



Configuration for Lab.

Bok, Jong Soon

javaexpert@nate.com

<https://github.com/swacademy/JavaSE>

Programming the First Java code

To write your first program, you need:

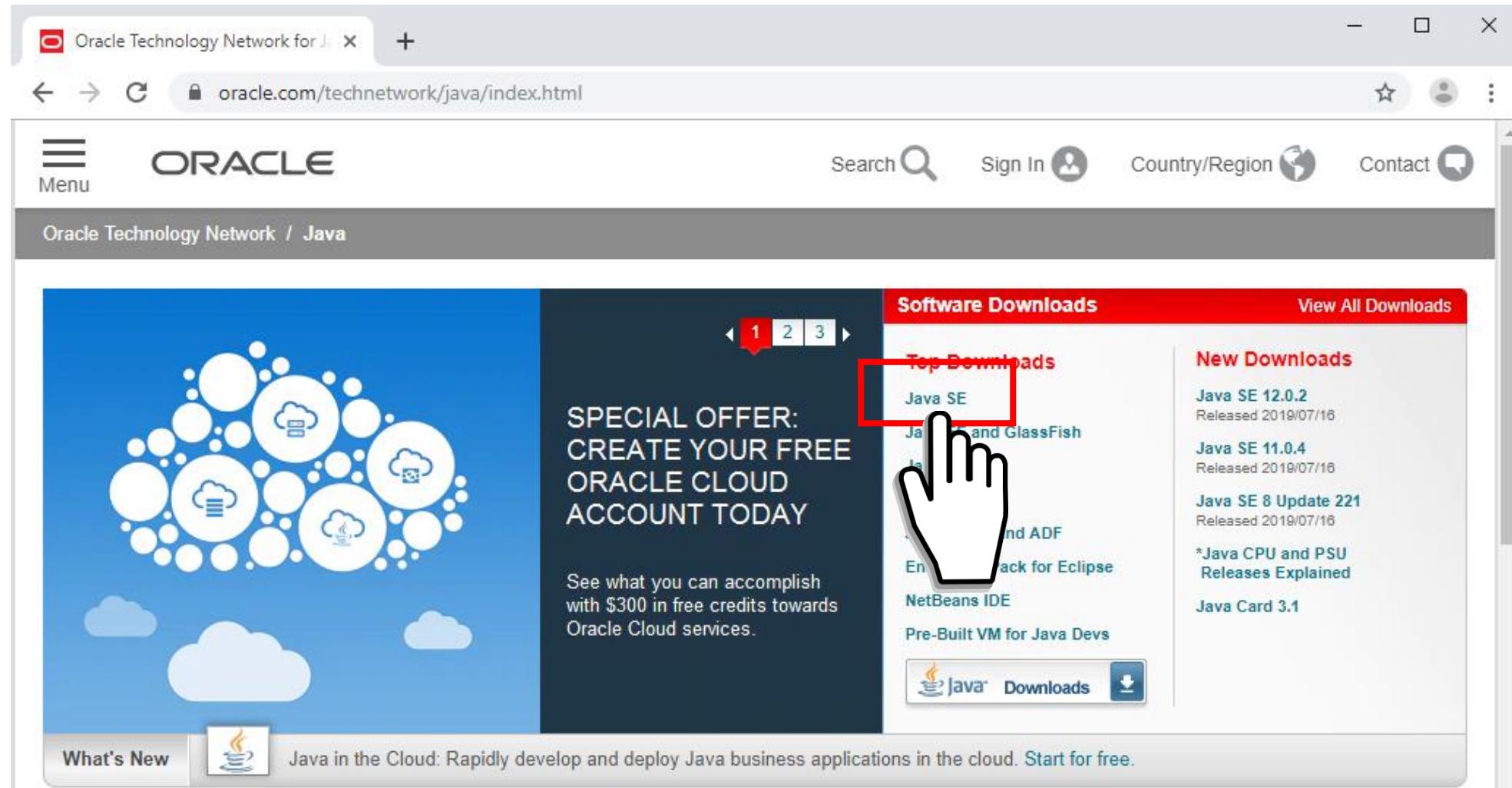
- The Java™ 8 Platform, Standard Edition.
 - Download the JDK, not the JRE.
 - Download API Specifications & Documentation.
 - Consult the [installation instructions](#).
- A Text Editor.
- IDE (Integrated Development Environment) tools - Option

Installation to Java 8 for Windows 10 64-bit Platform



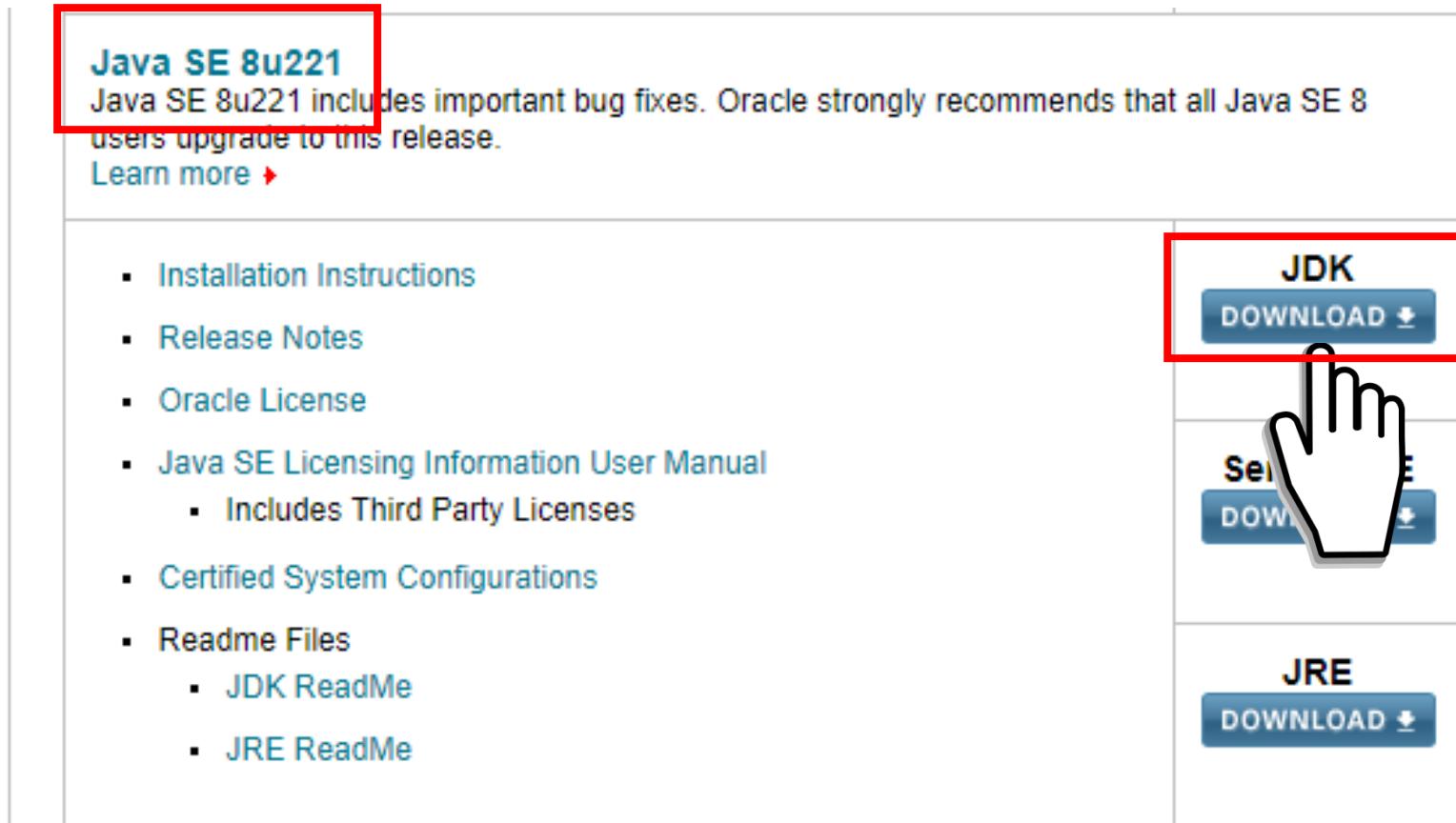
Downloading JDK 8 for Windows Platform

- Connect to <http://java.sun.com/>

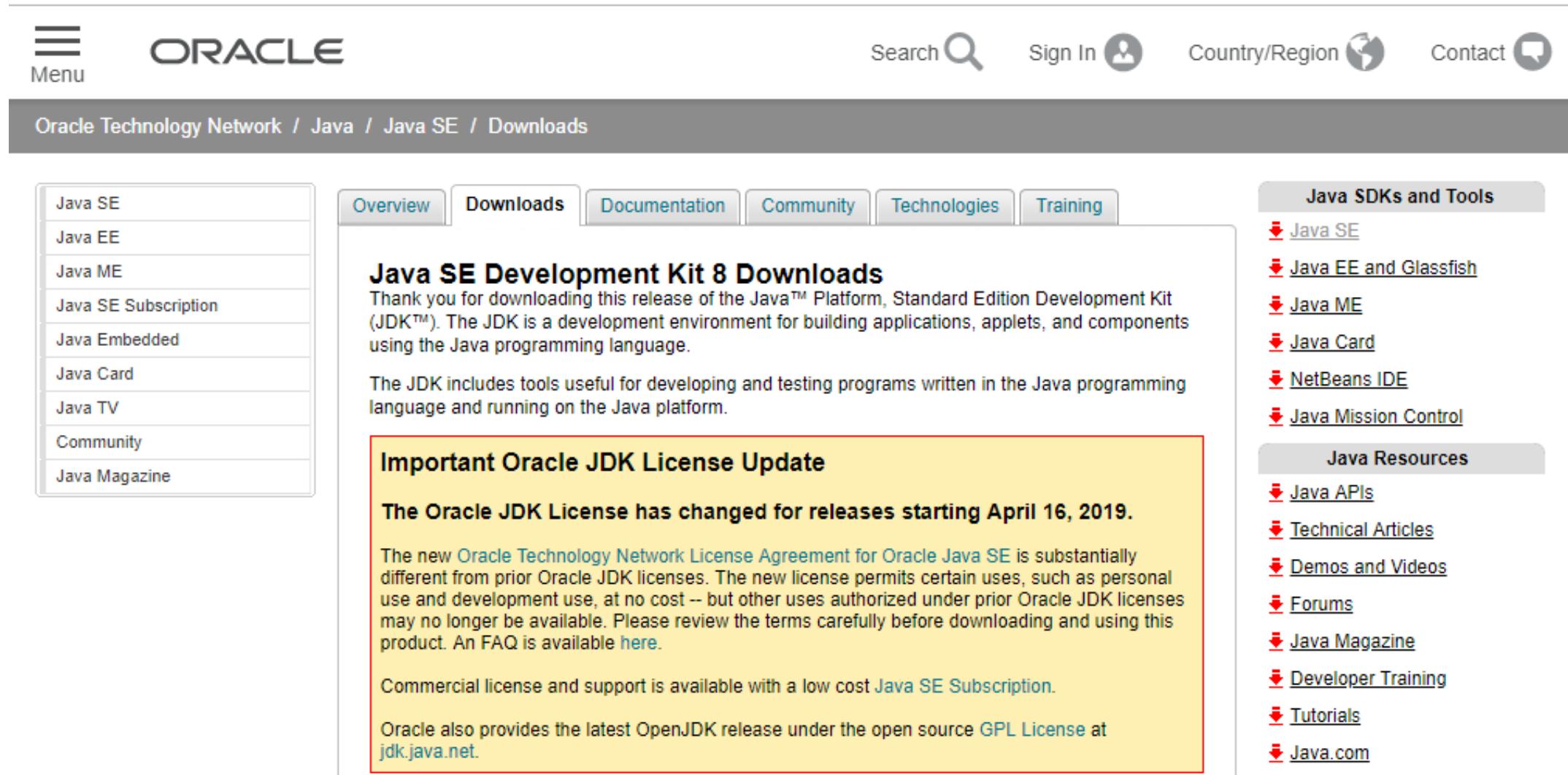


Downloading JDK 8 for Windows Platform (Cont.)

- <https://www.oracle.com/technetwork/java/javase/downloads/index.html>



Downloading JDK 8 for Windows Platform (Cont.)



The screenshot shows the Oracle Java SE Downloads page. At the top, there's a navigation bar with 'Menu', the 'ORACLE' logo, 'Search' with a magnifying glass icon, 'Sign In' with a user icon, 'Country/Region' with a globe icon, and 'Contact' with a speech bubble icon. Below the navigation bar, the breadcrumb trail reads 'Oracle Technology Network / Java / Java SE / Downloads'. On the left, a sidebar menu lists 'Java SE', 'Java EE', 'Java ME', 'Java SE Subscription', 'Java Embedded', 'Java Card', 'Java TV', 'Community', and 'Java Magazine'. The main content area has tabs for 'Overview', 'Downloads' (which is selected), 'Documentation', 'Community', 'Technologies', and 'Training'. A section titled 'Java SE Development Kit 8 Downloads' contains text about the Java™ Platform, Standard Edition Development Kit (JDK™) and its tools. Below this, a yellow box highlights an 'Important Oracle JDK License Update' notice. This notice states that the Oracle JDK License has changed for releases starting April 16, 2019, and provides details about the new license agreement. It also mentions commercial support through a Java SE Subscription and the availability of the latest OpenJDK release under the GPL License at jdk.java.net. To the right, there are two columns of links: 'Java SDKs and Tools' (including Java SE, Java EE and Glassfish, Java ME, Java Card, NetBeans IDE, and Java Mission Control) and 'Java Resources' (including Java APIs, Technical Articles, Demos and Videos, Forums, Java Magazine, Developer Training, Tutorials, and Java.com).

Java SE Development Kit 8 Downloads

Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications, applets, and components using the Java programming language.

The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.

Important Oracle JDK License Update

The Oracle JDK License has changed for releases starting April 16, 2019.

The new Oracle Technology Network License Agreement for Oracle Java SE is substantially different from prior Oracle JDK licenses. The new license permits certain uses, such as personal use and development use, at no cost – but other uses authorized under prior Oracle JDK licenses may no longer be available. Please review the terms carefully before downloading and using this product. An FAQ is available [here](#).

Commercial license and support is available with a low cost [Java SE Subscription](#).

Oracle also provides the latest OpenJDK release under the open source [GPL License](#) at [jdk.java.net](#).

Java SDKs and Tools

- ⬇ [Java SE](#)
- ⬇ [Java EE and Glassfish](#)
- ⬇ [Java ME](#)
- ⬇ [Java Card](#)
- ⬇ [NetBeans IDE](#)
- ⬇ [Java Mission Control](#)

Java Resources

- ⬇ [Java APIs](#)
- ⬇ [Technical Articles](#)
- ⬇ [Demos and Videos](#)
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- ⬇ [Tutorials](#)
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Downloading JDK 8 for Windows Platform (Cont.)

Java SE Development Kit 8u221

You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software.

Accept License Agreement Decline License Agreement

Product / File Descr	File Size	Download
Linux ARM 32 Hard Float A	72.9 MB	jdk-8u221-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float AB	69.81 MB	jdk-8u221-linux-arm64-vfp-hflt.tar.gz
Linux x86	174.18 MB	jdk-8u221-linux-i586.rpm
Linux x86	189.03 MB	jdk-8u221-linux-i586.tar.gz
Linux x64	171.19 MB	jdk-8u221-linux-x64.rpm
Linux x64	186.06 MB	jdk-8u221-linux-x64.tar.gz
Mac OS X x64	252.52 MB	jdk-8u221-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	132.99 MB	jdk-8u221-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	94.23 MB	jdk-8u221-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	133.66 MB	jdk-8u221-solaris-x64.tar.Z
Solaris x64	91.95 MB	jdk-8u221-solaris-x64.tar.gz
Windows x86	202.73 MB	jdk-8u221-windows-i586.exe
Windows x64	215.35 MB	jdk-8u221-windows-x64.exe



Downloading JDK 8 for Windows Platform (Cont.)

