to add question bank with answer to a Server variable Question.

Server class is the main Server class Buzzer, ServerThread and Question are used by creating objects within Server class.

Basic inbuilt modules of Socket Programming are used which is provided in java. Though the comments in the project are enough to understand the code but here is an overview:

For Client: - there are 3 nested-loops →

- a) Outermost loop – It is iterating again and again for displaying the questions. Its end condition is sent by the server.
- b) Inner Loop to the Outermost loop – It is used for keeping an account of buzzer i.e. either it is pressed before 10 seconds or buzzer is pressed by some other player first.
- c) Innermost loop – It is to allow answering of the question before 10 seconds end.

For Server: - there are 4 nested-loops.

- a) Outermost loop – It is iterating again and again for selecting the random questions.
- b) Inner Loop to the Outermost loop – they are the loops to transfer data from one thread to other and starting a new-born thread.
- c) Outer to Innermost loop – It is used for keeping an account of buzzer i.e. either it is pressed before 10 seconds or buzzer is pressed by some other player first.
- d) Innermost loop – It is to allow answering of the question before 10 seconds end.

Other than this there are multiple flags and if-else conditions for proper control flow.

Score board is shown before every question and at the last when winner is declared. Live scores are not shown to host to avoid partiality.



INSTRUCTIONS

NOTE : Order of execution matters...

It is assumed that the users will already have JAVA JDK 11(LTS).

Run the following command from the directory in which you have these codes.

```
$ javac Server.java
```

```
$ java Server
```

Open a new terminal in that same directory and then run the following commands:-

```
$ javac Client.java
```

```
$ java Client
```

Open a new terminal in that same directory and then run the following commands:-

```
$ java Client
```

Open a new terminal in that same directory and then run the following commands:-

```
$ java Client
```

If port number is not available, then change it in Server.java and Client.java(for help look at the comments).