PES University, Bengaluru
Computer Science & Engineering Department
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Computer Networks Lab – UE17CS304
Mini Project
Fifth Semester

Title of the project: **Multi-Client Quiz Application**

Team members:

Sl. #	Name	SRN	e–mail id
1	Ravichandra GK	PES1201701581	ravichandrakg999@gmail.com
2	Pavan Mitra	PES1201700239	pmkd42@gmail.com
3	Ambarish D Y	PES1201701635	ambarishambi7805@gmail.com

Abstract

MasterB couples a TCP connection, with multithreaded client spawns, to produce an elegant quiz application, that also enables extensive primary authentication.

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1. Introduction

MasterB, our Quiz application serves to maintain a real-time quiz environment, where an initial connection is established, armed with credential login and authentication handling. A series of questions is sent to a listening and legal client (that which has passed the authentication phase). On completing answers, a "finished_quiz" acknowledge is sent, which enables server to give out the results immediately!

2. Requirements Specification

ClayNet**,** UbuntuVM

3. Implementation
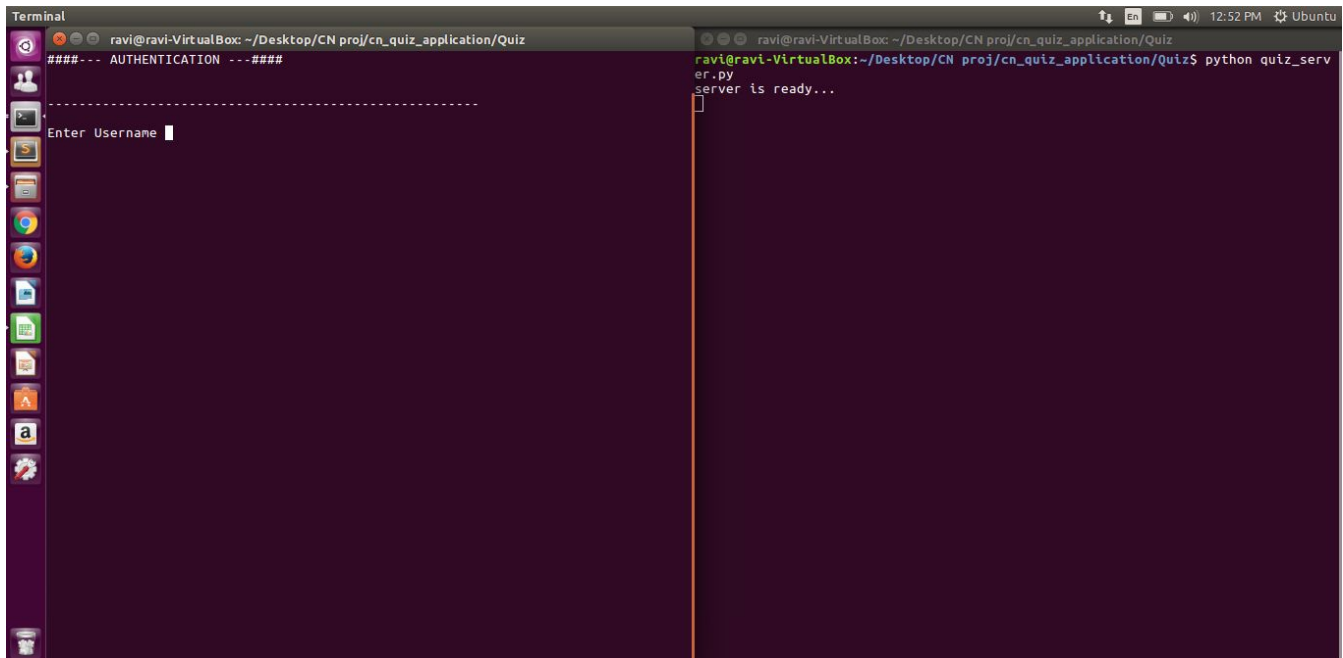
- **Authentication**
    1. Basic Username/Password Validation
    2. Repeats not allowed (Type: CommonUserError)
    3. Empty strings may not be allowed, and forced re-enter.
    4. A maximum of 4 attempts may be allowed.
    5. Erroneous passwords are immediately penalised by forced exit.
    6. Validation info is locally stored (authentication.txt), and hence offline.

