

# CSSE 152 Fundamentals of Computer Science II – Spring 2009

## Programming Assignment 4

Due date: Monday May 25<sup>th</sup>, 10:59 am

(No design/reflection submission is required for this assignment)

## Summary

The purpose of this assignment is to practice stack and queue operations by creating separate packages for stacks and queues. Separating the implementation from specification and creation of separate packages promotes code reuse and is crucial when designing complex programs. You will also exercise testing your code in a more comprehensive way.

## Directions

For this assignment you will create a Stack package and a Queue package. These will be located in separate files. In addition, you will supply a driver program to test each function of the two packages.

Specifically, in **C++**:

1. **Stack package:** This package provides a **dynamic array** implementation of a stack of **characters**. It should provide standard Stack functions (constructor, destructor, copy constructor, overloaded assignment operator, push, pop, display and isEmpty). You may add additional methods as necessary. Name the class *Stack*. Your code must provide basic error checking to protect the data from misuse.
2. **Queue package:** This package provides a **linked list** implementation of a queue of **characters**. It should provide all standard queue functions (constructor, destructor, copy constructor, overloaded assignment operator, enqueue, dequeue, display, and isEmpty). You may add any other methods needed in the class. Name the class *Queue*. Your code must provide basic error checking to protect the data from misuse.
3. **Driver program:** This program simply tests all of the functions provided by the two packages. The user interface should be minimal, but clear. Exactly how the tests are conducted is your decision, but the tests and the results should be clear to the user. As an example, the tests should show all the implemented functionality (e.g., overloaded assignment operator, copy constructor, adding and removing elements to/from the stack and queue, etc.)

## Program Design

Files must be named “**stack.h**”, “**stack.cpp**”, “**queue.h**”, “**queue.cpp**” and “**p4.cpp**” for the submission script to work.

## Submitting your Program

Run the following script in the directory with your program:

```
/home/fac/roshanak/submit/152/scripts/p4_runme
```

This will copy the file associated with this assignment to a directory that can be accessed by the instructor. If you get an error, please double check to make sure that you named the files correctly.

The submission program will try to compile your program using the following command line:

```
g++ -ansi -pedantic -Wall -Werror stack.cpp queue.cpp p4.cpp
```

Your program must not produce any error messages of any kind (including warnings) or the submission program will reject your program. Programs that fail to compile will not be submitted and will not be graded.

Remember that an assignment will only be graded once.