Python - Assignments

# Section 1 : Basics - Constructs, String, Files, List

## Question 1

Write a procedure that solves quadratic equations using the quadratic formula: It should take as arguments three numbers a, b, and c. It should print error messages if a is zero, or if the roots are complex. Otherwise it should print the two roots.

import math  
  
a = int(input("Enter the first number: "))  
b = int(input("Enter the second number: "))  
c = int(input("Enter the third number: "))  
  
if a == 0:  
 print("Error: 'a' cannot be zero.")  
else:  
 d = b\*\*2 - 4\*a\*c  
  
 if d < 0:  
 print("Error: Roots are complex.")  
 else:  
 r1 = (-b + math.sqrt(d)) / (2\*a)  
 r2 = (-b - math.sqrt(d)) / (2\*a)  
  
 print("Root 1:", r1)  
 print("Root 2:", r2)

## Question 2

Write a program that reads in a string on the command line and returns a table of the frequency of occurrence of each word. Ignore the case. A sample run of the program would look this

Enter some letters >>> The cat in the hat The - 2

Cat - 1

In - 1

Hat - 1

This should involve writing a function that takes in a string and returns a dictionary with these letters and counts.

sentence = input("enter a string").lower()  
x=sentence.split(" ")   
y=[]   
for i in x:   
 if y.count(i)==0:   
 y.append(i)   
 print(i.title(),"-",sentence.count(i))

## Question 3

Write a program that accepts a sentence and calculate the number of letters and digits. Suppose the following input is supplied to the program: hello world! 123

Then, the output should be:

LETTERS 10

DIGITS 3

import re  
a=input("enter a string:")  
m=n=0  
for i in a:  
 if i.isalpha():  
 m = m+ 1  
 elif i.isdigit():  
 n = n+1  
print("LETTERS -",m)  
print("DIGITS -", n)

## Question 4

Write a Python program to check the validity of a password input by the user. The password should satisfy the following conditions:

1. It should have at least 1 letter [a to z]
2. It should have at least 1 number [0 to 9]
3. It should have at least 1 capital letter [A to Z]
4. It should have at least one special character [$, #, @]
5. Minimum length = 6 characters
6. Maximum length = 12 characters

import re  
length = lower = upper = digit = spchar = False  
password = input('Enter the password: ')  
if len(password) >= 6 or len(password) <=12:  
 length = True  
 for letter in password:  
 if letter.islower():  
 lower = True  
 elif letter.isupper():  
 upper = True  
 elif letter.isdigit():  
 digit = True  
 if (letter == '@' or letter == '$' or letter == '\_'):  
 spchar=True  
if length and lower and upper and digit and spchar:  
 print('password is valid')  
else:  
 print('password is not valid')

## Question 5

Write a Python program that takes a string of words separated by spaces, together with a ”target” word, and shows the position of the target word in the string of words.

For example, if the string is: ‘we dont need no education we dont need no thought control no we dont’

and the target word is ”dont”, then your program should return the list 1, 6, 13 because ”dont” appears at the 1st, 6th, and 13th position in the string. Your program should return False if the target word doesn’t appear in the string.

txt = input("enter the string to be checked:")  
target\_word = input("enter the target word:")  
x = txt.split(" ")  
j=0  
index\_pos = []  
for i in x:  
 if i==target\_word:  
 index\_pos.append(j)  
 j=j+1  
print(index\_pos)