Java SE Development Kit 8u221

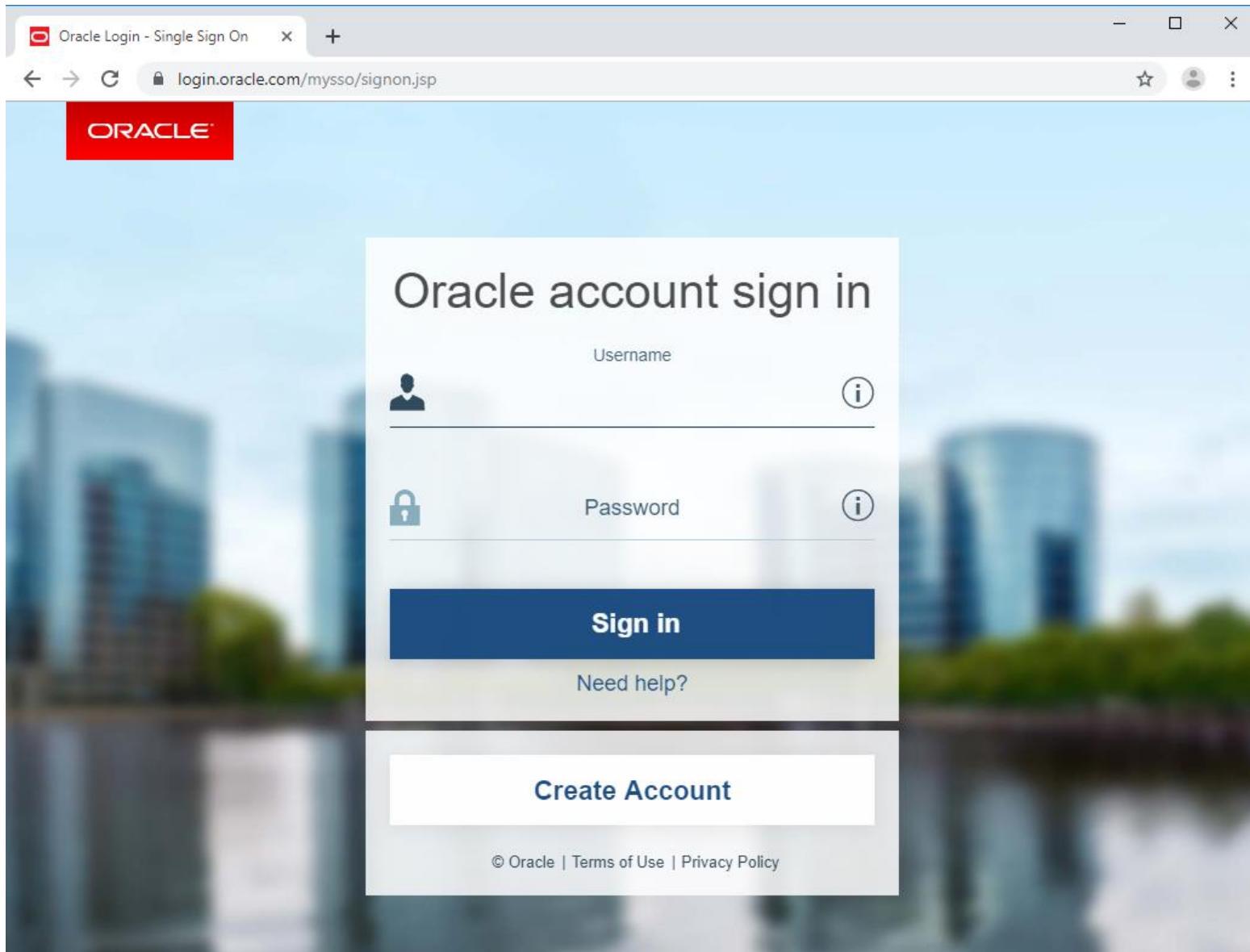
You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software.

Thank you for accepting the Oracle Technology Network License Agreement for Oracle Java SE; you may now download this software.

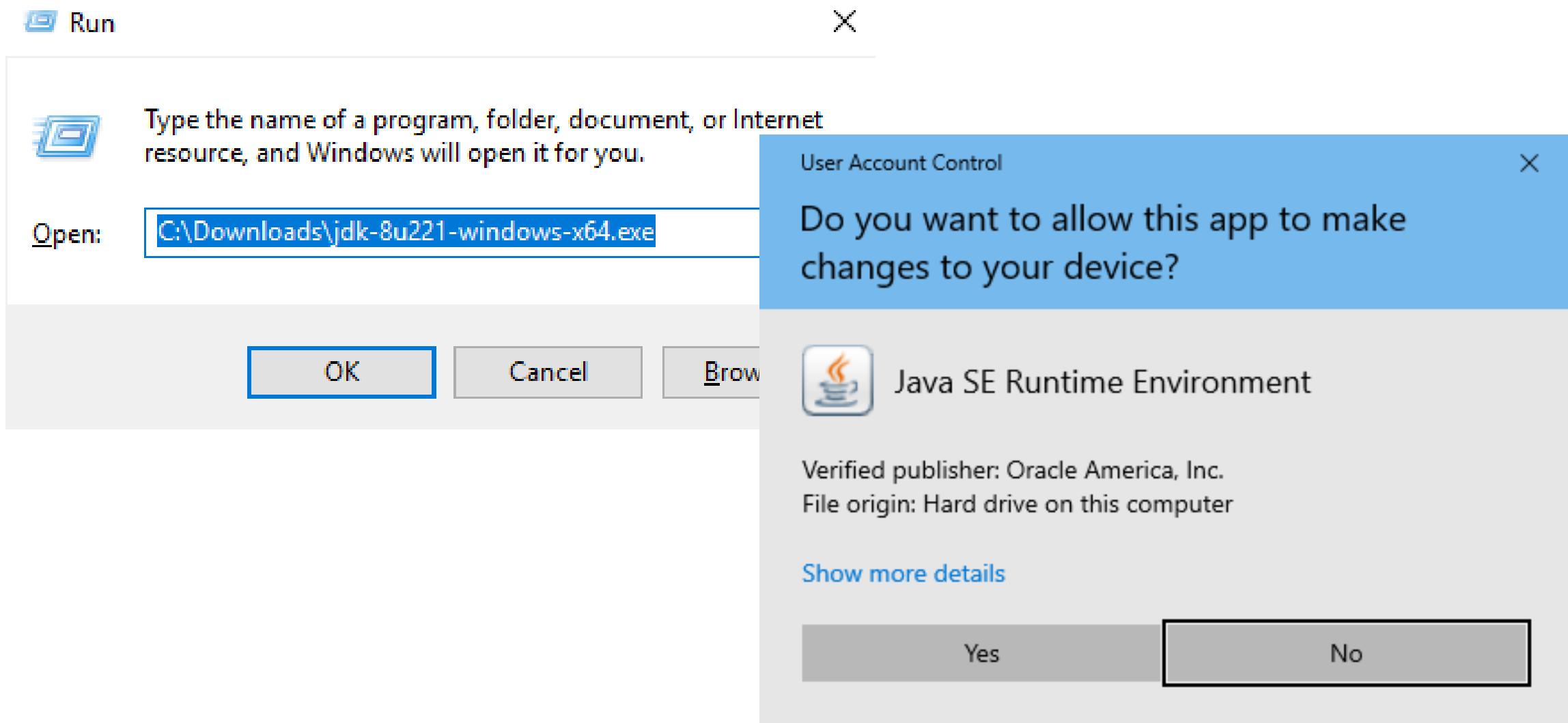
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Windows x86	202.73 MB	jdk-8u221-windows-i586.exe
Windows x64	215.35 MB	jdk-8u221-windows-x64.exe



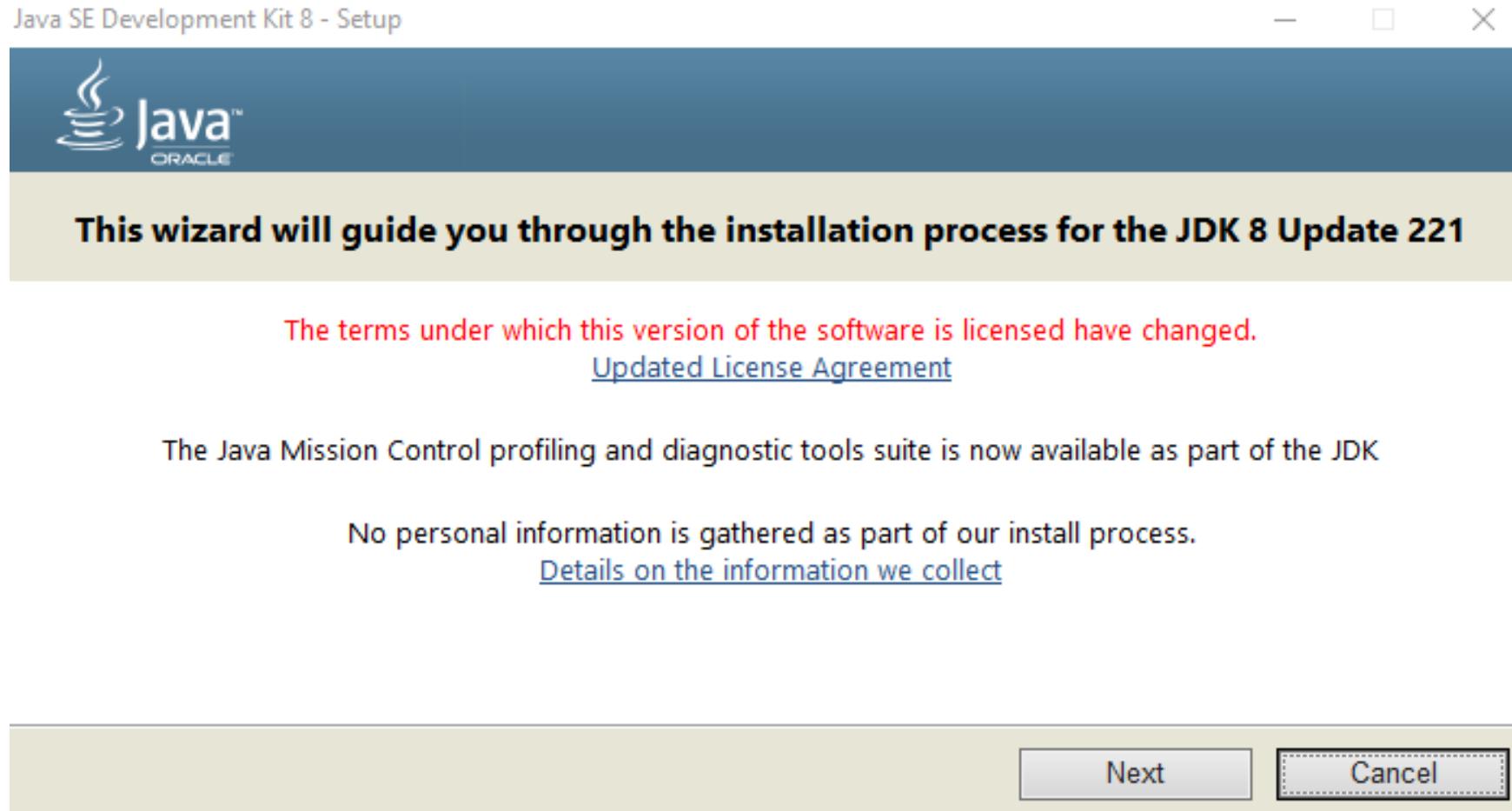
Downloading JDK 8 for Windows Platform (Cont.)



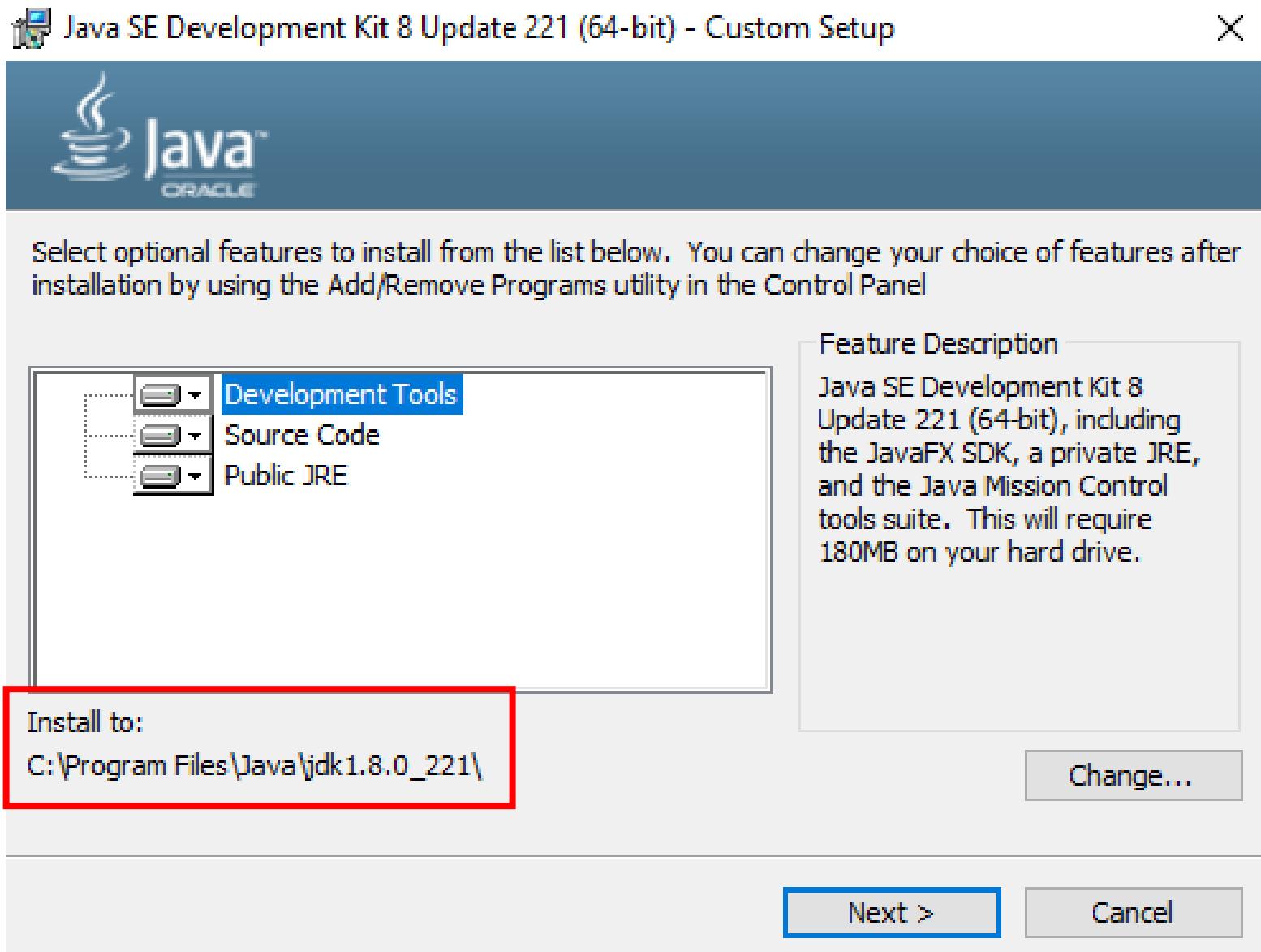
Installing JDK 8



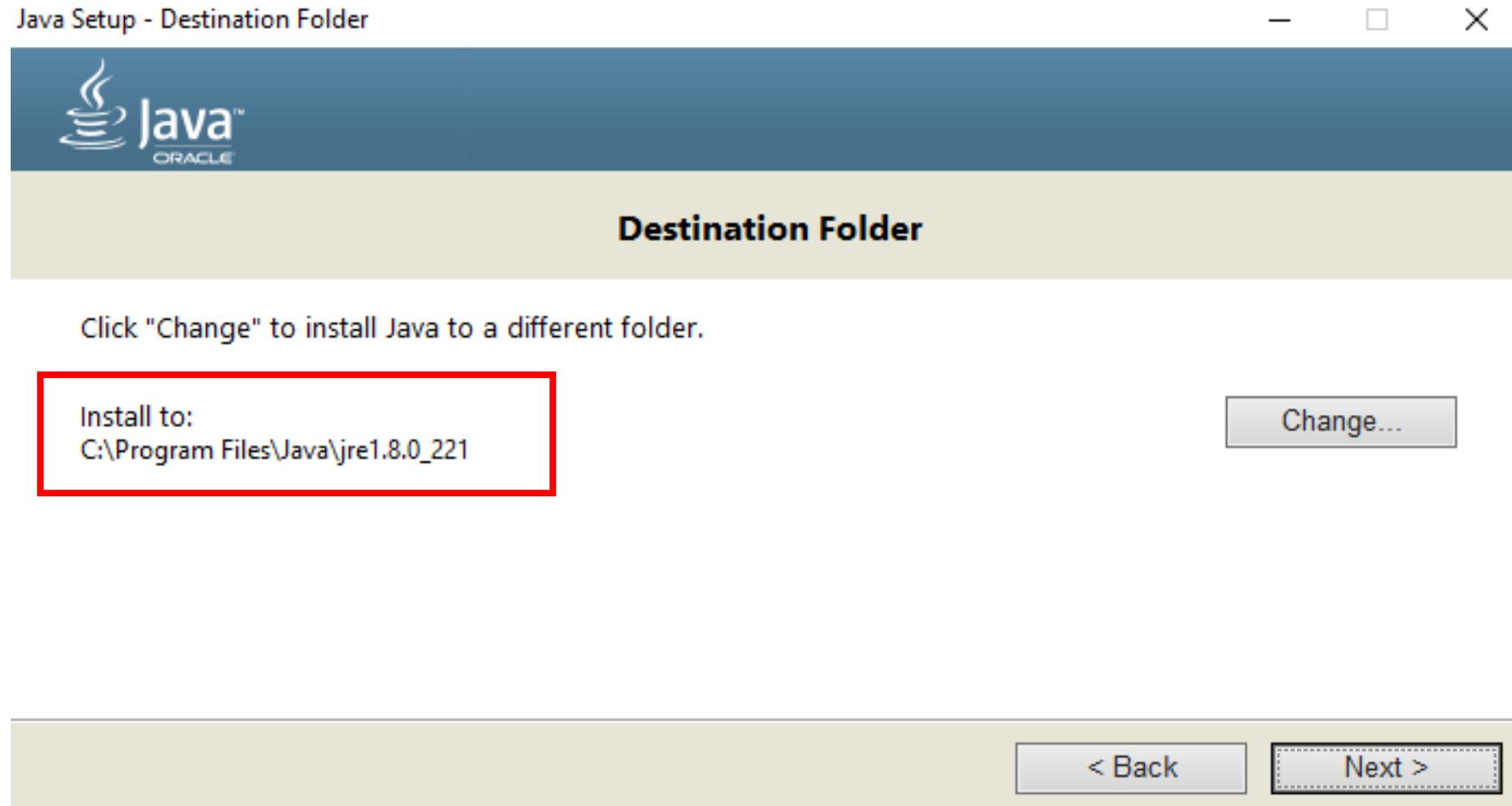
Installing JDK 8 (Cont.)



