LAB #6 – Functions

Remember, if you need to get Lab #5 graded, you need to show your programming part (6 pts) of Lab #5 **to the TAs within 10 minutes of getting to lab**, and you and your partner **will not receive lab credit if you do not get checked off** before leaving each lab. Once you have a zero on a lab, then it cannot be changed because we have no way of know if you were there or not!!! We will work on the last part of Lab #5 in this lab. **You will receive 4 pts for lab #5 and #6**.

New Labs: We are going to change the way we do labs by providing relevancy through videos and using larger group activities to encourage design, while utilizing a broader set of strengths. Each lab will begin with a 10-15 minute video shown on the TV by a TA, followed by a large group activity. The group activity requires design, input from everyone, and no computers!!!!

We realize working in a group can be difficult, but it is the real world. If you look at why people work in groups, then you realize that everyone brings their own unique set of strengths and weaknesses. Creating a productive, dynamic group involves having empathy toward one another and capitalizing on everyone's strengths.

What is empathy?
http://www.ted.com/talks/jeremy_rifkin_on_the_empathic_civilization

Now, let's learn about everyone in your group. Since we all learn/think differently, it helps to understand yourself and others around you. Take this quick quiz to find out the learning style you have. https://www.engr.ncsu.edu/learningstyles/ilsweb.html

After everyone in the group has finished filling out the inventory, then compare your results with everyone else in your group. Does this change the way you view your group?

Practice Designing as a Group (NO Computers Allowed!!!) (4 pts: Lab #5 and #6)

We need to get into a bigger group before you begin your paired-programming. Get into groups of 10 for a 30 person lab, i.e. 5 (or less) pairs in 3 different groups. Each group will have a dedicated TA as a project leader. The role of the TA is to make sure all members in the group are participating and that everyone understands the requirements of the problem being solved. In addition, your group might want to dedicate someone with good handwriting to capture your thoughts and design. Each group will begin by writing a flowchart for the solution, and then, write the pseudocode.

Problem Statement:
Take the current Roman-Numeral program and decide how you will break up the program into functions, each with a maximum of 10 lines of code. Draw boxes around blocks of pseudo-code you are deciding to modularize. You will need to make sure you check for good integers and roman numerals entered by the user.

- **What error handling functions will you use?**
- **How will main call these functions?**
- **What information will these functions need to share with main and other functions?**
- **Provide the pre-conditions, post-conditions, and return values for all functions.**

Show your project manager (TA) how numbers can be converted to and from roman numerals using your **new design** with functions. Trace the variables/values, as they are passed to functions and returned from functions.

Each Pair: Implement Your Group Design (6 pts)

We need to split back into pairs, and each of the 5 pairs in a group need to implement the design using functions. Different pairs will finish at different times. After you get checked off by your project manager, please help the other pairs in your group. After everyone in the group has completed the program, then let your project manager know. We are curious how design influences the time spent on implementation.

Show your project manager (TA) how numbers can be converted to and from roman numerals using your **implementation** with functions.