

Network Programming in Python

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Lecture 9





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Email Handling

Lecture 9

Prepared by
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Lecture

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RECAP: LECTURE 8

- Email Messages.
- E-mail Construction in Python.

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LECTURE MAIN POINTS

- Email Protocols.
- Sending Emails.
- Securing Emails.
- Retrieving Emails.

EMAIL PROTOCOLS

- **Simple Mail Transfer Protocol (SMTP):** It can only be used by the MTA for sending e-mails from one host to another.
- **Post Office Protocol 3 (POP3):** It provides a simple and standardized way for the users to gain access to the mailboxes and then download the messages.
- **Internet Message Access Protocol (IMAP):** It provides a simple and standardized way for accessing your e-mail. It requires only a small data transfer; this scheme works well even over a slow connection.

POP3 VS. IMAP

- With IMAP:
 - All your mail stays on the server in multiple folders.
 - You can connect to any computer and see all your mail and mail folders.
 - If you have a dedicated connection to the Internet or you like to check your mail from various locations.
- With POP3:
 - You only have one folder, the Inbox folder.
 - When you open your mailbox, new mail is moved from the host server and saved on your computer.

EMAIL MODULES

- Python has three modules:
 - **smtplib** for SMTP protocol.
 - **poplib** for POP3 protocol.
 - **imaplib** for IMAP protocol.
- Each module has options for transmitting the information securely by using the Transport Layer Security (TLS) protocol.
- Each protocol also uses some form of authentication for ensuring the confidentiality of the data.

SMTPLIB METHODS

- **SMTP():** returns an object of SMTP class.
- **ehlo():** identifies the client to the server. An extended hello message will be sent by the client to the server.
- **starttls():** starts unsecured SMTP connection with encryption for the traffic.
- **login():** takes username and password arguments to login to SMTP server.

SMTPLIB METHODS

Cont'd

- **sendmail()**: performs an entire mail transaction.
- **quit()**: terminates SMTP session.

LOCAL SMTP SERVER

- Python comes with simple `smtpd` module which allows you to run a simple SMTP server easily.
- When doing email debugging, `smtpd` has extreme useful `DebuggingServer` feature making it dump all relayed email to stdout instead of relaying them forward for email delivery.
- Running a local debugging server means it's not necessary to deal with encryption of messages or use credentials to log in to an email server.

LOCAL SMTP SERVER

Cont'd

- Code:

```
import smtplib
session = smtplib.SMTP('localhost', 1025)
subject = 'Test'
body = "A test message to check the email sending using SMTP"
msg = f"Subject: {subject} \n\n{body}"

session.sendmail("hamada@esu.ae.ac", "hamada_mbsoft@yahoo.com", msg)
```

LOCAL SMTP SERVER

Cont'd

```
drhamada@drhamada-Latitude-E6520: ~  
File Edit View Search Terminal Help  
drhamada@drhamada-Latitude-E6520:~$ python3 -m smtpd -c DebuggingServer -n local  
host:1025  
/usr/lib/python3.10/smtpd.py:105: DeprecationWarning: The asyncore module is dep  
recated and will be removed in Python 3.12. The recommended replacement is async  
io  
    import asyncore  
/usr/lib/python3.10/smtpd.py:106: DeprecationWarning: The asynchat module is dep  
recated and will be removed in Python 3.12. The recommended replacement is async  
io  
    import asynchat  
----- MESSAGE FOLLOWS -----  
b'Subject: Test '  
b'X-Peer: 127.0.0.1'  
b''  
b'A test message to check the email sending using STMP'  
----- END MESSAGE -----
```

EMAIL CLIENT APP

- Code:

```
import smtplib, imghdr
from email.message import EmailMessage
from email.utils import make_msgid
sender = input("Enter sender email address: ")
recipient = input("Enter recipient email address: ")
msg = EmailMessage()
msg['subject'] = 'A new message with attachment'
msg['from'] = sender
msg['to'] = recipient
```

EMAIL CLIENT APP

Cont'd

- Code:

```
msg['Message-ID'] = make_msgid()
msg.set_content("Image attached ...")
with open('image.jpg', 'rb') as f:
    file = f.read()
    fileType = imghdr.what(f.name)
    print(fileType)
    fileName = f.name
msg.add_attachment(file, maintype='image', subtype=fileType, filename
= fileName)
```

