Mini Project Lab Report: Random Password-Generator

Course Code : CSE234

Course Title : Object Oriented Programming (II) Lab

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Random Password Generator by Python3

Abstract:

We know that passwords are a real security threat. To keep your account safe and prevent your password from being hacked you have to make your password hard enough that nobody can guess.

Objective:

The objective of this project is to create a password generator using python. The password generator project will be build using python modules like **tkinter**, **random**, **string, pyperclip, ImageTk, Image**... etc.

In this project, the user has to select the password length and then click on the "**Generate Password**" button. It will show the generated password below. If the user clicks on the "**Copy to Clipboard**" button, then it will copy the password automatically.

Prerequisites:

To build this project we will use the basic concept of python and libraries – Tkinter, pyperclip, random, string.

- ✓ **Tkinter** is a standard GUI library and is one of the easiest ways to build a GUI application.
- ✓ **pyperclip** module allows us to copy and paste text to and from the clipboard to your computer
- ✓ **The random** module can generate random numbers
- ✓ **string** module contains a number of functions to process the standard python string.
- ✓ **pillow** module contains some functions for image related GUI operation.

To install the libraries we can use pip installer from the command line:

```
1) pip install Tk
2) pip install pyperclip
3) pip install random
4) pip install strings
5) pip install pillow
```

For Example:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\dell\Desktop\Random Password Genarator> python -u "c:\Users\dell\Desktop\Random Password Genarator\Password-Generator-Py3\Main.py"
PS C:\Users\dell\Desktop\Random Password Genarator> pip install Tk
Requirement already satisfied: Tk in c:\users\dell\appdata\local\packages\pythonsoftwarefoundation.python.3.9_qbz5n2kfra8p0\localcache\local-packages\python39\site-packages
 (0.1.0)
PS C:\Users\dell\Desktop\Random Password Genarator> pip install pillow
Requirement already satisfied: pillow in c:\users\dell\appdata\local\packages\pythonsoftwarefoundation.python.3.9_qbz5n2kfra8p0\localcache\local-packages\python39\site-pack
ages (8.3.1)
PS C:\Users\dell\Desktop\Random Password Genarator>
```

Project Structure:

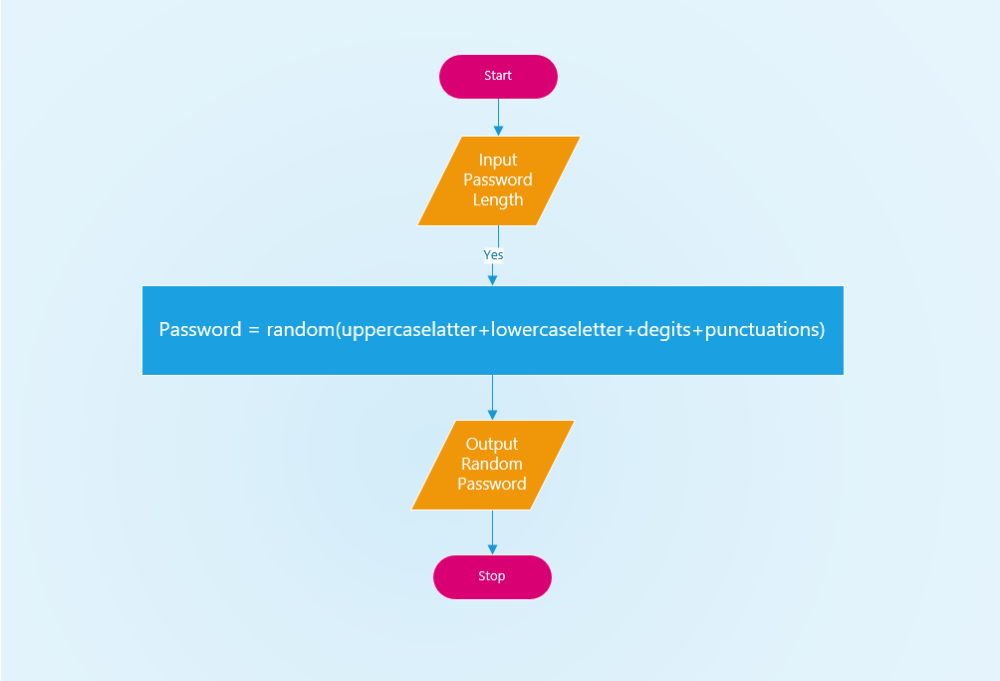
Let's check the step to build a Password Generator using Python

- Import modules
- Initialized Window
- Select Password Length
- Define Functions
- Output

Implemented Software:

- Language: Python 3.9.
- IDE: Visual Studio Code 2021.

Flow Chart------



Project Explanation:

1. *Import libraries/Modules*