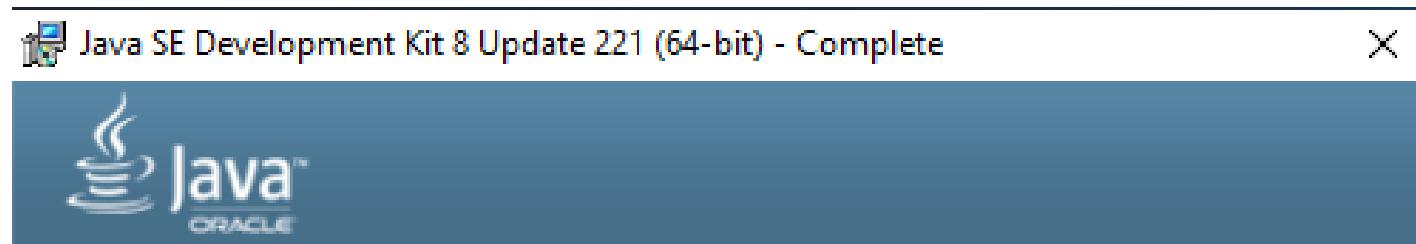
Installing JDK 8 (Cont.)



Installing JDK 8 (Cont.)



Installing JDK 8 (Cont.)



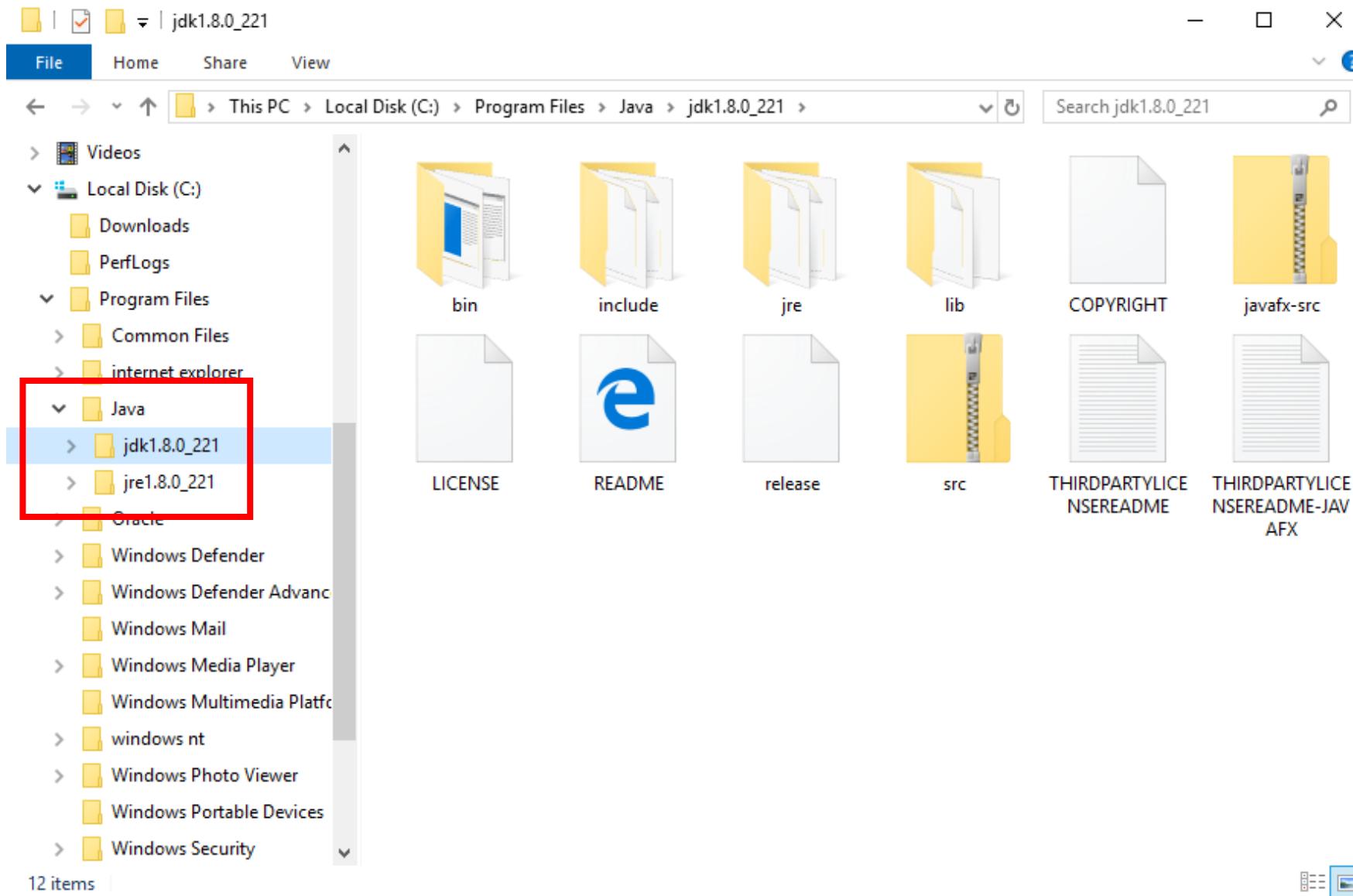
Java SE Development Kit 8 Update 221 (64-bit) Successfully Installed

Click [Next Steps](#) to access tutorials, API documentation, developer guides, release notes and more to help you get started with the JDK.

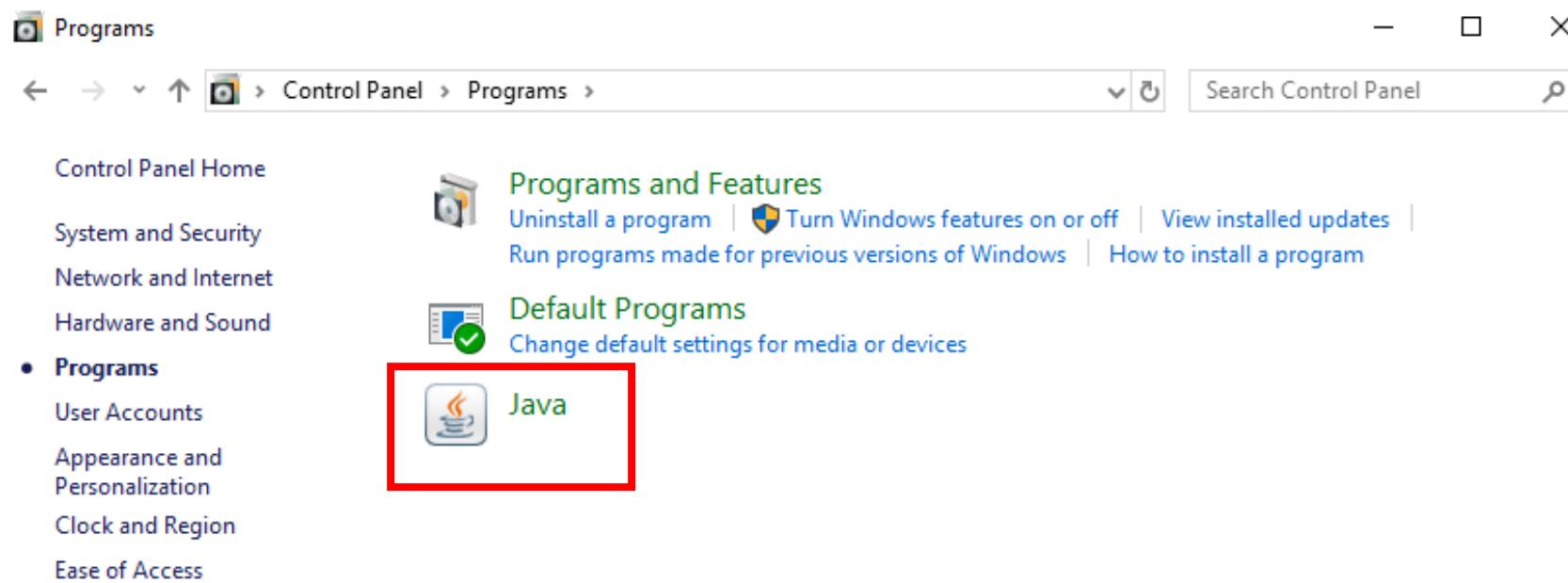
[Next Steps](#)

[Close](#)

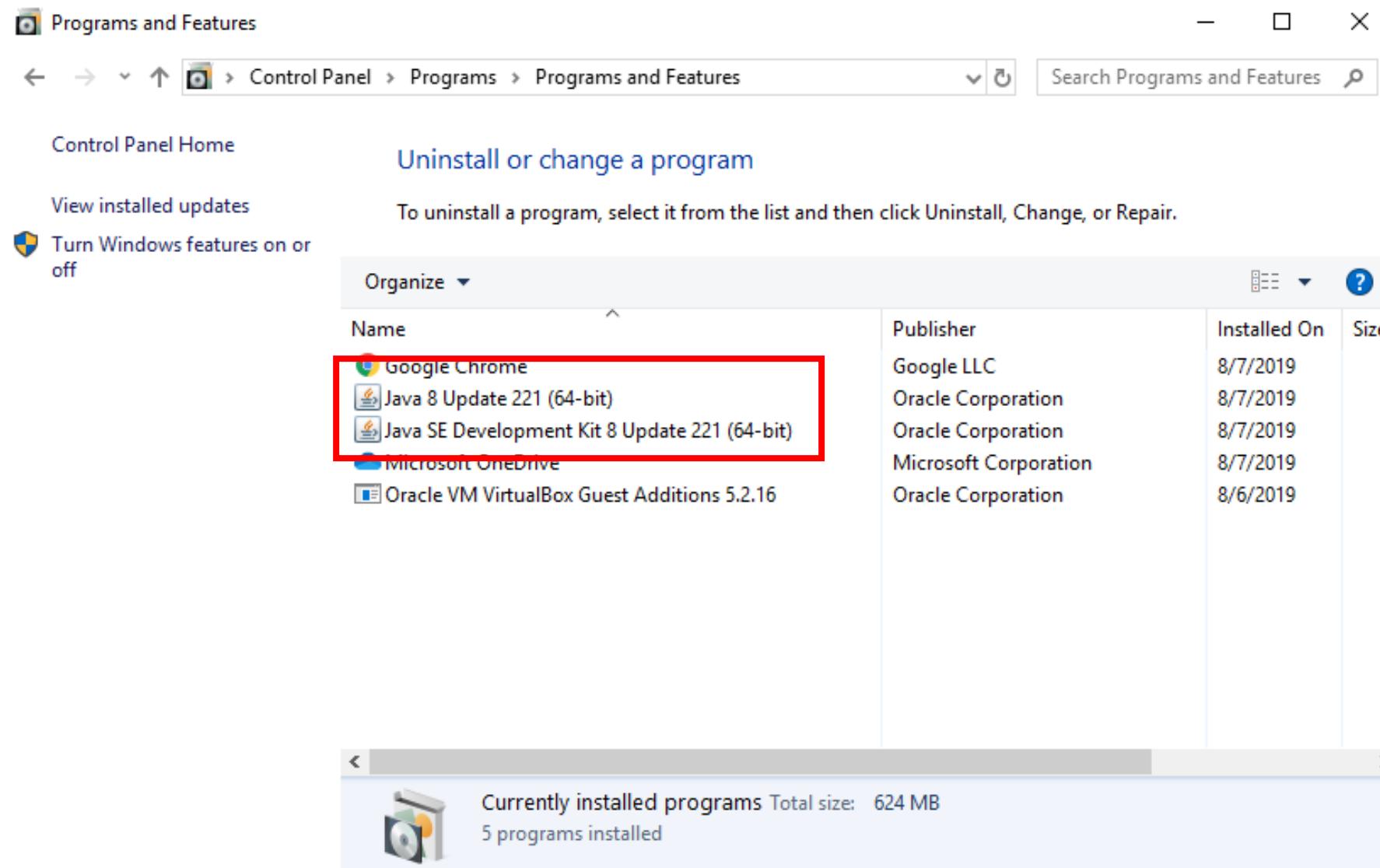
Checking Java 8



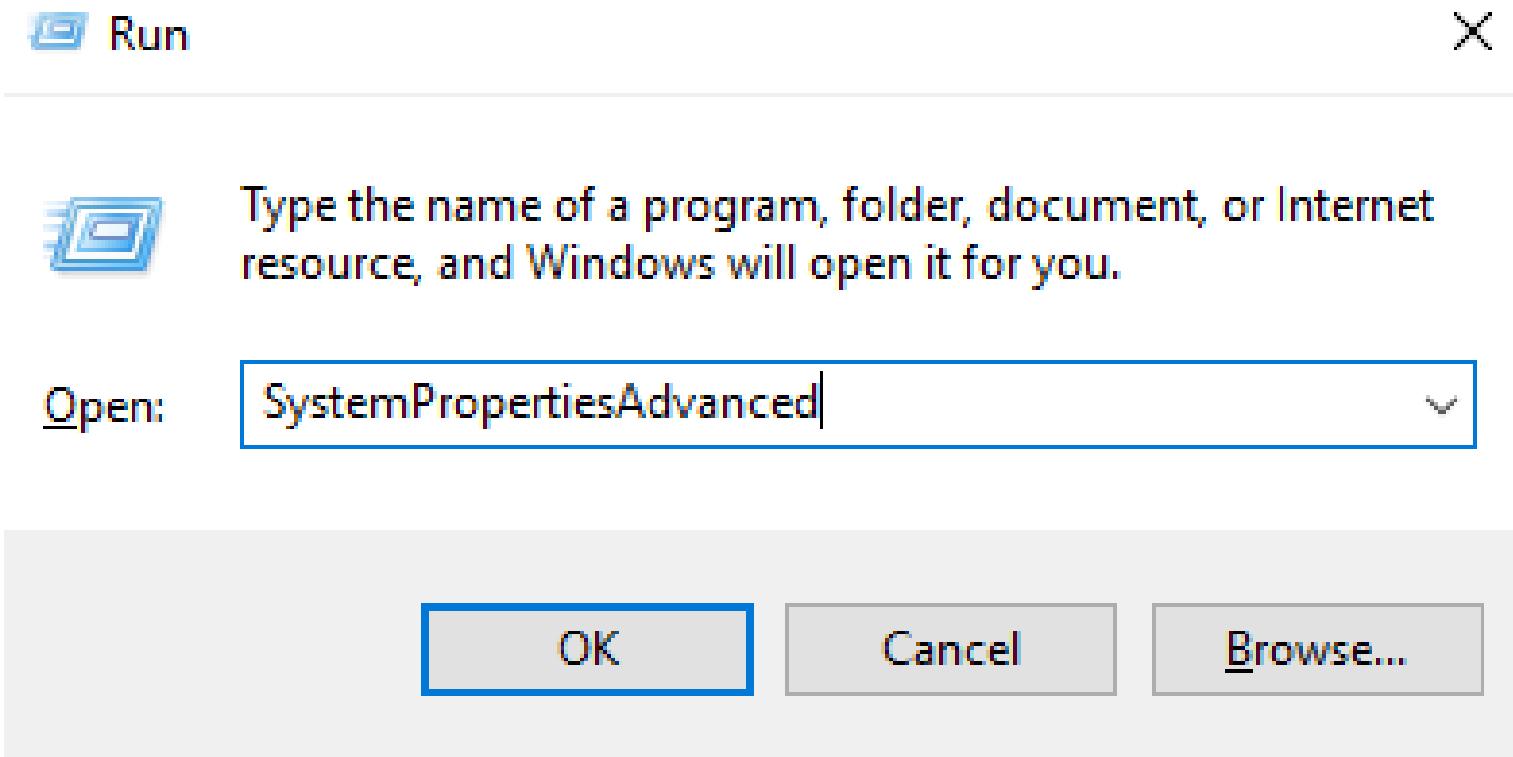
Checking Java 8 (Cont.)



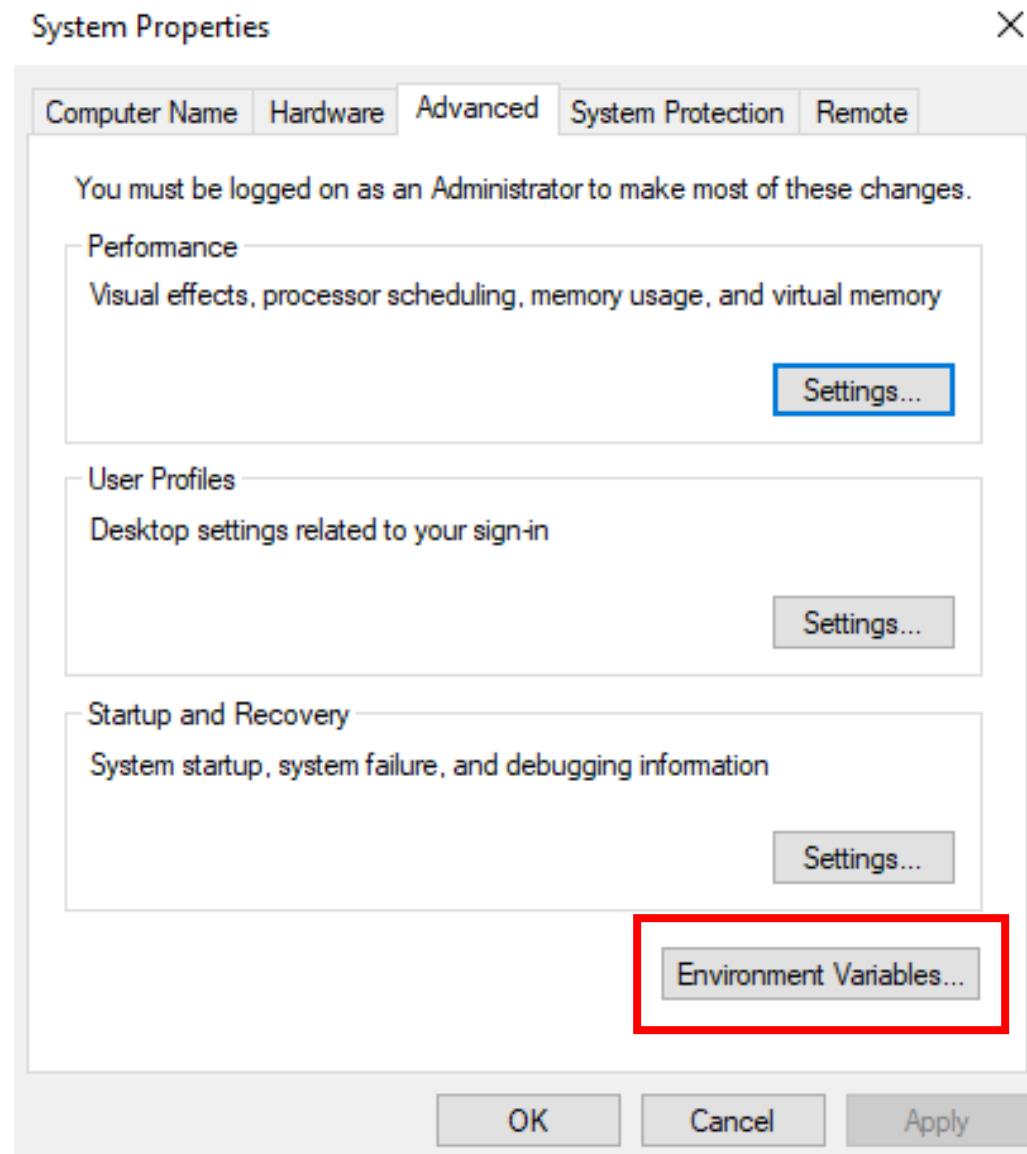
Checking Java 8 (Cont.)



Configuring JDK Environment

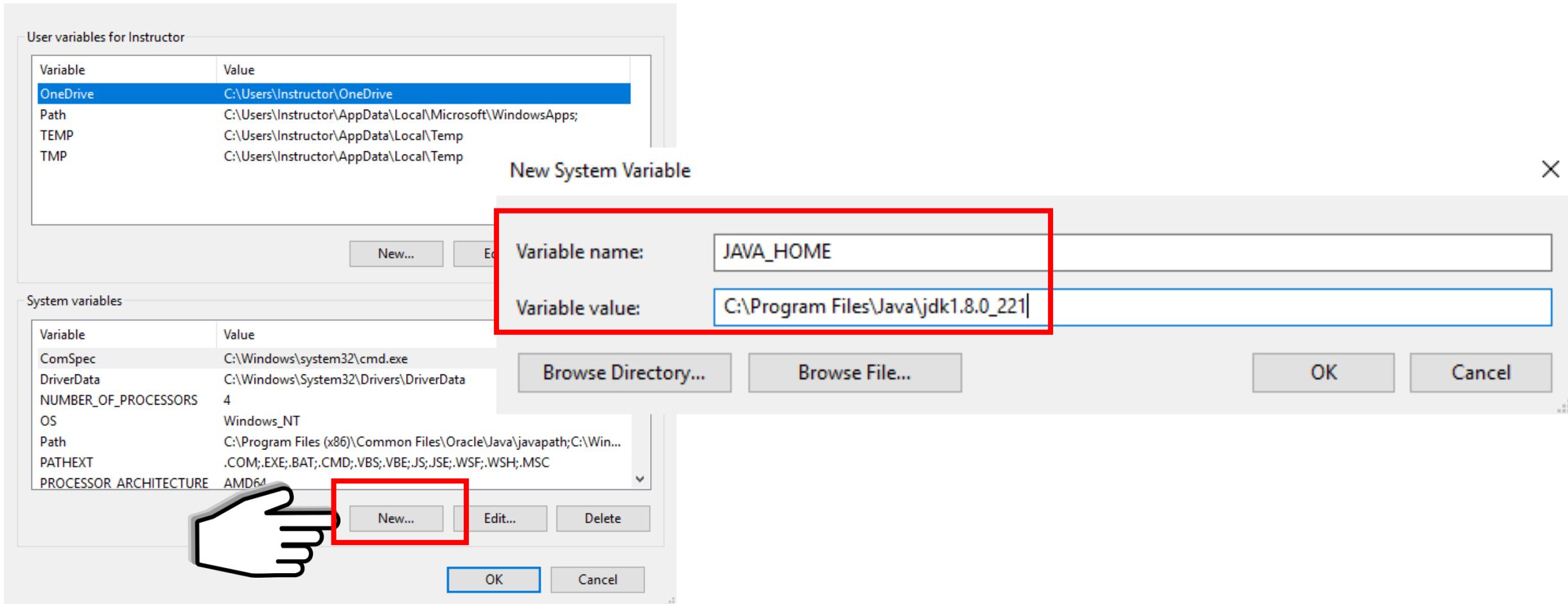


Configuring JDK Environment (Cont.)

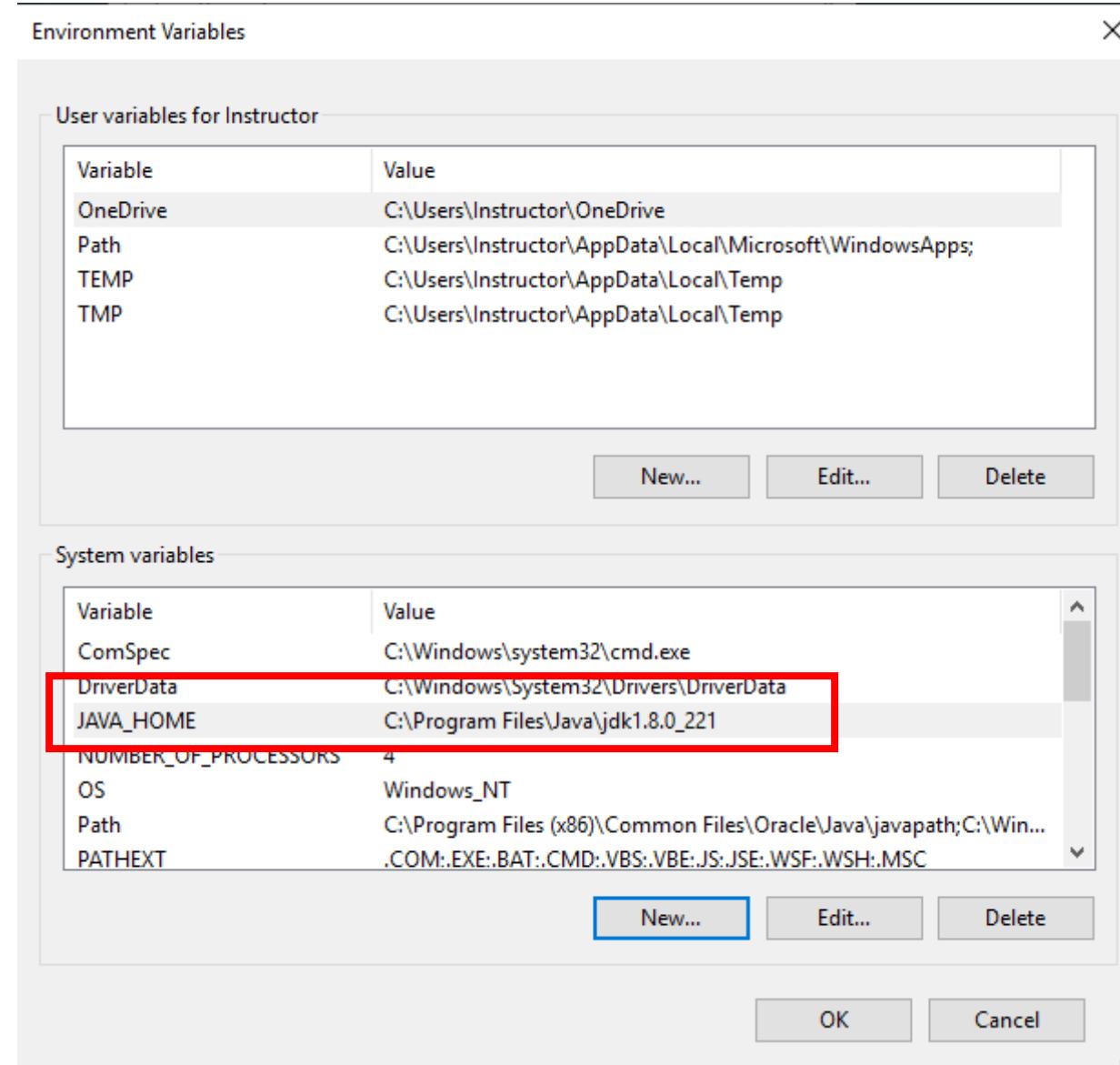


Configuring JDK Environment (Cont.)

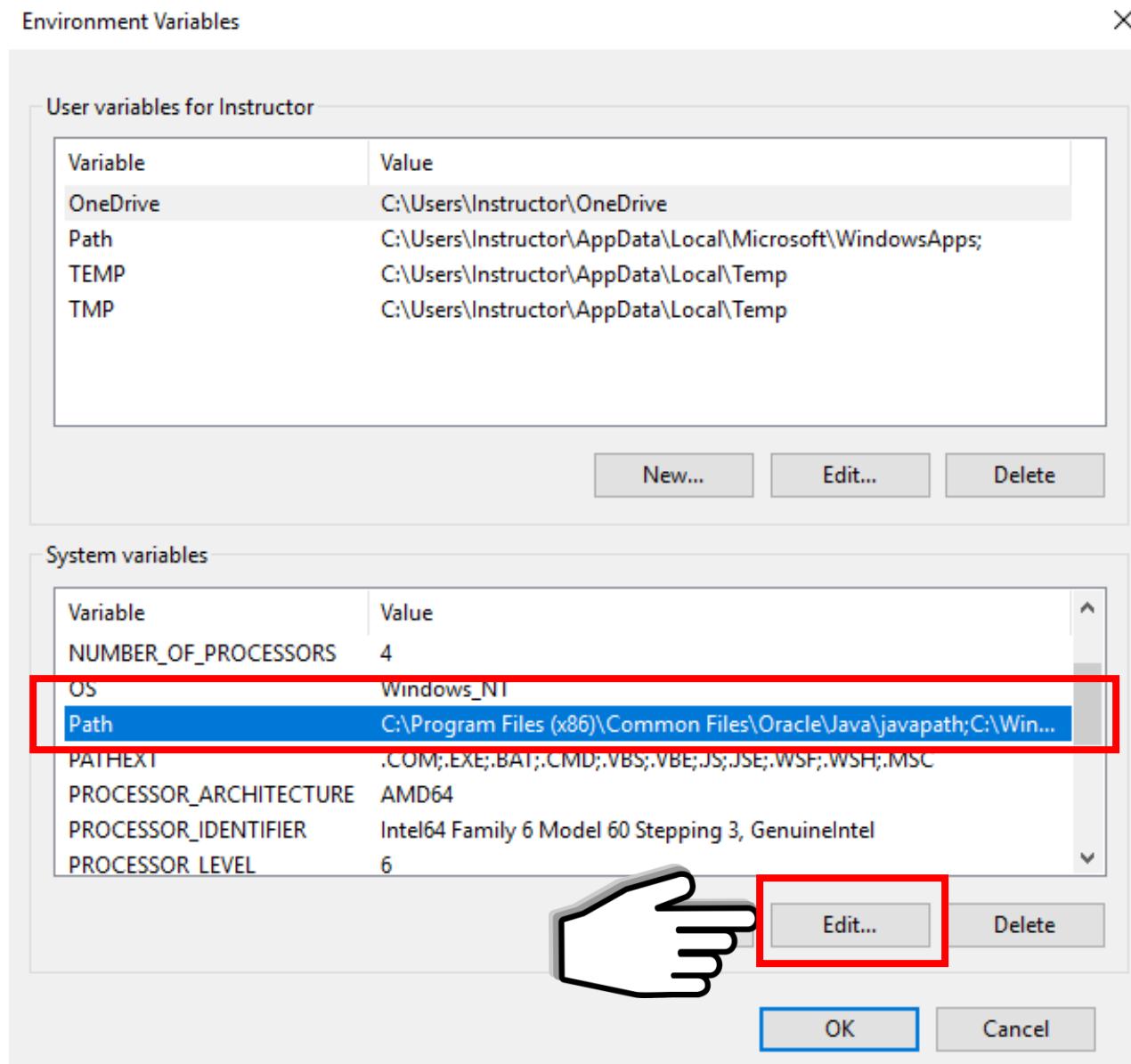
Environment Variables



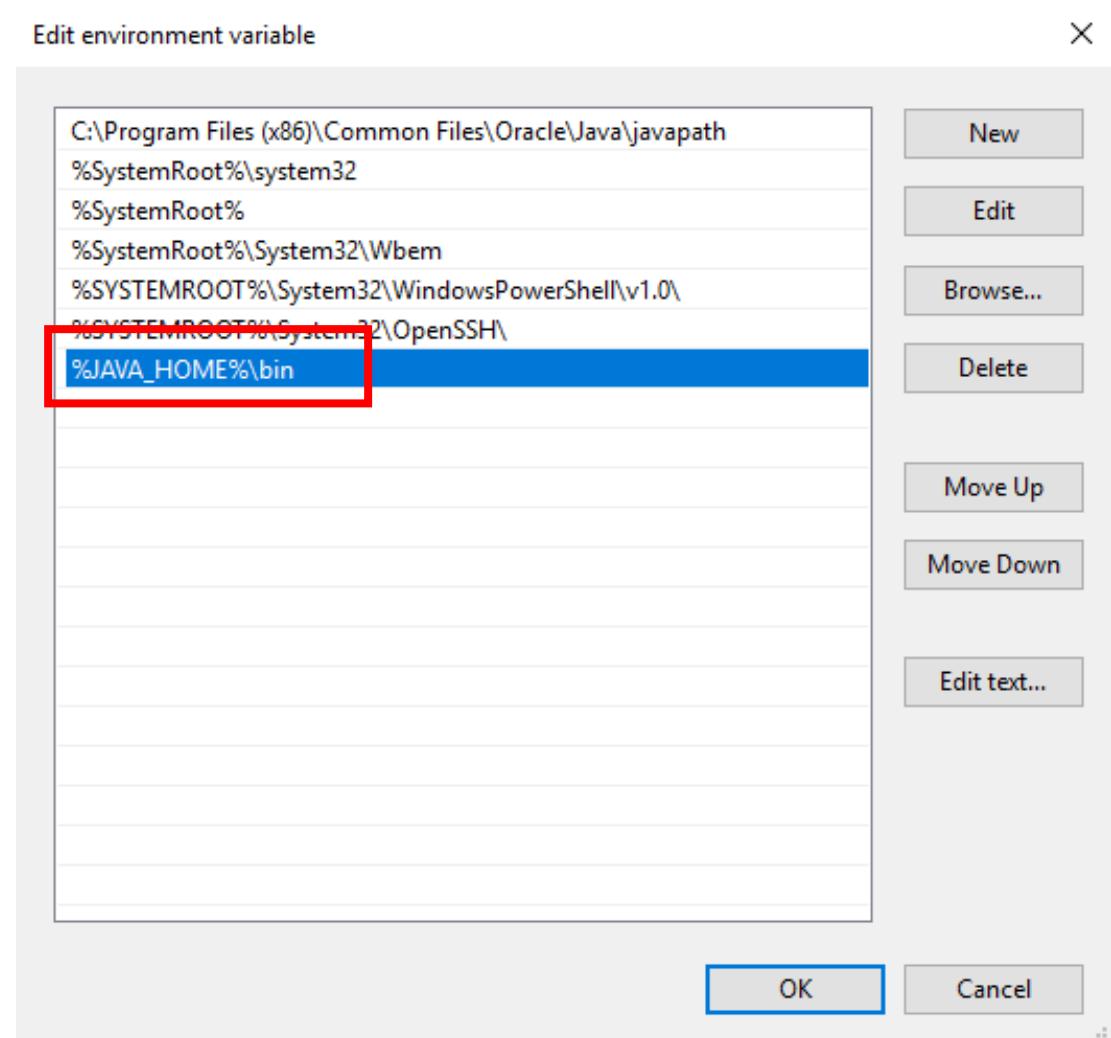
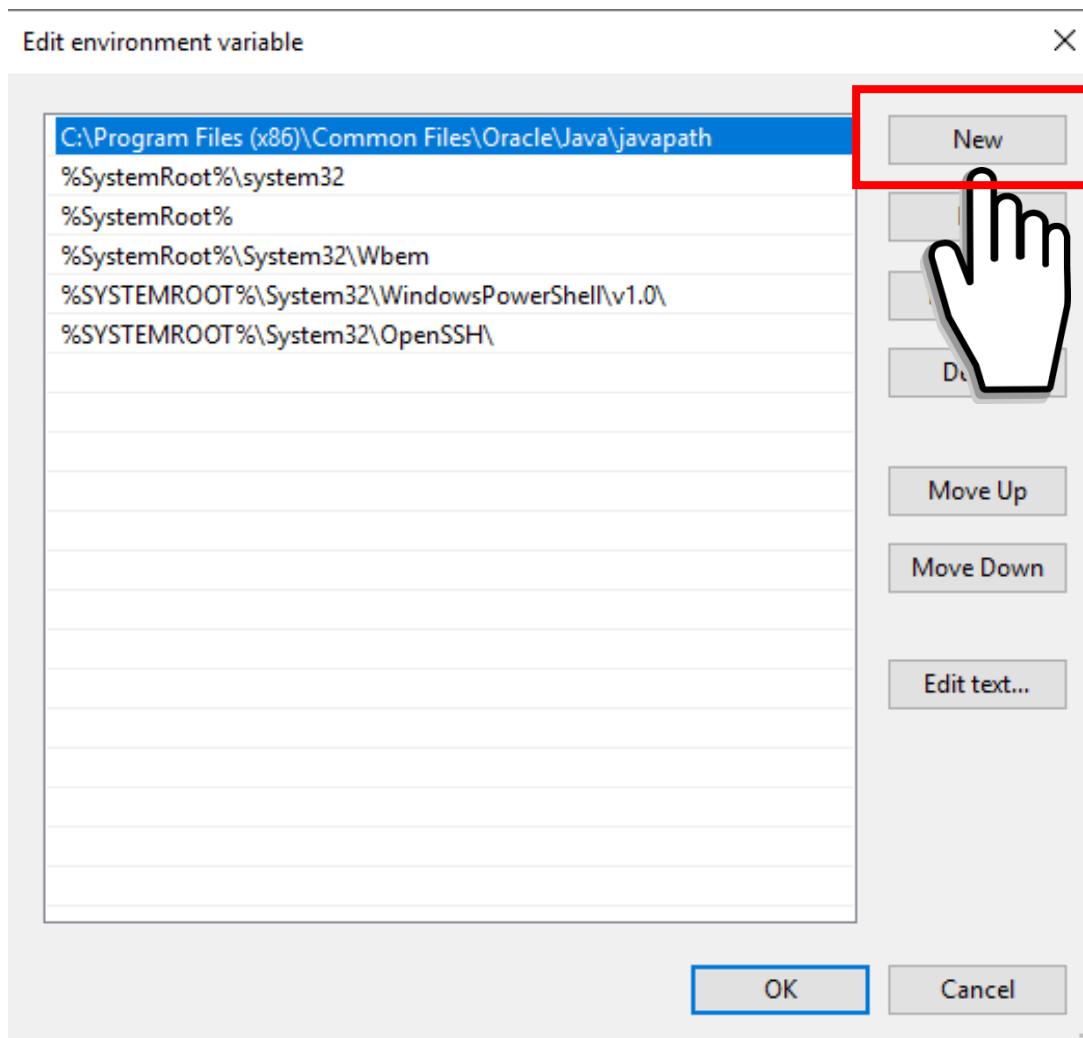
Configuring JDK Environment (Cont.)



