UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SEMESTER 1 SESSION 2022/2023

SMJE4383- ADVANCED PROGRAMMING

ASSIGNMENT 1

AUTOMATE THE CSV GENERATION PROCESS USING ROBOTIC PROCESS AUTOMATION (RPA) & PYTHON

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Section : 01 Lecturer's name: Assoc. Prof. Ir.Dr. Zool Hilmi Bin Ismail Github link: https://github.com/WanDz03/SMJE4383/tree/main/Assignment_1	

1.Introduction

The manual data entering and processing involved in creating CSV (Comma-Separated Values) files can be time-consuming and repetitious. However, there is now a chance to automate this procedure and save significant time thanks to the development of robotic process automation (RPA) technology.

RPA is a sort of software that automates repetitive, boring processes so that staff members may concentrate on more important duties. Many different operations, including data input, data processing, and report production, may be automated using it. Organizations may optimise their CSV manipulation process for increased productivity, accuracy, and cost savings by integrating RPA with the capabilities of Python programming. In this study, we'll examine the procedures needed to use Python and RPA to automate the CSV-generating process.

OBJECTIVES

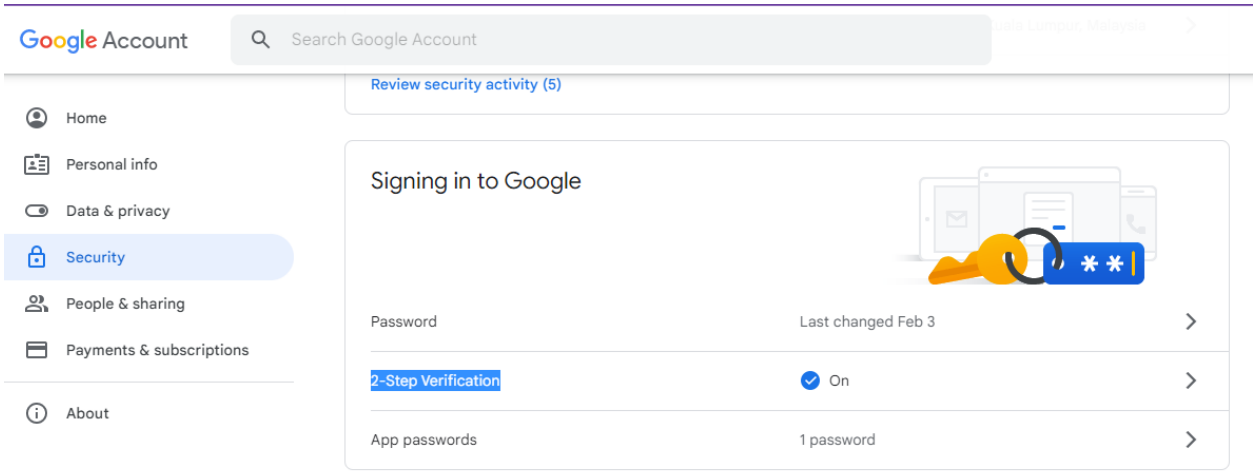
- To create a sample CSV file using CSV pad software
- To create a Python script that can create and import data into a new CSV file
- To give notification of the completed process to the email

2.METHODOLOGY

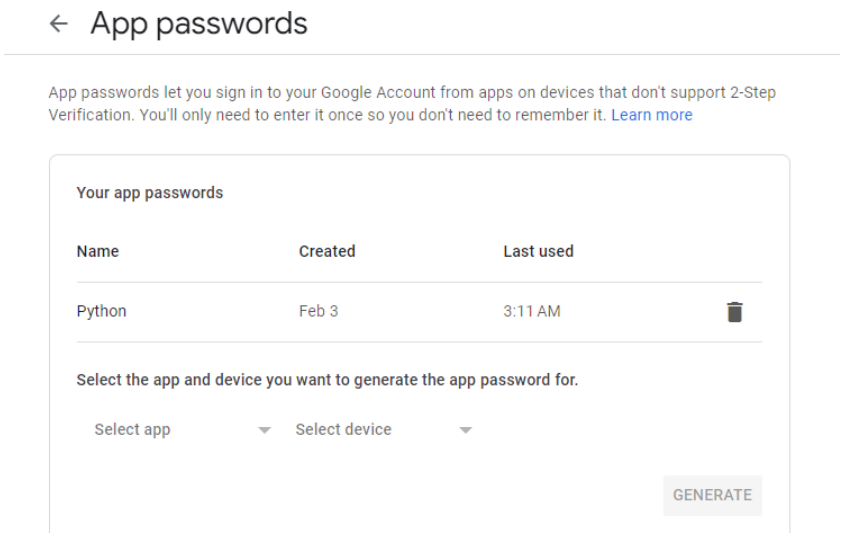
1. Firstly, we create a sample CSV file as the primary data store.
2. A new CSV file was created and the data from the primary CSV file is import and export into the new file by using Python.
3. A notification is sent to the dummy email. For this assignment the Dummy email is firdauswan645@gmail.com.

