Dalarna University

GIK29B: Python- and R-programming 7.5 Credits

Lab 2

Innehåll

Formalities

You solve the tasks in each group that you are divided into. Note that you should do a presentation, see information at the end of this document regarding the Hand-in.

Deadline

Wednesday 16th of February

Resources

Tips on resources or help :

- the course literature
- w3schools - functions

Exercises

In each exercise, make sure to comment your code

Exercise 1: DVD Club Points

A Video club that awards points to its customers based on the number of videos purchased each month. The points are awarded as follows:

- If a customer purchases 0 dvd's, the earning is 0 points.
- If a customer purchases 1 dvd, the earning is 5 points.
- If a customer purchases 2 dvd's,the earning is 15 points.
- If a customer purchases 3 dvd's, the earning is 30 points.
- If a customer purchases 4 or more dvd's, the earning is 60 points.

Write a program that asks the user to enter the number of videos that he or she has purchased this month, then displays the number of points awarded.

Exercise 2: BMI

Write a program that calculates the BMI (Body Mass Index) for a user.

Let the program ask the user for needed input:

- the weight (in kg)
- the height (in meter)

Then, display the BMI value on the screen with a message.
The message depends on the BMI index, if the person is:

- underweight
- normal weight
- overweight
or
- has obesity

BMI index
Under weight: < 18.5
Normal weight: 18.5 - 24.99
Over weight: 25.0 - 29.99
Obesity: BMI of 30 or greater

Formula: BMI = weight / (height^2)

Exercise 3: Property Tax

A county collects property taxes on the assessment value of property, which is 60 percent of the property's actual value.
For example, if an acre of land is valued at $10,000, its assessment value is $6,000.
The property tax is then 72¢ for each $100 of the assessment value. The tax for the acre assessed at $6,000 will be $43.20.

Write a program that asks for the actual value of a piece of property and displays the assessment value and property tax.

Exercise 4: Sum of Numbers

Write a program using a while loop and within the loop asks the user to enter a series of positive numbers.
The user should enter a negative number to signal the end of the series.
After all the positive numbers have been entered, the program should display their sum.

Exercise 5: Maximum of Two Values

Write a function named `my_max` that accepts two integer values as arguments and returns the value that is the greater of the two. For example, if 12 and 19 are passed as arguments to the function, the function should return 19. Use the function in a program that prompts the user to enter two integer values. The program should display the value that is the greater of the two.

Exercise 6: Test Average and Grade

Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following functions in the program:

- `calc_average` This function should accept five test scores as arguments and return the average of the scores.

- `determine_grade` This function should accept a test score as an argument and return a letter grade for the score based on the following grading scale:

Score Letter Grade

90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

Hand-in

The hand-in is done as a group in Learn with,

- your Python (**.py**) files and a report zipped together as a **.zip**-file.

  The report should be *short*, max one A4 page, where you reflect on how the lab went. I.e. did you encounter any obstacles? How did you overcome them ? Was the lab hard or easy ?

- a recorded presentation, max 12-15 minutes for your group ;)

  - each one in the group presents **one**! exercise in the assignment, decide within the group which task each one should present

    * present yourself in the recording with name before you begin the presentation :)

  - present the code verbally and independently

  - run and show that the program works

  - the recording can be

    * a link to a presentation on youtube
      or
    * an attached file to your submission
      this site can be used, which easy to get started with : Apowersoft - Free Online Screen Recorder
      the files can be stored in different formats but **use .mp4 format if you hand in a recording as a file**

Good luck ! :)