**U08008 Coursework 1 - Password**

**Version 1**

**Design**

The program is designed to generate a password, this will be a string based on a sequence of alphanumeric characters. The password must be between 7 and 14 characters. I will be using the random library for the project. The program will consist of a loop with a range based on a random integer between 8 and 13. Inside the loop it will generate a random integer between 1 and 3 called x, this will be used to determine which character to add to the password string. Inside will be there if statements, if x = 1 a random char character will be generated using the asci value of a randomly generated integer between the asci value of 0 and 9 to create a char integer value, this will added to password string. If x = 2 it will generate and add a random char between capital A and Z, if x = 3 it will generate and add a random char between lower case a to z. Finally it will print the password.

**Pseudo Code:**

Import random library

Create ‘password’ as string

passwordlength = random integer between 8 and 13

for loop ‘i’ in range of passwordlength

x = random integer between 1 and 3

if x == 1

password += ASCII char(random integer between ASCII value of ‘0’ and ASCII value of ‘9’)

else if x == 2

password += ASCII char(random integer between ASCII value of ‘A’ and ASCII value of ‘Z’)

else if x == 3

password += ASCII char(random integer between ASCII value of ‘a’ and ASCII value of ‘z’)

print password

**Source Code**

import random

password = '' # this creates a string variable which will be used as the final password

passlength = random.randint(8,13) # this will determind the length of the password

for i in range(passlength): #loop repeated depending on pass length

x = random.randint(1,3) # creates a random number used to determing if char value is a number , cap letter or lower case

if x == 1:

password += chr(random.randint(48,57)) # generates a random char number value and adds it to password string

elif x == 2:

password += chr(random.randint(65,90)) # generates a upper case char value and add to password string

else:

password += chr(random.randint(97,122)) # generates a lower case char value and add to password string

print(password) # prints password on screen

**Testing:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Final Output** | **Character limit test** | | **Valid (Y/N)** |
| **No. Characters** | **Between limit (Y/N)** |
| sbgivUE6fwB | 11 | Y | Y |
| h99V3gva54S1 | 12 | y | y |
| txCV3nqPJ4F4 | 12 | y | y |
| JwtOvv7DbV | 10 | Y | Y |
| d4zB7oNp6w4G | 12 | Y | y |
| 6XVfFKX9j | 9 | y | y |

**Version 2**

**Design:**  This version is based on version 1, but a few added parameters will be added to make a stronger version. Firstly there must be at least one digit, one uppercase letter and one lower case letter. Secondly two consecutive characters cannot be identical, but is case sensitive i.e Cc will be valid.

For the first parameter to be valid I will create three integer variable, these will be randomly generated and will be between 1 and password length, the values cannot be identical to each other. This will hold the position of the lower case, digit and upper case.

For the second parameter to be valid, I will compare the newly generated char value with the previously created one, if the new char value is identical then it will make a new char value until the new char value is not identical to the previous value.

**Pseudo Code:**

Import random library

Set ‘password’ as string

Passlength = random integer between 8 and 13

Capletter = random integer between 1 and passlength

Lowercase = random integer between 1 and passlength

While loop capletter == lowercase

Lowercase = random intger between 0 and passlength

Number = random integer between 1 and passlength

While loop number == cap letter or number == lowercase

Number = random integer between 1 and passlength

Prevcharvalue = “aa”

For loop i in range of passlength

x = random integer between 1 and 3

‘valid’ Boolean = false

while not valid

if i == number or x ==1 and not i == capletter and not - == lowercase

charvalue= ASCII char(random integer between ASCII value of ‘0’ and ASCII value of ‘9’)

else if i == capletter or x == 2 and not i = lowercase and not i = number

charvalue= ASCII char(random integer between ASCII value of ‘A’ and ASCII value of ‘Z’)

else if x == 3 or I == lowercase

charvalue= ASCII char(random integer between ASCII value of ‘a’ and ASCII value of ‘z’)

if not charvalue == prevcharvalue

valid = True

password += charvalue

prevcharvalue = charvalue

print password

**source code:**

import random

password = '' # this creates a string variable which will be used as the final password

