Lab 3:

Task 1:
Find all possible number from range <1,20>, that are divided by 3 (without a rest).
```
   3
   6
   9
  12
  15
  18
```

Task 2:
Create a list a = [1, 2, 3, 4, 5, 6, 7, 8] using the range() function and the list() function, which converts values to a list. Then use the for loop to display only the values from 1 to 4 from the list, according to the example presented below. Apply break.

```
My list: [1, 2, 3, 4, 5, 6, 7, 8]
----------------
1
2
3
4
```

Task 3:
Write a script that prints the multiplication table (pay attention to the right alignment of the numbers).
Hint: %4d in print() reserves 4 characters for a decimal number:
```
   1    2    …   10
   2    4    …    …

   …    …    …    …
  10    …    …  100
```

Task 4:

Write a script that prompts the user to enter one of the letters n or c. If the user enters one of the above mentioned letters, the program gives a message: "Thank you!". If the user enters a different letter, the program informs about this fact and gives another chance to enter the correct letter. Until the correct effect appears.

Task 5:
Write a script that will retrieve values from the user as long as the sum of the entered values does not exceed 100. The program is to end with printing the sum obtained. For example: for values (10, 40 and 70) entered by user:
```
Enter a value, please: 10
```

```
Enter a value, please: 40
Enter a value, please: 70
The end. Total sum = 120
```

Task 6:
Using a `for` loop, write a script that will count the number of times the user will enter a value of 5 among the six values he can enter.

```
Enter any number from 1 to 10: 2
Enter any number from 1 to 10: 3
Enter any number from 1 to 10: 5
Enter any number from 1 to 10: 5
Enter any number from 1 to 10: 9
Enter any number from 1 to 10: 5

The number 5 was entered 3 times.
```

Task 7:
Using any loop you know, write a script that will generate the following pattern:

```
*
**
***
****
```

Hint: in Python `print()` function has a skill of multiplying a string. Try: `printf("a"*3)`

Task 8:
A nested list is given: `R = [["CA", "NV", "UT"], ["NJ", "NY", "DE"]]`. Using any loop, display the list items as follows:

```
CA
NV
UT
NJ
NY
DE
```

Task 9:
Write a script that will calculate following expressions, based on floating point value taken from the user:

1. $3x^3 - 2x^2 + 3x - 1$,

   for x = 0 this expression should give the result of -1,
   for x = 1: 3
   for x=-1: -9

2. $\dfrac{x^2}{\pi^2\left(x^2 + \frac{1}{2}\right)} \cdot \left(1 + \dfrac{x^2}{\pi^2\left(x^2 - \frac{1}{2}\right)^2}\right)$,

   for x = 0 this expression should give the result of 0.0,
   for x = 1: 0.09492340844071674,

for x=10: 0.10092027643208898

Hint: Python will provide you the exact value of `pi` - you just need to import a symbol called `pi` from the `math` module, e.g. by putting the following instruction in the first line of the program: `from math import pi`. From that line, you can use the symbol `pi` in your script.

3.
$$\cfrac{1}{x+\cfrac{1}{x+\cfrac{1}{x+\cfrac{1}{x}}}}$$

for x = 1 the result is (about): **0.6**,
for x = 10: **0.0990195**,
for x = 100: **0.009999**,
for x = -5: **-0.192582**