**CS1401 – Challenge Lab 1**

**Due: Friday October 30, 2015 by 11:59 p.m.**

**To be submitted via Piazza in the folder “challengelab”**

**Challenge Lab 1!**

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| This lab is your first challenge lab. What that means is that it is OPTIONAL. If you decide to do it and you are successful, you can obtain up to 50 points to be added to your total number of lab points. This will definitely increase your final grade for labs!  Important: since this is an optional lab, you are expected to work on it outside your lab sessions, unless you are completely done with the current assigned lab.  We hope you enjoy being challenged! |

**This lab is not in replacement of the regularly assigned labs. Regularly assigned labs should be your priority and only once you are done, you should work on this challenge lab. You should expect to work about 3 to 4 hours to complete this assignment.**

**Lab description. Converting numbers to different bases.**

In this activity, you will design a method called **Conversion** whose aim is to practice the conversion of numbers from one given base to another base.

Method **Conversion** takes the following inputs:

* The number the user plans to convert;
* The original base (an integer); and
* The target base (an integer);

And it returns the number, given in the original base, now translated in the target base.

*Note: the base numbers can be anything between 2 and 36.*

Examples:

Conversion(111,2,10) 🡪 7

Conversion(31,10,2) 🡪 11111

Conversion(A3,16,10) 🡪 163

Conversion(1A,16,2) 🡪 11010

Conversion(27,10,16) 🡪 1B

Important note: When manipulating the number given as an input, you are not allowed to use built-in functions from Java, outside of length() (for Strings), possibly charAt() (for Strings), power function, floor/ceiling.

**What you have to turn in:**

* A docx file in which you describe the pseudocode of the above conversion method, along with a set of test cases designed to challenge your implementation and ensure that it works properly (i.e., as expected).
* A **single** java file that contains the conversion method as well as a main file.

**Important notes:**

* Indent your code properly following guidelines available at: <http://www.oracle.com/technetwork/java/javase/documentation/codeconventions-136091.html>. 15% of your grade will be reserved for correct indentation. Failing to indent properly puts you at risk of losing 15%.
* Spend time working on your pseudocode as pseudocode weighs 50% of the grade on this lab.
* Spend time designing your test cases as the quality of your test cases weighs 20% of the grade on this lab.
* Do not write your methods inside the main method. Each method has to be written where instructed in the code provided to you. Failing to do so puts you at risk of losing 20% off your lab grade.
* Do not submit more than the files that are requested from you: one docx file and one java file.

**That’s it! Looking forward to seeing you in lab!**