EMAIL CLIENT APP

Cont'd

- Code:

Incoming Mail (IMAP) Server

imap.gmail.com Requires SSL: Yes Port: 993

Outgoing Mail (SMTP) Server

smtp.gmail.com Requires SSL: Yes Requires
TLS: Yes (if available) Requires Authentication:
Yes Port for SSL: 465 Port for TLS/STARTTLS:
587

```
mailserver = 'smtp.gmail.com'
mailport = 587
session = smtplib.SMTP(mailserver, mailport)
session.ehlo()
session.sendmail(sender, recipient, msg.as_string())
print(f"You email is sent to {recipient}.")
session.quit()
```

EMAIL CLIENT APP

Cont'd

```
drhamada@drhamada-Latitude-E6520:/mnt/3126DF085226C5FC$ /bin/python3 /mnt/3126DF085226C5FC/Codes/server.py
Enter sender email address: hamada@esu.ac.ae
Enter recipient email address: hamada_mbsoft@yahoo.com
Enter your email subject: test
Enter your email message. Press Enter when finished. test
Traceback (most recent call last):
  File "/mnt/3126DF085226C5FC/Codes/server.py", line 31, in <module>
    send_email(sender, recipient)
  File "/mnt/3126DF085226C5FC/Codes/server.py", line 24, in send_email
    session.sendmail(sender, recipient, msg.as_string())
  File "/usr/lib/python3.10/smtplib.py", line 887, in sendmail
    raise SMTPSenderRefused(code, resp, from_addr)
smtplib.SMTPSenderRefused: (530, b'5.7.0 Must issue a STARTTLS command first.
.47 - gsmtp', 'hamada@esu.ac.ae')
```

LESS SECURE APPS

- An App Password gives permission to a non-Google app to access Google's SMTP server.
- App Passwords can only be used with accounts that have 2-step verification turned on.

To help keep your account secure, from **May 30, 2022**, Google no longer supports the use of third-party apps or devices which ask you to sign in to your Google Account using only your username and password.

Important: This deadline does not apply to Google Workspace or Google Cloud Identity customers. The enforcement date for these customers will be announced on the Workspace blog at a later date.

For more information, continue to read.

