Project: 2

Project 2: Phishing Website Detection Tool

Statement:

Weak passwords are a major reason for data breaches.

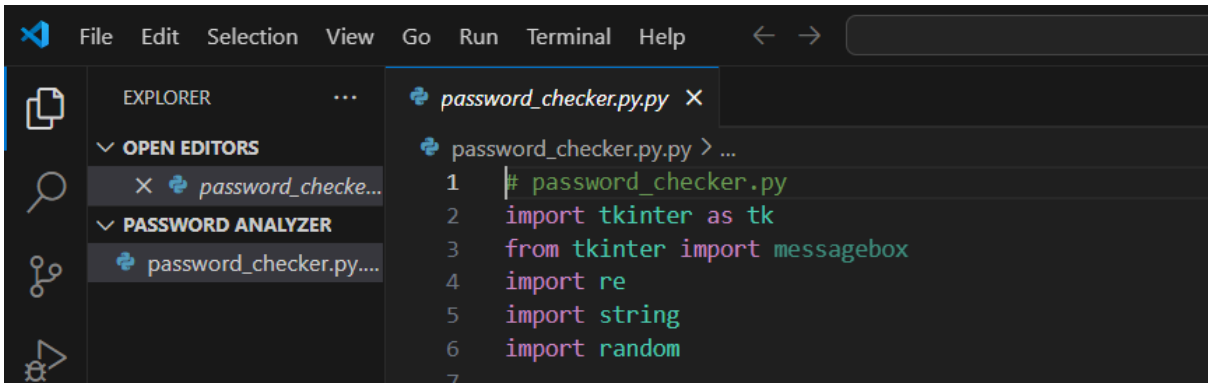
Objective:

Develop a GUI-based tool that analyzes passwords and provides

strength feedback and improvement suggestions.

Explanation:

- **Importing Libraries**



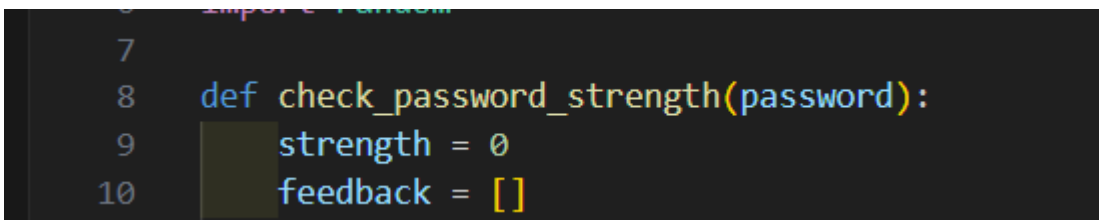
tkinter: The main GUI library used to create the window, buttons, text input, etc.

re: Python's regex module for checking password patterns.

string: Used to build a set of characters for strong password generation**.**

random: To randomly choose characters for generating suggestions.

- **Password Strength Checker Function**



strength: A score (0–5) based on how many rules the password meets.

feedback: A list of comments to help improve the password.

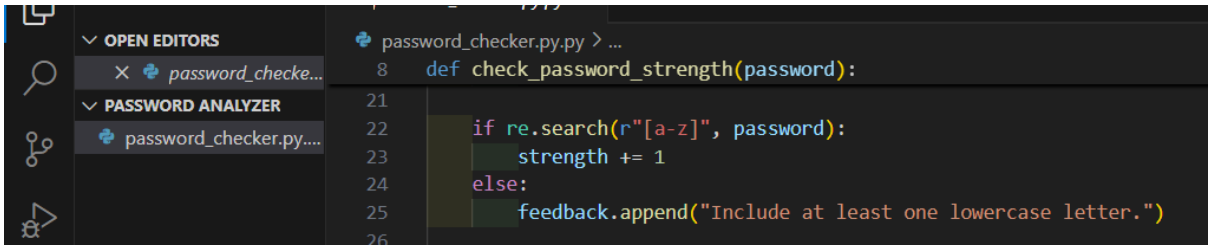
- **Rules and Evaluation**

```
11
12      if len(password) >= 8:
13          strength += 1
14      else:
15          feedback.append("Password should be at least 8 characters long.")
16
```

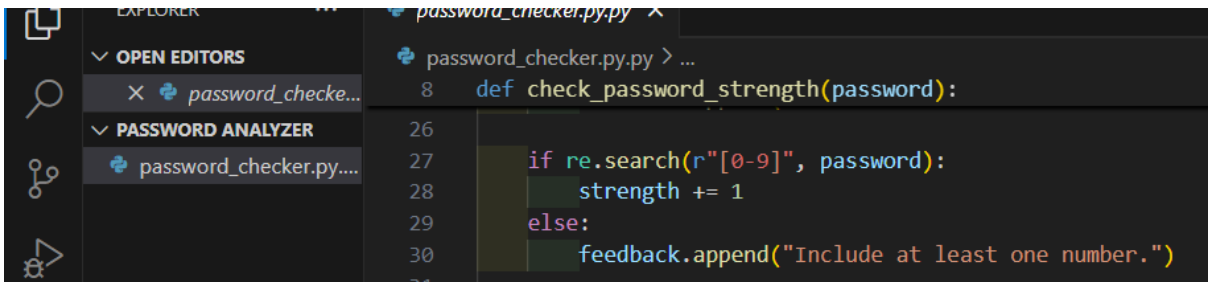
Rule 1: Password must be at least 8 characters.

```
16
17      if re.search(r"[A-Z]", password):
18          strength += 1
19      else:
20          feedback.append("Include at least one uppercase letter.")
```

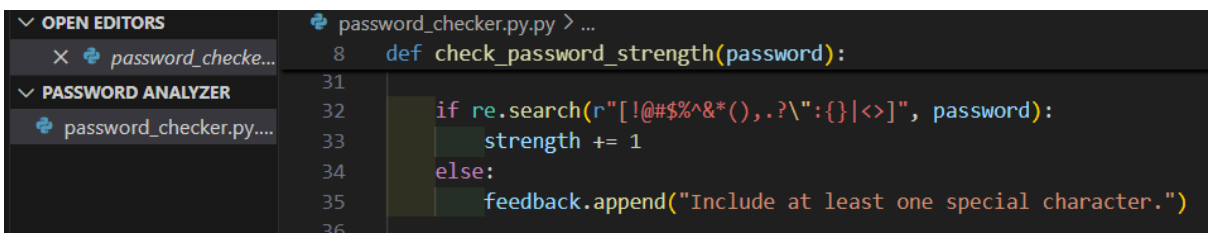
Rule 2: Must have at least one **uppercase letter**.



Rule 3: Must have at least one **lowercase letter**.

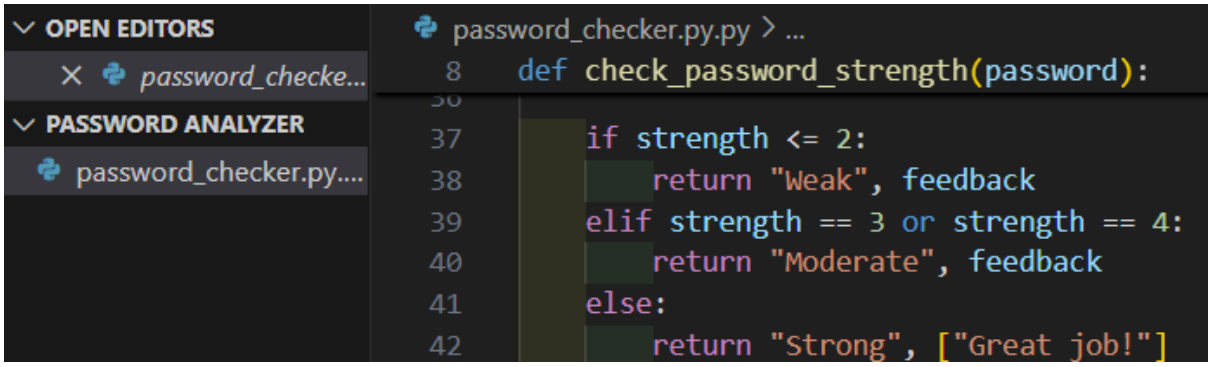


Rule 4: Must include at least one **digit**.



Rule 5: Must include **special characters**.