```
#import Libraries
from tkinter import *
import random, string
import pyperclip
from PIL import ImageTk,Image
```

1) **tkinter** is the de facto way in Python to create Graphical User interfaces (GUI)
2) Python **Pillow (PIL)** package for image processing capabilities. Using Pillow, a Tkinter function that displays a text-based message can instead display an image.
3) **random** module is a built-in module to generate the pseudo-random variables.
4) **Pyperclip** is a cross-platform Python module for copy and paste clipboard functions.

2. *Initialize Window*

```
###initialize window
root =Tk()
root.geometry("420x400")
root.resizable(0,0)
root.title("PASSWORD GENERATOR")

###input icons
photo = PhotoImage(file="./icons/password_500px.png")
root.iconphoto(False,photo);
```

1) **Tk()** initialized tkinter which means window created
2) **geometry()** set the width and height of the window
3) **resizable(0,0)** set the fixed size of the window
4) **title()** set the title of the window

Picture Add in root window

```
######picture
img = ImageTk.PhotoImage(Image.open("./icons/lady_window_password_100px.png"))
panel = Label(root, image = img)
panel.pack(side = "top", fill = "both", expand = "no")
```

1) **ImageTk.PhotoImage()** getting image for the window
2) **Label()** is getting the image as label attribute
3) **Panle.pack()** set the size and position in the window

Header and Footer add in root window

```
#####heading
heading = Label(root, text = 'RANDOM PASSWORD GENERATOR' , font ='arial 15 bold')
.pack()
#####footer
Label(root, text ='Copyright © Md. Abdullah Ibna Harun. All rights reserved.', fo
nt ='arial 8 bold').pack(side = BOTTOM)
```

Label() widget use to display one or more than one line of text that users can't able to modify.

1) **root** is the name which we refer to our window
2) **text** which we display on the label
3) **font** in which the text is written
4) **pack** organized widget in block

3. Select Password Length

```
#####select password length
password_label = Label(root, text = 'Chose Password Length', font = 'arial 8
bold').pack()
password_len = IntVar()
length = Spinbox(root, from_ = 6, to_ = 32 , textvariable = password_len, wid
th = 15).pack()
```

1) **password_len** is an integer type variable that stores the length of a password.
2) To select the password length we use **Spinbox()** widget.
3) **Spinbox()** widget is used to select from a fixed number of values. Here the value from 6 to 32 character.

4. Function to Generate Random Password

```
#####define string type variable
password_str = StringVar()
#####define function
def passwordGenerator():
    password = ''
    for x in range (0,4):
        password = random.choice(string.ascii_uppercase)+random.choice(string
.ascii_lowercase)+random.choice(string.digits)+random.choice(string.punctuati
on)
    for y in range(password_len.get()- 4):
        password = password+random.choice(string.ascii_uppercase + string.asc
ii_lowercase + string.digits + string.punctuation)
    password_str.set(password)
```

1) **password_str** is a string type variable that stores the generated password
2) **password** = “” is the empty string. It’s a temporary variable in this function.
3) First loop will generate a string of length 4 which is a combination of an uppercase letter, a lowercase letter, digits, and a special symbol and that string will store in password variable.
4) The second loop will generate a random string of length entered by the user – 4 and add to the password variable. Here i minus 4 to the length of the user because i already generate the string of length 4.

I have done this because I want a password which must contain an uppercase, a lowercase, a digit, and a special symbol. It will give better encryption.

Now the password is set to the password_str() variable.