- Visit: <https://support.google.com/accounts/answer/6010255?hl=en>

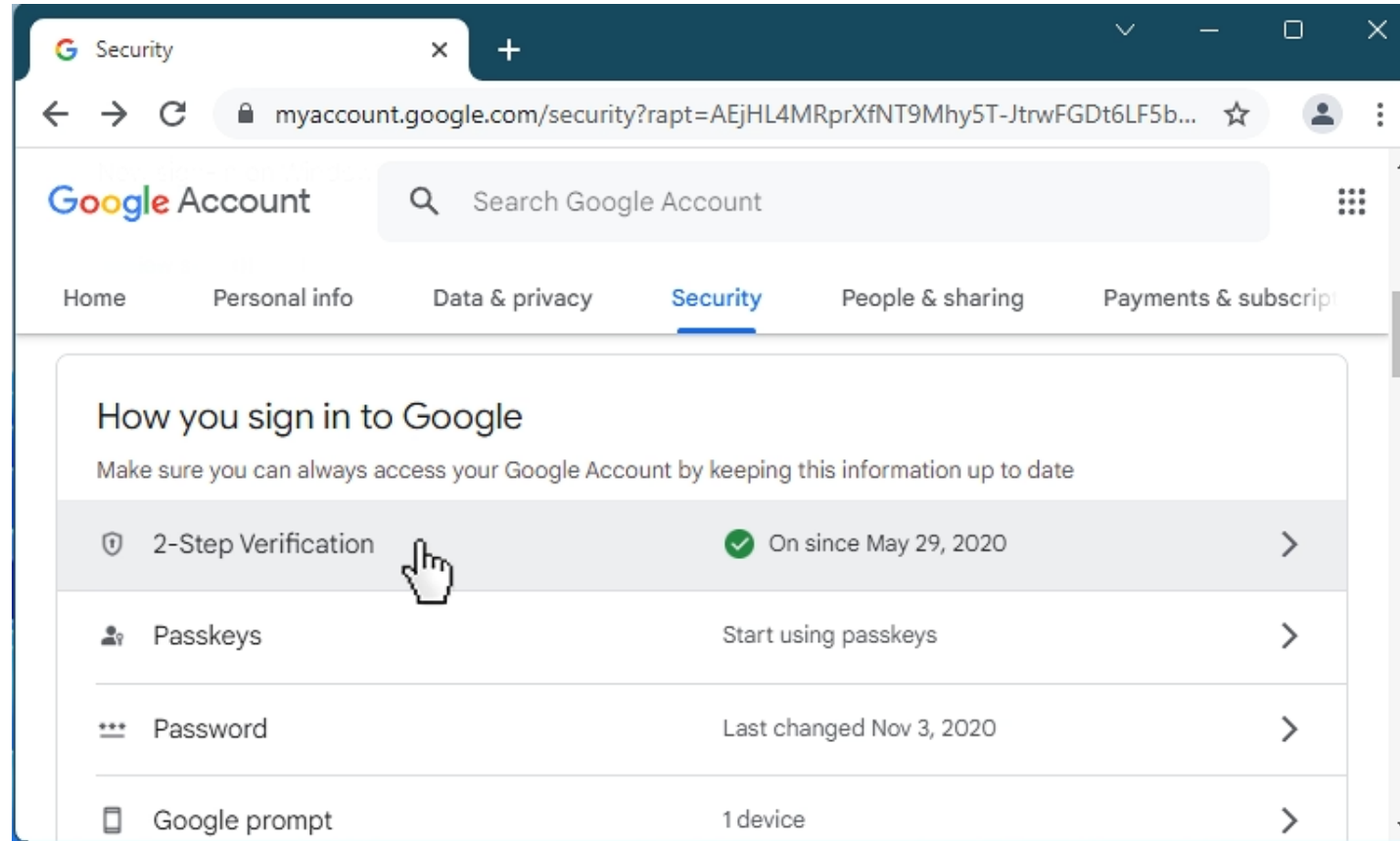
LESS SECURE APPS

Cont'd

- To use Google's SMTP server for sending email with Automation Workshop, follow the very simple set-up process:
 - Open Google Account Security settings.
 - Select 2-Step Verification option from the How to sign in to Google section.
 - Select App passwords option (at the very bottom of the page).
 - Click on the Select App field, and choose the Other (Custom name) option.
 - Enter an easily recognizable name, and click the Generate button.
 - Write down the generated App password.
 - From now on, for the SMTP settings use this 16-character password (without spaces) along with your complete Gmail address.

