16 Simple Mail Transfer Protocol

16.1 Aim

To implement a subset of Simple Mail Transfer Protocol using TCP

16.2 Theory

- **SMTP** : SMTP is a protocol used for email transmission.Mail servers and other mail transfer agents use SMTP to send and recieve mail messages. SMTP is connection oriented and text based protocol in which a mail sender communicates with a mail receiver by issuing command strings and supplying necessary data over a reliable ordered data stream channel, typically a transmission control protocol(TCP).An SMTP session consists of connection initiated by the SMTP client and the responses given by the SMTP server which sends the mail to other SMTP clients.

16.3 Algorithm

Algorithm 1 Server

Open a TCP Socket
Bind the socket to IP address HOST,PORT
Listen on the socket for connections
for ;; **do**
    Accept connection
    Create a thread to manage that connection and process requests like compose mail,view mailbox etc.
    Exit the thread when the connection closes
end for

Algorithm 2 Client

Open a TCP Socket
Connect to the socket with IP address HOST,PORT
Accept a mail address as the user's mail address
for ;; **do**
    Take an input on whether the user wants to compose a mail,view his mailbox or exit the program
    Send that input to the server socket
    Depending on the input wait for a response from the server
    Process the response and print the output
end for

16.4 Code

Server

```
#!/usr/bin/env python3

import socket
import threading

HOST = '127.0.0.1'  # Standard loopback interface address (
    localhost)
PORT = 65432        # Port to listen on (non-privileged ports are >
     1023)

user_emails = {}
global_mail_box = {}


def client_callback(conn,addr):
    while True:
        option = conn.recv(1024)
        if(option!="")
            option = int(option.decode())
            if option == 1:
                to = conn.recv(1024)
                to = to.decode()
                body = conn.recv(1024)
                body = body.decode()
                email = "From: "+user_emails[addr]+"\nTo :"+to+"\
    nBody :"+body
                for key,value in user_emails.items():
                    if value == to:
                        if key in global_mail_box.keys():
                            global_mail_box[key].append(email)
            elif option == 2:
                #Send back mailbox
                conn.sendall(str(global_mail_box[addr]).encode())
            else:
                #Exit
                exit(0)
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.bind((HOST, PORT))
s.listen()
while True:

    conn, addr = s.accept()
    print('Connected by', addr)
    email = conn.recv(1024)
    user_emails[addr] = email.decode()
    global_mail_box[addr] = []
    t = threading.Thread(target=client_callback,args=(conn,addr))
    t.start()
```

Client

```
import socket
import ast

HOST = '127.0.0.1'  # The server's hostname or IP address
```

```
PORT = 65432        # The port used by the server

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.connect((HOST, PORT))
email = input("Enter preferred email :")
s.sendall(email.encode())
while True:
    print("\n_____EMAIL_____\n")
    print("\n1.Compose Mail\n2.View mailbox\n3.Exit\n")
    option = int(input("Enter choice :"))
    s.sendall(str(option).encode())
    if option == 1:
        to = input("To :")
        body = input("Body :")
        s.sendall(to.encode())
        s.sendall(body.encode())
    elif option == 2:
        mailbox = s.recv(1024)
        mailbox = ast.literal_eval(mailbox.decode())
        for mail in mailbox:
            print(mail)
    else :
        exit(0)
    print("_____\n")
```

16.5 Output

```
Enter preferred email :abc

_____EMAIL_____


1.Compose Mail
2.View mailbox
3.Exit

Enter choice :1
To :abc
Body :helloworld

_____EMAIL_____


1.Compose Mail
2.View mailbox
3.Exit
```

```
Enter choice :2

_____________________MAIL :  1 ___________________

From: abc
To :abc
Body :helloworld

_____________________________________________________


_____________________EMAIL_____________________


1.Compose Mail
2.View mailbox
3.Exit

Enter choice :1
To :abc
Body :hello

_____________________EMAIL_____________________


1.Compose Mail
2.View mailbox
3.Exit

Enter choice :2

_____________________MAIL :  1 ___________________

From: abc
To :abc
Body :helloworld

_____________________________________________________


_____________________MAIL :  2 ___________________

From: abc
To :abc
Body :hello
```

```
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________________________EMAIL_________________________


1.Compose Mail
2.View mailbox
3.Exit

Enter choice :3
```

16.6 Result

SMTP server was implemented in python3