# Conclusion

**Introduction**

In the age of increasing cyber threats and password leaks, ensuring the strength and uniqueness of passwords is a critical security practice. Most users tend to create weak passwords based on personal information like names or dates, which are easily guessable by attackers. To address this, we developed a Password Strength Analyzer with an integrated Custom Wordlist Generator using Python.

This tool not only evaluates the strength of user-input passwords using real-world cracking models but also helps ethical hackers and researchers generate personalized password wordlists for educational penetration testing purposes.

**Abstract**

This project consists of two core modules:

1. Password Strength Analyzer:

- Uses the zxcvbn algorithm to score passwords from 0 to 4.

- Provides feedback, crack time estimation, and suggestions.

- Detects if the password contains personal information from a custom wordlist.

2. Custom Wordlist Generator:

- Generates password combinations using user-provided hints.

- Applies transformations like leetspeak and appending digits.

- Exports results as .txt files for cracking tools.

Together, the tool provides both defensive and offensive perspectives of password security.

**Tools Used**

- Python - Programming language

- zxcvbn - Password strength estimation

- Tkinter - GUI interface

- itertools - Wordlist permutation logic

- File I/O - Export and save logs and wordlists

**Steps Involved in Building the Project**

1. Environment Setup:

- Installed Python, zxcvbn, and Tkinter

- Organized files into folders

2. Password Analyzer:

- GUI for password input

- Used zxcvbn for scoring, feedback, and crack time

- Checked password against personal words

3. Wordlist Generator:

- Accepted name, date, etc., from user

- Created patterns like name123, 2024name, etc.

- Exported to custom_wordlist.txt

4. GUI and Enhancements:

- Tkinter tabs and exception handling

- Displayed formatted output and saved logs

5. Testing and Validation:

- Tested against common weak passwords

- Verified detection of personal patterns

**Conclusion**

The Password Strength Analyzer with Custom Wordlist Generator is a simple yet effective tool to promote password hygiene and awareness. It serves both offensive and defensive use cases in cybersecurity. With future enhancements like encryption and real-time feedback, it can evolve into a full-fledged security assistant.