

1. Are stacks LIFO or FIFO? Explain.
2. Are queues LIFO or FIFO? Explain.
3. Given the Java List API, implement the push and pop functions on a stack.
4. Given the nodes $A \rightarrow C \rightarrow D$, and assuming that each node has a **next** variable and are respectively called, *A*, *C*, and *D*. Write pseudocode that will add the node *B* to the list in the position: $A \rightarrow B \rightarrow C \rightarrow D$
5. Assume you are using the array `a = [2,3,4,null,null]` to store the elements of a stack. Assume that `top` is stored in a variable `top = 0`. Draw the array after pushing 1. Write pseudocode to add 1 to the array.
6. Will this code compile? Why or why not?

```
Object a = new String("a");
System.out.println(a.charAt(0));
```

7. Will this code compile? Why or why not?

```
ArrayList a = new ArrayList();
a.add("b");
String b = a.get(0);
```