SOLAPUR EDUCATION SOCIETY'S

S.E.S. POLYTECHNIC, SOLAPUR

Samrat Chowk, Solapur

C E R T I F I C A T E

This is to certify that **Suvarnalaxmi Lambture (3502)** of Sixth Semester of Diploma in Computer technology of Institute **Solapur Education Society's Polytechnic, Solapur(0095)** has satisfactorily completed micro-project titled **Password Generation using Random module** in subject **"Programming with Python" (22616)** for academic year 2021-2022 as prescribed by Maharashtra State Board Of Technical Education, Mumbai.

Place: Solapur Enrollment No:1900950046

Date: / 05 / 2022 Exam Seat no:

(Mrs.Rajmane S.S.)	**(Mr.Patil M.C)**	**(Bhawtankar A.A.)**
Staff In-charge	**Head of Dept**	**Principal**
		S.E.S. Polytechnic, Solapur

Synopsis:

Having a weak password is not good for a system that demands high confidentiality and security of user credentials. It turns out that people find it difficult to make up a strong password that is strong enough to prevent unauthorized users from memorizing it.
This project uses a mixture of numbers, alphabets, and other symbols found on the computer keyboard to form a strong password using random module which is unpredictable and cannot easily be memorized.

Microproject – Course Outcome matrix

Course Outcomes :

a. Display message on screen using Python script on IDE
b. Develop python program to demonstrate use of Operators
c. Perform operations on data structures in python
d. Develop functions for given problem
e. Design classes for given problem
f. Handle exceptions

Sr. No.	Microproject	CO a	CO b	CO c	CO d	CO e	CO f
1	**Password Generation using Random module**	✓	✓	✓	✓		

Annexure – I

Micro-Project Proposal

Password Generation using Random module

1.0 Aim of the Micro-Project

Creation of strong and unpredictable passwords for all your accounts.

2.0 Course Outcomes Addressed

1. Display message on screen using Python script on IDE [✓]
2. Develop python program to demonstrate use of Operators [✓]
3. Perform operations on data structures in python [✓]
4. Develop functions for given problem [✓]
5. Design classes for given problem [ ]
6. Handle exceptions. [ ]

3.0 Proposed Methodology

1. Discussion about topic with guide
2. Information collection
3. Analysis of Data
4. Discussing about concepts to be used and taken into consideration
5. Writing algorithm
6. Preparing flowchart
7. Coding
8. Compilation of the code
9. Representation
10. Editing and revising the content
11. Report Preparation

4.0 Resources Required

Sr. No	Equipment Name with Broad Specification	Remark (if any)
1	Hardware Computer System: Computer (i3-i5 preferable), RAM minimum 2 GB and onwards	Nil
2	Operating System: Windows 7 or Later Version	Nil
3	Software: Editor: Python IDLE or VS Code	Nil

Team Members:

Roll No	Name of Team Member
3502	Suvarnalaxmi Lambture

Teacher's Signature
(Mrs.Rajmane.S.S)

Annexure – II

Micro-Project Report

Password Generation using Random module

1.0 Rationale

Python is a high-level ,general purpose programming language. Python's standard library is very extensive, offering a wide range of facilities. The library contains built-in modules (written in C) that provide access to system functionality such as file I/O that would otherwise be inaccessible to Python programmers, as well as modules written in Python that provide standardized solutions for many problems that occur in everyday programming.

Python **Random module** is an in-built module of Python which is used to generate random numbers. In this project ,I will make use of this random module to generate a strong and customizable password

2.0 Aim of the Micro-Project

Creation of strong and unpredictable passwords for all your accounts.

3.0 Course Outcomes Addressed

1. Display message on screen using Python script on IDE	[✓]
2. Develop python program to demonstrate use of Operators	[✓]
3. Perform operations on data structures in python	[✓]
4. Develop functions for given problem	[✓]
5. Design classes for given problem	[ ]
6. Handle exceptions.	[ ]

4.0 Literature Review

We all make use of passwords on a daily basis, to keep your account safe and prevent your password from being hacked we have to make our password is hard enough that nobody can guess.

Password generator is a Random Password generating program which generates a password mix of upper and lowercase letters, as well as numbers and symbols strong enough to provides great security.

What is Password:
A password, sometimes called a passcode, is a memorized secret, typically a string of characters, usually used to confirm the identity of a user, In other words is a string of characters used to verify the identity of a user during the authentication process.

Random Module:
Random module is a built-in module of python. This module implements pseudo-random number generators for various distributions. We are making use of random.shuffle , random.choice methods to generate the password.

5.0 Actual Procedure Followed

Algorithm:

Step 1: Start
Step 2: Store all the characters as a list(use string module) and import modules.
Step 3: Ask the user to enter the length of password
Step 4: Shuffle all the characters using random.shuffle method
Step 5: Initialize an empty list to store the password
Step 6: Write a loop that iterates length times
    6.1 Pick a random character from all the characters using random.choice method
    6.2 Append the random character to the password
Step 7: Shuffle the resultant password character to make it more random
Step 8: Convert the password list to string using the join method.
Step 9: Print the password
Step 10: Stop.

Coding:

```
#import all the required modules
import string
import random


# characters to generate password from
lowercase = list(string.ascii_lowercase)
uppercase = list(string.ascii_uppercase)
digits = list(string.digits)
special_characters = list(string.punctuation)
characters = list(string.ascii_lowercase + string.ascii_uppercase + string.digits +
string.punctuation)

#function to generate the password
def generate_random_password():
    # length of password from the user
    length = int(input("Enter password length: "))

    # number of character types
    lowercase_count = int(
        input("Enter lowercase alphabets count in password: "))
    uppercase_count = int(input("Enter uppercase alphabets count in password: "))
    digits_count = int(input("Enter digits count in password: "))
    special_characters_count = int(input("Enter special characters count in password: "))

    characters_count = lowercase_count + uppercase_count + digits_count +
special_characters_count

    # check the total length with characters sum count
    # print not valid if the sum is greater than length
    if characters_count > length:
        print("Characters total count is greater than the password length")
        return

    # initializing the password
    password = []

    # picking random lower case alphabets
    for i in range(lowercase_count):
        password.append(random.choice(lowercase))

    # picking random upper case alphabets
    for i in range(uppercase_count):
        password.append(random.choice(uppercase))

    # picking random digits
```

```
    for i in range(digits_count):
        password.append(random.choice(digits))

    # picking random special characters
    for i in range(special_characters_count):
        password.append(random.choice(special_characters))

    # if the total characters count is less than the password length
    # add random characters to make it equal to the length
    if characters_count < length:
        random.shuffle(characters)
        for i in range(length - characters_count):
            password.append(random.choice(characters))
    print("Password:", end="")

    # shuffling the resultant password
    random.shuffle(password)


    # converting the list to string
    # printing the list
    print("".join(password))


# calling/invoking the function
generate_random_password()
```

6.0 Skill Developed / learning out of this Micro-Project

1. I learnt how to manage the time properly.
2. I developed our logical and designing skills.
3. I improved our individual skills.
4. I learnt how to solve problems faced during designing of the project.

7.0 Application of this Micro-Project

1. OTP generation.
2. Use as your online account passwords
3. To generate customized password
4. Can also be used as a validation code.

Teacher's Signature
(Mrs. Rajmane.S.S)