- **Connection Establishment** is done by means of a double-ended TCP connection, implemented by means of a multithreaded socket program.
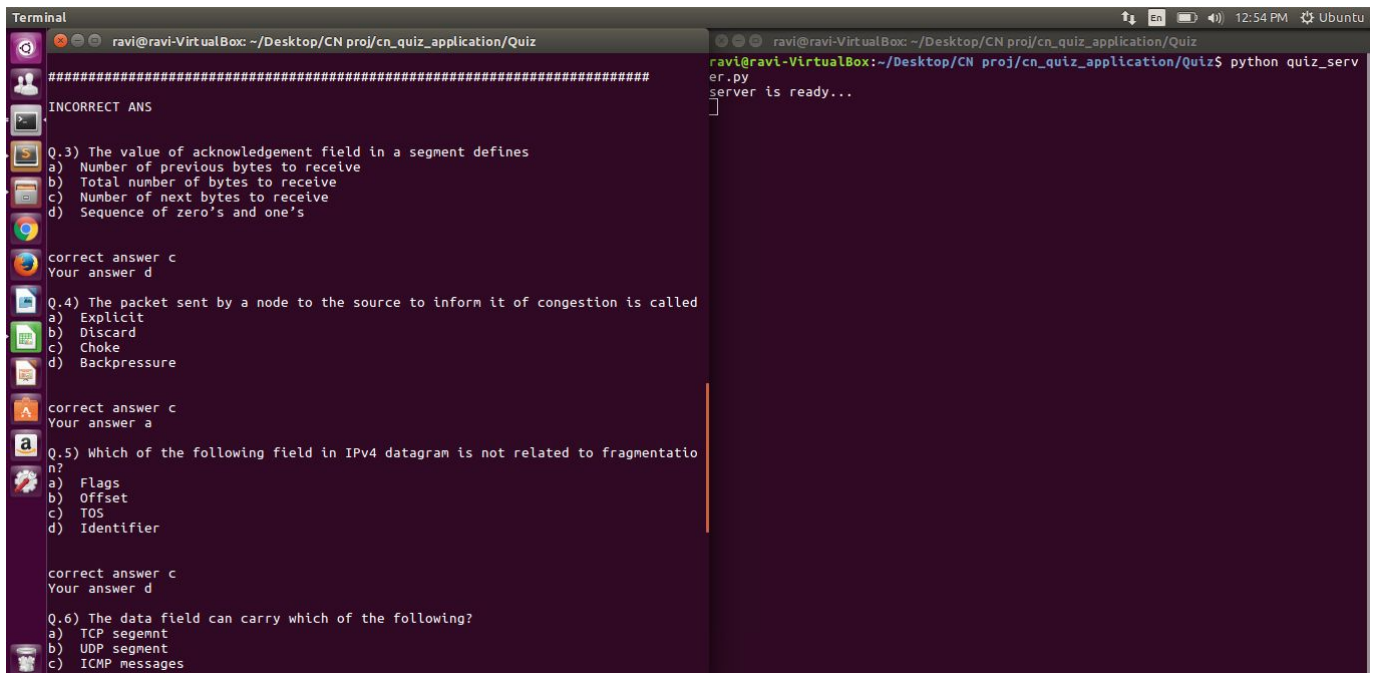
- **Quiz_Round** begins immediately on recognising validation, and user enters options amongst <a,b,c,d>. Invalid cases are taken care of, while <0,1> allow for "previous" and "next".

