CSCI 35500 – Introduction to Programming Languages
Assignment #5
Due: 4/28/2016

In this assignment you are going to take a look at abstract data types (ADT's) and how they can be implemented and used in popular programming languages. The following assignment should be done individually. All work is expected to be **your own** – please do not use code that you have found on the internet, this will be considered plagiarism. This assignment should be completed in one of the following languages: Java, C++, or Python – and should run on Pegasus.

1. Write a program that implements a queue making use of our understanding of ADT's. The following features that you will need to include as part of your implementation are: enqueue, dequeue, and isEmpty. Your implementation should handle integer input – and should provide a mechanism for printing out actions to the user.

2. Rewrite the program in #1 in a different language than what you selected for that problem.

3. Discuss the implementation of the queue as an ADT and how it differs from the stack implementation that we discussed in class. What role would generics play in this program?

4. In your report compare and contrast the different implementations of these ADT's in the respective language (questions 1 and 2) of your choice and provide analysis over the sample runs that you perform on your program to demonstrate how each behaves within the scope of the language.

Expectations:

- You should use good software design principles when creating your program – this includes the presence of comments throughout your code. Failure to do so will result in a lower score.
- Your code should be able to run on Pegasus – please provide specific and clear details within a README file for how to compile/execute your code.

Deliverables:

- Source code (Source Files) for each program.
- A detailed (professional looking) report that includes your analysis and answers from Question #3 and #4. Include any sample runs you have performed to test your program.
- A README file describing how to run your code. This should include any specific details on how to get your program to compile and run.
- These files should be submitted via Canvas in a zipped folder with the following format (LastNameA5.zip) – for example RybarczykA5.zip