CS 115 - Introduction to Programming in Python

Lab Guide 06

Lab Objectives: 2 D Lists, Classes

Notes:

1. Upload your solutions as **a single .zip file** to the Lab06 assignment for your section on Moodle. You must use the following naming convention: Lab06_Surname_FirstName.zip where Surname is your family name and FirstName is your first name.
2. You should only use functionality covered in CS115 in your solution.
3. Include a docstring for your functions.

1. a. Write a function `formSentence()` that takes a two-dimensional list of words (inList) and a String (searchChr) as parameters. The function will check all words row-wise in inList and form a sentence from the words that start with the given character by putting a space between the words. The function should return the sentence formed.

   Note: your function should work for a 2D array of any size.

   b. Write a script to test the function defined in part a.

   Sample Run: (search character is 's')

```
Two Dimensional List:
['This', 'is', 'lab', 'Script']
['We', 'should', 'finish', 'it']
['we', 'solve', 'some', 'questions']
Sentence: Script should solve some
```

2. Create a class, Instructor (**Instructor.py**) that represents a typical **Instructor** object.

   Instructors have the following attributes:

   - Id
   - Name and surname
   - Status (F – Full-time, P – Part-time)
   - Number of teaching hours

   Note: all data attributes should be private (__)

   a. Your class should have an **`init()`** method that takes the values of all four attributes as parameters.

   b. Your class should define the following methods:
      - `get_id:` returns the id
      - `get_name:` returns the name
      - `get_status:` returns the status
      - `get_hours:` returns the number of hours

   c. Write a method, `calculate_salary()`,which calculates the salary of an instructor according to the following:

      Full-time Instructor: 5000 + (number_of_hours) x 500 TL
      Part-time Instructor: (number_of_hours) x 400 TL

   d. Your class should define the **`__str__`** and **`__repr__`** methods according to the output shown in the sample run.

3. Create a Python script that does the following:
   a. Implement a `read_file()` function which takes a file name as a parameter and returns a dictionary which contains the id of instructors as keys and instructor objects as the values. (First examine the data file format).
   b. Read the contents of the file **`'instructor.txt'`** into dictionary d using the `read_file()` function.
   c. Input an id of an instructor and display his/her information.
   d. Input a status type and store the instructors with the given status in a list. Display the list. (see Sample Run)

Sample Run:

```
Enter instructor id: 7621
Name:Fatih Tekin
Status: F
Salary: 13000.0 TL


Enter status (F - Full-time / P) - Part-time: P
Part-time Instructors:
[Id:7623
Name:Burcu Koksal
Salary: 2400.0 TL
, Id:8911
Name:Fatos Gurun
Salary: 1200.0 TL
, Id:7833
Name:Lale Balci
Salary: 1600.0 TL
]
```