INF 510 – Principles of Programming for Informatics

Homework 2

Spring 2017

Due Date: Jan. 27, 2017 at 4:30 PM in Class

Instructions:

- Make sure you have installed python 2.7 on your computer.
- Read section 9.1 of the book 'Dictionaries as a set of counters' for Question 3.
- Send your work to the instructor at: pedro@isi.edu
- For all the programs in this assignment provide a separate file following the naming scheme: lastname_INF510_HW2_Qn.py for question n.
- You are encouraged to use the python interpreter to validate your answers.

Question 1. [30 points]
You are to design a guessing test that generates a random integer number between 1 and 10 and repeatedly prompts the user for a guess, at each time indicates if the guess is lower or higher than the randomly generated number. When the use guesses correctly, the program should terminate and indicate the number of tries the user took to guess the number correctly.

For this assignment, you need to use the built-in 'randint' function of the random package in python. You can do this by including the 'import' statement shown below and generating the random number between 1 and 10 as shown below.

```
import random

v = random.randint(1,10)
```

Question 2. [30 points]
Write a python function named AbsList that creates a copy of an input list and converts all negative numbers in the input list to their absolute value in the output list. If an item in the input list is a non-numeric value, the function should not include it in the output list. As an example, if the input is ['INF-510', -1, 0.1, 2, 'US', 3] the output should be [1, 0.1, 2, 3].

You might have some difficulties figuring out how to test if a string represents a numerical value. Use the 'try/except' construct to check if a string can be converted to a float for example and then use this information to proceed knowing that in fact the input string represents a numerical value.

Question 3. [30 points]
Given a text (possibly a very long string), write a program that uses a dictionary (see chapter 9 of the textbook) and find the most frequently occurring word in the text. For this purpose you will need to make use of the `split()` function for strings, as shown below.

```
words = text.split()
```

Question 4. [10 points]
Write a program that given a string identifies an e-mail addresses in that string of the form `username@hostname`. The code should simply print the user name and host name in separate lines. Test your program for the strings below and verify that the outputs are correct. You can ignore the case where there are multiple e-mails in a single line, but you code needs to handle the case where there is no e-mail of this form in the string. In this later case your code should simply terminate.

For the line:

```
line = 'From pedro@isi.edu Mon Sep  5 15:24:10 2016'
```

the output should be:

```
 hostname = isi.edu
 username = pedro
```

For the line:

```
line = 'From pedro:isi.edu Mon Sep  5 15:24:10 2016'
```

there should be no output.

You might find it useful to use the string function 'rfind'. This function is not a 'reverse' find, so you need to read a bit more into its description and how to set up its parameters to use it and correctly find the user name in a string.