Password Strength Analyzer with Custom Wordlist Generator

The Password Strength Analyzer with Custom Wordlist Generator is a cybersecurity-focused tool designed to evaluate the robustness of passwords and assist in ethical password auditing. The project aims to educate users on how password patterns can be predicted and exploited, while encouraging the creation of stronger passwords.

Abstract: This project combines password analysis and wordlist generation into a single user-friendly GUI tool. It leverages the zxcvbn library for password strength estimation and integrates user inputs (names, dates, keywords) to create realistic custom wordlists. The tool demonstrates how attackers generate wordlists for brute-force testing, highlighting the importance of strong and unpredictable passwords.

Tools Used:
• Python – Core programming language
• Tkinter – GUI development
• zxcvbn – Password strength analysis
• NLTK – Text manipulation and pattern generation
• Argparse – Command-line argument parsing (optional)
• ReportLab – PDF report generation

Steps Involved in Building the Project:
1. Installed and configured required Python libraries.
2. Designed the GUI using Tkinter for interactive password analysis and wordlist generation.
3. Integrated the zxcvbn library to calculate password strength and entropy.
4. Implemented custom wordlist generation based on user-provided keywords (name, pet, date, etc.).
5. Added support for common password mutation patterns (e.g., leetspeak, appended years, capitalizations).
6. Enabled wordlist export to a .txt file for compatibility with password cracking tools.
7. Tested the tool across multiple password scenarios for accuracy and usability.

Conclusion: The Password Strength Analyzer with Custom Wordlist Generator successfully combines education and ethical cybersecurity practices by helping users understand password vulnerabilities. The GUI-based interface makes it easy for both technical and non-technical users to test password strength and learn secure password habits. This project demonstrates practical applications of cybersecurity concepts, cryptography, and software design.