**Password Generator using Python**

**Description:**

This script generates a **random password** of a specified length using letters, digits, and punctuation characters. It utilizes Python’s built-in random and string modules.

**Imports:**

import random

import string

* random: Used for selecting random characters.
* string: Provides predefined character sets like ascii\_letters, digits, and punctuation.

**Function Definition:**

def password\_generator(length: int = 10):

* **Function Name**: password\_generator
* **Parameter**:
  + length (type: int, default: 10): Specifies the desired password length.

**Character Pool:**

alp = string.ascii\_letters + string.digits + string.punctuation

* Combines:
  + string.ascii\_letters: Includes all uppercase and lowercase letters (a-zA-Z)
  + string.digits: Includes digits (0-9)
  + string.punctuation: Includes special characters (e.g., !@#$%^&\*())

This creates a pool of characters from which the password will be generated.

**Password Generation:**

password = "".join(random.choice(alp) for i in range(length))

* Uses a **generator expression** inside join() to:
  + Loop length times (default is 10)
  + Pick one random character from alp on each iteration
* join() combines all chosen characters into a single password string.

**Return Value:**

return password

* Returns the generated password.

**Usage Example:**

pass1 = password\_generator()

print("Password Generated: " + pass1)

* Calls the function without arguments (defaults to 10 characters)
* Prints the generated password to the console.

**✅ Sample Output:**

Password Generated: a8$Nc2&LmQ