Surname: ___________________  First name: ___________________

Student #: ___________________  Tutor: ___________________

Instructions

Because there is no tutorial in week 1, you will do this on your own time. Feel free to work together with other students to solve the problems. A full solution will be posted on the web later.

Code you’ll work on

// Represents a mailing parcel which can contain several items.
public class Parcel {

    // My contents.
    private String[] items;
    // How many things I now contain.
    private int howmany;

    // Create me, with room for n items, but nothing in me yet.
    public Parcel(int n) {
        howmany = 0;
    }

    // Pack 'item' into me, if there is room.
    public void pack(String item){
        if (howmany < items.length-1)
            howmany++;
        items[howmany] = item;
    }

    // Return a string that represents me.
    public String toString(){
        String stuff;
        for (int i=0; i<=items.length; i++){
            stuff += items[i] + "\n";
        }
        return "A parcel that contains:\n" + stuff;
    }
}
Exterminate

1. Write a statement that describes how you can use `howmany` to figure out which slots of the array have something in them.

2. Class Flyer is buggy. Fix every bug that you can find. **Hint:** Use your answer to question 1.

Add to class Parcel

3. Suppose we want class Parcel to have an integer variable that will keep a count of the total number of Parcels created so far. Below, write a declaration for this variable.

4. Suppose we want class Parcel to have another integer variable that will record whether this is the 5th or 75th (for example) Parcel ever created.

5. The Parcel constructor will have to be updated so that it does the appropriate things to these two variables. Below, write the line(s) of code that must be added.

Do some design

Suppose that in addition to Flyer and Parcel, we were to write classes for other things that can go in a mailbox: Letter, Newspaper, and Gift.

6. Right now, class Mailroom only allows one to deliver Flyers. What is the best way to make Mailroom handle all of these things? Describe briefly each change that should happen in class Mailroom and any other affected classes: