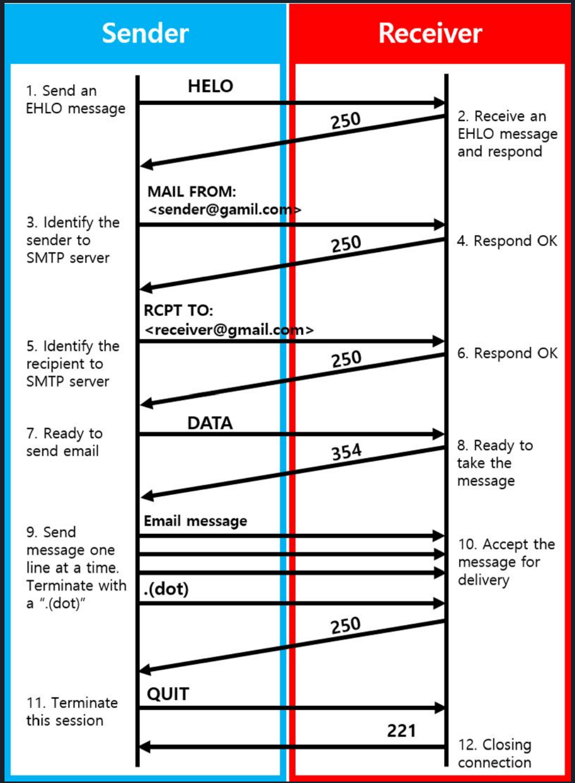
SMTP Protocol-Building Python Mail Client

Reiyyan Tariq Nizami
Alize De Matas

Simple Mail Transfer Protocol

- SMTP: Simple Mail Transfer Protocol
- A Standardized Internet Communication Protocol
- Used to send emails (Only)
- POP or IMAP for retrieval

SMTP Steps



Sender

Receiver

1. Send an EHLO message

HELO

250

2. Receive an EHLO message and respond

MAIL FROM: <sender@gamil.com>

3. Identify the sender to SMTP server

250

4. Respond OK

RCPT TO: <receiver@gmail.com>

5. Identify the recipient to SMTP server

250

6. Respond OK

DATA

7. Ready to send email

354

8. Ready to take the message

Email message

9. Send message one line at a time. Terminate with a ".(dot)"

10. Accept the message for delivery

.(dot)

250

QUIT

11. Terminate this session

221

12. Closing connection

Lee D., Kang J., Dahouda M.K., Joe I., Lee K. (2020) DTN-SMTP: A Novel Mail Transfer Protocol with Minimized Interactions for Space Internet. In: Gervasi O. et al. (eds) Computational Science and Its Applications – ICCSA 2020. ICCSA 2020. Lecture Notes in Computer Science, vol 12249. Springer, Cham. https://doi.org/10.1007/978-3-030-58799-4_24

Our Approach

- Two Options
  - Use Sockets
  - Use SMTP Library
- We chose Sockets
- Using Gmail SMTP Server

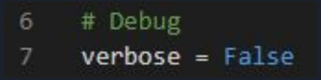
Gmail Settings

- SMTP username: Your Gmail address
- SMTP password: Your Gmail password
- SMTP server address: smtp.gmail.com
- Gmail SMTP port (TLS): 587
- SMTP port (SSL): 465
- SMTP TLS/SSL required: yes
- Enable “Less Secure Apps” from Google Settings

https://www.androidauthority.com/gmail-smtp-settings-801100/

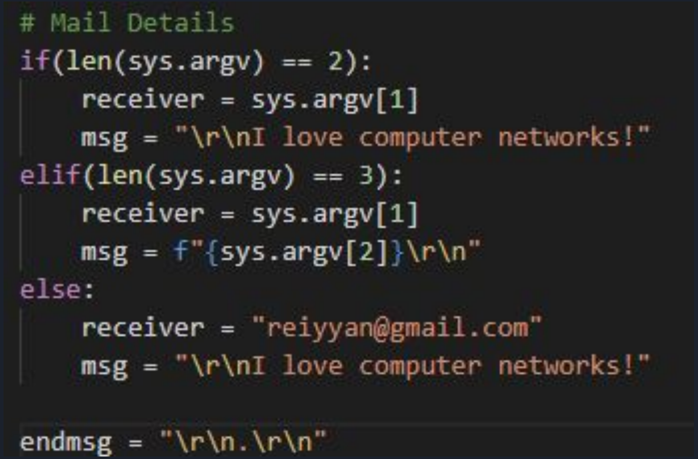
Step 1 & 2

- Setup a debugger flag



```
# Debug
verbose = False
```

- Created optional overridable inputs from system arguments

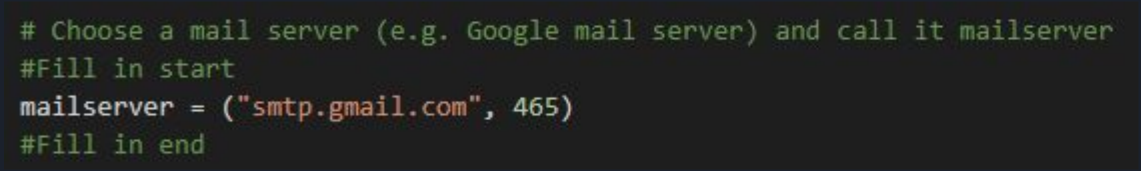


```
# Mail Details
if(len(sys.argv) == 2):
    receiver = sys.argv[1]
    msg = "\r\nI love computer networks!"
elif(len(sys.argv) == 3):
    receiver = sys.argv[1]
    msg = f"{sys.argv[2]}\r\n"
else:
    receiver = "reiyyan@gmail.com"
    msg = "\r\nI love computer networks!"

endmsg = "\r\n.\r\n"
```

