

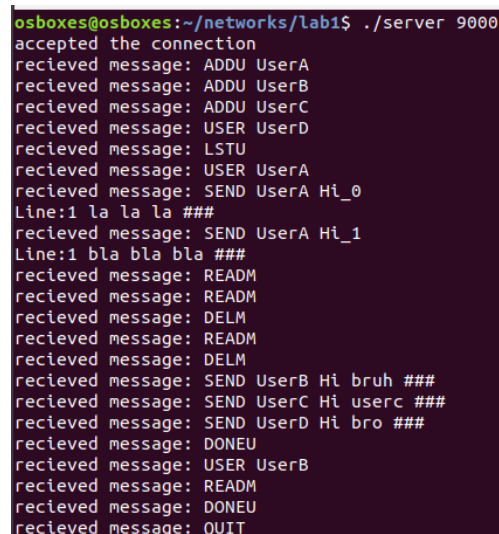
# Assignment\_1 Report

This assignment is about creating an email server and email client.

1. The client will take appropriate commands as given in the problem statement and behaves accordingly.
2. The client will say the command is invalid if we give some random command as the input which is not mentioned in the problem statement.
3. Here for sending the data from server to client or client to server we are using TCP , and first we are sending the number of bytes of the command afterwards we are sending the actual data , so that the socket otherside can receive without losing any data (this can be serious issue when the size of message is very high like  $\sim 1e5$ )
4. Remaining part of assignment is just manipulating the files and building a proper IO & network interface

Below is the image of sample sessions carried out on my Linux Machine:

1. Server and Client both running on the same

A terminal window with a dark purple background showing the output of a server program. The prompt is 'osboxes@osboxes:~/networks/lab1\$' and the command is './server 9000'. The output shows the server accepting a connection and receiving a series of messages from a client. The messages include 'ADDU' for adding users, 'LSTU' for listing users, 'USER' for user authentication, 'SEND' for sending messages, 'READM' for reading messages, 'DELM' for deleting messages, 'DONEU' for done, and 'QUIT' for ending the session. Some messages include line numbers and user identifiers.

```
osboxes@osboxes:~/networks/lab1$ ./server 9000
accepted the connection
recieved message: ADDU UserA
recieved message: ADDU UserB
recieved message: ADDU UserC
recieved message: ADDU UserD
recieved message: LSTU
recieved message: USER UserA
recieved message: SEND UserA Hi_0
Line:1 la la la ###
recieved message: SEND UserA Hi_1
Line:1 bla bla bla ###
recieved message: READM
recieved message: READM
recieved message: DELM
recieved message: READM
recieved message: DELM
recieved message: SEND UserB Hi bruh ###
recieved message: SEND UserC Hi userc ###
recieved message: SEND UserD Hi bro ###
recieved message: DONEU
recieved message: USER UserB
recieved message: READM
recieved message: DONEU
recieved message: QUIT
```

The below are the screenshots of the sample session carried out :

```
osboxes@osboxes:~/networks/lab1$ make
gcc server.c -o server
gcc client.c -o client
osboxes@osboxes:~/networks/lab1$ ./client 127.0.0.1 9000
Connection established with server
Main-Prompt>Adduser UserA
... The user UserA is added Successfully
Main-Prompt>Adduser UserB
... The user UserB is added Successfully
Main-Prompt>Adduser UserC
... The user UserC is added Successfully
Main-Prompt>SetUser UserD
... ERROR: user not available
Main-Prompt>ListUsers
Unsupported Command
Main-Prompt>Listusers
... UserA UserB UserC
Main-Prompt>SetUser UserA
... user has been set successfully
Sub-Prompt-UserA>Send UserA
Type Message: Hi_0
Line:1 la la la ###
... Message Sent Successfully
Sub-Prompt-UserA>Send UserA
Type Message: Hi_1
Line:1 bla bla bla ###
... Message Sent Successfully
Sub-Prompt-UserA>Read
... From: UserA
To: UserA
Date: Fri Mar 5 04:02:00 2021
Subject: A text message
Hi_0
Line:1 la la la ###
Sub-Prompt-UserA>Read
... From: UserA
To: UserA
Date: Fri Mar 5 04:02:22 2021
Subject: A text message
Hi_1
Line:1 bla bla bla ###
Sub-Prompt-UserA>Delete
... Message Deleted
... Message Deleted
Sub-Prompt-UserA>Send UserB
Type Message: Hi bruh ###
... Message Sent Successfully
Sub-Prompt-UserA>Send UserC
Type Message: Hi userc ###
... Message Sent Successfully
Sub-Prompt-UserA>Send UserD
Type Message: Hi bro ###
... ERROR: to user doesn't exist
Sub-Prompt-UserA>Done
Main-Prompt>SetUser UserB
... user has been set successfully
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar 5 04:03:12 2021
Subject: A text message
Hi bruh ###
Sub-Prompt-UserB>Done
Main-Prompt>Quit
... The current session with the client ends. The server closes the connection with the client.
```