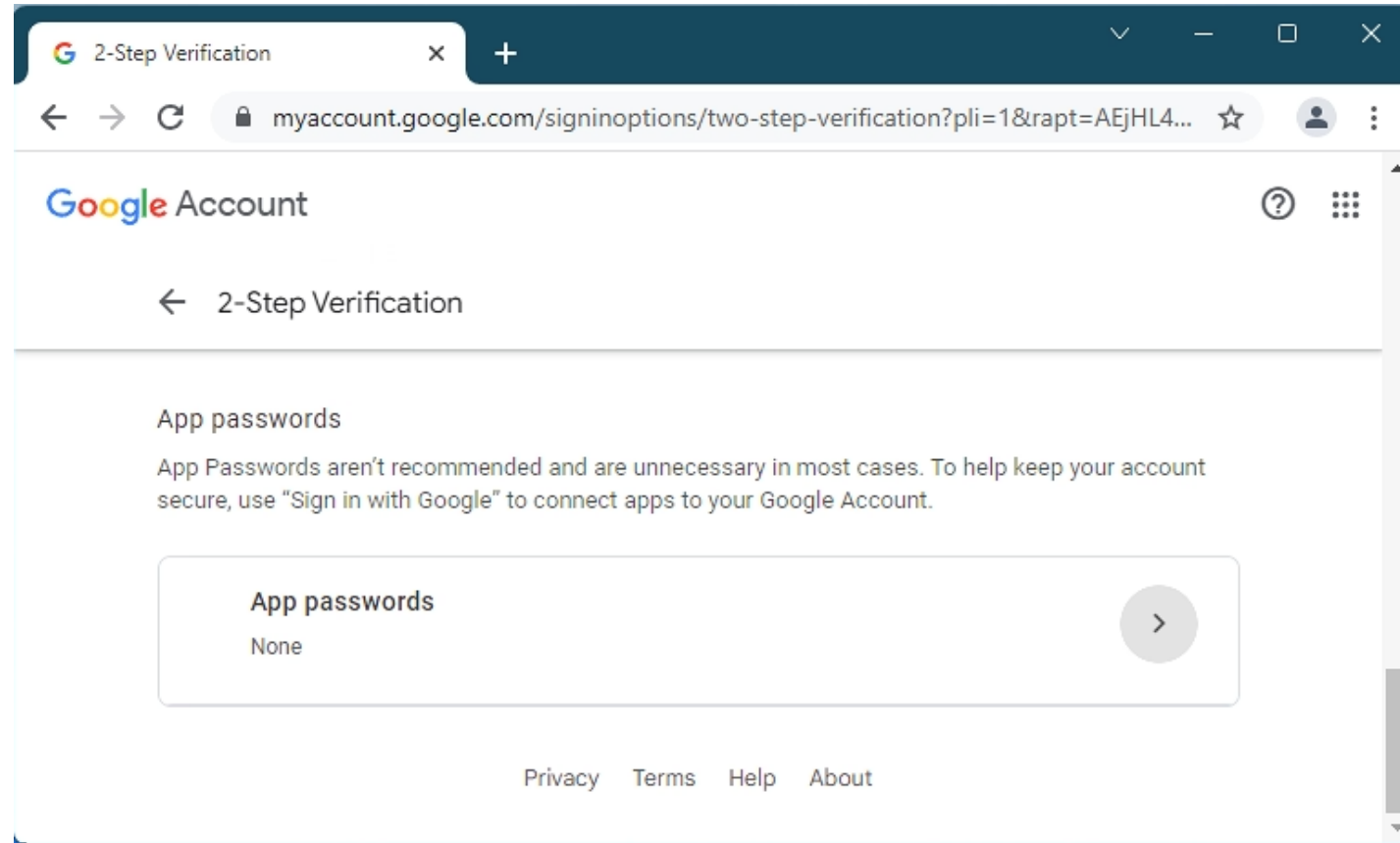
LESS SECURE APPS

Cont'd



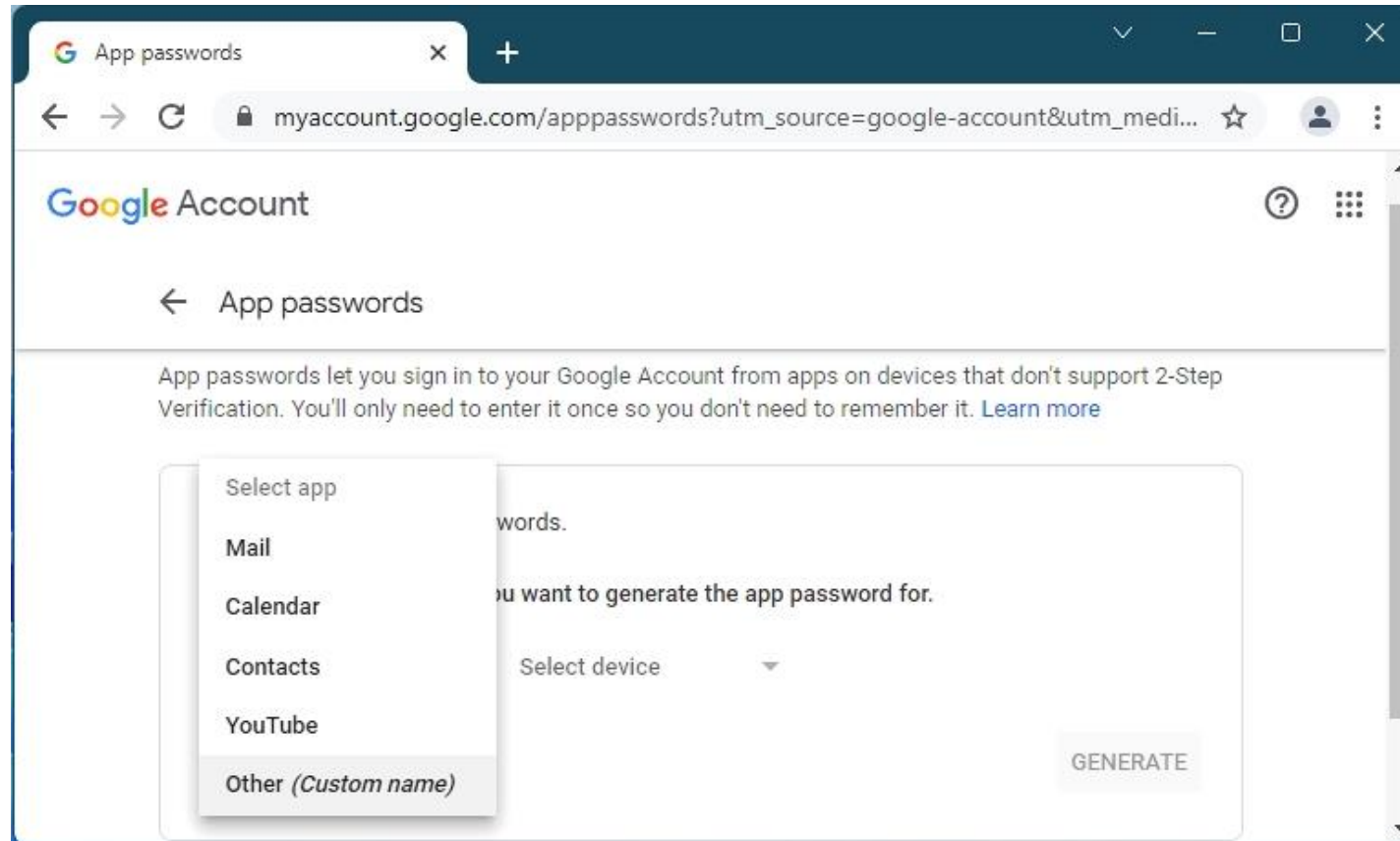
LESS SECURE APPS

Cont'd



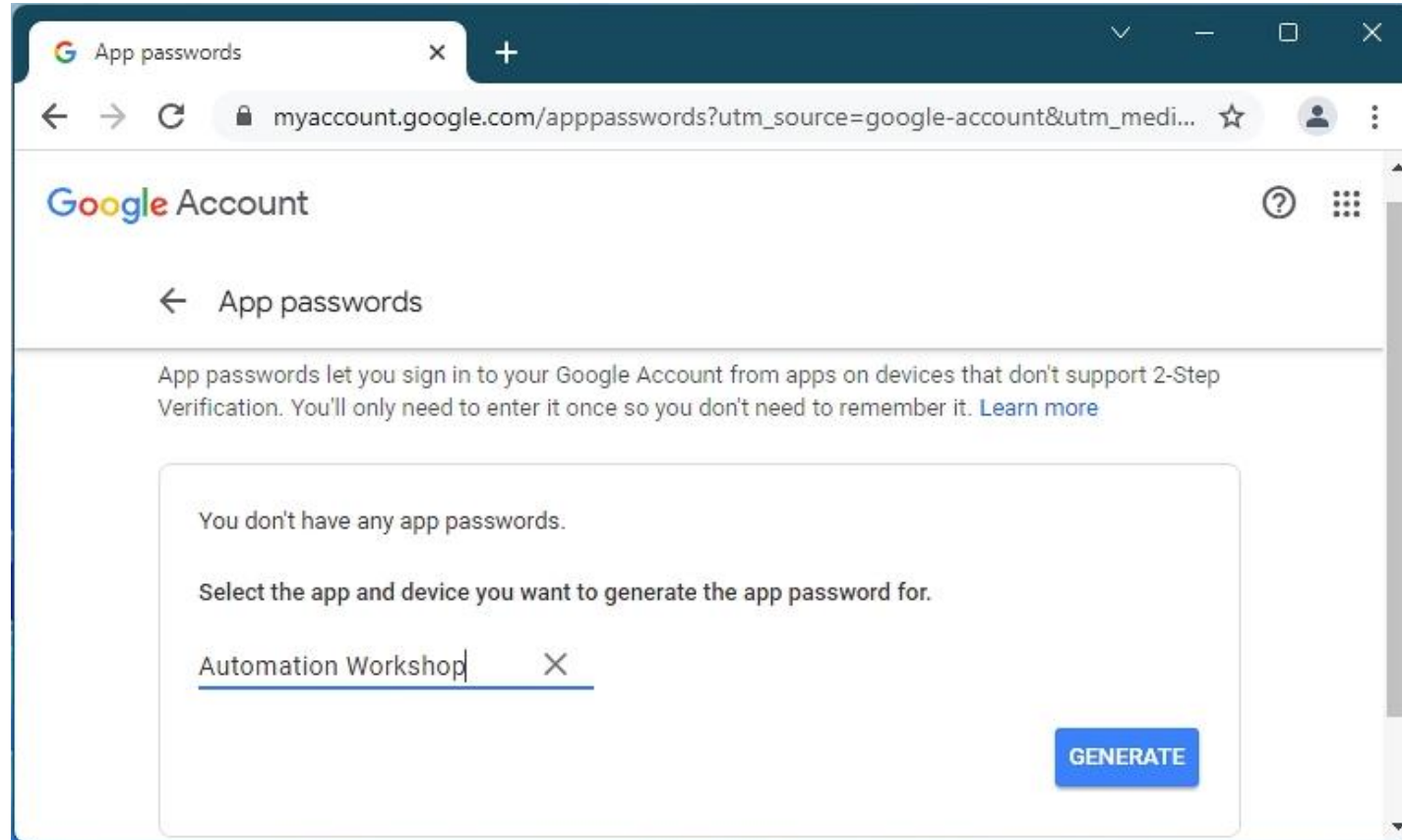
LESS SECURE APPS

Cont'd



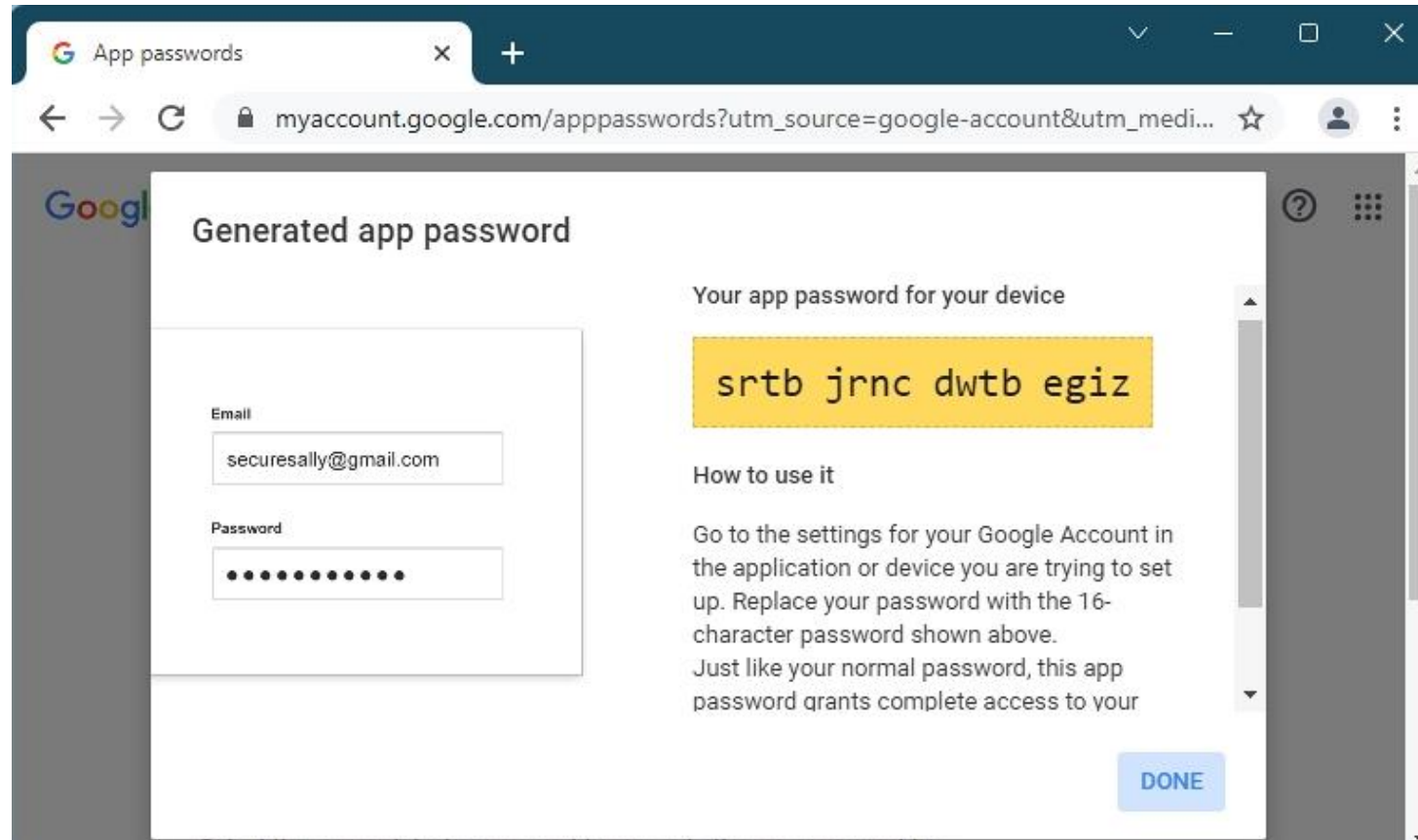
LESS SECURE APPS

Cont'd



LESS SECURE APPS

Cont'd



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EMAIL CLIENT APP

- Code:

```
import getpass
session = smtplib.SMTP(mailserver, mailport)
session.ehlo()
session.starttls()
session.ehlo()      # re-identify themselves as encrypted connection
# "tgrjnuccuhsjjzji"
password = getpass.getpass(prompt="Enter you email password: ")
session.login(sender, password)
```

POP3 METHODS

- **POP3()**: creates a POP3 object.
- **POP3_SSL()**: creates a secured POP3 object.
- **user()**: sets the username to get the mailbox.
- **pass_()**: sets the password for the username.
