**Homework 2**

**Exercise 1.** Do the exercises from 3.4 to 3.11 in the textbook.

**Exercise 2.** Create a program that reads two integers, a and b, from the user. Your program should compute and display:
- The sum of a and b
- The difference when b is subtracted from a
- The product of a and b
- The quotient when a is divided by b
- The remainder when a is divided by b
- The result of log10 a
- The result of $a^b$

Hint: You will probably find the log10 function in the math module (import math; pi = math.pi) helpful for computing the second last item in the list.

**Exercise 3.** Write a program that asks the user to enter the width and length of a room (meters). Once these values have been read, your program should compute and display the area of the room. The length and the width will be entered as floating-point numbers.

**Exercise 4.** Write a program that begins by reading a radius, $r$, from the user. The program will continue by computing and displaying the area of a circle with radius $r$ and the volume of a sphere with radius $r$. Use the `pi` constant in the `math` module in your calculations.

**Exercise 5.** Write a program that reads a positive integer, n, from the user and then displays the sum of all integers from 1 to n.

**Exercise 6.** Create a program that reads a duration from the user as a number of days, hours, minutes, and seconds. Compute and display the total number of seconds represented by this duration.

**Exercise 7.** $0.1 + 0.1 + 0.1 == 0.3$ In Python, does this expression return true (True) or false (False)? Can you explain?

**Exercise 8.** Given two python lists:
> list1 = list("10101000100101101010")
> list2 = list("10111001011010100001010")
> Let A be the event of choosing "1" from the list1 and B the event of choosing "1" from the list2
> a) Using the count() method to count the number of "1" in the list1 and the number of "0" list2.
> b) Calculate the probability P(A), P(B)
> c) Calculate the probability P(A,B), P(A| not B)