

CSEE 5590 - Special Topics

Python – Lab 1

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Configuration:

IDE : pycharm

python : version 3

Objective 1: To write a program, to check if the password given by the user is following the given criteria by using loops.

Implementation:

The password is taken from the user and then the string is passed to the function. In the function we use a While loop to iterate through the set of cases and will find out if the password string has met the criteria.

By using the length property we will find out the length of the string and then compare it with the required criteria.

We will use the isNumeric() method to check if the password contains a digit.

```
reverseOrder.py × sum.py × password.py × problem2.py × problem3.py × problem4.py × division.py × randomNumber.py ×
2 # Function to check for the criteria
3 def passwordvalidation():
4
5     validation = 0 # Assigning the value to validation so that to check if no error at the end
6
7     # while loop to iterate for entering the password if it does not met the criteria
8     while validation == 0:
9         password = input("\nEnter your UMKC Application password: ")
10        password_length = len(password) # To get the length
11
12        validation = 1
13        # Checking the length criteria of the password entered
14        if password_length < 6 or password_length > 16:
15            validation = 0
16            # To print the text that the password is missing
17            print("The password length should be in range 6-16 characters")
18
19        digit = 0
20        # Checking if a digit is present in the password
21        for i in password:
22            if i.isnumeric():
23                digit = 1
24                break
25        if digit == 0:
26            validation = 0
27            print("The password should have atleast one number") # To print the text that the password is missing
28
```

The special characters that can be used in the password are checked in the below code. And then we will check if the string contains at least one upper case and one lower case by using the string methods.

If the user entered password does not meet the criteria, the loop will ask for the user to enter the password again. If the password entered is correct which means if it satisfies all the conditions then it will display that the password is good.

```
reverseOrder.py x sum.py x password.py x problem2.py x problem3.py x problem4.py x division.py x randomNumber.py x
31 for i in password:
32     if i == "$" or i == "@" or i == "!" or i == "*":
33         specialcharacter = 1
34         break
35 if specialcharacter == 0:
36     validation = 0
37     # To print the text that the password is missing
38     print("Password should have atleast one special character in [$@!*]")
39
40 lowerCase = 0
41 # To check if the password contains lower case letters
42 for i in password:
43     if i.islower():
44         lowerCase = 1
45         break
46 if lowerCase == 0:
47     validation = 0
48     # To print the text that the password is missing
49     print("Password should have atleast one lowercase character")
50
51 upperCase = 0
52 # To check if the password contains upper case letters
53 for i in password:
54     if i.isupper():
55         upperCase = 1
56         break
57 if upperCase == 0:
58     validation = 0
59     # To print the text that the password is missing
60     print("Password should have atleast one uppercase character")
61 # If the password met the criteria we will be out of the loop and print the following message
62 if validation == 1:
63     print("Your password met the criteria !")
64 passwordvalidation() # Function to be called to verify the password
```

Input/Output:

```
Run: password password password
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmProje

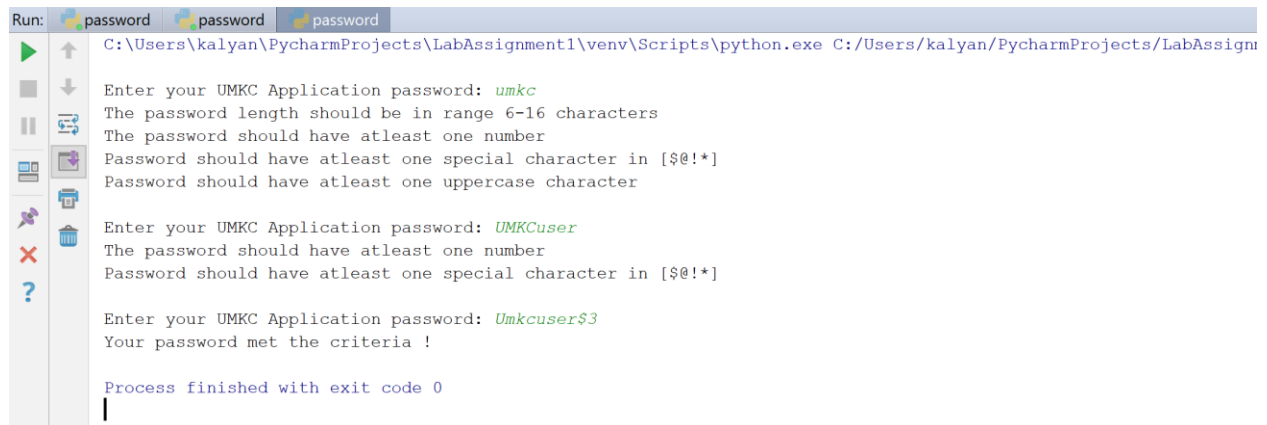
Enter your UMKC Application password: kalyan
The password should have atleast one number
Password should have atleast one special character in [$@!*]
Password should have atleast one uppercase character

Enter your UMKC Application password: Kalyan@
The password should have atleast one number

Enter your UMKC Application password: Kalyan@123
Your password met the criteria !

Process finished with exit code 0
```