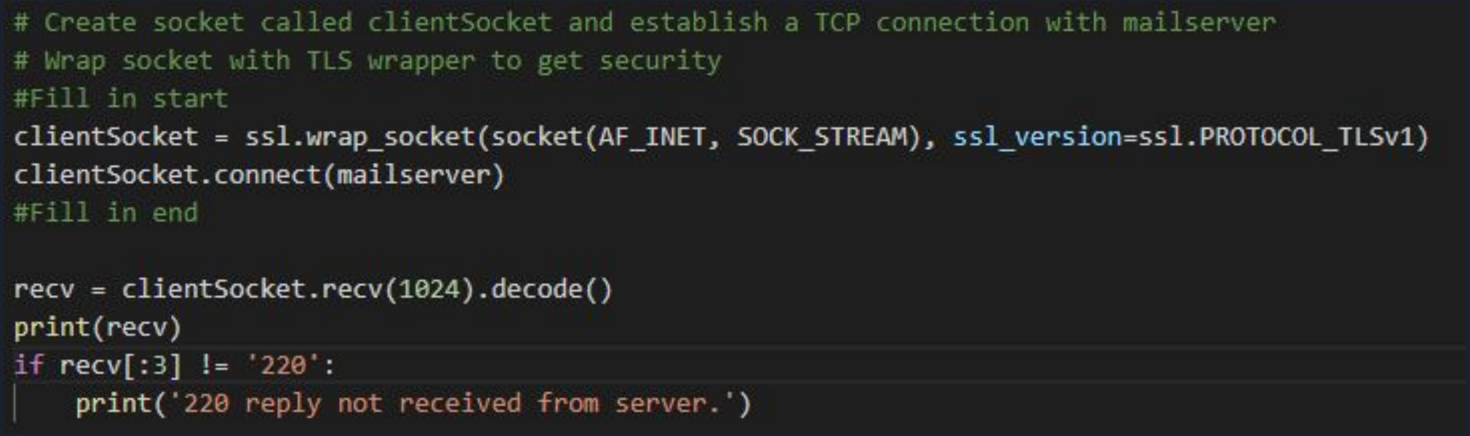
Step 3 & 4

- Setup details for our Gmail Mail Server using SSL Port



```
# Choose a mail server (e.g. Google mail server) and call it mailserver
#Fill in start
mailserver = ("smtp.gmail.com", 465)
#Fill in end
```

- Wrap our socket in SSL Wrapper and try to connect

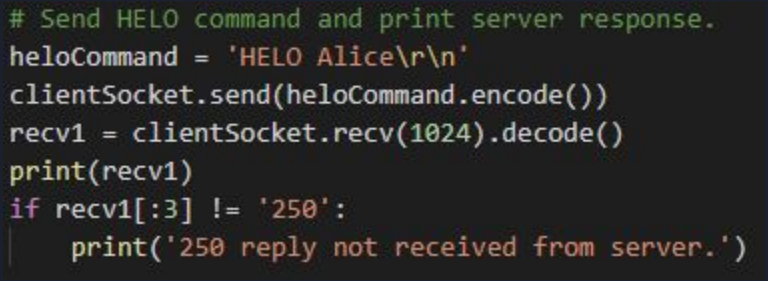


```
# Create socket called clientSocket and establish a TCP connection with mailserver
# Wrap socket with TLS wrapper to get security
#Fill in start
clientSocket = ssl.wrap_socket(socket(AF_INET, SOCK_STREAM), ssl_version=ssl.PROTOCOL_TLSv1)
clientSocket.connect(mailserver)
#Fill in end

recv = clientSocket.recv(1024).decode()
print(recv)
if recv[:3] != '220':
    print('220 reply not received from server.')
```

Step 5

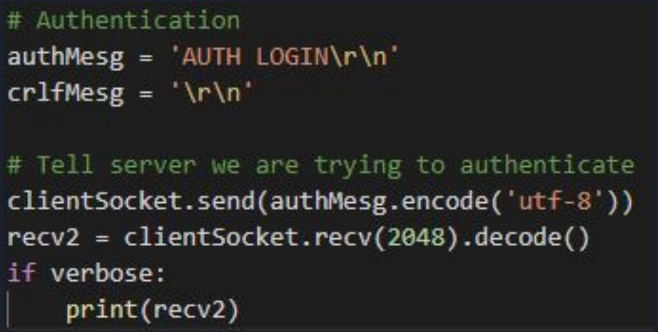
- Send HELO Message



```
# Send HELO command and print server response.
heloCommand = 'HELO Alice\r\n'
clientSocket.send(heloCommand.encode())
recv1 = clientSocket.recv(1024).decode()
print(recv1)
if recv1[:3] != '250':
    print('250 reply not received from server.')
```

