**Prototype – Password Generator**

**Project Overview:**

The Password Generator Tool is a Python-based application developed to generate strong, random passwords based on user-defined criteria. With increasing security threats, the use of complex passwords is crucial to protecting sensitive data and user accounts. This tool allows users to generate secure passwords by selecting parameters like password length and inclusion of uppercase letters, lowercase letters, numbers, and special characters.

**Project Objectives:**

* To create a simple and secure tool for generating strong passwords.
* To provide users with control over password characteristics.
* To demonstrate secure and random password generation logic using Python.
* To explore both Command Line Interface (CLI) and Graphical User Interface (GUI) using Tkinter.

**Key Features:**

* Custom password length input
* Options to include:
  + Uppercase letters
  + Lowercase letters
  + Numbers
  + Special characters
* Ensures password complexity and randomness
* GUI version for better usability (optional)
* Real-time error handling and validation

**Technologies Used:**

* **Programming Language:** Python 3.x
* **Modules:** random, string, tkinter (for GUI version)
* **Platform:** Cross-platform (Windows, macOS, Linux)

**Conclusion:**

This Password Generator Tool is a useful application to enhance digital security by generating secure, random passwords. It demonstrates the application of Python in real-world cybersecurity scenarios and showcases the developer's ability to design, code, and deliver a complete software utility.