**PROJECT-4**

Build a Python program that generates strong, secure passwords. These passwords should meet modern security standards and be suitable for various applications**.**

**PROGRAM:**

import random

import string

def generate\_password(length):

"""Generate a single strong password of given length."""

if length < 4:

raise ValueError("Password length should be at least 4 to include all character types.")

# Characters to include in the password

all\_characters = string.ascii\_letters + string.digits + string.punctuation

# Ensure the password has at least one of each character type

password = [

random.choice(string.ascii\_uppercase),

random.choice(string.ascii\_lowercase),

random.choice(string.digits),

random.choice(string.punctuation)

]

# Fill the rest of the password length with random characters

password += random.choices(all\_characters, k=length - 4)

# Shuffle the list to ensure randomness

random.shuffle(password)

# Convert list to string and return

return ''.join(password)

def generate\_passwords(num\_passwords, length):

"""Generate multiple strong passwords."""

return [generate\_password(length) for \_ in range(num\_passwords)]

def main():

print("Welcome to the Secure Password Generator!")

# Get user input for the number of passwords and their length

try:

num\_passwords = int(input("Enter the number of passwords to generate: "))

length = int(input("Enter the desired length for each password: "))

if num\_passwords < 1:

raise ValueError("Number of passwords should be at least 1.")

passwords = generate\_passwords(num\_passwords, length)

print("\nGenerated Passwords:")

for idx, password in enumerate(passwords, 1):

print(f"{idx}: {password}")

except ValueError as e:

print(f"Error: {e}. Please enter valid numbers.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**OUTPUT:**

Welcome to the Secure Password Generator!

Enter the number of passwords to generate: 4

Enter the desired length for each password: 4

Generated Passwords:

1: 2cF{

2: 9$oQ

3: +0eJ

4: }7Cm

=== Code Execution Successful =**==**