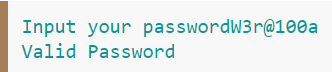
**Question 1(3 point)**

Write a Python program to check the validity of passwords input by users.  
Validation :

* At least 1 letter between [a-z] and 1 letter between [A-Z].(**0.5 point**)
* At least 1 number between [0-9].(**0.5 point**)
* At least 1 character from [$#@].(**0.5 point**)
* Minimum length 6 characters.(**0.5 point**)
* Maximum length 16 characters.(**0.5 point**)

Input data from keyboard and print it to screen (**0.5 point**)

Output should be:



**Question 2(3 point)**

Write a Python program to read data from the file data\_text.txt. In this program you need to complete 3 required:

* Required 1: Read file txt and print the data on the screen (**1 point**)
* Required 2: Count the number of line in the file data\_text.txt (**1 point**)
* Required 3: Count the number of occurrences of each word in the file and print out the top 3 words with the highest number of occurrences (**1 point**)

**Question 3(4 point)**

Write a program in the python programing language using object-oriented programing techniques. The program enters a list of books, each with information on Rollnumber, name, ROI, year. You should complete some requiremenet here:

Require 1: Enter the data of books from keyboard(**1 point**)

Require2: Print the information of each book on the screen before sort (**1 point**)

Require3: Sort the book by increasing name and print the information of each book on the screen after sort (**1 point**)

Require4: Filter the books with year >= 2010 and print on the screen(**1 point**)

question1

class Main:

#====================f1====================

def f1(self, password): #check valid password

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

x = True

while x:

if len(password) < 6 or len(password) > 12:

break

elif not any(char.isalpha() and char.islower() for char in password):

break

elif not any(char.isalpha() and char.isupper() for char in password):

break

elif not any(char.isnumeric() for char in password):

break

elif not any(char in ["$", "#", "@"] for char in password):

break

else:

print("Valid password")

x=False

break

if x:

print("Invalid password")

# end def

#================DO NOT CHANGE THE CODE BELOW===============================

def main(self):

password = input("Enter the password:")

print("OUTPUT")

self.f1(password)

print("FINISH")

main = Main()

main.main()

question 2

class Main:

#====================f1====================

def f1(self): #Count all line in file txt

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

with open("data\_text.txt", "r") as f:

data = f.readlines()

print("The number of line:", len(data))

# end def

#====================f2====================

def f2(self): #Print top 3 word

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

with open("data\_text.txt", "r") as f:

data = f.readlines()

data\_after\_remove\_n = []

for text in data:

text = text.split("\n")[0]

text = text.strip()

text = text.split(".")

if "" in text:

data\_after\_remove\_n.append([text[0]])

else:

data\_after\_remove\_n.append(text)

data\_special = [data\_after\_remove\_n[0][0]]

data\_processing = []

for i in range(1, len(data\_after\_remove\_n)):

if len(data\_after\_remove\_n[i]) > 1:

lst = []

for j in data\_after\_remove\_n[i]:

j = j.strip()

lst.append(j)

text1 = " ".join(lst)

data\_processing.append(text1)

else:

data\_processing.append(data\_after\_remove\_n[i][0])

data\_list = []

for string in data\_processing:

string = string.lower()

word\_list = string.split(" ")

data\_list.append(word\_list)

data\_special = data\_special[0].split(" ")

for i in range(len(data\_special)):

if "(" in data\_special[i]:

data\_special[i] = data\_special[i][1:]

if ")" in data\_special[i]:

data\_special[i] = data\_special[i][:-1]

data\_special[i] = data\_special[i].lower()

data\_list.append(data\_special)

new\_data\_list = []

for j in data\_list:

new\_data\_list += j

set\_new\_data\_lst = list(set(new\_data\_list))

D = {word:0 for word in set\_new\_data\_lst}

for i in new\_data\_list:

D[i] += 1

D\_sort = dict(sorted(D.items(), key=lambda item: item[1], reverse=True))

keys = list(D\_sort.keys())

for i in range(3):

print(f"{keys[i]}:{D\_sort[keys[i]]}")

# end def

def f3(self): #Print data on the screen

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

with open("data\_text.txt", "r") as f:

data = f.read()

print(data)

# end def

#================DO NOT CHANGE THE CODE BELOW===============================

def main(self):

print(" 1. Test f1 (1 mark)")

print(" 2. Test f2 (1 mark)")

print(" 3. Test f3 (1 mark)")

print(" Your selection (1 -> 2): ")

choice = int(input())

print("OUTPUT")

if choice == 1:

self.f1()

elif choice == 2:

self.f2()

elif choice == 3:

self.f3()

else:

print("Wrong select")

print("FINISH")

main = Main()

main.main()

question 3

# ===YOU CAN ADD NEW CLASSES IN THE FOLLOWING PART========

class Book:

def \_\_init\_\_(self, rollnumber, name, year, doi):

self.rollnumber = rollnumber

self.name = name

self.year = year

self.doi = doi

def get\_rollnumber(self):

return self.rollnumber

def set\_rollnumber(self):

return self.rollnumber

def get\_name(self):

return self.name

def set\_name(self, name):

self.name = name

def get\_year(self):

return self.year

def set\_year(self, year):

self.year = year

def get\_doi(self):

return self.doi

def set\_doi(self, doi):

self.doi = doi

def display\_info(self):

print(f"Year: {self.year}")

print(f"DOI: {self.doi}")

print(f"Name: {self.name}")

#=========================================================

class Main:

#====EDIT THIS FUNCTION TO READ AND RETURN LIST BOOKS========

def InputListBook(self):

n = int(input('Enter the number of books: '))

books = []

for i in range(n):

rollnumber = int(input("Enter rollnumber:"))

name = input("Enter name:")

roi = int(input("Enter ROI:"))

years = int(input("Enter year:"))

new\_book = Book(rollnumber, name, years, roi)

books.append(new\_book)

return books

# end def

#====================f1====================

def f1(self): #print information

#=======DO NOT EDIT CODE BELOW===============

bookList = self.InputListBook()

print("OUTPUT")

#==========================================

for book in bookList:

print("Rollnumber:", book.rollnumber)

print("name:", book.name)

print("ROI:", book.doi)

print("Year:", book.year)

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

# end def

#==========================================

#====================f2====================

def f2(self): #sort

#=======DO NOT EDIT CODE BELOW===============

bookList = self.InputListBook()

print("OUTPUT")

#==========================================

sort\_booklist = sorted(bookList, key=lambda x: x.name)

for book in sort\_booklist:

print("Rollnumber:", book.rollnumber)

print("name:", book.name)

print("ROI:", book.doi)

print("Year:", book.year)

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

# end def

#==========================================

#====================f3====================

def f3(self): #filter

#=======DO NOT EDIT CODE BELOW===============

bookList = self.InputListBook()

for book in bookList:

if book.year >= 2010:

print("Rollnumber:", book.rollnumber)

print("name:", book.name)

print("ROI:", book.doi)

print("Year:", book.year)

print("OUTPUT")

#==========================================

# ===YOU CAN EDIT OR EVEN ADD NEW FUNCTIONS IN THE FOLLOWING PART========

# end def

#==========================================

#==================DO NOT CHANGE THE CODE BELOW=====================

def main(self):

print(" 1. Test f1 (1 mark)")

print(" 2. Test f2 (1 mark)")

print(" 3. Test f3 (1 mark)")

print(" Your selection (1 -> 3): ")

choice = int(input())

if choice == 1:

self.f1()

elif choice == 2:

self.f2()

elif choice == 3:

self.f3()

else:

print("Wrong select")

print("FINISH")

main = Main()

main.main()