# Google AI Challenge

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## Starting Your Own Bot

In this guide, you will learn how to compile and run the default bot that comes with the starter package. You will actually be able to watch it play against itself, or against any one of the sample bots. You will also make a quick and easy change to the bot's code that will improve its skill. Finally, you will learn how to package up your modified bot and submit it to the online tournament. If your goal is to climb the online rankings, then you are in the right place.

If you have any trouble with this tutorial, please complain on the forums so that we know to fix it. We'll do whatever it takes to get you off the ground!

### Prerequisites

For this tutorial, we will be using the Java starter package. In order to compile Java code, you must download and install the Java JDK, if you don't have it already.

If you haven't already, you should also look through the Using the Tools article before starting this one.

### Getting a Starter Package

If you haven't done so already, download the Java starter package. Unzip the starter package in a location of your choice. Since we will be using a command-line terminal in this tutorial, it is better to choose a location that is easy to find using a terminal. I chose to unzip my starter package in C:\planetwars\. This creates a new folder C:\planetwars\JavaStarterPackage\ which contains all the materials that we need for this tutorial.

If you don't want to use Java, that's fine. You can always download a different starter package later. For this tutorial, we're going to be using the Java starter package.

### Opening a Command Prompt

In this tutorial, you will use a command prompt (also known as a terminal) to issue commands. Don't worry, it's really easy! If you're using a Windows machine, open the Run dialog, type "cmd", then click the Run button. A black window containing white text and a flashing cursor should pop up.

Once you have a command prompt open, you also have to point it at the location where you unzipped the Java starter package. Since I unzipped my starter package in C:\planetwars\, I will type the following command. If you unzipped your starter package in a different location, modify the command accordingly.

cd C:\planetwars\JavaStarterPackage

## Compiling the Java Starter Package

The Java starter package contains a simple working bot that you can use as a starting point. To compile the starter package, use the following command. Remember that you must have the terminal pointed at the correct directory, otherwise the Java compiler won't know where to find the code files.

javac *.java

You'll know that the Java code files got compiled correctly if you see the file *MyBot.class* was created.

## Watching Your Bot Play Against Itself

If the compile goes smoothly, then you can watch your bot play against itself using the following command.

java -jar tools/PlayGame.jar maps/map7.txt 1000 1000 log.txt "java MyBot" "java MyBot" | java -jar tools/ShowGame.jar

You can also watch your bot play against one of the sample strategy using the following command.

java -jar tools/PlayGame.jar maps/map7.txt 1000 1000 log.txt "java MyBot" "java -jar example_bots/RandomBot.jar" | java -jar tools/ShowGame.jar

## Make an Easy Improvement to Your Bot

Open the file MyBot.java. This is the code file that you will be working on to improve your bot's strategy. Inside, you will see that there is some sample code already in this file. Right near the top of the file, you'll see the following lines of code.

```
// (1) If we current have a fleet in flight, just do nothing.
if (pw.MyFleets().size() >= 1) {
    return;
}
```

These lines are what stop your bot from sending all of its ships at once. The number that appears in this code is the maximum number of fleets that your bot can have in flight at any given time. By increasing this number, you can make your bot more aggressive. Change the number from 1 to 2, so the code looks like this:

```
// (1) If we current have a fleet in flight, just do nothing.
if (pw.MyFleets().size() >= 2) {
    return;
}
```

Save the file and close it. Back in the terminal, recompile your code using the following command.

javac *.java

Assuming the compile goes smoothly, run your bot against itself again. Use the following command.

java -jar tools/PlayGame.jar maps/map7.txt 1000 1000 log.txt "java MyBot" "java MyBot" | java -jar tools/ShowGame.jar

Notice that your bot now generally keeps two fleets in the air at once, instead of only one. You have made your bot more aggressive. You are now an AI programmer. Cool, huh? Show your friends!

You can experiment with different numbers. Try 3 or 4 and see how it does. You can even experiment with keeping different versions of your bot, so that you can play them against each other to see which is better.

Try experimenting on different maps, too.

If you're really loving tinkering with the code and making simple improvements, check out the Simple Strategy Guide to see a whole series of small incremental improvements that can be made to the starter package in order to climb up the rankings.

### Submit Your Code Online

When you submit your code on the Google AI Challenge website, it automatically starts playing against bots submitted by other people from around the world. Within an hour, your name will show up in the global rankings. You can submit your code as often as you like. There is no limit.

Before submitting your code, you must create a .zip file that contains all your code. It's recommended that you only put code files into this zip file. On Windows, open the folder where your code is, hold the Ctrl key, then click all the .java files. Once all the .java files are selected, you can put them into a .zip file by right-clicking one of them, and from the context menu selecting "Send To" then "Compressed File". Your main code file MUST be called MyBot.java (or MyBot.cc, MyBot.py, etc).

To submit your code online, make sure that your account is activated and you are signed in to the website, then visit the Upload Your Code page.

### Next Steps

Just by making this one little change to the starter package, you should notice that your ranking will start to improve over the next hour or so. But it doesn't end here! In the next tutorial, you will make a series of simple changes that should give you another big bump. Soon you will be well on your way to the top of the leaderboard!

- Climbing the Rankings: make some simple improvements to the starter package to climb the rankings.
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