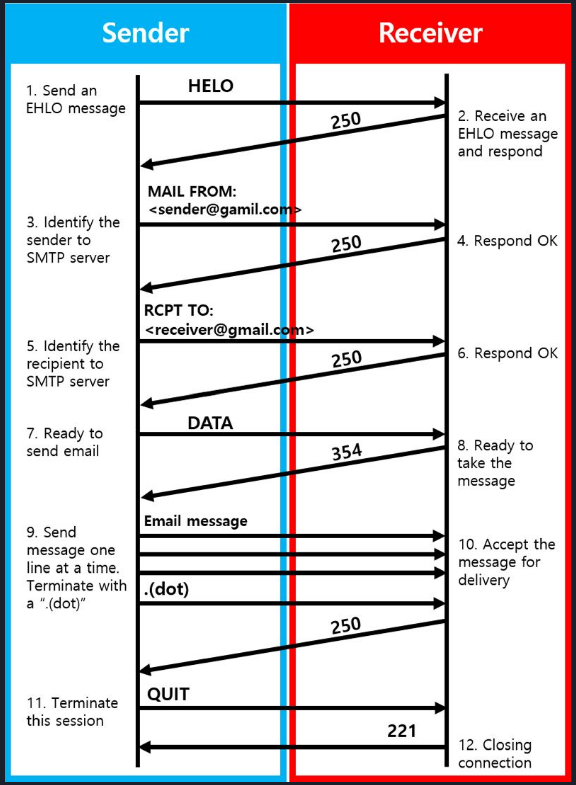
And Repeat!

- Repeat for all messages



```
# Authentication
authMesg = 'AUTH LOGIN\r\n'
crlfMesg = '\r\n'

# Tell server we are trying to authenticate
clientSocket.send(authMesg.encode('utf-8'))
recv2 = clientSocket.recv(2048).decode()
if verbose:
    print(recv2)
```



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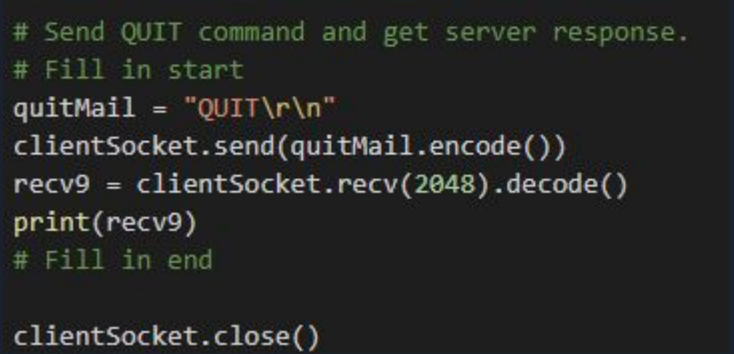
Final Step

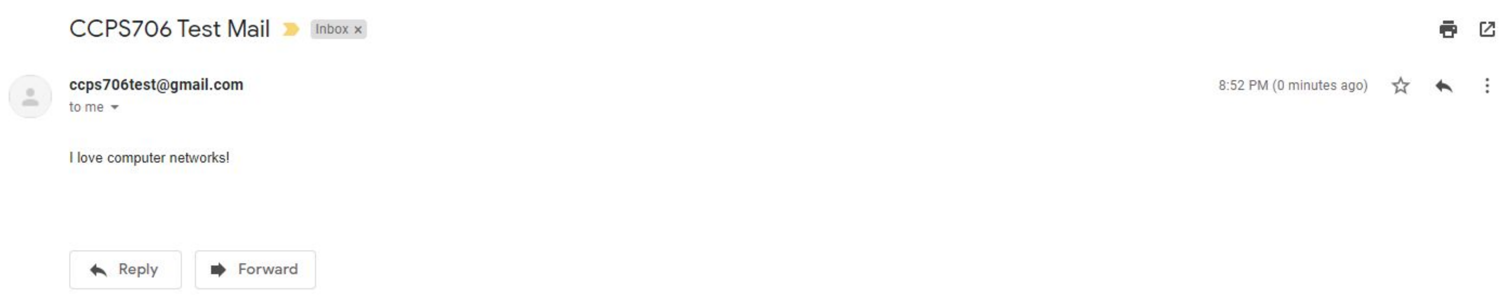
- Say Goodbye to the Server :)



```
# Send QUIT command and get server response.
# Fill in start
quitMail = "QUIT\r\n"
clientSocket.send(quitMail.encode())
recv9 = clientSocket.recv(2048).decode()
print(recv9)
# Fill in end

clientSocket.close()
```

Final Result!



CCPS706 Test Mail

ccps706test@gmail.com

to me

8:52 PM (0 minutes ago)

I love computer networks!