The below two are the UserB.txt & UserC.txt files generated in this sample session.

```
From: UserA
To: UserB
Date: Fri Mar  5 04:03:12 2021
Subject: A text message
Hi bruh ###
```

```
From: UserA
To: UserC
Date: Fri Mar  5 04:03:21 2021
Subject: A text message
Hi userc ###
```

## 2. Client and server running on different machines.

SERVER:

```
shakti@ubuntu:~/Downloads/lab1$ ./server 8080
accepted the connection
recieved message: ADDU UserA
recieved message: ADDU UserB
recieved message: USER UserA
recieved message: DELM
recieved message: READM
recieved message: SEND UserB Hi_0 ###
recieved message: SEND UserB Hi_1 ###
recieved message: SEND UserB Hi_2 ###
recieved message: DONEU
recieved message: USER UserB
recieved message: READM
recieved message: READM
recieved message: READM
recieved message: DELM
recieved message: READM
recieved message: DELM
recieved message: READM
recieved message: READM
recieved message: DELM
recieved message: READM
recieved message: DELM
recieved message: DONEU
recieved message: QUIT
```

```
kailgiri@kailgiri-desktop:~/Downloads/lab1$ ./client 192.168.1.4 8080
Connection established with server
Main-Prompt>Adduser UserA
... The user UserA is added Successfully
Main-Prompt>Adduser UserB
... The user UserB is added Successfully
Main-Prompt>SetUser UserA
... user has been set successfully
Sub-Prompt-UserA>Delete
... No More Mail
Sub-Prompt-UserA>Read
... No More Mail
Sub-Prompt-UserA>Send UserB
Type Message: Hi_0 ###
... Message Sent Successfully
Sub-Prompt-UserA>Send UserB
Type Message: Hi_1 ###
... Message Sent Successfully
Sub-Prompt-UserA>Send UserB
Type Message: Hi_2 ###
... Message Sent Successfully
Sub-Prompt-UserA>Done
Main-Prompt>SetUser UserB
... user has been set successfully
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar 5 20:21:40 2021
Subject: A text message
Hi_0 ###
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar 5 20:21:59 2021
Subject: A text message
Hi_1 ###
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar 5 20:22:19 2021
Subject: A text message
Hi_2 ###
Sub-Prompt-UserB>Delete
... Message Deleted
```

```
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar  5 20:21:59 2021
Subject: A text message
Hi_1 ###
Sub-Prompt-UserB>Delete
... Message Deleted
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar  5 20:21:59 2021
Subject: A text message
Hi_1 ###
Sub-Prompt-UserB>Read
... From: UserA
To: UserB
Date: Fri Mar  5 20:21:59 2021
Subject: A text message
Hi_1 ###
```

```
Sub-Prompt-UserB>Delete
... Message Deleted
Sub-Prompt-UserB>Read
... No More Mail
Sub-Prompt-UserB>Delete
... No More Mail
Sub-Prompt-UserB>Done
Main-Prompt>Quit
... The current session with the client ends. The server closes the connection with the client.
kailgiri@kailgiri-desktop:~/Downloads/lab1$
```

The above is the output of the client at a remote location.

Actually I am using Virtual box Ubuntu so port forwarding was bit complicated , I searched a lot and tried things like (making connection bridged/ use NAT networking+ map host and guest ports) but couldn't succeed in that , so I have used my friend's laptops and demonstrated working of server and client running on different machines.

[illegible]

[illegible]