Name:_____ Lab Section:_____

Quiz 4A – November 22

CS 2102 B19

1. (3 points) Examine the following code:

```
Stack s = new Stack();
s.push(2);
s.push(3);
s.push(4);
s.push(2);
s.push(1);
s.pop();
s.pop();
s.push(2);
s.push(4);
s.pop();
```

Draw the stack `s` after the above code is executed.

2
4
3
2

Rubric:
-1 if the stack is drawn as a queue
Otherwise, 3 points all or nothing

2. (2 points) What is the Big-O of searching through a LinkedList? Briefly explain how you know.

O(n). This is because, in the worst case, we'd have to search through all n elements of a LinkedList to find the item we want.

Rubric:
+1 O(n)
+1 Proper explanation

3. (5 points) Alter the code below to improve encapsulation. You do not need to rewrite all of the code. You are free to cross things out and to draw arrows to show your changes.

```
class Enterprise {

	private String shipNumber;
	private String captain;
	private EngineRoom er;

	//constructor omitted to save space

	public String makeItSo(double warp) {
		String s = "Ensign, go to warp " + warp;
		this.er.setWarp(warp);
		return s;
	}
}
class EngineRoom {

	private double currentWarp;

	//constructor omitted to save space

	public void setWarp(double warp) {
		this.currentWarp = warp;
	}
}
```

Rubric:

+2 for setting all fields to private (-0.5 for each one missed)

+2 for correct setter method

- -1 if setter not in `EngineRoom` class
- -0.5 if return value not specified or incorrect
- -0.5 if parameter not specified or incorrect
- -0.5 if method is not public

+1 setter method called inside `makeItSo()` instead of `currentWarp` field being changed directly

-2 if student provides (correct) written explanations instead of writing code

Do not deduct points for syntax errors or extra (i.e. unnecessary) code.