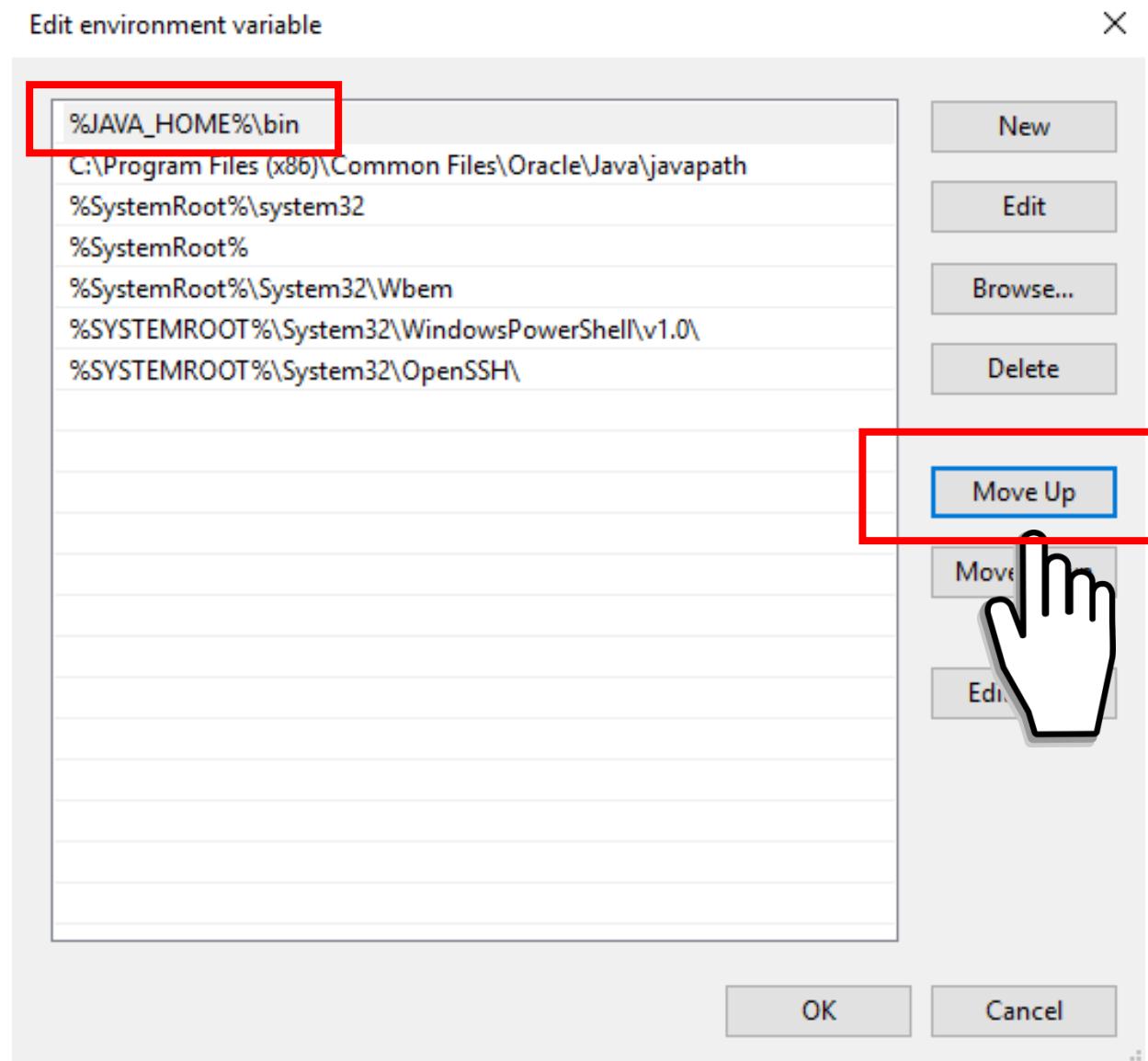
Configuring JDK Environment (Cont.)



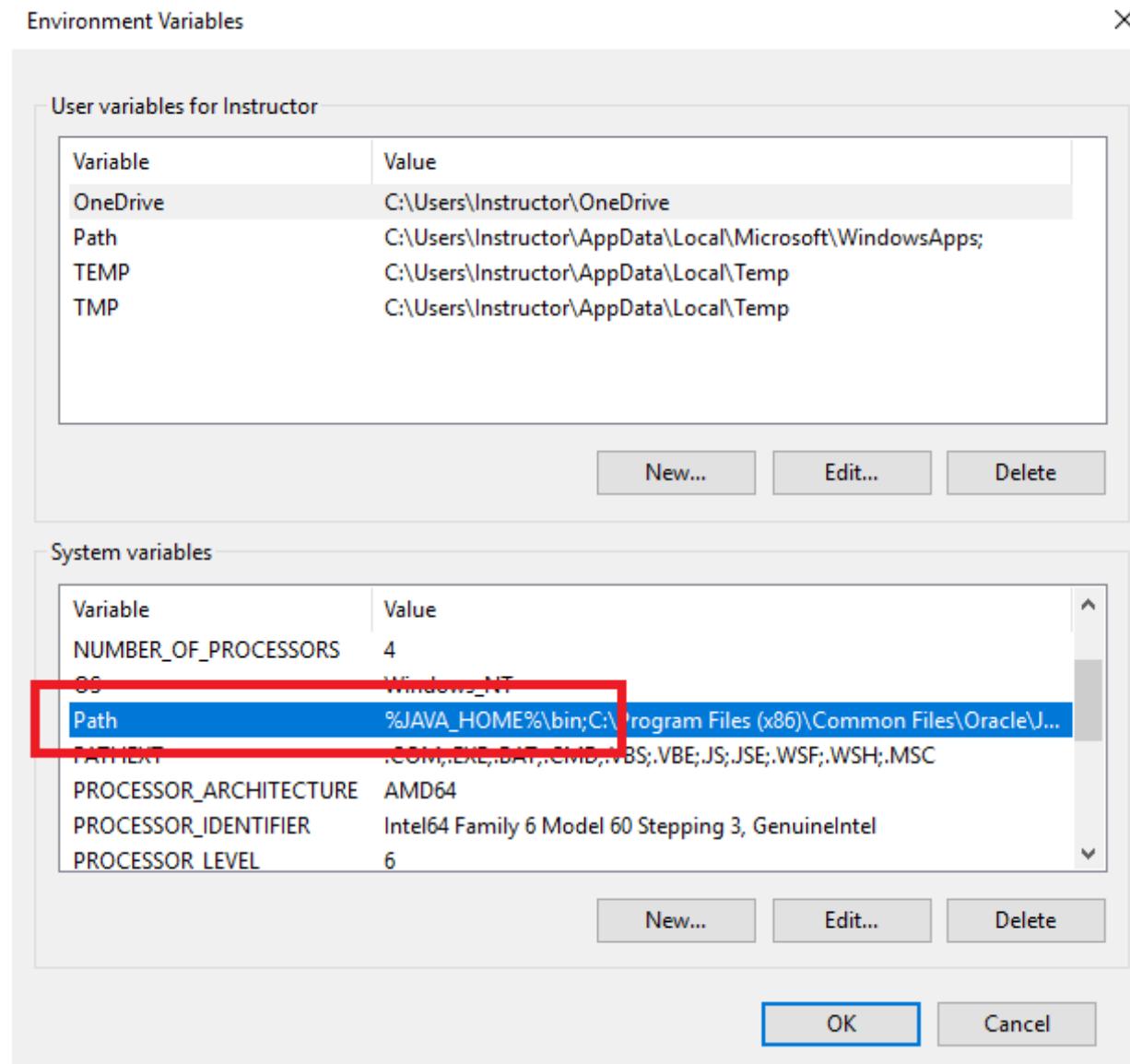
Configuring JDK Environment (Cont.)



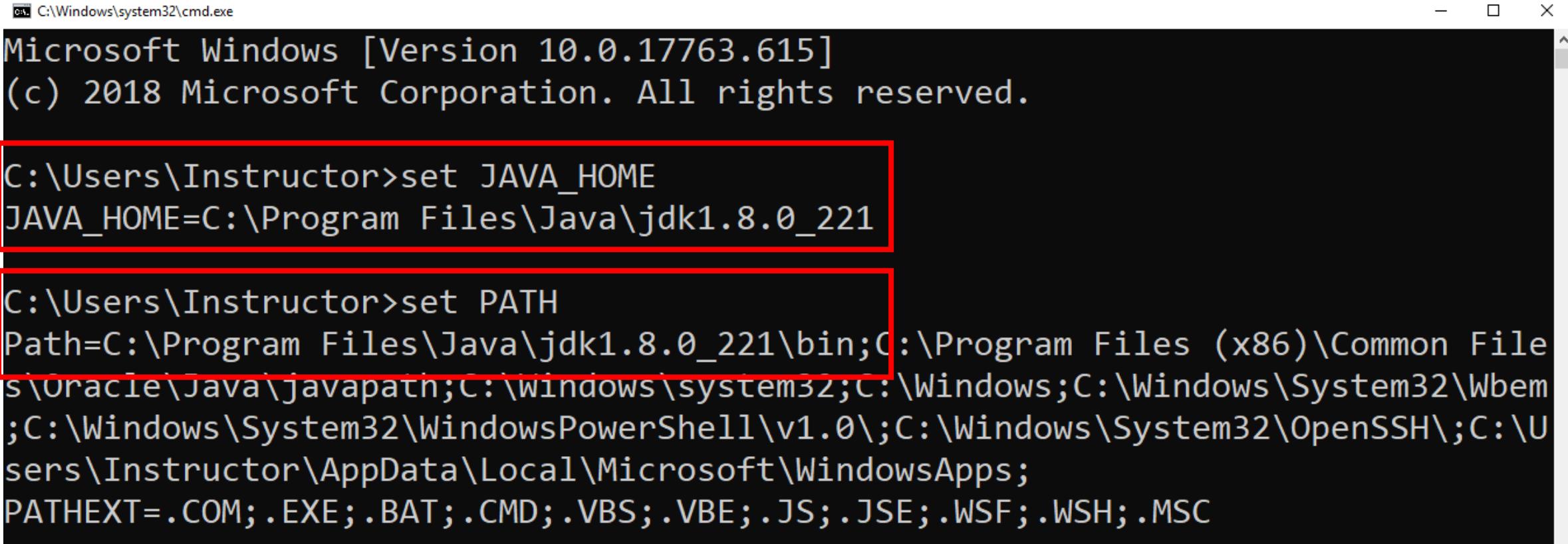
Configuring JDK Environment (Cont.)



Configuring JDK Environment (Cont.)



Configuring JDK Environment (Cont.)



A screenshot of a Windows Command Prompt window titled "C:\Windows\system32\cmd.exe". The window shows the following text:

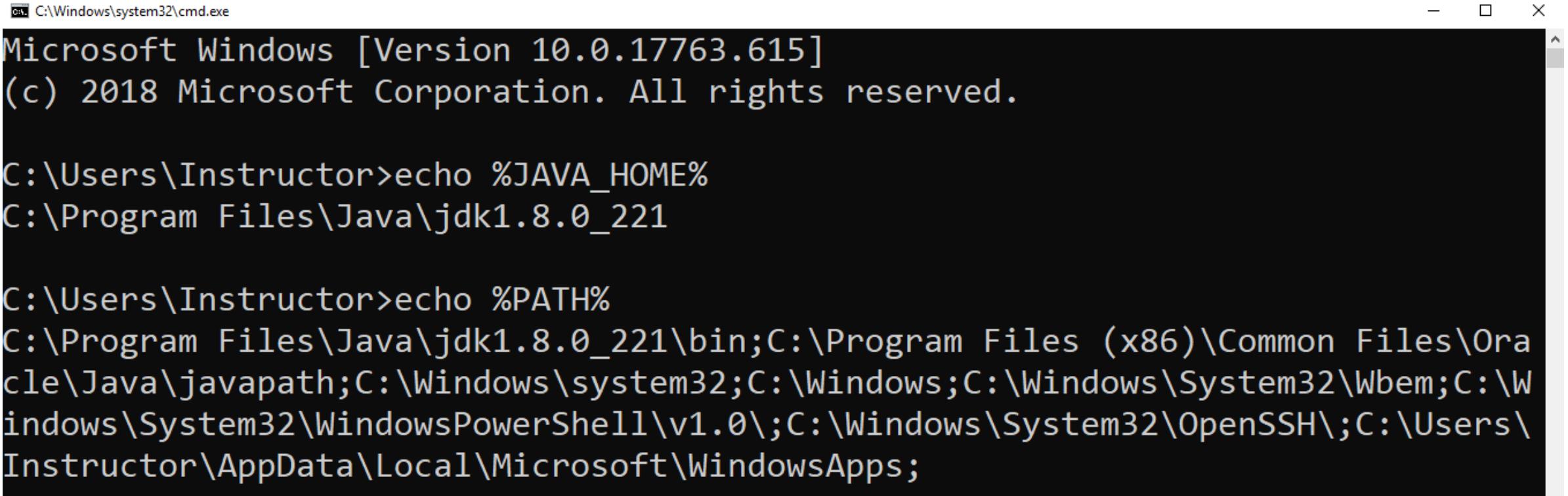
```
Microsoft Windows [Version 10.0.17763.615]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Instructor>set JAVA_HOME
JAVA_HOME=C:\Program Files\Java\jdk1.8.0_221

C:\Users\Instructor>set PATH
Path=C:\Program Files\Java\jdk1.8.0_221\bin;C:\Program Files (x86)\Common File
s\oracle\java\javapath;C:\windows\system32;C:\Windows;C:\Windows\System32\Wbem
;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\U
sers\Instructor\AppData\Local\Microsoft\WindowsApps;
PATHEXT=.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
```

The first two lines of the command history are highlighted with a red box.

Configuring JDK Environment (Cont.)



