

## Programming Fundamentals

### Tutorial 5

**Note:** You are not allowed to copy-paste code snippets. You need to have a basic understanding of following concepts at the end of the Tutorial

- Use Python FOR loops
  - Nested FOR loops
  - FOR- Else
  - Continue and break with FOR
1. Use Pycharm integrated development environment (IDE) to write and run the following programs. If it not installed, you can use Python IDLE.
  2. Following code snippet demonstrates a simple nested FOR loop in python. Execute the code and try to understand the flow of the code

```
for i in range(1,100):  
    #outer loop iterates 1 to 99  
    for j in range(1,50):  
        #inner loop iterates 1 to 49  
        print(str(i)+" "+str(j))
```

3. Write a program that simulates the rolling of two six-sided dice and then counts the number of times that the dice generate a double (e.g. both dice shown the same value). Roll the dice 50 times and then print the number of doubles. Example output., Out of 50 you rolled 5 doubles.
4. Display the cube of the number up to given number
5. Print the following patterns using FOR loop

- a. 55555  
5555  
555  
55  
5
- b.

```

      *
    * *
  * * *
* * * *
* * * * *
* * * * *
* * * * *

```

C.

```

      *
    * *
  * * *
* * * *
* * * * *

```

6. Write a loop to find the factorial of a given number?
7. Write a program that generates a random number (0-10) and ask you to guess it. You have three attempts.
  - Define a `random_number` with `randint` between 0-10.
  - Initialize `guesses_left` to 3.
  - Use a loop to let the user keep guessing so long as `guesses_left` is greater than zero.
  - Ask the user for their guess, just like the second example above.
  - If they guess correctly, print 'You win!' and break. Decrement `guesses_left` by one.
  - Use an `else`: case after your loop to print: You lose.
8. Scrabble is a game where players get points by spelling words. Words are scored by adding together the point values of each individual letter. Write a program which takes a word as input and returns the equivalent scrabble score for that word.

```

score = {"a": 1, "c": 3, "b": 3, "e": 1, "d": 2, "g": 2,
         "f": 4, "i": 1, "h": 4, "k": 5, "j": 8, "m": 3,
         "l": 1, "o": 1, "n": 1, "q": 10, "p": 3, "s": 1,
         "r": 1, "u": 1, "t": 1, "w": 4, "v": 4, "y": 4,
         "x": 8, "z": 10}

```