Computer Science 252
Problem Solving with Java
The College of Saint Rose
Spring 2015

# Topic Notes: Introduction and Overview

Welcome to Problem Solving with Java!

As you know, this is the second course in our introductory programming sequence. You already know the basics programming is and have already had some experience using Java as a problem solving tool. In this course, we will develop your problem solving skills using more advanced Java programming techniques and constructs.

These topic notes will include details of everything covered in class.

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## What is this Course All About?

You learned the basics of Java in CSC 202 (or some equivalent). In this course, you will learn about many more Java features and how to use them to solve more complex (and hopefully more interesting) problems than you have before.

Most likely, your Java programs so far have had some of the following features:

- They were Java applications – they run by executing a `main` method.

- You interacted with the programs in a terminal window using `Scanner`s and `System.out.println`.

- There was likely some reading of files with `Scanner`s and writing files with `PrintWriter`s.

- You made extensive use of the basic Java language conditional and looping constructs.

- You probably wrote at least a few of your own methods, but much of your program was contained completely in your `main` method.

- You might have written a custom class or two, but most of your programs were contained within a single Java class.

- You might have used a few arrays to hold collections of related objects using a single name, but maybe now.

In this class, as you expand your programming abilities, your programs will start to use the above and many new language features and programming constructs.

- In addition to Java applications, we will write many Java applets – programs we interact with through graphical windows using the mouse in addition to the keyboard.

- These Java applets are event-driven programs. Instead of a single `main` method that runs when the program starts, we write many methods that execute in response to various events such as mouse clicks. And our programs will not terminate when a method returns, they will remain active as long as the graphics window is open.

- We will see a few new Java constructs and use the ones you already know in more complex ways.

- You will write many of your own methods, starting with the event handlers mentioned above.

- Many of our programs will work with graphical objects. First, it will be simple shapes, then we will advance to graphical user interface components such as buttons and menus.

- You will develop programs that have multiple Java classes that interact with each other.

- You will develop programs that have multiple threads of execution, allowing objects in your programs to have their own "brains"...

There are several advantages to using these kinds of programs, not the least of which is that we can write some fun programs. By the end of the course, you will know enough to be able to write some fairly sophisticated games.