CO1102 Programming Fundamental- Workshop Week 3 Solution

Objectives

- Be able to understand and implement loop for problem solving in python
- To able to implement nested loop in python

Task 1:

Prepare a python program that can compute the solution for the following series (using loops)

$$\sum_{i=1}^{10} 3i$$

Solution

```
result=0
for i in range(1,11):
    result = result + (3*i)
print(result)
```

Let's make this a little more interesting, let's allow the start and end values to be chosen by the user. For example:

Sample output:

Where should i start? 3
Where should i stop? 5
The result for sum of 3i from 3 to 5 is: 36

```
start=int(input("Where should I start: "))
stop=int(input("Where should I stop: "))
result=0
for i in range(start,stop+1):
```

```
    result= result + (3*i)

print(result)
```

Extend your program so that the start and stop values are random between 1 to 10.

```
import random

start=random.randint(1,10)
stop=random.randint(start,10)
result=0
print(start)
print(stop)

for i in range(start,stop+1):
    result= result + (3*i)

print(result)
```

Task 2

Write a program to calculate the following by asking the user the start and stop values.

$$\sum_{i}^{n} 2i^2 + 4i$$

```
start =int(input("Where should I start ?"))
stop = int(input("where should I stop? "))

result=0
c=start
while  c<=stop:
        result= result + ( 2*(c**2) + 4*c)
        c=c+1
print(result)
```

Task 3

Write a program to calculate the following

Sum = 2 / 2! - 4/4! + 6/6! - 8 /8!

Solution:

```
fact = 1
sign = 1
result = 0
count = 1
while count <= 8:
    fact = fact * count
    if count % 2 == 0:
        result = result + ((sign * count) / fact )
        sign = -sign
    count = count + 1

print('The output of this series is : ', round(float(result),2))
```

Task 4

Write a program to get 10 words from user, count those start with vowel letter. Assume all the words **start with capital letter**.

```
count=0
for i in range (10):
    name=input("Name: ")
    if name[:1] == 'A' or name[:1]=='O' or name[:1]=='U' or name[:1]=='I' or name[:1]=='E':
        count =count + 1
print(count)
```

Task 5 (a bit challenging)

For this task, we want to think about how to generate a group of numbers from one up to value given by user so that they all have the same number of digits as the number entered by user. For example, if the user enters 122, then all numbers from 1 to 122 must be represented with three digits. See further example below:

Sample output:

Enter an integer number: 12

00

01
02
03
04
05
06
07
08
09
10
11
12

If the user enters 122, then the output will be as follow:

000
001
002
.
.
.
099
100
101
.
.
.
120
121
122

Solution:

```
n = int(input("please insert an integer number: "))
maxDigit=len(str(abs(n)))
count=0
for count in range(n+1):
    diff=maxDigit - len(str(abs(count)))
    if diff > 0:
        count = "0" * diff + str(count)
    print(count)
```