

CS 104 - Homework 03



The deadline for this homework is Wednesday 27th of October 23:59:00. Please name your solution files as `solution1.py`, `solution2.py`, `solution3.py`, `solution4.py`. Once you're finished with the homework, upload the files to LMS in order to complete the assignment. The assignment can and must be solved with the content we have covered during the first four weeks.

1. (25 pts) Please implement a function that takes a number as its argument and returns whether the number is prime or not. For example, let's assume that call your function `is_prime_number`, `is_prime_number(4)` returns `False`, `is_prime_number(7)` returns `True`.
2. (25 pts) The surface area of an elliptic cylinder is calculated as the sum of all its surfaces. Please implement the following three functions and demonstrate that it works for an example.
 - a) A function that takes the radii of the elliptic cylinder and returns the area of the elliptic surface.
 - b) A second function which takes the radii and height of the cylinder and returns the area of the lateral surface.
 - c) Implement and use a third function that uses the first two functions and computes and returns the total surface area of an elliptic cylinder.
 - d) Please declare `pi=3.141592` **only once** in your file and use this variable other places whenever necessary.
3. (25 pts) Write a Python program that defines a function in order to print the following on the screen. The properties of this function must be as follows:
 - a) **Your function** must accept an argument called `height` which will be used to figure out the height of the triangle.
 - b) **Your function** must return the sum of all integers on the last line of the triangle. For example 16 for `height=4`, 4 for `height=2`, and 49 for `height=7`.
 - c) **Your function** must use another function called `get_row` to figure out the row to be printed. This function must get the row height and return the necessary line. For example, it shall return "1" for `row_height=1`, "1 2 1" for `row_height=2`, "1 2 3 4 5 4 3 2 1" for `row_height=5`.
 - d) **Your function** must use a loop to call the `get_row` function and print the result to the screen.

```
      1
     1 2 1
    1 2 3 2 1
   1 2 3 4 3 2 1      height = 4

      1
     1 2 1      height = 2

      1
     1 2 1
    1 2 3 2 1
   1 2 3 4 3 2 1
  1 2 3 4 5 4 3 2 1
 1 2 3 4 5 6 5 4 3 2 1      height = 7
```

4. (25 pts) Please implement four functions and use them to print out the following. You may use a particular function more than once.

