22C:080/CS:2110 Programming for Informatics
Fall 2016
Homework 4

Date assigned: September 16, 2016
Date Due: September 23, 2016 by 11:30am (before class starts).
The purpose of this homework is to familiarize you with recursion.

Create a file called **`recursion.py`** which shall contain the functions you write for the following two problems. Both the problems need to be solved using recursion. *You just need to submit the **`recursion.py`** file on ICON.*

1. Write a function **`bisection`** as specified below:

```
def bisection(numbers, n):
'''
Function bisection takes as input a range of sequential integers starting from 0 and searches
for the integer n in the range.  The bisection search is done recursively. If n is found then
the function returns 'Found', if n is not found then it returns 'Not Found'.  Either way the
function returns the number of calls made to the bisection function.
'''
```

   For example (the expected output is shown in **bold**):

```
numbers = list(range(10))
res1, res2 = bisection(numbers, 1)
print(res1, res2)
Found 2
res1, res2 = bisection(numbers, 11)
print(res1, res2)
Not Found 5
```

2. Write a function **`print_large_string`** as specified below:

```
def print_large_string(input_string, max_length):
'''
Function takes as input a string and a maximum length. It keeps appending the string to itself
until it becomes either equal to or greater than the maximum length specified. The function
prints the input string and the current length of the input string on each call. Also once the
string reaches the desired length the system prints out "Length reached" and prints the string
and its length.
'''
```

   For example (the expected output is shown in **bold**):

```
print_large_string('abc', 18)
abc 3
abcabc 6
abcabcabcabc 12
Length reached!
abcabcabcabcabcabcabcabc 24
print_large_string('xy', 15)
xy 2
xyxy 4
xyxyxyxy 8
Length reached!
xyxyxyxyxyxyxyxy 16
```

Submission Instructions

- Always comment your code. Proper commenting allows us to understand the thought that went into the code which in turn makes gaining points easier.
- Please follow all file naming conventions that are specified in the homework.
- If there are multiple files to be uploaded, compress them to a single file (zip).
- Submit your work on ICON under Assignments. Make sure you submit your files to the correct homework.