A screenshot of a Windows Command Prompt window titled 'C:\Windows\system32\cmd.exe'. The window shows the following text output:

```
Microsoft Windows [Version 10.0.17763.615]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Instructor>echo %JAVA_HOME%
C:\Program Files\Java\jdk1.8.0_221

C:\Users\Instructor>echo %PATH%
C:\Program Files\Java\jdk1.8.0_221\bin;C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Users\Instructor\AppData\Local\Microsoft\WindowsApps;
```

Testing JDK Environment

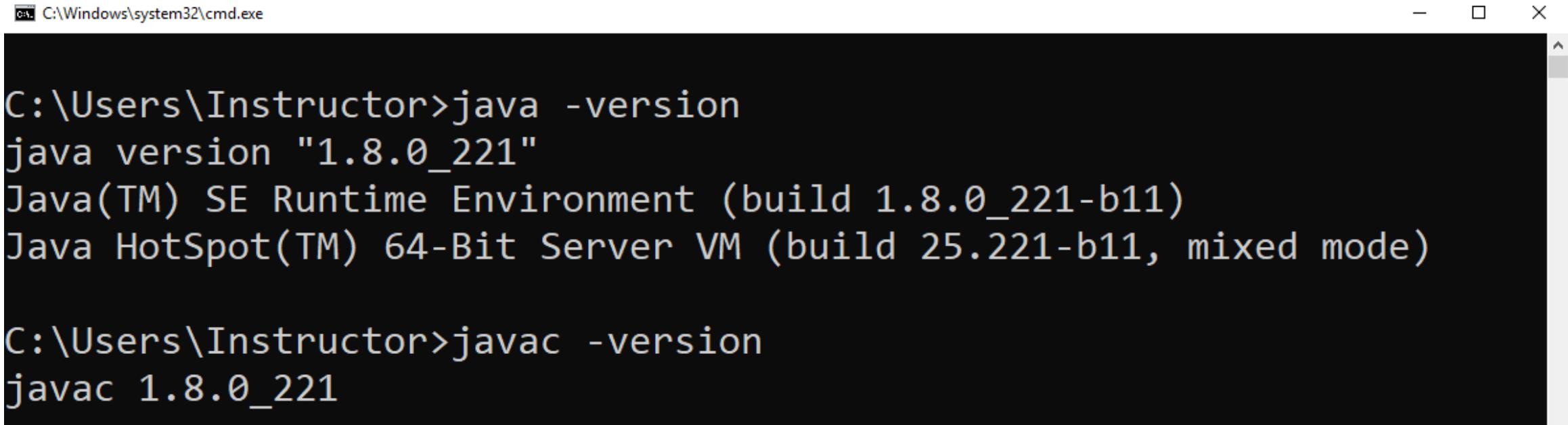
c:\ C:\Windows\system32\cmd.exe

```
C:\Users\Instructor>java  
Usage: java [-options] class [args...]  
           (to execute a class)  
or   java [-options] -jar  
      jarfile [args...]
```

where options include:

-d32	use a 32-bit Java Virtual Machine	Usage: javac <options> <source files>
-d64	use a 64-bit Java Virtual Machine	where possible options include:
-server	to select the default VM	
	The default VM is doing	-g -g:none -g:{lines,vars,source}
	A ; separating classpath entries	-nowarn
-cp <classpath>	and ZIP files	-verbose
-classpath <classpath>	APIs are used	-deprecation
	and annotation processors	-classpath <path>
	and annotation processors	-cp <path>
	and annotation processors	-processorpath <path>

Testing JDK Environment (Cont.)



A screenshot of a Windows Command Prompt window titled "cmd C:\Windows\system32\cmd.exe". The window shows two command-line executions:

```
C:\Users\Instructor>java -version
java version "1.8.0_221"
Java(TM) SE Runtime Environment (build 1.8.0_221-b11)
Java HotSpot(TM) 64-Bit Server VM (build 25.221-b11, mixed mode)

C:\Users\Instructor>javac -version
javac 1.8.0_221
```

Installation to Oracle Java 8 for Ubuntu 64-bit Platform



Installation JDK 8 for Ubuntu 18.04 LTS Platform

```
instructor@Ubuntu-Desktop: ~
File Edit View Search Terminal Help
instructor@Ubuntu-Desktop:~$ java -version
Command 'java' not found, but can be installed with:
sudo apt install default-jre
sudo apt install openjdk-11-jre-headless
sudo apt install openjdk-8-jre-headless
```

Installation JDK 8 for Ubuntu 18.04 LTS Platform (Cont.)

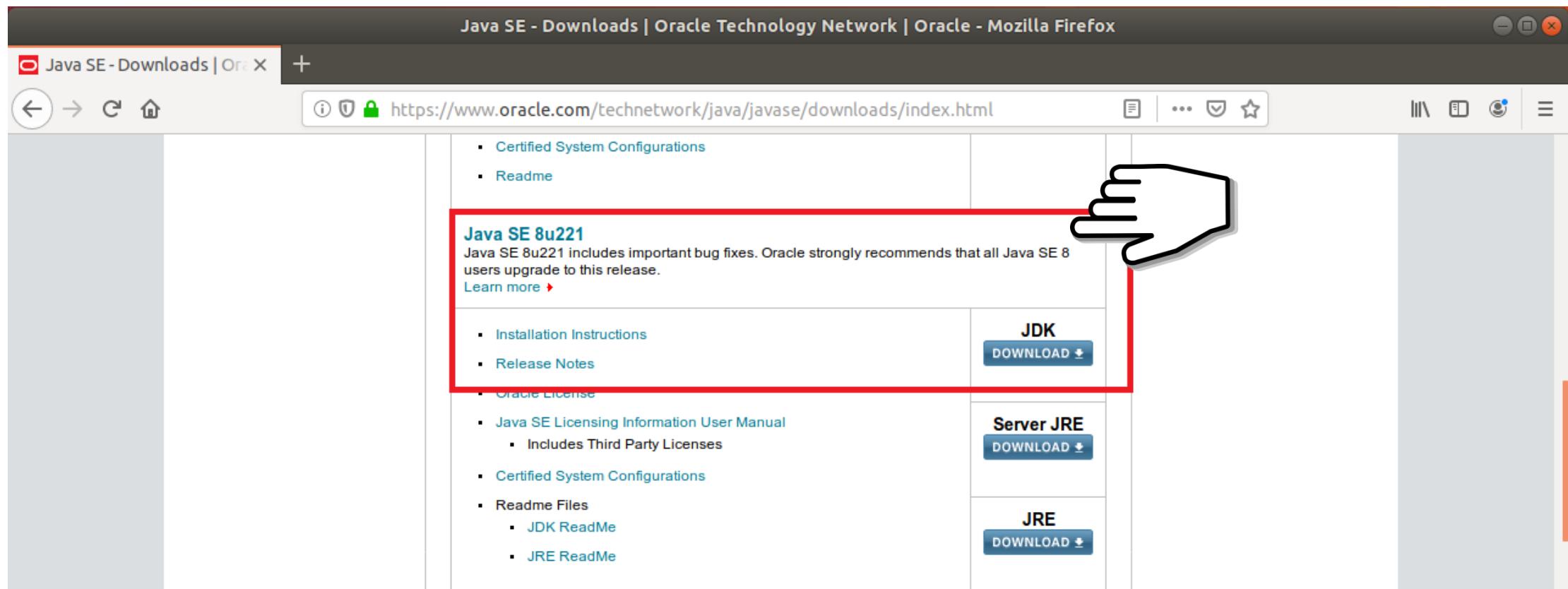
1. Connect to <http://java.sun.com>

The screenshot shows a Mozilla Firefox browser window displaying the Oracle Java Technology Network website at <https://www.oracle.com/technetwork/java/index.html>. The page features a large blue banner on the left with white clouds and icons representing cloud computing. To the right of the banner, there is a promotional offer for creating a free Oracle Cloud account. Below the banner, there are links for "What's New" and "Java in the Cloud". On the right side of the page, there is a "Software Downloads" section with a red header. The "Top Downloads" section is currently selected, showing links for Java SE, Java EE and GlassFish, JavaFX, Java Card, JDeveloper and ADF, Enterprise Pack for Eclipse, NetBeans IDE, and Pre-Built VM for Java Devs. Below this, there is a "New Downloads" section listing Java SE 12.0.2, Java SE 11.0.4, Java SE 8 Update 221, *Java CPU and PSU Releases Explained, and Java Card 3.1. At the bottom of the page, there is a "Java Downloads" button.

Downloading JDK 8

■ Connect to

<https://www.oracle.com/technetwork/java/javase/downloads/index.html>



Downloading JDK 8 (Cont.)

The screenshot shows a Mozilla Firefox browser window displaying the Java SE Development Kit 8 Downloads page on Oracle's website. The URL in the address bar is <https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>. The page content is as follows:

Java SE Development Kit 8 Downloads
Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications, applets, and components using the Java programming language.

The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.

Important Oracle JDK License Update
The Oracle JDK License has changed for releases starting April 16, 2019.

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Commercial license and support is available with a low cost [Java SE Subscription](#).

Oracle also provides the latest OpenJDK release under the open source [GPL License](#) at jdk.java.net.

The page features a navigation menu on the left with links to Java SE, Java EE, Java ME, Java SE Subscription, Java Embedded, Java Card, Java TV, Community, and Java Magazine. A top navigation bar includes links for Overview, Downloads (which is highlighted), Documentation, Community, Technologies, Training, Search, Sign In, Country/Region, and Contact. On the right, there are sections for Java SDKs and Tools (with links to Java SE, Java EE and Glassfish, Java ME, Java Card, NetBeans IDE, and Java Mission Control) and Java Resources (with links to Java APIs, Technical Articles, Demos and Videos, Forums, Java Magazine, Developer Training, Tutorials, and Java.com).

Downloading JDK 8 (Cont.)

JDK 8u221 checksum

Java SE Development Kit 8u221

You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software.

Accept License Agreement Decline License Agreement

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	72.9 MB	jdk-8u221-linux-arm32-vfp-hflt.tar.gz
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Windows x64	215.35 MB	jdk-8u221-windows-x64.exe



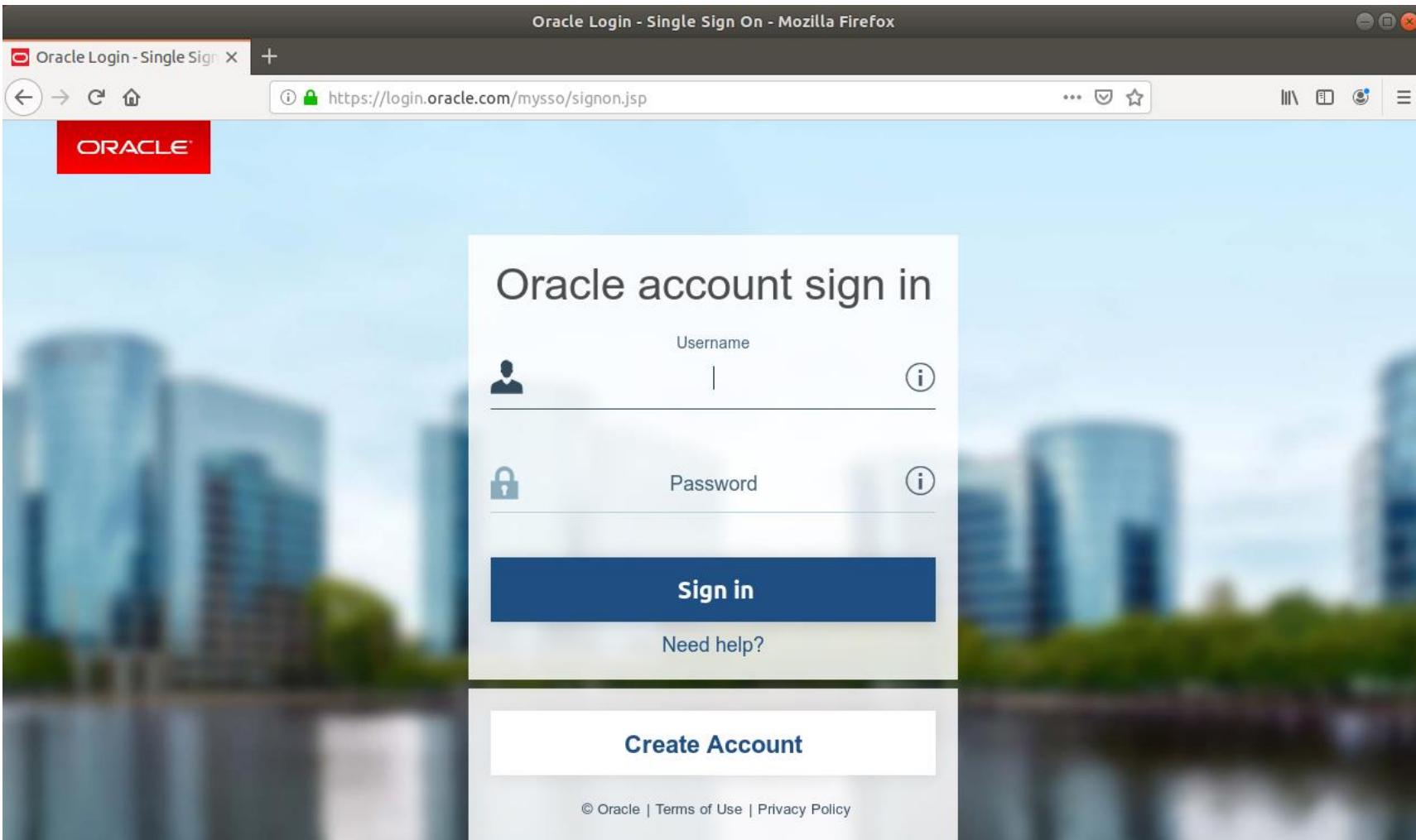
Downloading JDK 8 (Cont.)

2. Download `jdk-8uXXX-linux-x64.tar.gz`

The screenshot shows a web browser displaying the Oracle Java SE Development Kit 8u221 download page. The URL in the address bar is <https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>. The page title is "Java SE Development Kit 8u221". A message box states: "You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software. Thank you for accepting the Oracle Technology Network License Agreement for Oracle Java SE; you may now download this software." Below this, a table lists various Java distribution options:

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	72.9 MB	jdk-8u221-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	69.81 MB	jdk-8u221-linux-arm64-vfp-hflt.tar.gz
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Solaris x64	91.95 MB	jdk-8u221-solaris-x64.tar.gz
Windows x86	202.73 MB	jdk-8u221-windows-i586.exe
Windows x64	215.35 MB	jdk-8u221-windows-x64.exe

Downloading JDK 8 (Cont.)



Installation JDK 8 on Ubuntu

3. Unpacking `$ tar xvzf jdk*.tar.gz`

```
instructor@Ubuntu-Desktop: ~/Downloads  
File Edit View Search Terminal Help  
instructor@Ubuntu-Desktop:~$ cd Downloads  
instructor@Ubuntu-Desktop:~/Downloads$ ls  
jdk-8u221-linux-x64.tar.gz  
instructor@Ubuntu-Desktop:~/Downloads$
```

```
instructor@Ubuntu-Desktop:~/Downloads$ tar xvzf jdk-8u*.tar.gz
```

```
instructor@Ubuntu-Desktop:~/Downloads$  
instructor@Ubuntu-Desktop:~/Downloads$ ls  
jdk1.8.0_221 jdk-8u221-linux-x64.tar.gz  
instructor@Ubuntu-Desktop:~/Downloads$
```

Installation JDK 8 on Ubuntu (Cont.)

4. Making JDK Directory

```
instructor@Ubuntu-Desktop:~/Downloads$  
instructor@Ubuntu-Desktop:~/Downloads$ sudo mkdir /usr/lib/jvm  
[sudo] password for instructor:
```

5. Moving JDK Directory

```
$ sudo mv jdk1.8.0_XXX /usr/lib/jvm/
```

```
instructor@Ubuntu-Desktop:~/Downloads$ sudo mv jdk1.8.0_221 /usr/lib/jvm/
```

```
instructor@Ubuntu-Desktop:~/Downloads$ cd /usr/lib/jvm  
instructor@Ubuntu-Desktop:/usr/lib/jvm$ pwd  
/usr/lib/jvm  
instructor@Ubuntu-Desktop:/usr/lib/jvm$ ls  
jdk1.8.0_221  
instructor@Ubuntu-Desktop:/usr/lib/jvm$
```

Installation JDK 8 on Ubuntu (Cont.)

6. Adding your new Java 8 installation into alternatives list.

```
$ sudo update-alternatives --install \
/usr/bin/java java \
/usr/lib/jvm/jdk1.8.0_xxx/bin/java \ 1
```

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo update-alternatives --install \
> /usr/bin/java java /usr/lib/jvm/jdk1.8.0_221/bin/java 1
update-alternatives: using /usr/lib/jvm/jdk1.8.0_221/bin/java to provide /usr/bin/java (java) in auto
mode
instructor@Ubuntu-Desktop:/usr/lib/jvm$
```

Installation JDK 8 on Ubuntu (Cont.)

7. Adding your new Java 8 installation into alternatives list.

```
$ sudo update-alternatives --install \
/usr/bin/javac javac \
/usr/lib/jvm/jdk1.8.0_xxx/bin/javac 1
```

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo update-alternatives --install \
> /usr/bin/javac javac /usr/lib/jvm/jdk1.8.0_221/bin/javac 1
update-alternatives: using /usr/lib/jvm/jdk1.8.0_221/bin/javac to provide /usr/bin/javac (javac) in auto mode
```

Installation JDK 8 on Ubuntu (Cont.)

8. Adding your new Java 8 installation into alternatives list.

```
$ sudo update-alternatives --install \
/usr/bin/javaws javaws \
/usr/lib/jvm/jdk1.8.0_xxx/bin/javaws \ 1
```

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo update-alternatives --install \
> /usr/bin/javaws javaws /usr/lib/jvm/jdk1.8.0_221/bin/javaws 1
update-alternatives: using /usr/lib/jvm/jdk1.8.0_221/bin/javaws to provide /usr/bin/javaws (javaws) in auto mode
```

Installation JDK 8 on Ubuntu (Cont.)

9. Change permission.

