CS 171
Lab Assignment 3
Collection Data Types

This lab assignment uses many elements provided in the main bibliographic reference for these lectures:
Programming in Python 3

A Complete Introduction to the Python Language,
2nd Edition,
Mark Summerfield

1 Exercises

Exercise 1 *Write a program that asks a string to the user, and counts the number of time each character occurs in the string.*

An example of the execution of such program is:

```
$ Please enter a string: program
[('p', 1), ('r', 2), ('o', 1), ('g', 1), ('a', 1), ('m', 1)]
```

□

Exercise 2 *Repeat Exercise 1, but in such a way that the program outputs a set (but not using the* `set()` *function to convert from a list).*

An example of the execution of such program is:

```
$ Please enter a string: program
{('p', 1), ('r', 2), ('o', 1), ('g', 1), ('a', 1), ('m', 1)}
```

□

Exercise 3 *Repeat Exercise 1, but in such a way that the program outputs a dictionay (but not using the* `dict()` *function to convert from a list).*

An example of the execution of such program is:

```
$ Please enter a string: program
{'p': 1, 'r': 2, 'o': 1, 'g': 1, 'a': 1, 'm': 1}
```

□

Exercise 4 *Each of the 4 students in a class has taken two exams. Implement a program that registers, in a multiple-subscripted collection, the number of each student and the grades he/she obtained. A possible set of values to store is:*

Number	*Grade 1*	*Grade 2*
10701	*10*	*12*
09001	*5*	*15*
10321	*16*	*17*
10452	*8*	*11*

Later, print the contents of the collection, as well as an extra column showing, for each student, the average of his/her two grades.

```
Student 1 number: 10701
Student 10701 grade 1: 10
Student 10701 grade 2: 12

Student 2 number: 09001
Student 09001 grade 1: 5
Student 09001 grade 2: 15

Student 3 number: 10321
Student 10321 grade 1: 16
Student 10321 grade 2: 17

Student 4 number: 10452
Student 10452 grade 1: 8
Student 10452 grade 2: 11

Number   Grade 1   Grade 2    Avg
10701     10         12         11.0
09001     5          15         10.0
10321     16         17         16.5
10452     8          11         9.5
```

□

Exercise 5 *Having reached this point, you are strongly encouraged to:*

1. *Study in detail the example programs that are described in Chapter 3, Section Examples, starting on page 148 of the reference book;*
2. *Provide solutions to the exercises in the same Chapter, Section Exercises, which start on page 158.*

□