

COMPUTER NETWORKS LABORATORY

MINI PROJECT

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ENQ – ENQ Not QuizUp

ONLINE QUIZZING PLATFORM USING CONCEPTS OF
SOCKET PROGRAMMING

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INTRODUCTION

What does ENQ stand for?

ENQ (pronounced as *Enque*) is a recursive bacronym which stands for “ENQ Not QuizUp”.

What does ENQ do?

ENQ lets you quiz against other online users. It also keeps a count of player scores and declares the winner at the end of the quiz.

PROBLEM DEFINITION

To provide a fast, entertaining and a robust service of a quizzing platform which can support two users at a time.

OBJECTIVES

- To build a quizzing platform where the server can host a quiz.
- To calculate the scores after each question and display it to the players.
- Implementing the project by using concepts of socket programming in C++, POSIX threads and Linux Commands.
- Understanding Socket Programming concepts, basic concepts in Computer Networks and Linux Commands.

OTHER EXISTING QUIZZING PLATFORMS



QuizUp



BACKGROUND AND IMPLEMENTAION

The programming language used in our project is: C++

The concepts used in our project are:

- Sockets
- Multithreading
- Shared Memory – Memory Maps
- Linux File Handling

Sockets: Sockets are communication points on the same or different computers to exchange data. Sockets allow communication between two different processes on the same or different machines. It's a way to talk to other computers using standard Unix file descriptors. A Unix Socket is used in a client-server application framework.

Multithreading: In simple words, multithreading is the ability of a central processing unit (CPU) or a single core in a multi-core processor to execute multiple processes or threads concurrently, appropriately supported by the operating system. This way it lets us make efficient use of multi-core processor systems.

Linux File Handling: A Linux system, makes no difference between a file and a directory, since a directory is just a file containing names of other files. A file represents a sequence of bytes on the disk where a group of related data is stored. File is created for permanent storage of data. It is a ready-made structure. Thus, it is easy to implement file handing in the LINUX environment.

METHODOLOGY

The following are the steps the user has to take to use the platform:

- **STEP 1:** The player connects to the server.
- **STEP 2:** If the server finds another waiting player, it sets up the game. If no other waiting player was found, then the player has to wait for a new player to join in.
- **STEP 3:** Once set up, the players try to get as many questions correct as possible. The questions are stored on the server and are selected at random.
- **STEP 4:** At the end of the quiz, the user can either stay for another round or choose to leave.

SCORING

- The scoring system is based on *dynamic scoring*.
- This means, the faster the correct answers are submitted by a player, more the number of points are awarded to the player.
- Number of points awarded for a correct answer =
$$\left[\frac{\text{Total number of correct answers}}{\text{Total time taken to finish the quiz (in seconds)}} \right] \times 100.$$

There is no time-limit for a question to be answered.
- No points are deducted for failing to submit an answer or submitting a wrong answer.

SCREENSHOTS

Server:

```
rkb@rkb-warmachine: ~/Documents/CNPKritik/CNProj
rkb@rkb-warmachine:~/Documents/CNPKritik/CNProj$ g++ -std=c++11 QuizServer.cpp -o QuizServer -lpthread
rkb@rkb-warmachine:~/Documents/CNPKritik/CNProj$ ./QuizServer
3
4
Player chose to Play
No Player was found
Player was told to wait
5
Player chose to Play
Player found at 0
Game Over
Player 5 scored: 71 in 7 seconds

Player 4 scored: 21 in 14 seconds
PLAYER 5 WINS!
```

Winning Player:

```
rkb@rkb-warmachine: ~/Documents/CNPKritik/CNProj
A:Iron Pyrite
B:Aluminium Hydroxide
C:Copper Sulphate
D:Sodium Cyanide
Your answer here: a

Correct answer!
Your score is 4
*****
Question 5

Which American TV show best describes the 2016 Presidential elections in United States?

A:Mad Men
B:Orange is the new Black
C:Game of Thrones
D:American Horror Story
Your answer here: b

Correct answer!
Your score is 5
CONGRATULATIONS! You win!
rkb@rkb-warmachine:~/Documents/CNPKritik/CNProj$ █
```

Losing Player:

```
rkb@rkb-warmachine: ~/Documents/CNPKritik/CNProj
C:Copper Sulphate
D:Sodium Cyanide
Your answer here: a

Correct answer!
Your score is 2
*****
Question 5

Which American TV show best describes the 2016 Presidential elections in United States?

A:Mad Men
B:Orange is the new Black
C:Game of Thrones
D:American Horror Story
Your answer here: b

Correct answer!
Your score is 3
YOU LOST! But this game is always on your computer to replay
rkb@rkb-warmachine:~/Documents/CNPKritik/CNProj$ █
```

LIMITATIONS

The limitations of the project:

- Only one game can be hosted by the server at a time.
- A second player is always needed to play the game. There is no provision for single player quizzing.
- This platform can be used by seasoned players only, as it lacks a robust UI.

CONCLUSION

With this project, we see the implementation of a quizzing platform using the fundamentals of socket programming.

Working on this project was a great learning experience for all of us and it has definitely broadened our horizon in the field of networking.

REFERENCES

1. www.stackoverflow.com
2. www.askubuntu.com
3. www.wikipedia.org
4. Computer Networks: A Top-Down Approach, Forouzan