```
$ sudo chmod a+x /usr/lib/java  
$ sudo chmod a+x /usr/lib/javac  
$ sudo chmod a+x /usr/lib/javaws
```

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo chmod a+x /usr/bin/java  
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo chmod a+x /usr/bin/javac  
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo chmod a+x /usr/bin/javaws
```

Installation JDK 8 on Ubuntu (Cont.)

10. Check java version & javac version

```
$ java -version
```

```
$ javac -version
```

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ java -version
java version "1.8.0_221"
Java(TM) SE Runtime Environment (build 1.8.0_221-b11)
Java HotSpot(TM) 64-Bit Server VM (build 25.221-b11, mixed mode)
instructor@Ubuntu-Desktop:/usr/lib/jvm$ javac -version
javac 1.8.0_221
```

Registering OS Environment Variables on Ubuntu

- **sudo vi /etc/profile**

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ sudo vi /etc/profile
```

Registering OS Environment Variables on Ubuntu (Cont.)

```
instructor@Ubuntu-Desktop: /usr/lib/jvm  
File Edit View Search Terminal Help  
fi  
fi  
  
if [ -d /etc/profile.d ]; then  
    for i in /etc/profile.d/*.sh; do  
        if [ -r $i ]; then  
            . $i  
        fi  
    done  
    unset i  
fi  
  
#-----  
# Java Settings  
#-----  
JAVA_HOME=/usr/lib/jvm/jdk1.8.0_221  
PATH=$JAVA_HOME/bin:$PATH  
  
export JAVA_HOME  
export PATH
```

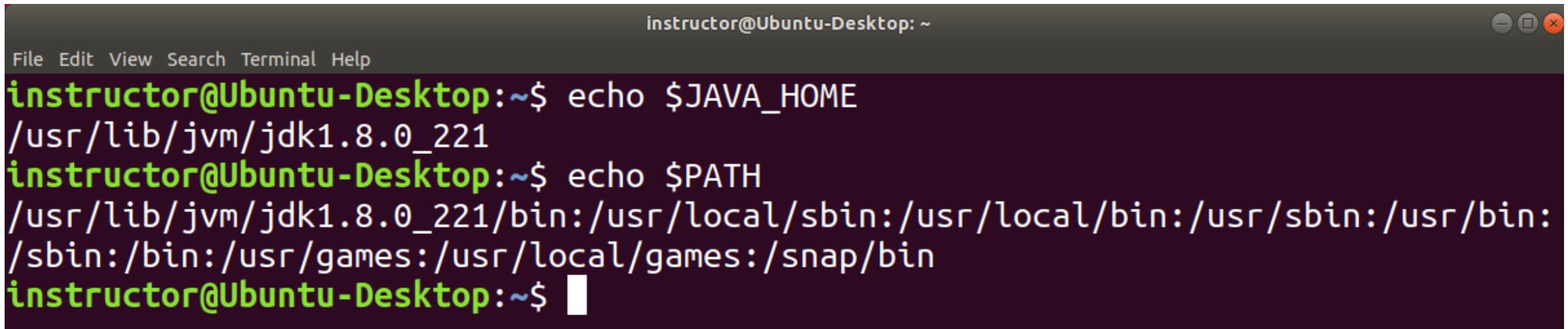
Registering OS Environment Variables on Ubuntu (Cont.)

- **source /etc/profile**

```
instructor@Ubuntu-Desktop:/usr/lib/jvm$ source /etc/profile  
instructor@Ubuntu-Desktop:/usr/lib/jvm$
```

- Restart System

Registering OS Environment Variables on Ubuntu (Cont.)

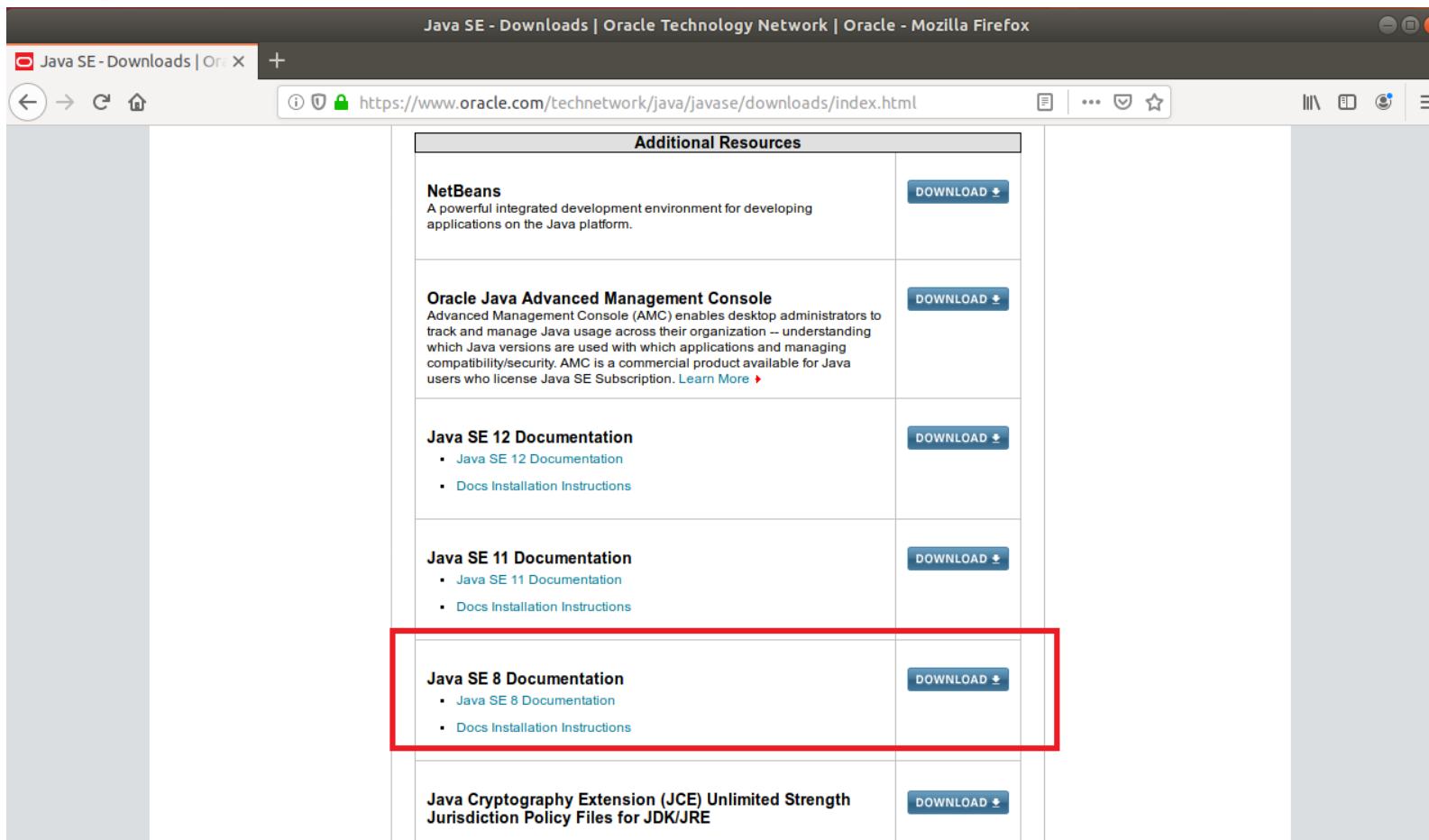


A screenshot of a terminal window on an Ubuntu desktop. The title bar reads "instructor@Ubuntu-Desktop: ~". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The window has standard close, minimize, and maximize buttons in the top right corner. The terminal content shows the user running two commands: "echo \$JAVA_HOME" which outputs the path "/usr/lib/jvm/jdk1.8.0_221", and "echo \$PATH" which outputs a long list of directory paths including "/usr/lib/jvm/jdk1.8.0_221/bin", "/usr/local/sbin", and several "/usr/bin" entries.

```
instructor@Ubuntu-Desktop:~$ echo $JAVA_HOME  
/usr/lib/jvm/jdk1.8.0_221  
instructor@Ubuntu-Desktop:~$ echo $PATH  
/usr/lib/jvm/jdk1.8.0_221/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:  
/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
instructor@Ubuntu-Desktop:~$ █
```

Java SE 8 Documentation downloads

- Connect to <http://www.oracle.com/technetwork/java/javase/downloads/index.html>



Java SE 8 Documentation downloads (Cont.)

The screenshot shows the Oracle Java SE Development Kit 8 Documentation download page. At the top, there's a navigation bar with links for Menu, ORACLE, Search, Sign In, Country/Region, and Contact. Below the navigation bar, the URL is Oracle Technology Network / Java / Java SE / Documentation.

On the left, a sidebar menu lists Java SE, Java EE, Java ME, Java SE Subscription, Java Embedded, Java Card, Java TV, Community, and Java Magazine. The main content area features tabs for Overview, Downloads, Documentation (which is selected), Community, Technologies, and Training. The Documentation tab displays the Java SE Development Kit 8u221 Documentation. It includes a note about accepting the license agreement and two radio buttons: "Accept License Agreement" (selected) and "Decline License Agreement". Below this, there's a table with columns for Product / File Description, File Size, and Download. The first row shows "Documentation" with a file size of 89.47 MB and a download link for "jdk-8u221-docs-all.zip".

Below the Java SE documentation, there's another section for JavaFX API Documentation, with a similar layout for accepting the license agreement and a download link for "javafx-8u221-apidocs.zip".

On the right side, there are two sections: "Java SDKs and Tools" and "Java Resources". The "Java SDKs and Tools" section lists links for Java SE, Java EE and Glassfish, Java ME, Java Card, NetBeans IDE, and Java Mission Control. The "Java Resources" section lists links for Java APIs, Technical Articles, Demos and Videos, Forums, Java Magazine, Developer Training, Tutorials, and Java.com.

At the bottom, there are links for E-mail this page and Printer View.

Java SE 8 Documentation downloads (Cont.)

The screenshot shows the Oracle Java SE Development Kit 8 Documentation page. The top navigation bar includes links for Menu, ORACLE, Search, Sign In, Country/Region, and Contact. The breadcrumb navigation shows Oracle Technology Network / Java / Java SE / Documentation. The left sidebar lists Java SE, Java EE, Java ME, Java SE Subscription, Java Embedded, Java Card, Java TV, Community, and Java Magazine. The main content area features tabs for Overview, Downloads, Documentation (which is selected), Community, Technologies, and Training. Below these tabs is the title "Java SE Development Kit 8 Documentation". A callout box highlights the "Java SE Development Kit 8u221 Documentation" section, which contains a note about accepting the license agreement and a download link for "jdk-8u221-docs-all.zip" (89.47 MB). Another callout box highlights the "JavaFX API Documentation" section, which contains a note about accepting Oracle Legal Notices and a download link for "javafx-8u221-apidocs.zip" (10.08 MB). The right sidebar is titled "Java SDKs and Tools" and lists Java SE, Java EE and Glassfish, Java ME, Java Card, NetBeans IDE, and Java Mission Control. The "Java Resources" sidebar lists Java APIs, Technical Articles, Demos and Videos, Forums, Java Magazine, Developer Training, Tutorials, and Java.com.

Java SE Development Kit 8 Documentation

Java SE Development Kit 8u221 Documentation

You must accept the [Java SE Development Kit 8 Documentation License Agreement](#) to download this software.

Thank you for accepting the Java SE Development Kit 8 Documentation License Agreement; you may now download this software.

Product / File Description	File Size	Download
Documentation	89.47 MB	jdk-8u221-docs-all.zip

JavaFX API Documentation

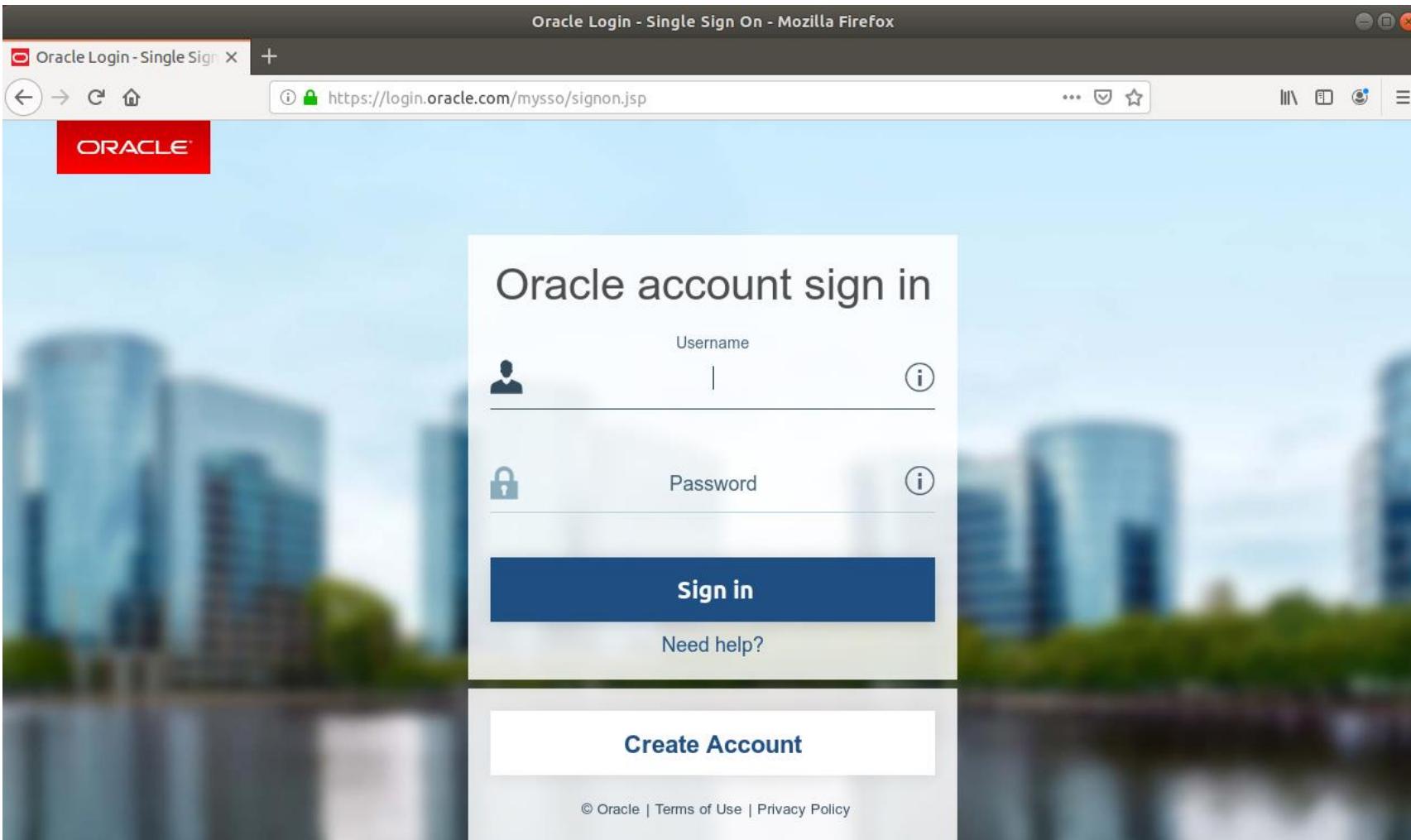
You must accept the [Oracle Legal Notices](#) to download this software.

Accept License Agreement Decline License Agreement

Product / File Description	File Size	Download
Documentation	10.08 MB	javafx-8u221-apidocs.zip

E-mail this page Printer View

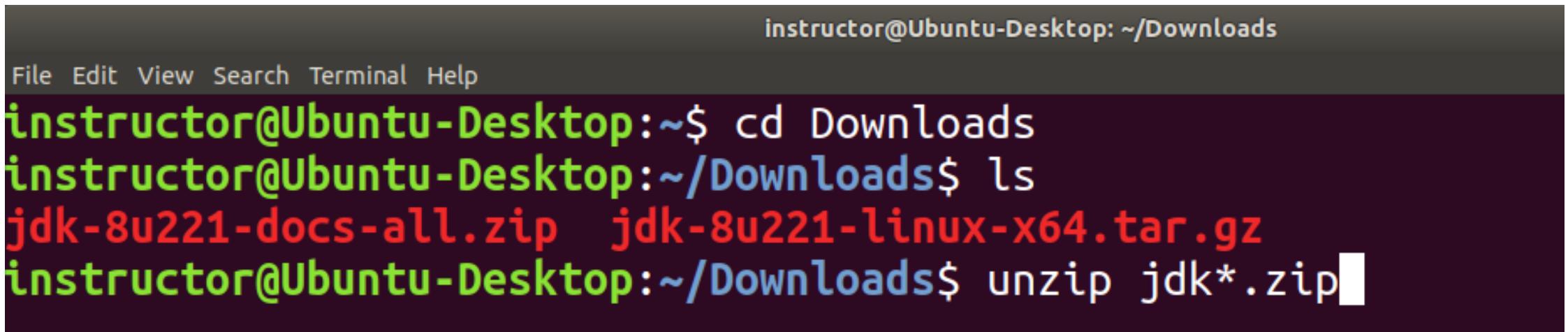
Java SE 8 Documentation downloads (Cont.)



Java SE 8 Documentation downloads (Cont.)