When the procedure is done, an email notification will be issued. Python takes extra steps to send emails since the sender's email requires an app password. The procedures to generate the app password are as follows:

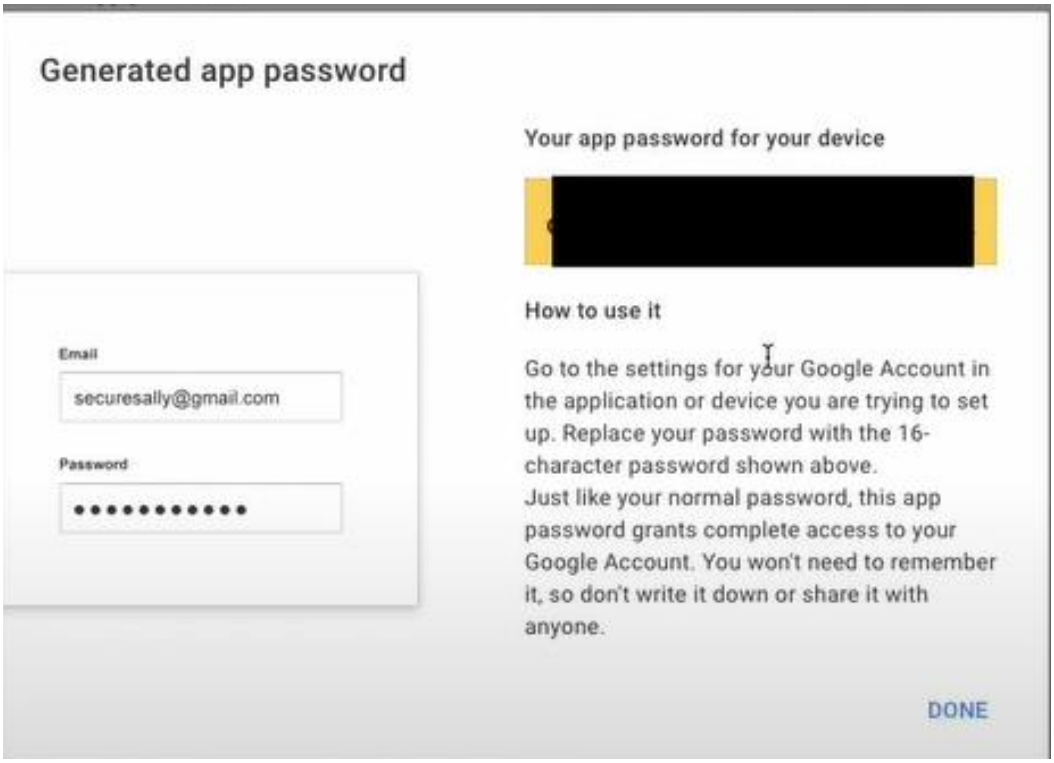
1. Go to Google Account > Security > Enable the 2-step Verification



