Web Engineering

Fall 2020

LAB-01

Date: October 27, 2022.

The objective of this lab is to

1. Practice basic python programming concepts.
2. Utilize built-in python data structures like *lists, tuples, and dictionaries.*
3. Practice DRY (don't repeat yourself) via functions.

Instructions!

1. Keep your student identity cards with you.
2. This is an individual lab, you are strictly **NOT** allowed to discuss your solutions with your fellow colleagues, even not allowed to ask how is he/she is doing, it may result in a negative marking.
3. You can **ONLY** discuss this with TAs or Ma'am.
4. Save your work frequently. Make a habit of pressing CTRL+S after every line of code you write.
5. This is a **GRADED** lab, so, at the end of the lab session, you should have your complete work ready for evaluation.
6. Follow proper coding conventions and put comments where needed.
7. ***Total Time for this Lab is 90 minutes.***

Task 01 **[5 Marks - 15-20 minutes]**

Matrix multiplication

In this task, define a function `matrix_multiplication()` that takes 2 lists as parameters and returns their result after multiplication and then print the resultant matrix in a good format in the main function.
Matrices will be taken as input from the user.

NOTE: You will be using nested lists (recall the concept of 2D arrays) for storing matrices.

Task 02 [15 Marks - 70-75 minutes]

Students Marks Evaluation

1. **F**or this task, you'll require a *dictionary* that will represent the data of a single student.

   This dictionary must have 4 key-value pairs.
   1. Name of the student
   2. Homework Marks of the student
   3. Quizzes Marks of the student
   4. Semester's Project Marks of the student

   Create at least 3-5 sample dictionaries and store them in a list.

2. **C**reate a function `print_students()` that takes a dictionary as an argument and prints all the students in a *well-formatted* manner with the following data.

   print the student's name
   print the student's homework
   print the student's quizzes
   print the student's final_project marks

3. **D**efine a function called `average()` that takes the *list as a parameter* (of marks/numbers) and *returns its average*. *(Don't use built-in sum() functions)*
4. **W**rite a function called `get_average_of_student()`, that takes a *student dictionary as a parameter* and *returns the average for homework and quizzes, in a tuple.*
5. **D**efine a function `weighted_average()` that takes a *tuple and project's marks as a parameter* and returns the *weighted average of the student* (out of 100). (weight of homework is 15%, quizzes are 40% and final_project is 35%).
6. **D**efine a function called `get_letter_grade()` that takes *marks(weighted average) as a parameter* and *returns a char: A, B, C, D, or F.*

   Grade criterion is
   A: 80-100
   B: 70-79
   C: 60-69
   D: 50-59

   F: Below 50.

7. **D**efine a function called `get_class_average()` that takes a list of *weighted marks (Hint: utilize the function in point 5) as a parameter* and *returns the average of the class.*

Carpe Diem