The screenshots for the various inputs given and the output displayed based on the input.



```
Run: password password password
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmProjects/LabAssignn

Enter your UMKC Application password: umkc
The password length should be in range 6-16 characters
The password should have atleast one number
Password should have atleast one special character in [$@!*]
Password should have atleast one uppercase character

Enter your UMKC Application password: UMKCuser
The password should have atleast one number
Password should have atleast one special character in [$@!*]

Enter your UMKC Application password: Umkcuser$3
Your password met the criteria !

Process finished with exit code 0
```

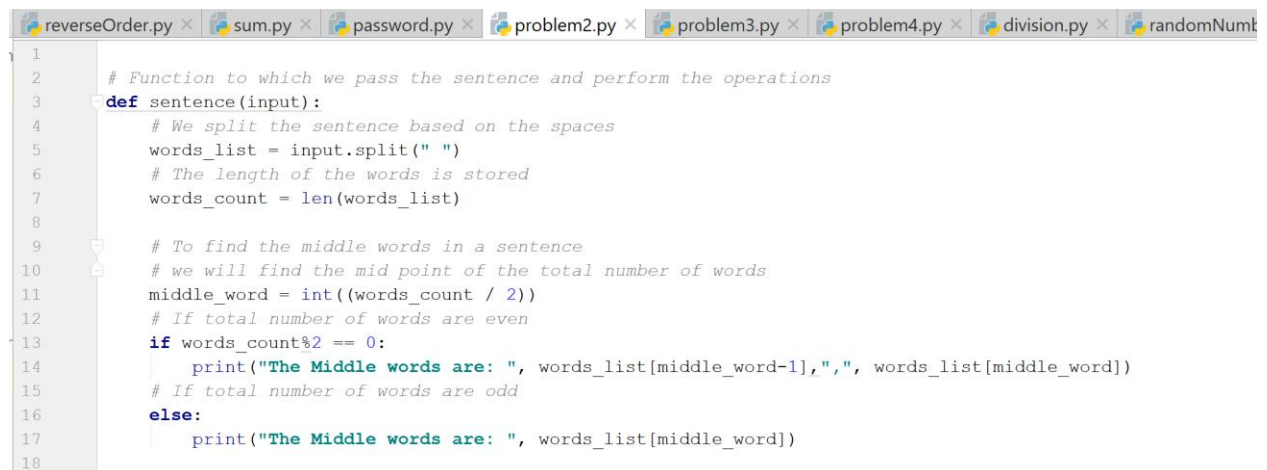
Objective 2: Program that accepts a sequence of words(sentence) from the user and then displaying the Middle word, Longest word and the sentence with the words in reverse order.

Implementation:

The given input by the user is split by using space and then we store the values of words in the sentence in a list and the length of each word in a separate list.

If the sentence has even number of words we will be having two mid values so based on that the code is written and we will display the two middle values.

If the total number of words are odd then there will be only one middle word and that will be the output for the middle word.



