Programming I – Lab #6

Aim: Getting Familiar with the for loop and range() function

Topics:

- 1. range() Function
- 2. for loop

Lab Questions -

Q1 – Write a code to generate the following sequence of numbers.

seq = list(range(21))
print(seq)

Q2 – Write a code to generate the following sequence of numbers.

[4,5,6,7,8,9,10,11,12,13]

seq = list(range(4, 14))
print(seq)

Q3 – Write a code to generate the following sequence of numbers.

[0, 5, 10, 15, 20, 25, 30, 35]

seq = list(range(0, 36, 5))
print(seq)

Q4 – Write a code to generate the following sequence of numbers.

[-5,-4,-3,-2,-1,0,1,2,3,4,5]

seq = list(range(-5, 6))
print(seq)

Q5 – Write a code to generate the following sequence of numbers.

```
seq = list(range(10, 2, -1))
print(seq)
```

Q6 – Write a code to generate all odd numbers between 5 and 25 (5 and 25 are included).

```
seq = list(range(5, 26, 2))
print(seq)
```

Q7 – Write a code to print all one-digit numbers, each number is printed in a line (use for loop).



Q8 – Write a code that uses a for loop to **print even numbers between 1 and 50** in a line, separated by a comma. (number 50 is also included).



```
for num in range(1,51):
    if (num%2==0):
        print(num, end=",")
```

 $\mathbf{Q9}$ – Modify the previous question (Q8) to find the total number of even numbers between 1 and 50.

```
count = 0
for num in range(1,51):
    if (num%2==0):
        print(num, end=",")
        count = count + 1
print("\nTotal number of even numbers: ",count)
```

Q10 – Write a code that uses a for loop to ask a user to enter 5 integer numbers and find the square of each number.

```
for i in range(5):
    num = int(input("Enter a number: "))
    squ = num**2
    print("Square of",num,"is",squ)
```

Q11 – Write a code that asks the user to enter an integer number, then calculate and print its factorial. (Example: Factorial of 4 is calculated as 4! = 4*3*2*1)

```
num = int(input("Enter an integer number: "))
fact = 1
for i in range(num,0,-1):
    fact = fact * i
print("Factorial of", num,"is",fact)
```

Q12 – Write a code that uses a for loop to find the largest number among all numbers in the following list. (All numbers are positive.)

[45, 11, 32, 67, 90, 9, 19, 27, 51]

```
numbers = [45, 11, 32, 67, 90, 9, 19, 27, 51]
largest = -1
for num in numbers:
    if (num>largest):
        largest = num
print("The largest number is: ", largest)
```

Q13 – Write a program that uses a for loop to print the following shape of asterisks (*) to the console.



Q14 – Modify the question Q13 to print the following shape of asterisks (*).



1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Q15 – Write a program that will print the multiplication table (1 to 10) as follows:

```
for i in range(1,11):
    for j in range(1,11):
        result = i*j
        print(result, end="\t")
        print("\n")
```

Q16 – What is the output of this code?

```
for i in range(1,3):
    for j in range(1,5):
        print(j, end="")
        if (j==3) and (i==1):
            break
    print("\n")
```