passlength = random.randint(8,13) # this will determind the length of the password

capletter = random.randint(1,passlength) #used so it guarantees atleast one capital letter is present

lowercase = random.randint(1,passlength) # used so it guarantees atleast one lower case letter is prestn

while capletter == lowercase: #make sures the capital letter and lower case value is not at the same position

lowercase = random.randint(1,passlength)

number = random.randint(1,passlength)# used so it guarantees atleast one number will be present in password

while number == capletter or number == lowercase: # makes the number will not be in the same possition as cap letter and lower case

number = random.randint(1,passlength)

prevcharvalue = "aa" #varible used make sure no consecutive password is duplicate

for i in range(passlength): #loop repeated depending on pass length

x = random.randint(1,3) # creates a random number used to determing if char value is a number, cap letter or lower case

valid = False # boolean variable used to make sure char value is valid

while not valid:

if i == number or x == 1 and i != capletter and i != lowercase:

charvalue= chr(random.randint(ord('0'),ord('9'))) # generates a number used for the password based on ascii values for numbers

elif i == capletter or x == 2 and i !=lowercase and i != number:

charvalue= chr(random.randint(ord('A'),ord('Z'))) # generates a upper case value based on ascii values for capital letters

elif x == 3 or i == lowercase:

charvalue= chr(random.randint(ord('a'),ord('z'))) # generates a lower case value based on ascii value for lower case values

if charvalue != prevcharvalue: #compares value created and prevous value to make sure they are not identical or loop will be repeated

valid = True

password += charvalue #adds the new value to the password variable

prevcharvalue = charvalue # replaces prevcharvalue with char value created used for test if loop repeats

print(password) # displays password

**Testing**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Final Output** | **Word length** | | **No identical**  **Consecutive** | **At least 1**  **Number**  **\_\_\_\_\_\_\_\_** | **At least 1**  **Uppercase**  **\_\_\_\_\_\_\_\_** | **At least 1**  **Lowercase**  **\_\_\_\_\_\_\_\_** | **Valid** |
| **length** | **Valid(y/n)** |
| QuDrf26cQ85 | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| uUJU5dDIm3c | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| rWEFp1YVBDAf1 | **13** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| r6a7NWei | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 0M5pPVAN23 | **10** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 9E0fx0c1 | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| a8Irt1gckfe | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 4q1YIpV9j | **9** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 8yfPsV96Kd7r | **12** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| j692J8sDQ4c | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 4LFqv1VF8y | **10** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 9lfeWBL7ULWly | **13** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| muq02BoOrL9V6 | **13** | **Y** | **Y** | **Y** | **y** | **y** | **Y** |
| ytuN61d6 | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| FoDZG7CGpqx | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 95wymP1gBnF8 | **12** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 1O8ia5B1 | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| YNm491ag5y | **10** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 985wkRaiSVCA | **12** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| d9ewG3eM | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| GXOQ9jbAkF | **10** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| CQpIli5K92XT | **12** | **y** | **y** | **y** | **y** | **y** | **Y** |
| c9p6jVN7 | **8** | **y** | **y** | **y** | **y** | **y** | **y** |
| eJ4S6qPd9 | **9** | **Y** | **y** | **Y** | **Y** | **Y** | **Y** |
| mcM732lC6HPqf | **13** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 32U1jT9A | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 1x2ELk749 | **9** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| uhfR0AeSX2x | **11** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| Lz4oE9Tu0 | **9** | **Y** | **Y** | **Y** | **Y** | **Y** | **y** |
| 07otTR35 | **8** | **Y** | **y** | **Y** | **y** | **Y** | **Y** |
| 4Y3pOi7worCz | **12** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| dP84s58O | **8** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| Jr232tvYGlN3 | **12** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 0B8TDxma85n0I | **13** | **Y** | **Y** | **Y** | **Y** | **Y** | **Y** |
| 3J0X7b9q | **8** | **y** | **Y** | **y** | **Y** | **Y** | **Y** |