Homework 11

All the following assignments are selected from Gaddis edition 7. The purpose is that you practice with **queues**. First do the reading assignment; Section 18.4-18-6 (pages 1084-1098). Run your code, submit the output and code too. Submit code in a separate, compliable file, do NOT include it in your pdf or text file.

1. Programming challenges 18.5. Error Testing, page 1108[2 points].
2. Programming challenges 18.7. Queue Exceptions, page 1109 [2 points].

5. Error Testing

The `DynIntStack` and `DynIntQueue` classes shown in this chapter are abstract data types using a dynamic stack and dynamic queue, respectively. The classes do not currently test for memory allocaton errors. Modify the classes so they determine if new nodes cannot be created, and handle the error condition in an appropriate way. (You will need to catch the predefined exception `bad_alloc`.)

> **NOTE:** If you have already done Programming Challenges 2 and 4, modify the templates you created.

7. Queue Exceptions

Modify the static queue class used in Program 18-5 as follows.

1. Make the `isFull` member private.
2. Define a queue *overflow* exception and modify `enqueue` so that it throws this exception when the queue runs out of space.
3. Define a queue *underflow* exception and modify `dequeue` so that it throws this exception when the queue is empty.
4. Rewrite the main program so that it catches overflow exceptions when they occur. The exception handler for queue overflow should print an appropriate error message and then terminate the program.