CS 2500, Spring 2011 – Programming II
Quiz 5
May 16, 2011

There are 5 questions (on three pages).

Name: _____

1. Compare and contrast the stack and queue abstract data types we have studied (i.e. how are the similar and how are they different?).

2. What are the main pros and cons of the three implementations that we have seen for stacks and queues?

3. To the stack ADT that we have studied in class, add a function called popAndDiscard that removes and discards a user-specified number of elements from the top of the stack. Your function should work in any of the ADT implementations we have seen. The prototype is given as follows:

```
void popAndDiscard (int count) throw(StackException);
```

4. What is the output of the following pseudocode?

```
int num1 = 5;
int num2 = 1;
int num3 = 4;

aQueue.enqueue(num2);
aQueue.enqueue(num3);
aQueue.dequeue();
aQueue.enqueue(num1- num2);
cout << aQueue.getFront() << endl;
aQueue.dequeue();
aQueue.enqueue(num1+ num2);

num1 = aQueue.dequeue();
num2 = aQueue.dequeue();
cout << num2 << " " << num1 << " " << num3 << endl;
```

5. a. Draw the binary search tree that is the result of inserting the following integers (insert in order starting with 20):

20, 10, 25, 21, 5, 15, 31, 17

b. Write down the list of nodes visited using the following three traversals of the tree above:

Preorder

Inorder

Postorder