CYBERSECURITY PROJECT: PASSWORD STRENGTH ANALYZER

1. Project Overview

A Password Strength Analyzer checks how strong a user-entered password is by analyzing:

• Length

• Uppercase/lowercase letters

• Numbers

• Special characters

• Common password dictionary

• Repeated patterns

It then gives the password a strength score (Weak / Medium / Strong / Very Strong).

2. Tools Required

• Python

• Regex

• Optional (GUI): Tkinter

3. Features

• Score password out of 100

• Detect weak patterns

• Warn about dictionary words

• Recommend stronger password

• Simple CLI or GUI version

4. Python Code (Complete Working Script)

```python
import re

weak_passwords = ["password", "123456", "admin", "qwerty", "iloveyou", "welcome"]

def check_password_strength(password):
    score = 0
    feedback = []

    if len(password) >= 12:
        score += 30
    elif len(password) >= 8:
        score += 15
    else:
        score += 5
        feedback.append("Use at least 8-12 characters.")

    if re.search(r"[A-Z]", password):
        score += 15
    else:
        feedback.append("Add uppercase letters.")
```

```python
        if re.search(r"[a-z]", password):
            score += 15
        else:
            feedback.append("Add lowercase letters.")

        if re.search(r"\d", password):
            score += 15
        else:
            feedback.append("Add numbers.")

        if re.search(r"[@$!%?&#]", password):
            score += 15
        else:
            feedback.append("Add special characters (@,$,!,#,etc).")

        if password.lower() in weak_passwords:
            score -= 20
            feedback.append("This is a commonly hacked password!")

        if score >= 80:
            level = "Very Strong"
        elif score >= 60:
            level = "Strong"
        elif score >= 40:
            level = "Medium"
        else:
            level = "Weak"

        return score, level, feedback

    password = input("Enter a password: ")
    score, level, tips = check_password_strength(password)

    print("\nPassword Strength Score:", score)
    print("Strength Level:", level)
    print("\nSuggestions to improve:")
    for t in tips:
        print("- " + t)
```

5. Sample Output

Input: Password123!

Output:

Password Strength Score: 85

Strength Level: Very Strong

(no suggestions)