Lab Week 05

Repetition

FOR Loop

*For loop is used to repeat statements if the repetition frequency is known before the looping is executed. This frequency can come from a process or from the user. Example **week5ex1.py**:*

```
for k in range(1, 4):
    print (k)           # will print 1 2 3

for k in range(2, 10, 3):
    print (k)           # will print 2 5 8

for k in range(20, 5, -5):
    print (k)           # will print 20 15 10

n = int(input("Enter a number >> "))
for k in range(2, n):
    print (k)           # if input is 6, it will print 2 3 4 5
```

FOR Loop an also be used for string enumeration.

```
w = input("Enter a word >> ")
for k in w:
    print ("Char", k)       # if input is "mat", it will print Char m Char a Char t
```

WHILE Loop

WHILE loop is used to repeat statements similar to that of FOR loop. WHILE loop will check the condition to continue looping before the statement begins.
In FOR loop, we write

```
for k in range(1, 4):
    print (k)           # will print 1 2 3
```

In WHILE loop, we write

```
k = 1
while k < 4 :
    print (k)
    k = k + 1           # will print 1 2 3
```

*Example **week5ex2.py**:*

```
k = 20
while k > 5 :
    print (k)
    k -= 5              # will print 20 15 10
```

*Example **week5ex3.py**:*

```
sal = int(input("Enter your salary (-1 to exit) >> $"))
while sal >= 0 :
    print ("Your income tax is >> $", (sal * 0.05))
    sal = int(input("Enter your salary (-1 to exit) >> $"))

print ("Good Bye!")
```

Output example

```
Enter your salary (-1 to exit) >> $2000
Your income tax is >> $ 100.0
Enter your salary (-1 to exit) >> $1000
Your income tax is >> $ 50.0
Enter your salary (-1 to exit) >> $-1
Good Bye!
```

BREAK and CONTINUE statement

BREAK is used to immediately exit from the for loop and go to the next statement
CONTINUE is used to immediately exit from the current loop and go to the next loop within the same for loop.

BREAK example

```
n = int(input("Enter a number >> "))
for k in range(2, n):
    if k == 6:
        break
    print (k)               # if input is 10, it will print 2 3 4 5
```

CONTINUE example

```
n = int(input("Enter a number >> "))
for k in range(2, n):
    if k == 6:
        continue
    print (k)               # if input is 10, it will print 2 3 4 5 7 8 9
```

*BREAK and CONTINUE behave similar to for WHILE loop. Example **week5ex3.py**:*

```
n = int(input("Enter a number >> "))
k = 2
while k < n :
    k+=1
    if k == 6 :
        break
    print (k)                   # if input is 10, it will print 3 4 5
```

replace BREAK with CONTINUE. It will print

3 4 5 7 8

Exercise

1. *Create a program called MChart.py that asks for a number and list a multiplication chart for that number. The chart will give multiplication result of that number with numbers from 1 to 12.*

   Output example

```
Enter a number ? 4
Multiplication Chart for number 4
4 x 1 = 4
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 5 = 20
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
4 x 10 = 40
4 x 11 = 44
4 x 12 = 48
```

2. *Create a program called CountLetter.py that count the quantity of a specific letter in a word. The program will ask a word and a letter from the user.*

   Output example 1

```
Enter a word >> mamat
Enter a letter to count >> a
Qty of letter a is 2
```

   Output example 2

```
Enter a word >> mamat
Enter a letter to count >> b
Qty of letter b is 0
```

3. *Create a program called WhileMChart.py that asks for a number and list a multiplication chart for that number. The chart will give multiplication result of that number with numbers from 1 to 12. Use WHILE loop.*

   Output example

```
Enter a number >> 5
Multiplication chart for number 5
1 x 5 = 5
2 x 5 = 10
3 x 5 = 15
4 x 5 = 20
5 x 5 = 25
6 x 5 = 30
7 x 5 = 35
8 x 5 = 40
9 x 5 = 45
10 x 5 = 50
11 x 5 = 55
12 x 5 = 60
```

- The End -