Java and the Windows Command Prompt

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This document instructs you on how to use the Windows Command Prompt with Java. These instructions are specialized to Windows 7, but are similar for Windows XP and Windows Vista.

Java

You will use the Java compiler `javac` to compile your Java programs and the Java interpreter `java` to run them. You should **skip the first step** if Java is already installed on your machine.

- Download and install the latest version of the [Java Platform, Standard Edition Development Kit (Java SE 6 Update 27)](#). Note the installation directory for later—probably something like `C:\Program Files\Java\jdk1.6.0_27\bin`.

- To make sure that Windows can find the Java compiler and interpreter:

  - Select *Start -> Computer -> System Properties -> Advanced system settings -> Environment Variables -> System variables -> PATH*.

    [In Vista, select *Start -> My Computer -> Properties -> Advanced -> Environment Variables -> System variables -> PATH*.]

    [In Windows XP, Select *Start -> Control Panel -> System -> Advanced -> Environment Variables -> System variables -> PATH*.]

  - Prepend `C:\Program Files\Java\jdk1.6.0_27\bin;` to the *beginning* of the `PATH` variable.

  - Click OK three times.

Command-line interface

You will type commands in an application called the *Command Prompt*.

- Launch the command prompt via *All Programs -> Accessories -> Command Prompt*. (If you already had a command prompt window open, close it and launch a new one.) You should see the command prompt; it will look something like:

  ```
  Microsoft Windows [Version 6.1.7600]
  Copyright (c) 2009 Microsoft Corporation. All rights reserved.
  ```

- To check that you have the right version of Java installed, type the text in boldface below. You should see something similar to the information printed below. (It's important that you see the number `1.6` or `1.5` for the Java version number, but the rest is not critical.)

  ```
  C:\Users\username>java -version
  java version "1.6.0_27"
  Java(TM) 2 Runtime Environment, Standard Edition (build 1.6.0_27-b07)
  Java HotSpot(TM) Client VM (build 1.6.0_27-b13, mixed mode, sharing)
  ```

  Then type:

```
C:\Users\username>javac -version
javac 1.6.0_27
```

- Since you will be using the Command Prompt frequently, we recommend customizing the default settings. Right-click the title bar of an open Command Prompt window, select *Properties* and then:

  - Set *Layout -> Screen Buffer Size* to 80 x 500.

  - Select *Options -> Edit Options -> QuickEdit Mode*.

  - Select *Options -> Edit Options -> Insert Mode*.

Compile the Program

You will use the `javac` command to convert your Java program into a form more amenable for execution on a computer.

- From the Command Prompt, navigate to the directory containing your `.java` files, say `C:\introcs\hello`, by typing the `cd` command below.

  ```
  C:\Users\username>cd c:\introcs\hello
  C:\introcs\hello\>
  ```

- Assuming the file, say `HelloWorld.java`, is in the current working directory, type the `javac` command in boldface below to compile it.

  ```
  C:\introcs\hello\>javac HelloWorld.java
  C:\introcs\hello\>
  ```

  If everything went well, you should see no error messages.

Execute the Program

You will use the `java` command to execute your program.

- From the Command Prompt, type the `java` command below.

  ```
  C:\introcs\hello\>java HelloWorld
  Hello, World
  ```

  If all goes well, you should see the output of the program - `Hello, World`.

Input and Output

If your program gets stuck in an infinite loop, type `Ctrl-c` to break out.

If you are entering input from the keyboard, you can signify to your program that there is no more data by typing `Ctrl-z` for EOF (end of file). On some DOS systems the first line of output sent to the screen after you enter EOF will be rendered invisible by DOS. This is not a problem with your code, but rather a problem with DOS. To help you debug your program, we recommend including an extra `System.out.println();` statement before what you really want to print out. If anyone knows of a better fix, please let us know!

Troubleshooting

Here are a few suggestions that might help correct any installation woes you are experiencing. If you need assistance, don't hesitate to contact a staff member.

When I type, "java -version" I get an error. Check that you edited your `PATH` environment variable as indicated. A missing `;` or an added `%` is enough to screw things up. Close and re-open a command prompt. Type `path` at the command prompt and look for an entry that includes `C:\Program Files\Java\jdk1.6.0_27\bin;`. Check that the version number `1.6.0_27` matches the one you installed —Oracle updates Java periodically and you might have a more recent version. If this doesn't fix the problem, check if you have any old versions of Java on your system. If so, un-install them and re-install Java.

The command "java -version" works, but not "javac -version". Any thoughts? It's likely a path issue. Try the suggestions from the previous question. Also check that you installed the JDK properly by checking that the folder `C:\Program Files\Java\jdk1.6.0_27\bin` exists.

How can I check the values of my `PATH` variable? Type the following at the command prompt.

        C:\introcs\hello\> echo %PATH%

The `PATH` variable should begin with `C:\Program Files\Java\jdk1.6.0_27\bin;` Be sure to open the command prompt after you have edited the PATH environment variable. You may also need to reboot for the environment variable change to take effect.

I can compile with javac, but I get the error message "Exception in thread "main" java.lang.NoClassDefFoundError: HelloWorld" when I try to execute it with java. First, be sure that `HelloWorld.class` is now in the current directory. Be sure to type `java HelloWorld` without a trailing `.class` or `.java`. Check that the command "`java -version`" works. Now try to execute with "`java -cp . HelloWorld`". If this works, you need to edit your classpath. (iTunes has a proclivity for changing the *classpath*, so if you recently upgraded iTunes, this is likely the source of the problem.)

Where can I learn more about the Windows command line? Here is a short tutorial on the Windows command prompt. Microsoft maintains a complete command line reference.

How do I change my directory to the H: drive from the Windows Command Prompt? Type H: at the command prompt. Then cd to the appropriate directory.