

SOCKET PROGRAMMING

PROJECT REPORT

BASIC INFORMATION:

- The Project is made using **Python 3**.
- It involves using the *socket*, *sys*, *time*, *random*, *select*, *termios* modules already present within Python3
- I have 3 files, a *server.py*, *client.py* and *Questions_Answers.py*
- I have put over 50 actual quiz questions in the Questions array and their corresponding Answers in the Answers array in *Questions_Answers.py*.

ASSUMPTIONS:

- There can be negative points as low as possible and if by the end of all questions no one reaches 5 points, then the one with the maximum points wins.
- If all the clients have the same points, the server declares it as a tie between all the clients.

ABOUT THE QUIZ:

- There will be many questions each with 4 options.
- You have to enter any key to hit the buzzer within 10 seconds, if no one presses the buzzer the game moves on.
- The first one to hit the buzzer gets the chance to answer the question within 10 seconds.
- You get 1 Point for every Correct Answer and -0.5 Points for wrong answer or if the time runs out after you hit the buzzer.

DESCRIPTION OF CODE:

Server Side:

1. I have used **select module** to implement the handling of multiple clients, my program is **flexible** and can handle any number of clients.
2. I have first created the server socket (**TCP** for reliability) then binded it to the given host and port no., then initiated the connecting clients function.
3. I have made an array of Questions and corresponding Answers in another file and imported it to make it clear.
4. In the connecting clients function the server welcomes and tells each of the clients the rules, when 3 clients are connected the server initiates the Start Quiz function.
5. In the Start Quiz function, I have used the random module to pick a question at **random** from the Questions array.
6. I have used select along with its timeout feature, to implement the buzzer.
7. And then also receive data(answer) from the client using the select's timeout feature.
8. Then compare the answer given with the correct answer and determine points.
9. In Case Nobody Presses the buzzer, the quiz moves to the next question.

This Repeats until someone reaches 5 points or if All Questions have been asked.

Client Side:

1. I created a Client Socket (TCP) then connect to the server and receive the welcome message.
2. The client then receives the question; I use **select** here to see which client socket has pressed the buzzer first.
3. I have also used a Unix module called **termios**, to flush the standard input, so that current question's input doesn't affect the next question.
4. In case our client presses it, the server then asks for the answer.
5. I have again used select here to take input of the answer from the client within 10 seconds.
6. Then the client receives information about their points.

At the end of the game, the client can see the final standings and the Result.

INSTRUCTIONS TO RUN THE CODE:

- python3 server.py (to be run on 1 terminal)

- python3 client.py (to be run on 3 different terminals)

SCREENSHOTS:

Server Side:

```
$ python3 server.py
Enter the Port No. : 1234
Connected to Client 1 at address: 127.0.0.1 and port: 60106
Connected to Client 2 at address: 127.0.0.1 and port: 60108
Connected to Client 3 at address: 127.0.0.1 and port: 60110
All 3 Clients connected
```

Client Side:

1. Welcome

```
Enter Port No. : 1234

-----Welcome to this Amazing Quiz!-----

The rules are simple:
1. There will be many questions each with 4 options.
2. You have to press any key to hit the buzzer within 10 seconds, if no one presses the buzzer the game moves on.
3. The first one to hit the buzzer gets the chance to answer the question within 10 seconds.
4. You get 1 Point for every Correct Answer and -0.5 Points for wrong answer or if the time runs out.
   The First One to Reach 5 points wins the Quiz!
      GOOD LUCK!

You are Player: 3
```

2. Correct Answer

```
Q1) Hundred year war was fought between which of the following?
a. France and England
b. Greek and Persian forces
c. Civil war in England
d. None of the above

g
Good Job! You pressed the buzzer first, now answer the question within 10 secs
a
> Correct Answer! You get 1 Point
```

3. Wrong Answer

Q3) Where did India play its 1st one day international match?

- a. Headingley
- b. Lords
- c. The Oval
- d. Eden Gardens

g

Good Job! You pressed the buzzer first, now answer the question within 10 secs

d

> Wrong Answer! You get -0.5 Points

4. No one hits the buzzer

Q4) Tipu sultan was the ruler of?

- a. Mysore
- b. Hyderabad
- c. Madurai
- d. Vijayanagar

Nobody pressed the buzzer. So Moving on to the next question

5. Client hits the buzzer but doesn't answer within 10 seconds

Q5) Quartz crystals normally used in quartz clocks is chemically?

- a. silicon dioxide
- b. germanium oxide
- c. a mixture of germanium oxide and silicon dioxide
- d. sodium silicate

h

Good Job! You pressed the buzzer first, now answer the question within 10 secs

You didn't answer within 10 seconds, You get -0.5 Points