Homework1:

Read chapter 1 and do the following exercises

Exercise 1.6. *Compute the growth of money in a bank.*

Let p be a bank's interest rate in percent per year. An initial amount A has then grown to

$$A\left(1+\frac{p}{100}\right)^n$$

after n years. Make a program for computing how much money 1000 euros have grown to after three years with 5% interest rate. Name of program file: `interest_rate.py`. ◇

Exercise 1.9. *Type in programs and debug them.*

Type these short programs in your editor and execute them. When they do not work, identify and correct the erroneous statements.

(a)Does $\sin^2(x)+\cos^2(x)=1$?

```
from math import sin, cos
x = pi/4
1_val = sin^2(x) + cos^2(x)
print 1_VAL
```

Name of program file: `sin2_plus_cos2.py`

Exercise 1.10. *Evaluate a Gaussian function.*

The bell-shaped Gaussian function,

$$f(x)=\frac{1}{\sqrt{2\pi}\,s}\exp\left[-\frac{1}{2}\left(\frac{x-m}{s}\right)^2\right], \tag{1.6}$$

is one of the most widely used functions in science and technology[32]. The parameters m and s are real numbers, where s must be greater than zero. Make a program for evaluating this function when $m=0$, $s=2$, and $x=1$. Verify the program's result by comparing with hand calculations on a calculator. Name of program file: `Gaussian_function1.py`. ◇

Exercise 2.19. *Index a nested lists.*
We define the following nested list:

```
q = [['a', 'b', 'c'], ['d', 'e', 'f'], ['g', 'h']]
```

Index this list to extract 1) the letter `a`; 2) the list `['d', 'e', 'f']`; 3) the last element `h`; 4) the `d` element. Explain why `q[-1][-2]` has the value `g`. Name of program file: `index_nested_list.py`. ◇

Question 6:

X= set(1, 3, 8, 10, 14, 10, 20, 25)

Y=set(3,3,8,10,15,20,33,55,88)

Write a program to calculate the intersection, union, X-Y, Y-X using set operations.

How to submit:

1) Put all your program files into a folder named homework1
2) Zip it into a single file homework1.zip using the winrar program
3) Upload your submission file to https://dropbox.cse.sc.edu/ since you enrolled in this course, you should have already got access to this above cse dropbox. This is NOT the same dropbox that we share files. Don't put your homework into that CSCE206 folder as it can be seen by others.

Note:

- The dropbox for each homework will be closed after due date. So be sure to submit it before deadline.
- You are encouraged to do the other exercises to test your learning
- please name your program files as suggested by the book.
- You need to make your programs run without any error. When I grade it, I will check the results.
- Write your code with reasonable comments