- **Results** are displayed on either timeout or on answering all 10 questions with valid (not necessarily correct) inputs. For this we use:
    1. correct_ans.txt : stores player wise scores (row wise) including a time stamp, which enables high score per user.
    2. correct.csv : stores game wise data (column wise) that can be backed up, and cloud-oriented further down the line.
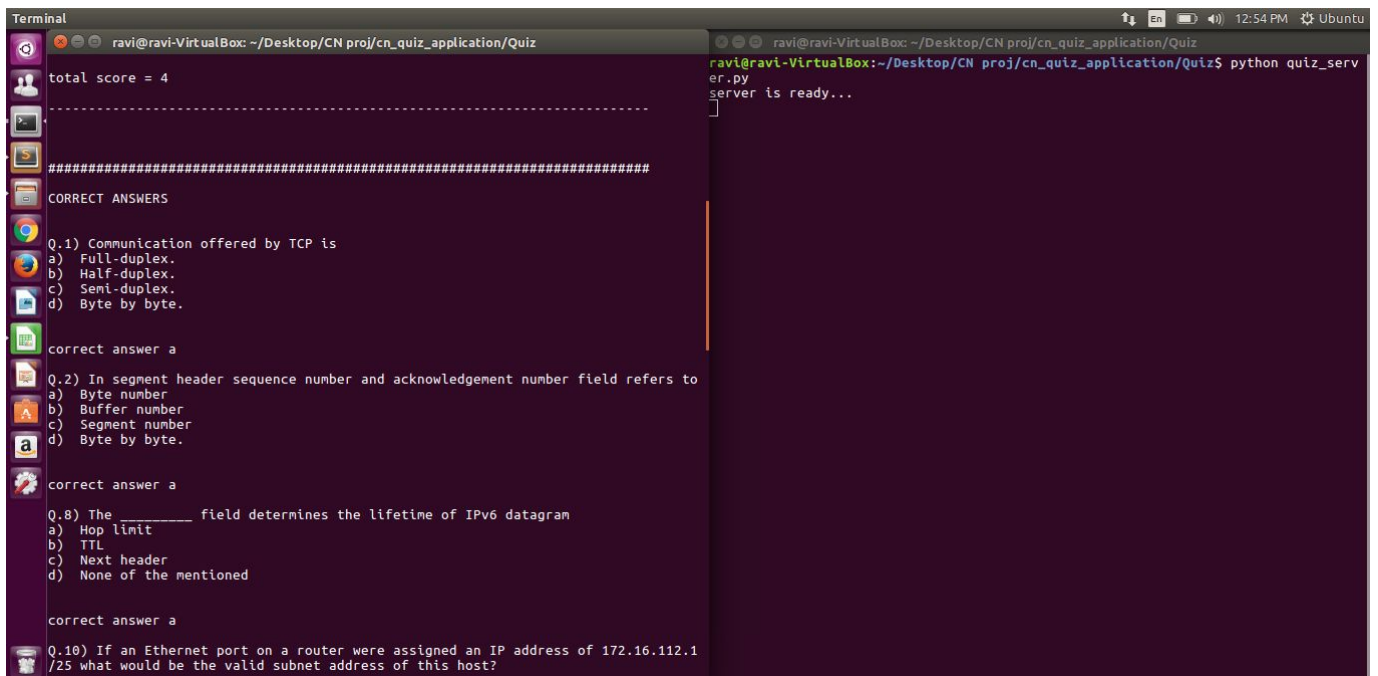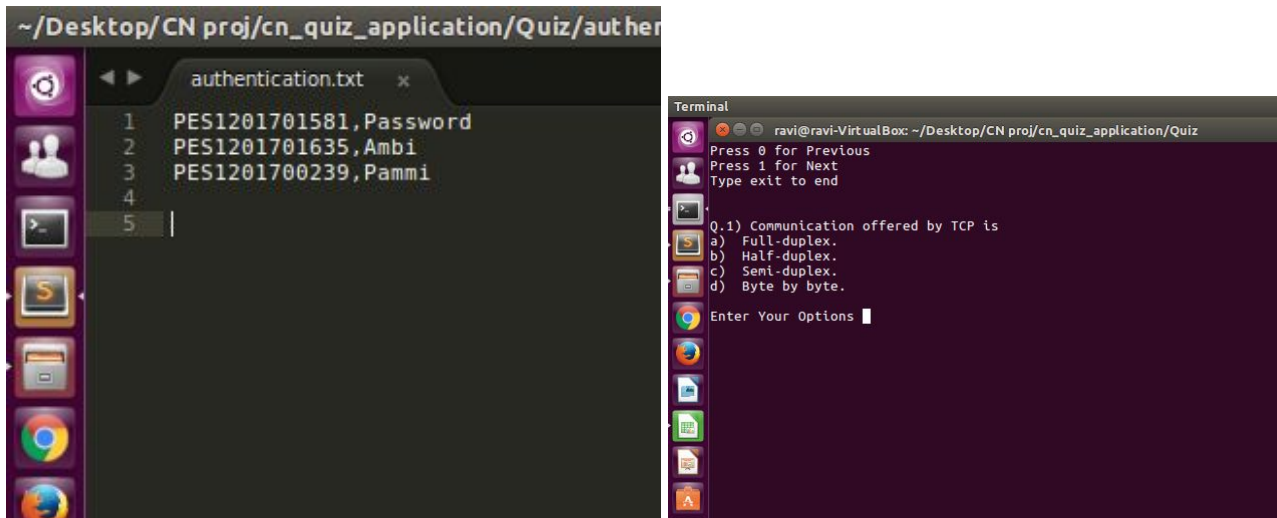- Format of results displayed includes a list of all correct and provided answers.

