

Name: _____

CMPU 161 — Spring 2009

Exam #1

This exam should have four problems (not counting problem #0) and contain four pages.
Closed book and notes.

Problem 0: [1 point]

On a scale of 0–5, where 5 is highest, I think I deserve a _____ for overall class participation.
(Feel free to justify your answer.)

Problem 1: [20 points]

1a) What is the difference between a for loop, a while loop, and a for-each loop? When is each appropriate?

1b) What is the difference between a constructor and a mutator?

Problem 2: [24 points]

The questions below apply to this terribly mysterious method:

```
public void mystery(int x)
{
    Circle c;
    for(int i=x; i>0; i--)
    {
        c = new Circle();
        c.changeSize(i*20);
        if (i % 2 == 0)
            c.changeColor("red");
        else
            c.changeColor("blue");
        c.makeVisible();
    }
}
```

2a) What does this method do if passed a zero when invoked?

2b) What does this method do if passed a three when invoked?

2c) Describe, in *English*, what the method does in general. (To get in the right frame of mind, think about what you'd write as a *comment* for this method.)

Problem 3: [25 points] Below, write a method called `largestOfThree` that takes three integer arguments. It should print a single line of output that includes all three input values, as well as the *largest* value of the three. For example, if the user passed in 5, 7, and 1 when calling the method, the output would be “The largest of 5, 7, and 1 is 7”.

```
public class Notebook
{
    // Storage for an arbitrary number of notes.
    private ArrayList<String> notes;

    // Methods not shown
}
```

Problem 4: [30 points] Part of the Notebook project from the book is shown above. Below, write a new Notebook method called `countNotesContaining` that takes a single `String` as its argument, and returns the number of notes in the notebook that contain the specified string. (Note: There's a `contains` method in the `String` class that works just like the `startsWith` method you used in lab, but returns true if the argument appears *anywhere* in a string, not just at the front.)

```
> Notebook nb = new Notebook();
> nb.storeNote("Java is lots of fun");
> nb.storeNote("Exams are fun too");
> nb.storeNote("I like donuts");
> nb.countNotesContaining("fun")
2    (int)
> nb.countNotesContaining("o")
3    (int)
```