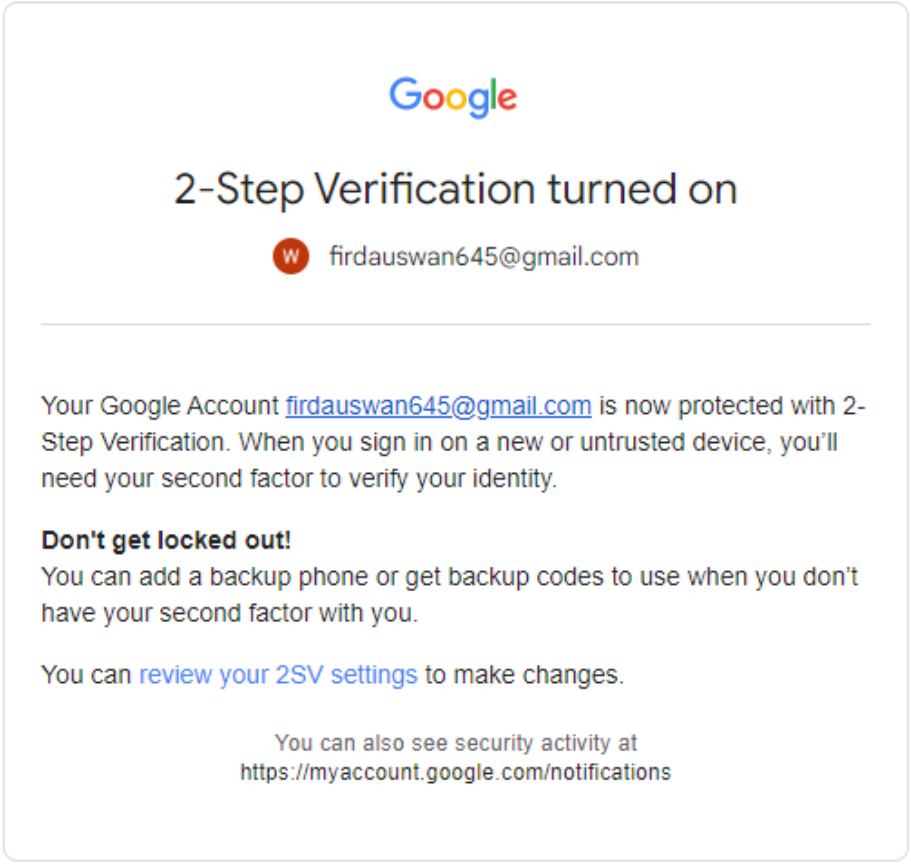
2. Go to app passwords > Select app > Other (Custom name) > write Python > click Generate.



3. 16 Character password is automatically generated. This password is needed for the sender's email to send email using Python.



4. Get the notification regarding activation of 2-Step Verification



Google

2-Step Verification turned on

firdauswan645@gmail.com

Your Google Account firdauswan645@gmail.com is now protected with 2-Step Verification. When you sign in on a new or untrusted device, you'll need your second factor to verify your identity.

Don't get locked out!
You can add a backup phone or get backup codes to use when you don't have your second factor with you.

You can review your 2SV settings to make changes.

You can also see security activity at
https://myaccount.google.com/notifications

You received this email to let you know about important changes to your Google Account and services.
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5. Now the 16 Character password can be used as an email password in the Python code.

3.RESULT AND DISCUSSION

The picture below shows the output of the program. The first output is a new CSV file is created and ‘written’ with the same data as the old CSV file. The original file is named ‘nam_height.csv’ while the new file saves the copy data of the original file is name as ‘file2’csv’. The second output can be seen in the notification in the dummy email. A notification will be sent after the program successfully executes the process of creating and copying data.

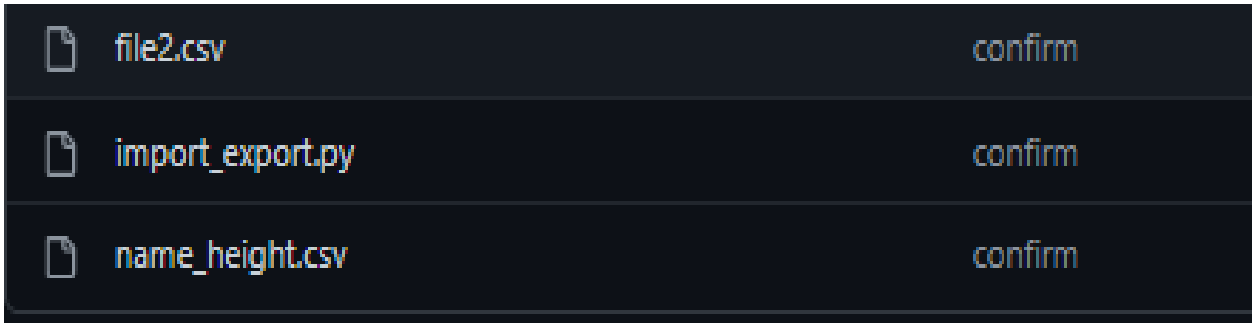

Figure 3.1 The First output (Create and copying data file)