4. Screen Shots

~/Desktop/CN proj/cn_quiz_application/Quiz/auther

authentication.txt

```
1  PES1201701581,Password
2  PES1201701635,Ambi
3  PES1201700239,Pammi
4
5  |
```

Terminal

ravi@ravi-VirtualBox: ~/Desktop/CN proj/cn_quiz_application/Quiz

```
Press 0 for Previous
Press 1 for Next
Type exit to end


Q.1) Communication offered by TCP is
a)  Full-duplex.
b)  Half-duplex.
c)  Semi-duplex.
d)  Byte by byte.

Enter Your Options
```

Terminal

ravi@ravi-VirtualBox: ~/Desktop/CN proj/cn_quiz_application/Quiz

```
total score = 4

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########################################################################

CORRECT ANSWERS

Q.1) Communication offered by TCP is
a)  Full-duplex.
b)  Half-duplex.
c)  Semi-duplex.
d)  Byte by byte.


correct answer a

Q.2) In segment header sequence number and acknowledgement number field refers to
a)  Byte number
b)  Buffer number
c)  Segment number
d)  Byte by byte.


correct answer a

Q.8) The _____ field determines the lifetime of IPv6 datagram
a)  Hop limit
b)  TTL
c)  Next header
d)  None of the mentioned


correct answer a

Q.10) If an Ethernet port on a router were assigned an IP address of 172.16.112.1
/25 what would be the valid subnet address of this host?
```

ravi@ravi-VirtualBox: ~/Desktop/CN proj/cn_quiz_application/Quiz

```
ravi@ravi-VirtualBox:~/Desktop/CN proj/cn_quiz_application/Quiz$ python quiz_serv
er.py
server is ready...
```

5. Results

Quiz was implemented with upto 6 listening clients with no interruptions or violations. Border cases were also tested and no errors were noted. TCP connections fired well, with no errors in around 30 trials.

6. Conclusion

MasterB is now a deploy-ready tool, that can be affixed to an interface and played. The attached files are well-formatted and further improvements like high score, fastest-first rounds etc. can be conveniently carried out.