- **stat()**: returns mailbox status in a tuple format (message count, mailbox size).

POP3 METHODS

Cont'd

- **list():**
 - Retrieves a list of messages.
 - Returns a tuple of:
(responsecode, msglist, sizeofresponse)
- **retr():**
 - Retrieves a single message.
 - Returns a tuple of:
(responsecode, lines, size)
 - Marks the Email as read.

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EMAIL ACCESS CLIENT APP

- Code:

```
import getpass, poplib
popserver = 'pop.gmail.com'
popport = 995
username = input("Enter your email user ID: ")
# "tgrjnucchuhsjjzji"
password = getpass.getpass(prompt="Enter your email password: ")
mailbox = poplib.POP3_SSL(popserver , popport)
mailbox.user(username)
mailbox.pass (password)
```

EMAIL ACCESS CLIENT APP

Cont'd

- Code:

```
num_messages = len(mailbox.list()[1])  
print(f"Total emails: {num_messages}")  
print("Getting last message")  
for msg in mailbox.retr(num_messages)[1]:  
    print(msg)  
mailbox.quit()
```

IMAP METHODS

- **IMAP4_SSL():** creates a secure IMAP object.
- **login():** logs in to the server.
- **list():**
 - Lists the folders present in mailbox.
 - Returns a tuple of:
(**'Ok'**, [**list**])

IMAP METHODS

Cont'd

- **select():**
 - Selects a specific mail folder to get messages from it.
 - Returns a tuple of:
(`'Ok'`, [list of one item specify number of emails in this folder])
- **fetch():**
 - Returns a particular message.
 - The 1st argument is the number of message, the second is the parsing format.
 - Returns a tuple of:
(`'Ok'`, [list of message header]).

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EMAIL ACCESS CLIENT APP

- Code:

```
import imaplib, email
imapServer = 'imap.gmail.com'
sender = 'hamada.mbsoft@gmail.com'
password = 'tgrjnuccuhsjjzji'
conn = imaplib.IMAP4_SSL(imapServer)
conn.login(sender, password)
print(conn.list())
print(conn.select('INBOX'))
```

EMAIL ACCESS CLIENT APP

Cont'd

- Code:

```
conn.select('INBOX')
typ, data = conn.fetch(b'6433','(RFC822)')
print(data[0])
print(data[0][1])
# convert data into email message object
msg = email.message_from_string(data[0][1].decode('utf-8'))
print("To:", msg['to'])
print("From:", msg['from'])
```

EMAIL ACCESS CLIENT APP

Cont'd

- Code:

```
print("Subject: ", msg['subject'])
# use walk() to get message parts and check its content type
for p in msg.walk():
    if p.get_content_type() == 'text/plain':
        body = p.get_payload()
print(body)
```

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QUESTIONS FOR ONLINE DISCUSSION

- Write a program to create your own Mail Client and use it to send e-mail with attachment to "hamada@esu.ac.ae".



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Thank You