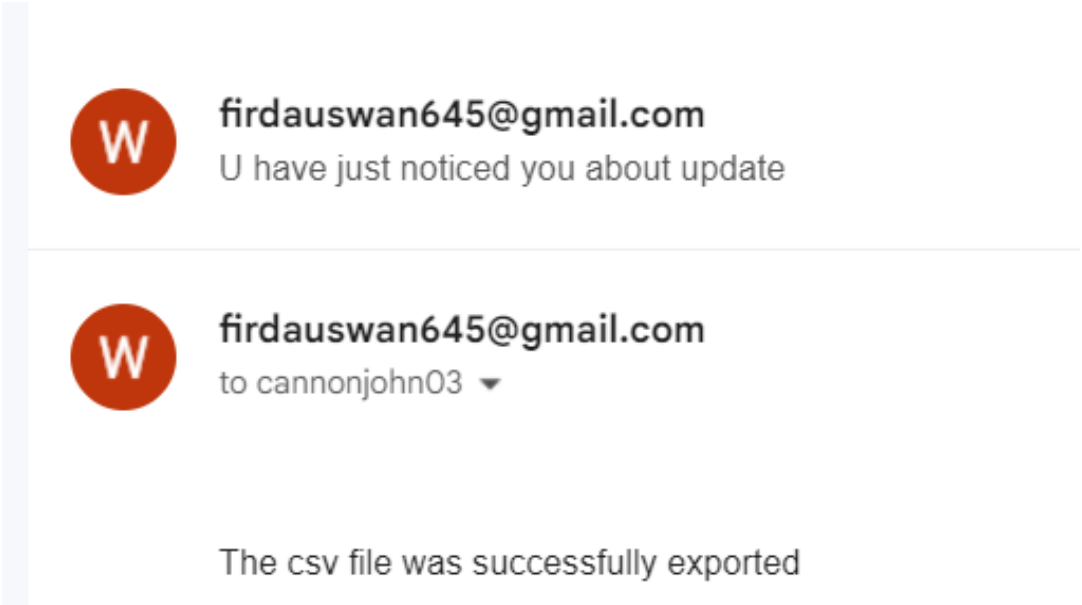

Figure 3.2 The second output (Notification sent to the dummy email)

4.Code

```python
import pandas as pd
import smtplib
#import os
import ssl
from email.message import EmailMessage

file_1 = pd.read_csv('/home/wan_dz/github/SMJE4383/Assignment_1/name_height.csv')
print(file_1)

file_1.to_csv("file2.csv")

```

This part of the code is used to create and copy the data from the ‘name_height.csv’ file into the created file,’file2.csv’ file. We using the Pandas library as the tool to run the process. Pandas library is used to transfer data from one file to another because it provides easy-to-use data structures and data analysis tools for handling and manipulating numerical tables and time series data. It can read a variety of file formats such as CSV, Excel, SQL, JSON, etc., and can write to many of these formats as well. Pandas also offer a convenient and efficient way to manipulate and clean the data, making it a popular choice for data analysis and preprocessing tasks

```
email_user = 'firdauswan645@gmail.com'
email_password = 'tykyupcfcxpptfko'
email_receiver = 'cannonjohn03@gmail.com'



subject = 'There is notification'
body = """

The csv file was successfully exported

"""
em = EmailMessage()
em['From']= email_user
em['To']= email_receiver
em['Subject']= subject
em.set_content(body)


context= ssl.create_default_context()

with smtplib.SMTP_SSL('smtp.gmail.com',465,context= context) as smtp:
        smtp.login(email_user, email_password)
        smtp.sendmail(email_user, email_receiver ,em.as_string())
```

feedback

The second part of the code is for the notification-sending email process. The email is sent using the SMTP (Simple Mail Transfer Protocol) library in Python(smtplib). The Gmail SMTP server is connected to using "smtp.gmail.com" and port 587. Theemail sender logs into the Gmail account using the "login" method, sends the email using the"sendmail" method, and finally quits the SMTP server using the "quit" method.

5.Conclusion

In conclusion, any firm that depends on this kind of data processing would benefit greatly from the integration of Python and Robotic Process Automation (RPA) to automate the CSV production process. Combining Python programming's flexibility and strength with RPA to automate repetitive and routine processes results in a highly effective and efficient solution.

RPA and Python make it possible to create CSV files more quickly, precisely, and consistently than with conventional human approaches. An organisation may gain a lot from implementing this automated solution, including more productivity, fewer mistakes, and cost savings. Routine chores are automated using RPA technology, freeing up significant time and resources that may be used to more crucial duties. The Python programming language, meanwhile, offers the flexibility and customisation features required to satisfy certain business requirements. The end result is a simplified and effective procedure that produces excellent outcomes.

In summary, any firm trying to increase productivity, accuracy, and speed while cutting costs should automate the CSV production process using RPA and Python. It has the potential to revolutionise data processing and provide substantial economic value.