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JavaBot Development Guide
(a work in progress)

This guide should get you through the basics of writing the Java source code for your JavaBot and compiling it into a **.class** file to be loaded into the JavaBot Simulator. This guide assumes no previous knowledge of the Java programming language, the JDK, or Object-Oriented Programming (OOP). It does, however, assume some prior programming knowledge and that you are using Win95.

Modifying and Compiling a Sample Bot

The **\JavaBots\samples\** directory contains a few sample JavaBots to help you in your quest to develop a mean piece of AI. If you've loaded these bots into the simulator, you may have noticed that the *Aimer* bot searches for and chases opponents in much the same manner as the *ColliderIII* and the *Runner*. This is because all three are built around the same "choose and hunt" design. Additionally, you might have been perceptive enough to see that the *Aimer* bot does its scan sweep much slower than the *ColliderIII* bot. As you'll see, the speed of the sweep is determined by a simple constant embedded in the code.
First, we'll try to increase the speed of the *Aimer*'s sweep. Let's take a look at *line 67* of the **Aimer.java** file located in **\JavaBots\samples\**. Using any vanilla text editor (DOS's edit.com will do) open the Aimer.java file and go to line 67:

```
        if (infolist.size() == 1 || notarget) {
            /* stop driving */
            success = super.Drive(0, 0, 0);
            /* increase the direction of scan by PI/20 */
line 67 ->  dir += java.lang.Math.PI/20;
        }
```

Here, the local variable ***dir*** is set to its previous value plus ***java.lang.Math.PI/20***, this new ***dir*** value is used to call ***Scan()*** the next time through the while loop. In other words, ***dir*** is incremented by 1/20 of PI each time through the loop. The term, ***java.lang.Math.PI*** is a floating point constant stored as a **class variable** inside the class ***Math***. This class is part of the standard Java package ***java.lang***. Packages can be likened to a library of pre-existing code similar to **C** libraries, for example, **Server**, **Bot**, and **Visualizer** are all packages written for JavaBots. We'll learn more about **classes** and **class variables** later.
Since 1/20 of PI is a relatively small amount to be sweeping each turn, we should increase this amount to achieve a more speedy sweep rate. Let's set edit line 67 so that it increments the scan direction by 1/8 PI:

```
            dir += java.lang.Math.PI/8;
```

We can now recompile the **Aimer.java** file and see how it has changed the *Aimer* bot. Change directory to **\JavaBots** and run the **setpath.bat** file if you have not already done so. Enter the **\JavaBots\samples\** directory and type:

```
    javac Aimer.java
```

This will run the **javac** Java compiler to compile **Aimer.java**. If there are no errors, than you are ready to run the simulator and test out the new *Aimer* bot. Change directory to **\JavaBots** and run **launchsim.bat**.
Select *Load Bot* from the *File* menu and select the **Aimer.class** file inside the **samples** directory. Now select *Start Sim* from the *File* menu and you should see the *Aimer* class sweeping its scanner around the arena at a

faster pace. Add a few bots from the *Extras* menu and see how well it does.

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