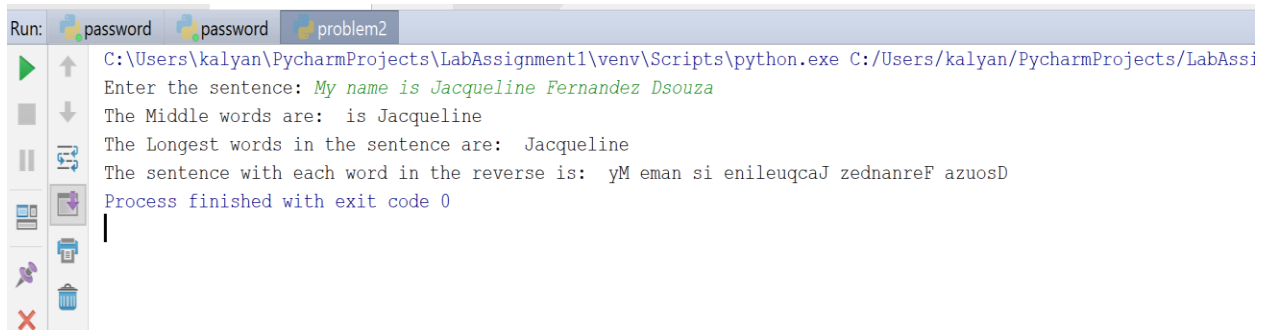
```
reverseOrder.py x sum.py x password.py x problem2.py x problem3.py x problem4.py x division.py x randomNumt
1
2 # Function to which we pass the sentence and perform the operations
3 def sentence(input):
4     # We split the sentence based on the spaces
5     words_list = input.split(" ")
6     # The length of the words is stored
7     words_count = len(words_list)
8
9     # To find the middle words in a sentence
10    # we will find the mid point of the total number of words
11    middle_word = int((words_count / 2))
12    # If total number of words are even
13    if words_count%2 == 0:
14        print("The Middle words are: ", words_list[middle_word-1],",", words_list[middle_word])
15    # If total number of words are odd
16    else:
17        print("The Middle words are: ", words_list[middle_word])
18
```

Now to get the longest word we will sort the words based on the length of each word. If we find two or more words with same length then by using the for loop we will print all of them. The sentence with words In reverse is displayed by using the for loop.

```
18
19     # To get the longest word from the given input sentence
20     words_sorted = sorted(words_list, key=len) # We sort the words list
21     length_word = len(words_sorted[-1])
22     print("The Longest words in the sentence are: ", end=" ")
23     # If there are more words with the same length
24     for word in words_sorted:
25         if len(word) == length_word:
26             print(word, ", ", end=" ")
27
28     # To reverse each word of a sentence and print it
29     print("\nThe sentence with each word in the reverse is: ", end=" ")
30     for i in range(0, words_count):
31         reverse_words = words_list[i]
32         print(reverse_words[::-1], end=" ")
33
34     # User will give the input from the console
35     sentenceOfWords = input("Enter the sentence: ")
36     sentence(sentenceOfWords) # Calling the function by passing the sentence
37
```

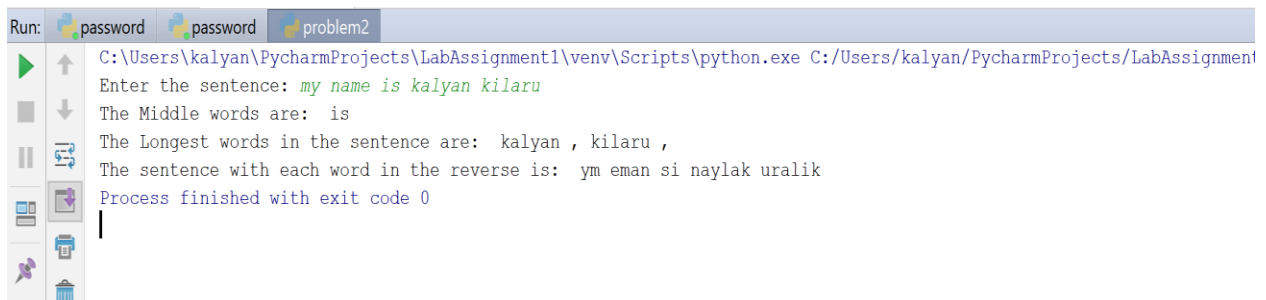
Input/Output:

