**CS 203 HW #3
Spring 2012**

**Due Date:** Wednesday, Feb 8 at 11 am [**note: this is also the day of your first exam, so budget your time accordingly.]**

**A Greeting Card Program**

Your program will create a Java applet that displays a graphical birthday card. If you would rather create a card for a different occasion (Valentine’s Day, Anniversary, Christmas, Halloween, Thank you, Sympathy, etc), you may do so.

**Specification (7 points functionality)**

* Getting input (1 pt for the dialog windows). Put these in the init method in your code.
	+ The user of your program should be greeted with a **dialog window message**, such as "Welcome to the birthday card program."
	+ In an **input dialog window**, the user should be asked for the name to whom the birthday card should be addressed. Trim the input.
	+ In an **input dialog window**, the user should be asked for the name from whom the birthday card is being sent. Trim the input.
	+ In an **input dialog window**, the user should be asked for the age of the birthday person. Trim the input. You do not need to validate that this is a proper number for this assignment.
	+ In an **input dialog window**, the user should be given the option of drawing 1, 2, or 3 items of your choosing. In the starter file, you will see how one or two trees are drawn. (In your greeting card drawing, you might draw one, two, or three flowers, candles, balloons, clouds, etc.).
	+ In an **input dialog window**, the user should be asked for a color selection. For example, you might ask the use to enter 1 for blue or 2 for orange. You must have at least two color choices, but you could have more.
	+ (1 pt) Your program should check strings entered by the user to ensure they are legal numbers (other than the prompt for the names). If the user types in something that is not valid, your program should display a dialog window message stating the input was invalid and the program is setting the value to a default value. For example, if the user types in 5 for number of trees and your program can only handle 1, 2, or 3 trees, you should create a dialog box message stating that 5 is invalid and the **default** of 2 trees will be used.
* Drawing, put these in the paint method in your code.
	+ You may assume the user uses a 500 x 500 applet viewer window.
	+ (.5 pt) The program should display a birthday greeting (you may display a message like “Hope your birthday is grand!” instead of simply “Happy Birthday”) in the graphics window with the correct “To” and “From” names.
	+ (.5 pt) You should include the entered age somewhere on the displayed card.
	+ (.5 pt) Your card picture should use the color selected by the user in some way. For example, if the user selected blue, you might draw a blue present. If you user selected orange, you might draw an orange present.
	+ (2 pts) Your card should have at least two distinct objects in your picture (such as a person, a flower, a candle, a present, a squirrel, etc.). The picture should have 1, 2, or 3 objects drawn according to the user’s input.
	+ (.5 pt) Your card should have at least four different colors, not including the background.
	+ (1 pt) Your card should include at least one polygon, at least one oval, and at least one rectangle.
* You may be as creative as you wish, but try to make a visually pleasing greeting card.

**Additional Enrichment**

* Have several greeting card types and let the user choose which one to display.
* Have several greeting cards (one for adults, one for children) and display the appropriate card given the recipient’s age.
* Draw any number of objects the user wants, not just from a list of 1, 2, or 3. You will need to use a loop to complete this task. (See Chapter 4 in your textbook about loops.)
* Draw the number of candles for the person’s age (See Chapter 4 about loops).

**Logistics**

* Download the starter BlueJ project. Remember to include comments to remind yourself and your reader the functionality of the different parts of your program.
* Create a zip file username\_HW3.zip that contains your summary report CardReport.docx and your GreetingCard.java file.
* You will see comments in the sample starter file about how to use dialog boxes in an applet. *Put your dialog box code in the* init() *method, as this method gets run once when the applet is started. Because you want to store the strings the user types at the prompts, you should declare these* String *objects as instance variables in your* GreetingCard *class.*
* When running the applet in BlueJ, you might see the progress bar spin with red and white colors. This means that the applet is waiting for user input. If you do not see the dialog box, hit Alt-Tab and tab through to the dialog box. Sometimes the box gets drawn under the other application windows you have displayed on your screen.
* If you want to copy a rectangular area in your graphics window and draw it somewhere else, you can use g.copyArea(xcoord, ycoord, width, height, deltaX, deltaY) where deltaX and deltaY are the distances from the original location.
* See the graphics handout in the coursepack for more information about methods you can use for drawing.

**Grading Guidelines**Your program will be graded on a scale of 0 to 7 in two categories:

* Code Quality: Design, Specification, Implementation, Documentation (Comments)
* Code Functionality: Functionality of code and adherence to project specification

Your report will be graded on a scale of 0 to 6:

* Summary Report: Proper vocabulary, clarity, conciseness, evidence of proper testing

**Report Guidelines and Format [use the template for HW1, but answer the following questions instead]**

 **1. Introduction:** Describe the type of greeting card you created and the message and graphics your program displays. Include a picture of your card here. To generate a picture, the easiest way is to hit the PrtScn (print screen button) on the keyboard. Open MS Word and hit Cntl-V to paste the picture into your document. If you want to crop the picture to include just the applet window, open it in MS Paint and use the selection tool.

**2. System Description:** Choose your most complicated graphic and describe what methods you used to create the graphic. How did you implement the user-specified color selection? You may assume the reader is another student in CS 203.

**3. Testing and Evaluation:**

**3.1 Correctness** If your program does not meet the specifications, please note the differences here. If it works as specified, write “The Java applet meets all specifications.”

**3.2 Invalid Input** Describe what your program does if you enter an invalid number for the prompts for numbers.

**3.3 User Test** Have a friend who is not enrolled in CS203 run your program. (You may get the program started for them in BlueJ’s applet viewer, so the first dialog window is displayed.) In your report, include the answers to the following questions: 1. What did the user like about your program? 2. What suggestions for improvement did the user have for your program? If you have time, ask more users to test your program.

**4. Conclusion:** Describe the most challenging aspect(s) of this program and what you learned from completing it.

1. How long did you spend on this assignment?

2. By typing your name here, you are acknowledging that the code and report you are submitting are your own.

**Appendix:** Copy and paste your code here (use **Courier** font so the characters line up correctly).

Please keep your reports concise (no more than 2 pages - not including your picture). A high quality computer scientist can explain their code, their process, and their testing to their colleagues and bosses. When writing the report, your audience is someone else taking CS 203. I ask you to do these reports because you will be expected to explain your ideas, whether or not you become a computer scientist.