```
###button
Button(root,text ="GENERATE PASSWORD",command = passwordGenerator).pack(pady= 10)
###Output
Entry(root , textvariable = password_str).pack()
```

1) **Button()** widget used to display button on our window
2) **command** is called when the button is click
3) **Entry()** widget used to create an input text field
4) **textvariable** used to retrieve the current text to the entry widget

5. *Function to Copy Password*

```
########function to copy
def copy_password():
    pyperclip.copy(password_str.get())

Button(root, text ='COPY TO CLIPBOARD',command = copy_password).pack(pady=5)
```

1) **pyperclip.copy()** used to copy the text to clipboard

6. *Function To Run Program*

```
#### loop to run program
root.mainloop()
```

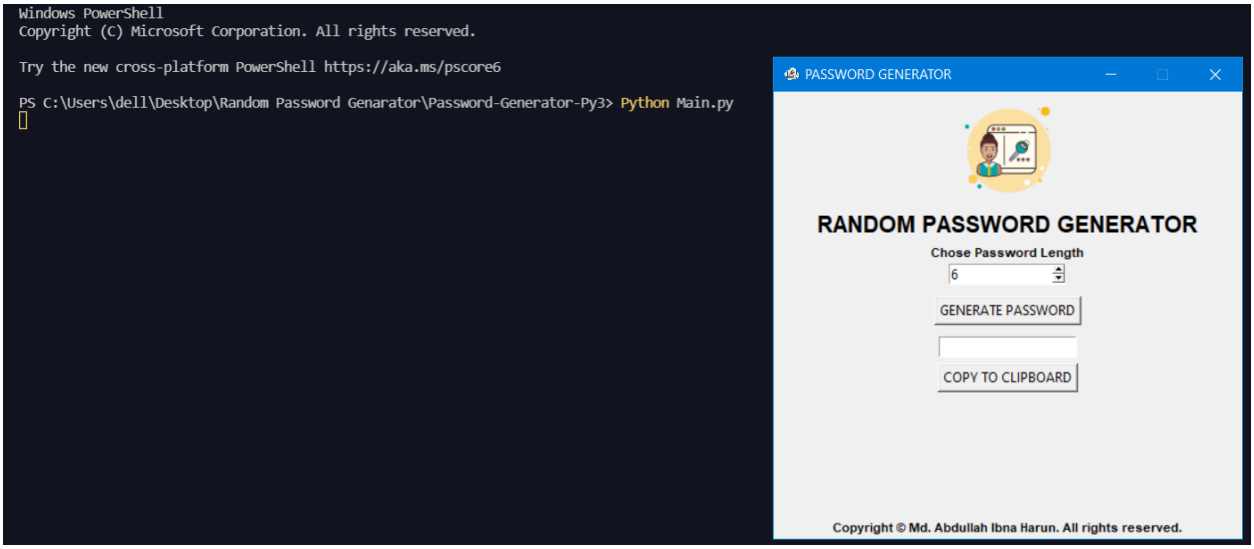
1) **root.mainloop ()** used to run the whole window/program.

>>> To Run This Application. Open **CMD** in project Directory-

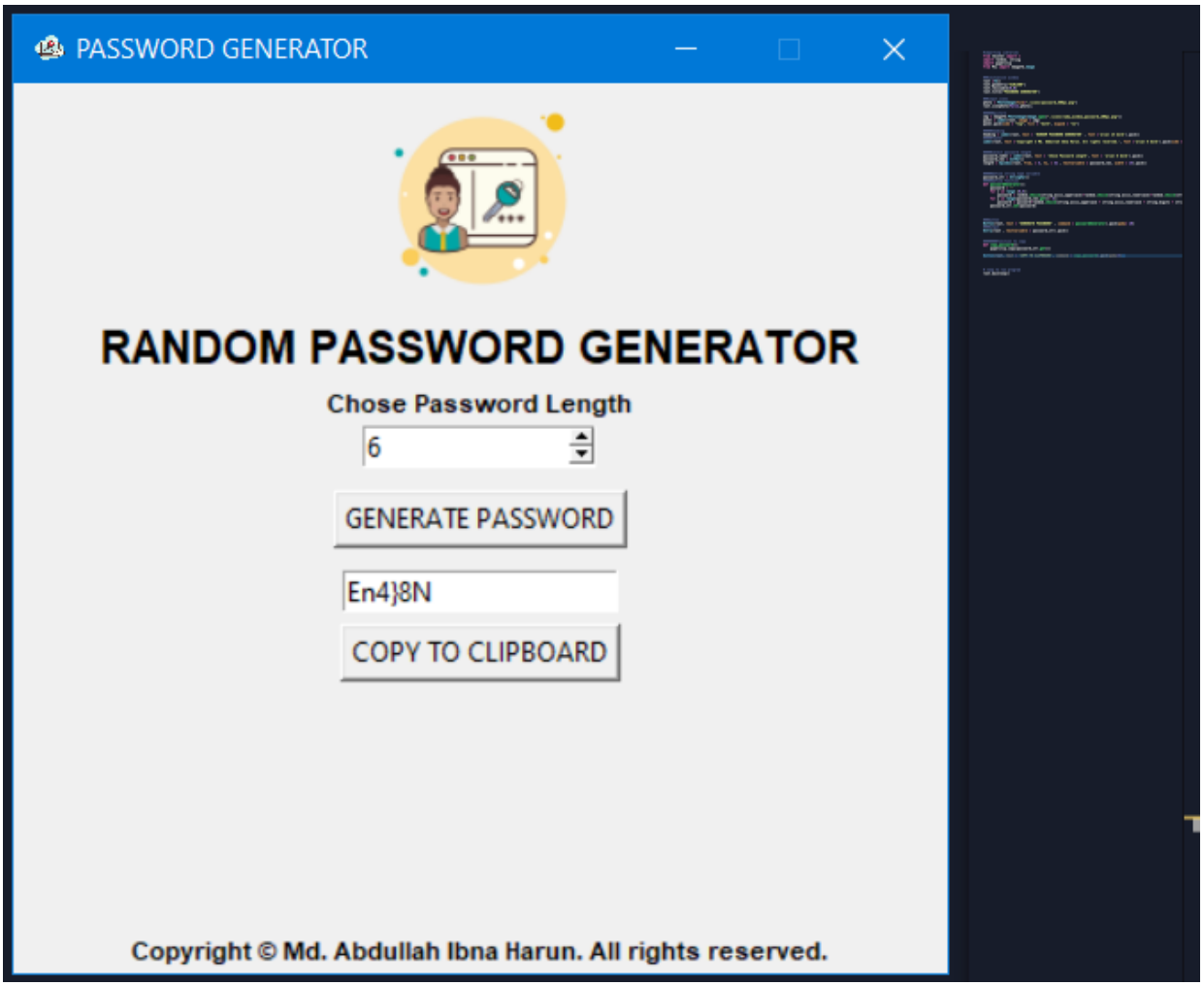
And Type This command: *Python <file name.py>*

<u>For Example:</u>

CMD> `Python Main.py`



Output/Test.



Application Source Code:

Git-hub Repository: [Random-Password-Generator]

Google-Drive link:
https://drive.google.com/drive/folders/12862qkJOzKLWrYHqCOQdJUEfBVgFeVAQ?usp=sharing

Challenges Faced:

Faced error user input. Faced problem in insert and Some Little bugs.

Outcome

The outcome of this project is a simple GUI application all people can use to get Random Password.

Conclusion:

This was a great experience doing this mini project. With these steps, I have successfully created a random password generator project using python3. I used popular tkinter library to rendering graphics in our display window and also learned about pyperclip,ImageTk and random library. In this way, I successfully created my password generator mini python project. The challenges I faced and the learning that will come in great help in the future. Hope you enjoyed it.

Thank You. ☺