# Programming Assignment 05

## **Functions**

### Instructions

This programming assignment consists of **2 programming exercises**. You have to:

- 1. download the empty Python files on NYU Classes
- 2. edit them according to the assignment
- 3. **verify** on your computer that it works
- 4. upload them back on NYU Classes (do not change the filenames)

#### Exercise 1 - Diamond function

Write the code for function diamond in the file exercise1.py.

The function diamond:

- takes one parameter N (type int), its value must be **odd** and in the range [3,99]
- it draws a **square shape** made of integer values and spaces:
  - integer values are always printed with **2 digits** (for example, value **7** is printed **07**)
  - every line consists of integer values from  $\begin{bmatrix} 1 \end{bmatrix}$  up to  $\begin{bmatrix} \mathbb{N} \end{bmatrix}$ , where some values have to be replaced by spaces instead
  - the **first** and **last row** are **full** (no space)
  - the **middle row** is **empty** except for values 1 and N,
  - each row from the first one to the middle one is increasingly empty from its center
  - each row from the middle one to the last one is increasingly full to its center

Below are a couple of example outputs when using the diamond function from the shell:

```
>>> diamond(15)
010203040506070809101112131415
01020304050607 09101112131415
010203040506
                   101112131415
0102030405
                     1112131415
01020304
                       12131415
010203
                         131415
0102
                           1415
01
                             15
0102
                           1415
010203
                         131415
01020304
                       12131415
0102030405
                     1112131415
010203040506
                   101112131415
01020304050607 09101112131415
010203040506070809101112131415
```

### Exercise 2 - Find a character in a given string

Write the code for function find\_character in the file exercise2.py.

The function find\_character:

- takes 2 parameters:
  - 1. aString  $\rightarrow$  type str: the given string
  - 2.  $aChar \rightarrow type str$ : the character to be found in the string
- returns the index of first occurrence of the specified character.
- returns -1 if the character is not found.

NOTE: You shall not use the method <code>.find()</code>

Below are a couple of example outputs when using the find\_character function from the shell:

```
>>> a = find_character('hello World', 'o')
>>> print(a)
4
```

```
>>> a = find_character('hello World', 'p')
>>> print(a)
-1
```