# Password Generator - Documentation

## 1. Introduction

A password generator is a software application designed to create strong, secure, and random passwords to help users protect their online accounts and data. This tool minimizes the risks of weak passwords by producing complex combinations of characters.

## 2. Objective

The objective of this project is to build a user-friendly password generator that can create passwords with customizable criteria such as length, use of uppercase letters, lowercase letters, digits, and special characters.

## 3. Features

- Generate secure and random passwords

- Customize password length

- Choose character types (uppercase, lowercase, numbers, symbols)

- Copy password to clipboard (if using GUI)

## 4. Functional Requirements

- User should input or select desired password length

- User should be able to select which character sets to include

- System should validate input and generate a password accordingly

## 5. System Design

The system uses a random selection mechanism from Python's libraries (e.g., random or secrets) to choose characters from user-selected character pools (uppercase, lowercase, digits, symbols).

## 6. Workflow

1. Input password length

2. Select character types

3. Generate password using random algorithm

4. Display or return the password

**7. User Interface (UI) Overview**

The application can be CLI-based or GUI-based (Tkinter or web-based). GUI includes options for checkboxes (character types), slider (length), and a 'Generate' button.

**8. Conclusion**

A password generator is essential for improving personal and organizational security. This project ensures usability while promoting the generation of strong and complex passwords.