For the given input we will get the output as shown below in the screenshot



```
Run: password password problem2
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmProjects/LabAssi
Enter the sentence: My name is Jacqueline Fernandez Dsouza
The Middle words are: is Jacqueline
The Longest words in the sentence are: Jacqueline
The sentence with each word in the reverse is: yM eman si enileuqcaJ zednanreF azuosD
Process finished with exit code 0
```

For the longest word, there can be more than one word with the same length. Here we are displaying all the words that are long in the given sentence.



```
Run: password password problem2
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmProjects/LabAssignment
Enter the sentence: my name is kalyan kilaru
The Middle words are: is
The Longest words in the sentence are: kalyan , kilaru ,
The sentence with each word in the reverse is: ym eman si naylak uralik
Process finished with exit code 0
```

Objective 3: For a given list of numbers we need find the triplets whose sum will be equal to zero(0).

Implementation:

The list is passed to the function where we find the length of the list and then we write three for loops in order to get three digits and we will then find the sum of these numbers. If they are equal to zero then all the triplets will be displayed.

```
reverseOrder.py x sum.py x password.py x problem2.py x problem3.py x problem4.py x division.py x randomNumb
1
2 # The function where the list is passed and it will find the triplets
3 def triplets(number_list):
4
5     # Finding the length of the list
6     total_digits = len(number_list)
7     # To print the input the output
8     print("\nThe list of numbers are: ", number_list)
9     print("The Triplets from the list whose sum is zero are: ", end=" ")
10    # As we are taking 3 numbers from the list we take the range from starting till last but 2
11    for i in range(0,total_digits-2):
12        # As this is the second loop we take all except the last value in the list
13        for j in range(i+1,total_digits-1):
14            # We take till the end of the list in this loop starting from third element
15            for k in range(j+1,total_digits):
16                # Checking if the triplets give the sum equal to Zero
17                if number_list[i] + number_list[j] + number_list[k] == 0:
18                    print("[" ,number_list[i], " ,", number_list[j], " ,", number_list[k],"]")
19
20
21    number_list = [1, 1, -2, 0, -1, 2, 8, -2, 9] # The list which consists of numbers
22    triplets(number_list) # Calling the function by passing the list
23
```

Input/Output:

For the given input numbers we will display the triplets whose sum is equal to 0

```
Run: password password problem3
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/Pycha
The list of numbers are: [1, 3, 6, 2, -1, 2, 8, -2, 9]
The Triplets from the list whose sum is zero are: [( 3 , -1 , -2 )]
Process finished with exit code 0
```

Even if there are many triplets all of them will be displayed excluding the duplicates.

```
Run: password password problem3
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/i

The list of numbers are: [1, 3, 6, -5, -1, 2, 8, -2, 9]
The Triplets from the list whose sum is zero are: [( 3 , -5 , 2 )]
[( 3 , -1 , -2 )]
[( 6 , -5 , -1 )]

Process finished with exit code 0
```

Objective 4: To find the common students who are in both python and web application courses and to find the un common students in both of them.

Implementation:

we will be using two for loops one with python students list and the other with web application students list, if the student is in both the lists then the student is appended to a list that is created earlier as Common students list.

```
reverseOrder.py x sum.py x password.py x problem2.py x problem3.py x problem4.py x division.py x randomNumber.py
1
2
3 def students(python_students, web_students): # Function students to get common and uncommon students list
4
5     # To print the lists
6     print("\nThe list of python students: ",python_students)
7     print("The list of web application students: ", web_students)
8
9     # To print the common students list
10    print("The list of students who are attending both the classes: ", end=" ")
11    common_students = [] # New list for common students
12    # Loop for getting the common students
13    for i in python_students:
14        for j in web_students:
15            if i == j:
16                common_students.append(i)
17    print(common_students)
18
```

Similarly, we take a new list for uncommon students, we will remove the common students from both the python and web application list of students so that we get the un common students list.

