

Name: _____

Student ID number: _____

CS 14 – Quiz 2
25 points possible

1. (3 pts)

a) What does FIFO stand for?

b) What abstract data type does it refer to?

c) List two uses/applications for this data type.

2. (3pts)

a) What does LIFO stand for?

b) What abstract data type does it refer to?

c) List two uses/applications for this data type.

3. (5 pts) Show how to implement a stack using two queues. Describe the push and pop functions. You may assume the Queue has the functions Enqueue, Dequeue, and Empty. You do not have to actually write code, you may just describe the method and use pictures, but be sure that you are clear.

4. (6 pts) Lists may be either array-based or pointer-based (linked lists).

a) List 2 **advantages** of a **pointer-based** implementation of a list over an array-based implementation of a list:

b) List 2 **advantages** of an **array-based** implementation of a list over a pointer-based implementation of a list:

5. (8 pts) Show code to perform the member functions enqueue and dequeue using a singly linked list implementation of a Queue. Dequeue will return the item dequeued via a parameter. The function should be general enough to work for any type. Remember to use good programming style. You may assume the following classes exist:

```
class Queue {
private:
    Node* head;
    Node* tail;
public:
    void enqueue(itemtype item);
    void dequeue(itemtype& item);
};
```

```
class Node {
public:
    Node* next;
    itemtype item;
};
```