

Quiz #3 Answers

1. What are the operations on a stack? What about a queue? In what way are they different from one another? In what way are they the same?

The required operations on a stack are push and pop plus we added peek and isEmpty. The operations on a queue are enqueue and dequeue with peek and isEmpty being helpful here as well. The similarities between the two include that they are simple ADTs that each have one method for adding things and one for taking things out. The big difference is the order in which things are taken out. The stack is LIFO (last in first out) and the queue is FIFO (first in first out).

2. Write code for doing an add method on a linked list. Assume it is singly linked with no sentinel and the add method should add to the end. Your linked list class only keeps a head pointer.

```
public void add(E e) {  
    if(head==null) {  
        head=new Node<E>(e,null);  
    } else {  
        Node<E> rover=head;  
        while(rovers.next!=null) rovers=rovers.next;  
        rovers.next=new Node<E>(e,null);  
    }  
}
```

There are two things to note here. Because we are adding to the end of a singly linked list with no tail, we have to walk the list using a loop. I've used a while loop here, but a for loop works just as well. Also, we have to have special case code for when the entire list is null so that we can change the head pointer.

Extra Credit: Give three layout managers you could use in Java?

The three we have discussed are FlowLayout, GridLayout, and BorderLayout. There are many others that you could mention though.