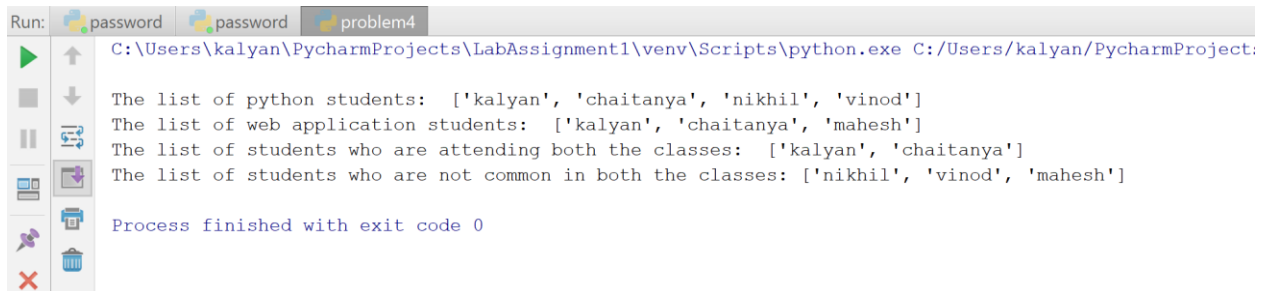
```

19     # creating a new list as python students and then removing the common students
20     uncommon_students = python_students
21     for i in common_students:
22         uncommon_students.remove(i)
23     # Creating a new list and then removing the common students from it
24     uncommon_students_web = web_students
25     for j in common_students:
26         uncommon_students_web.remove(j)
27     # The list of students who are not common in both
28     uncommon_students.extend(uncommon_students_web)
29     print("The list of students who are not common in both the classes:", end=" ")
30     print(uncommon_students)
31
32
33 python_students_list = ["kalyan", "chaitanya", "mahesh"] # Python students list
34 web_students_list = ["kalyan", "chaitanya", "mahesh"] # Web application students list
35 students(python_students_list, web_students_list) # Calling the function by passing the lists

```

Input/Output:

For the two-lists given we can get the common items among them and also the uncommon items among them.



```

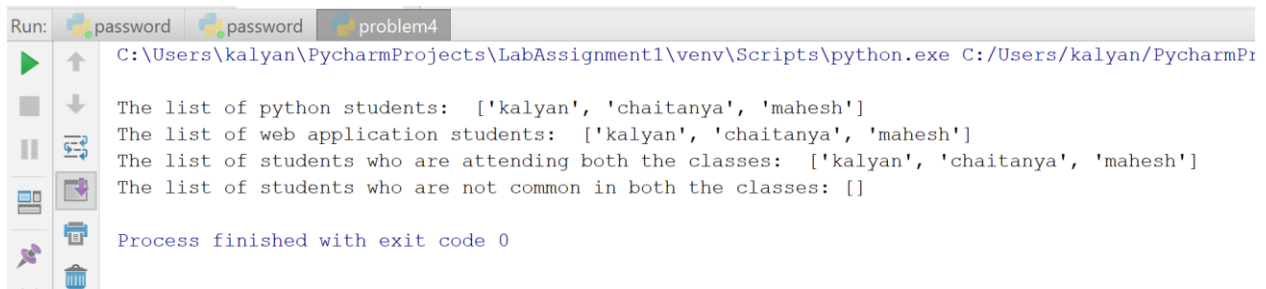
Run: password password problem4
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmProject:

The list of python students: ['kalyan', 'chaitanya', 'nikhil', 'vinod']
The list of web application students: ['kalyan', 'chaitanya', 'mahesh']
The list of students who are attending both the classes: ['kalyan', 'chaitanya']
The list of students who are not common in both the classes: ['nikhil', 'vinod', 'mahesh']

Process finished with exit code 0

```

If there are no items as uncommon then the empty list will be displayed.



```

Run: password password problem4
C:\Users\kalyan\PycharmProjects\LabAssignment1\venv\Scripts\python.exe C:/Users/kalyan/PycharmPr

The list of python students: ['kalyan', 'chaitanya', 'mahesh']
The list of web application students: ['kalyan', 'chaitanya', 'mahesh']
The list of students who are attending both the classes: ['kalyan', 'chaitanya', 'mahesh']
The list of students who are not common in both the classes: []

Process finished with exit code 0

```

References:

<https://www.digitalocean.com/community/tutorials/how-to-construct-for-loops-in-python-3>

<https://www.learnpython.org/en/Loops>