- **Return Strength Label**



Depending on the score, it returns:

- "Weak" (0–2 points)
- "Moderate" (3–4 points)
- "Strong" (5 points)

- **Password Suggestion Function**

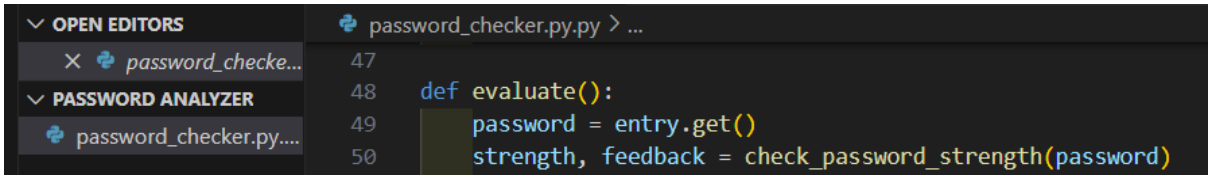
```
43
44  def generate_strong_password():
45      chars = string.ascii_letters + string.digits + "!@#$%^&*()"
46      return ''.join(random.choice(chars) for _ in range(12))
```

This function creates a 12-character strong password using:

- Uppercase and lowercase letters
- Numbers
- Special symbols

random.choice() picks one character at a time

- **Main Evaluation Logic (Called on Button Click)**



Grabs the password from the input field.

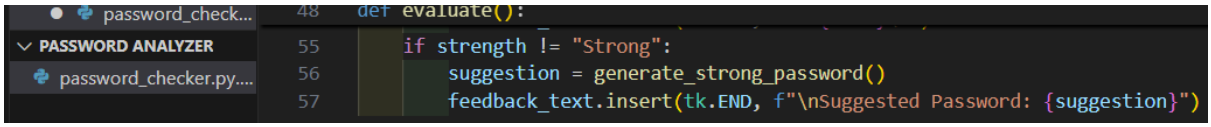
Calls the checker to get the strength and feedback.

```
51      result_label.config(text=f"Strength: {strength}")
```

Displays the strength rating (Weak, Moderate, Strong).

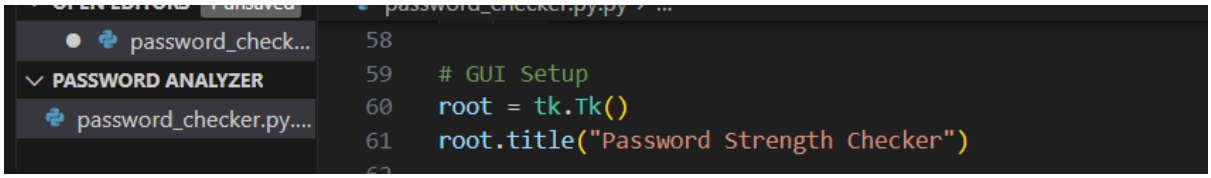
```
52      feedback_text.delete(1.0, tk.END)
53      for item in feedback:
54          feedback_text.insert(tk.END, f"- {item}\n")
```

Clears the text box, then shows feedback messages line by line.



If the password isn't strong, generate and display a suggested one.

- **7. GUI Layout**



Creates the main application window and sets the title.

```
63  tk.Label(root, text="Enter your password:").pack()
64  entry = tk.Entry(root, width=40, show="*")
65  entry.pack()
```

Adds a label and a password input field (show="*" hides characters).

```
67  tk.Button(root, text="Check Strength", command=evaluate).pack(pady=10)
```

A button that runs the evaluate() function on click.

```
68  result_label = tk.Label(root, text="")
69  result_label.pack()
```

Label to display strength result (updates dynamically).

```
71    feedback_text = tk.Text(root, height=10, width=50)
72    feedback_text.pack()
```

Text box to show detailed feedback and suggestions.

```
74    root.mainloop()
```

Starts the Tkinter GUI event loop (keeps the window open and interactive).

Is a fully functional and educational GUI tool that:

- Checks real-time password strength using 5 key security rules
- Provides feedback and best-practice suggestions
- Offers strong, randomly generated passwords
- Uses clean modular Python code with Tkinter, Regex, and string