- Unzip download file.

```
$ unzip jdk*.zip
```



The screenshot shows a terminal window with a dark background and light-colored text. At the top, it displays the user's name and location: `instructor@Ubuntu-Desktop: ~/Downloads`. Below this is a standard menu bar with options: File, Edit, View, Search, Terminal, and Help. The main area of the terminal shows a command-line session:

```
instructor@Ubuntu-Desktop:~$ cd Downloads
instructor@Ubuntu-Desktop:~/Downloads$ ls
jdk-8u221-docs-all.zip  jdk-8u221-linux-x64.tar.gz
instructor@Ubuntu-Desktop:~/Downloads$ unzip jdk*.zip
```

The terminal window has a dark header bar and a dark footer bar. The text is rendered in a monospaced font.

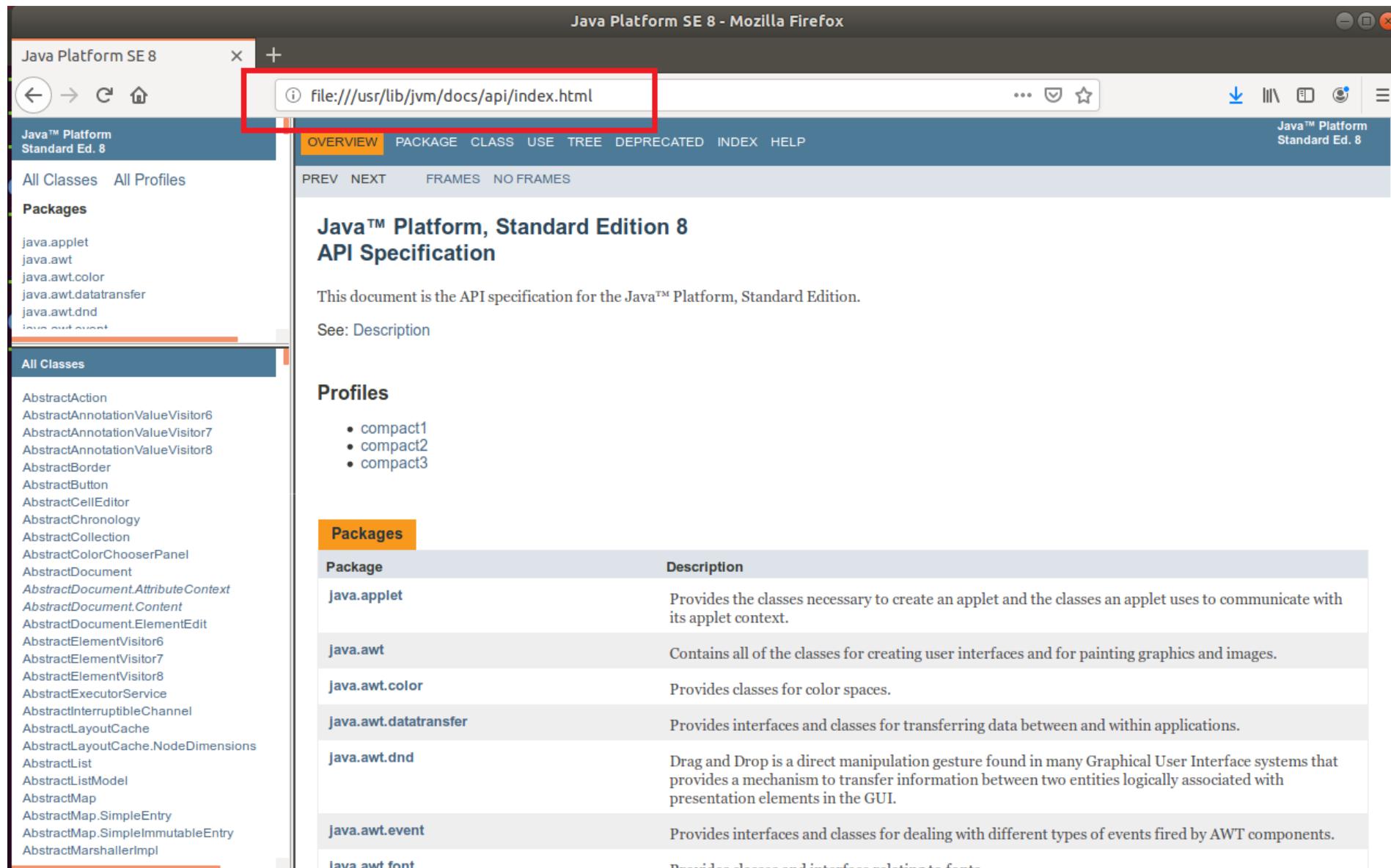
Java SE 8 Documentation downloads (Cont.)

- Moving unzipped folder.

```
$ sudo mv docs /usr/lib/jvm/
```

```
instructor@Ubuntu-Desktop:~/Downloads$ ls
docs  jdk-8u221-docs-all.zip  jdk-8u221-linux-x64.tar.gz
instructor@Ubuntu-Desktop:~/Downloads$ sudo mv docs /usr/lib/jvm/
[sudo] password for instructor:
instructor@Ubuntu-Desktop:~/Downloads$ ls /usr/lib/jvm
docs  jdk1.8.0_221
```

Java SE 8 Documentation downloads (Cont.)



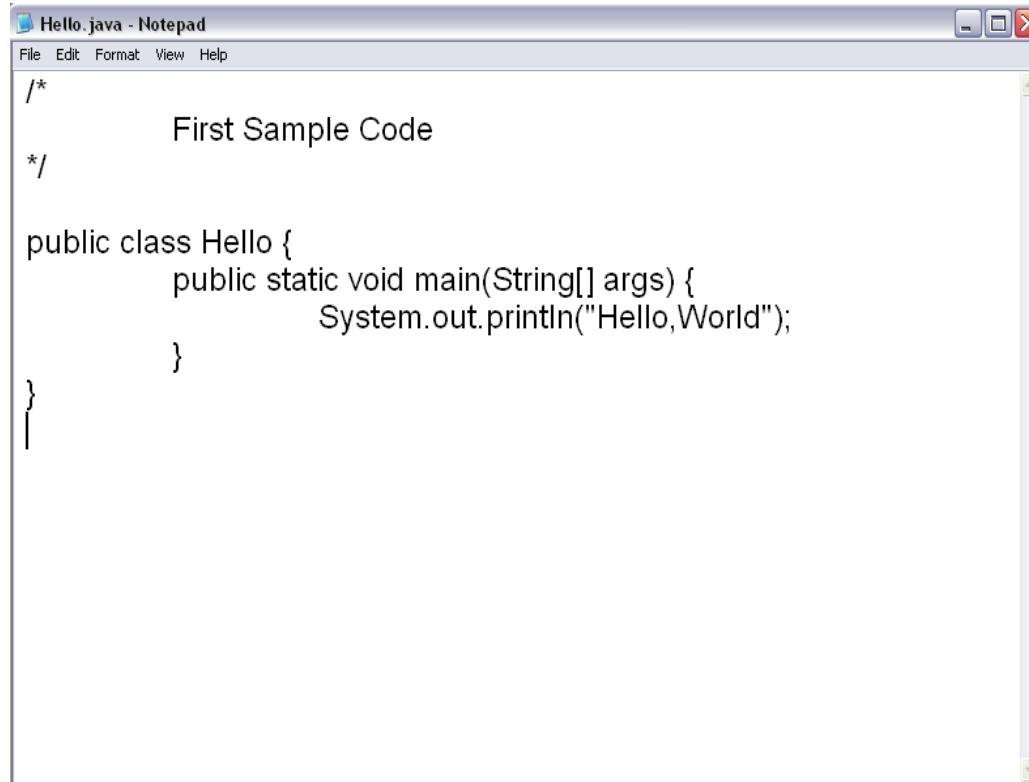
Text Editors

Text Editor

■ vi

```
public class HelloWorld{
    public static void main(String [] args){
        System.out.println("Hello, World");
    }
}
```

■ Notepad



Text Editor – Sublime Text 3

- Sublime Text 3 (<http://www.sublimetext.com/3>) – Half Freeware

The screenshot shows the Sublime Text 3 interface with a dark theme. A file named 'HelloWorld.java' is open in the editor. The code contains a simple Java class definition:

```
1 public class HelloWorld {  
2     public static void main(String[] args) {  
3         System.out.println("Hello, World");  
4     }  
5 }
```

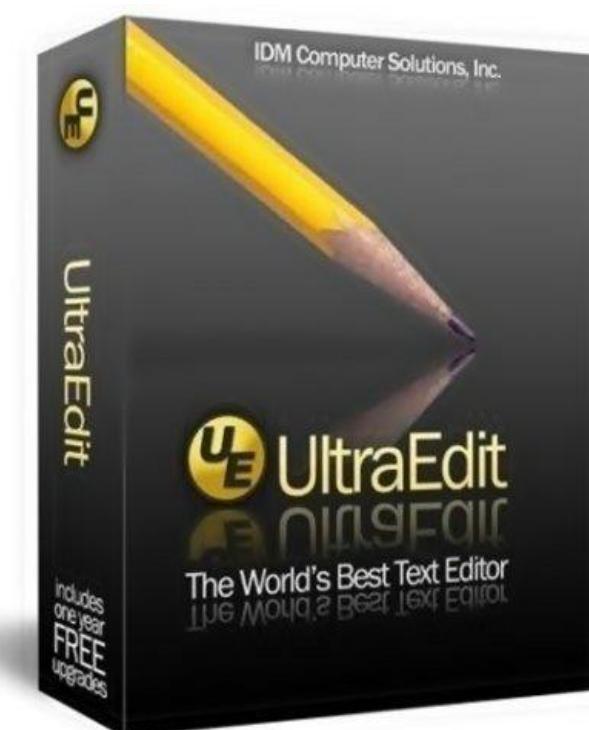
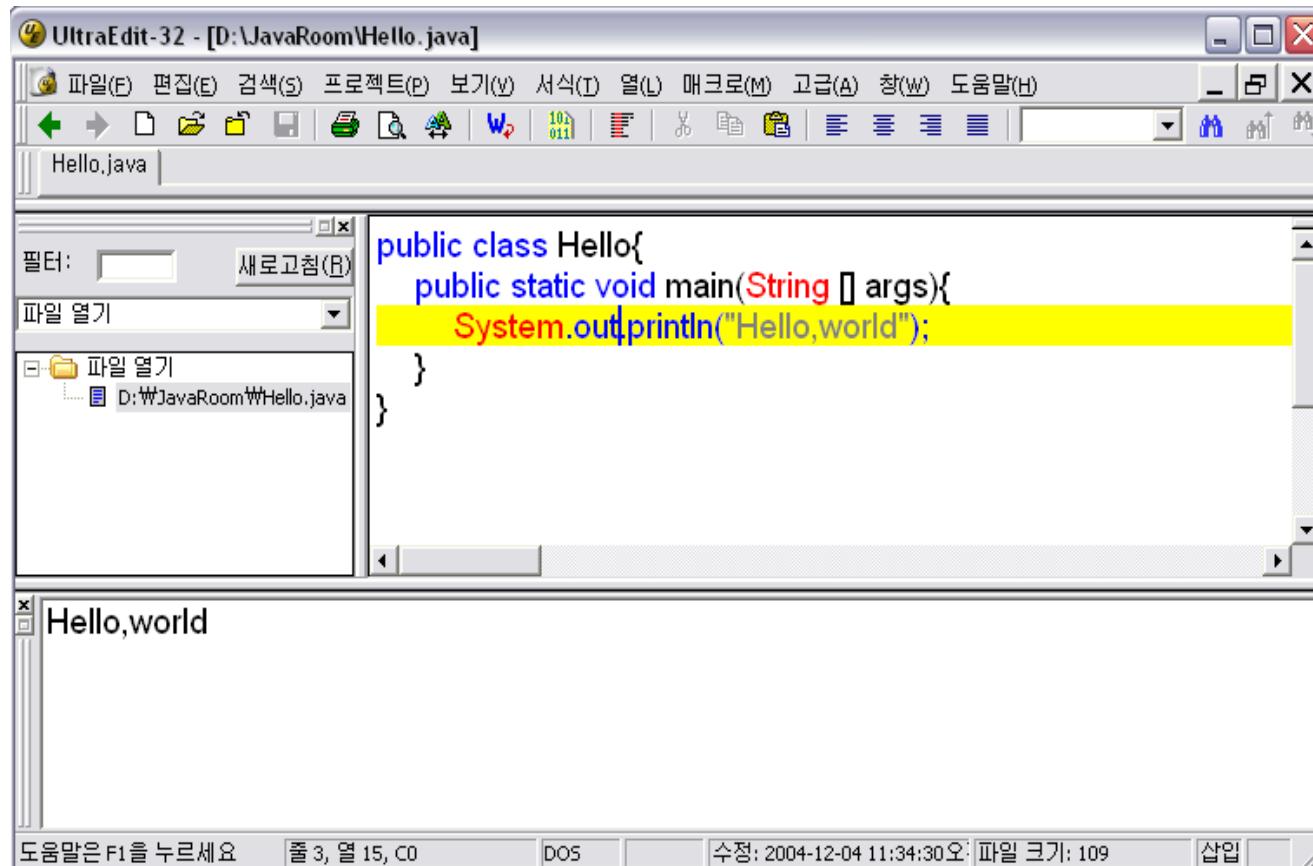
Below the editor, a terminal window displays the output of the program:

```
Hello, World  
[Finished in 1.3s]
```

The status bar at the bottom indicates 'Line 5, Column 2' and includes tabs for 'Tab Size: 4' and 'Java'.

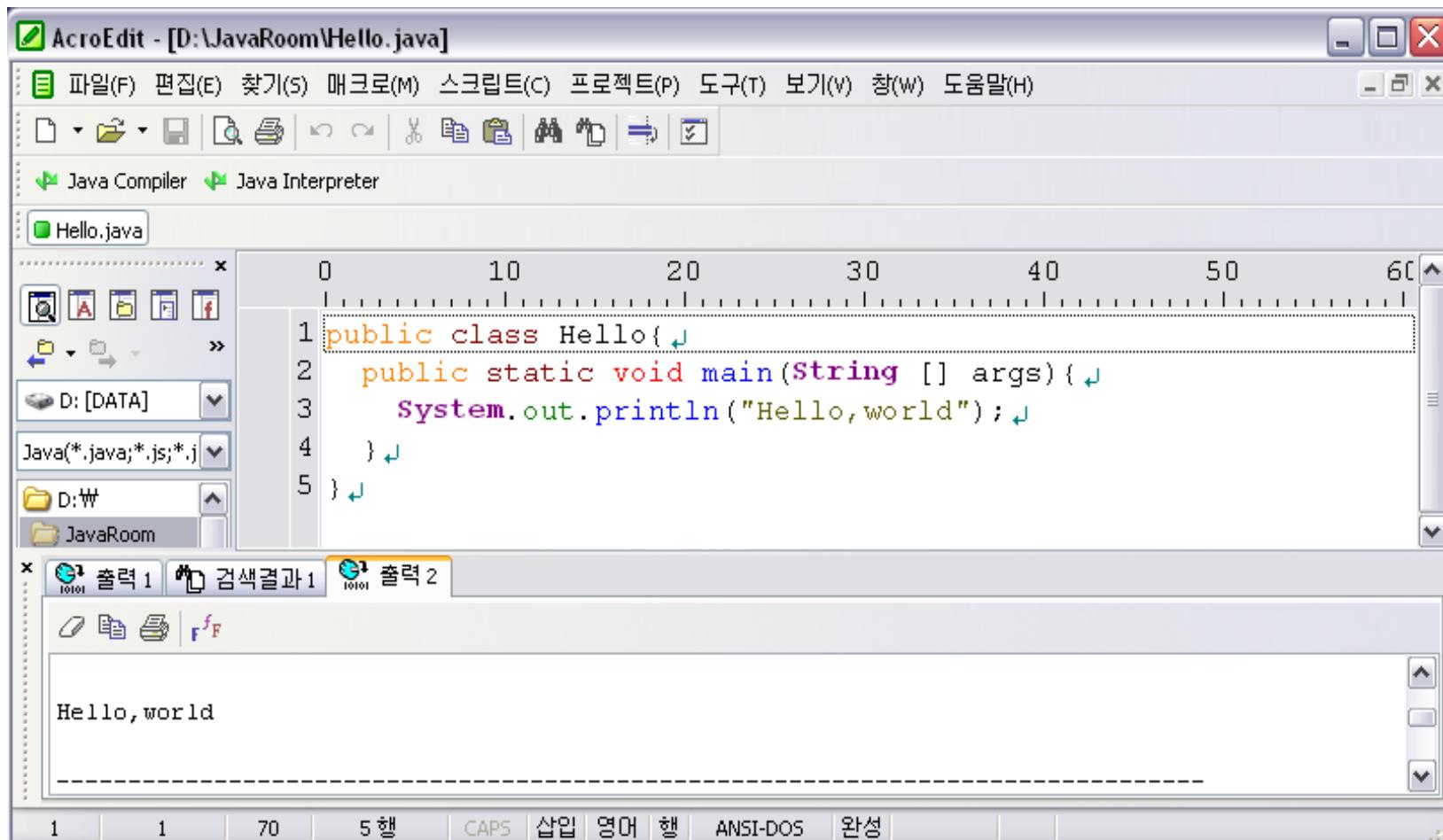
Text Editor - UltraEdit

- UltraEdit-64 (<http://www.ultraedit.com/>) – Shareware



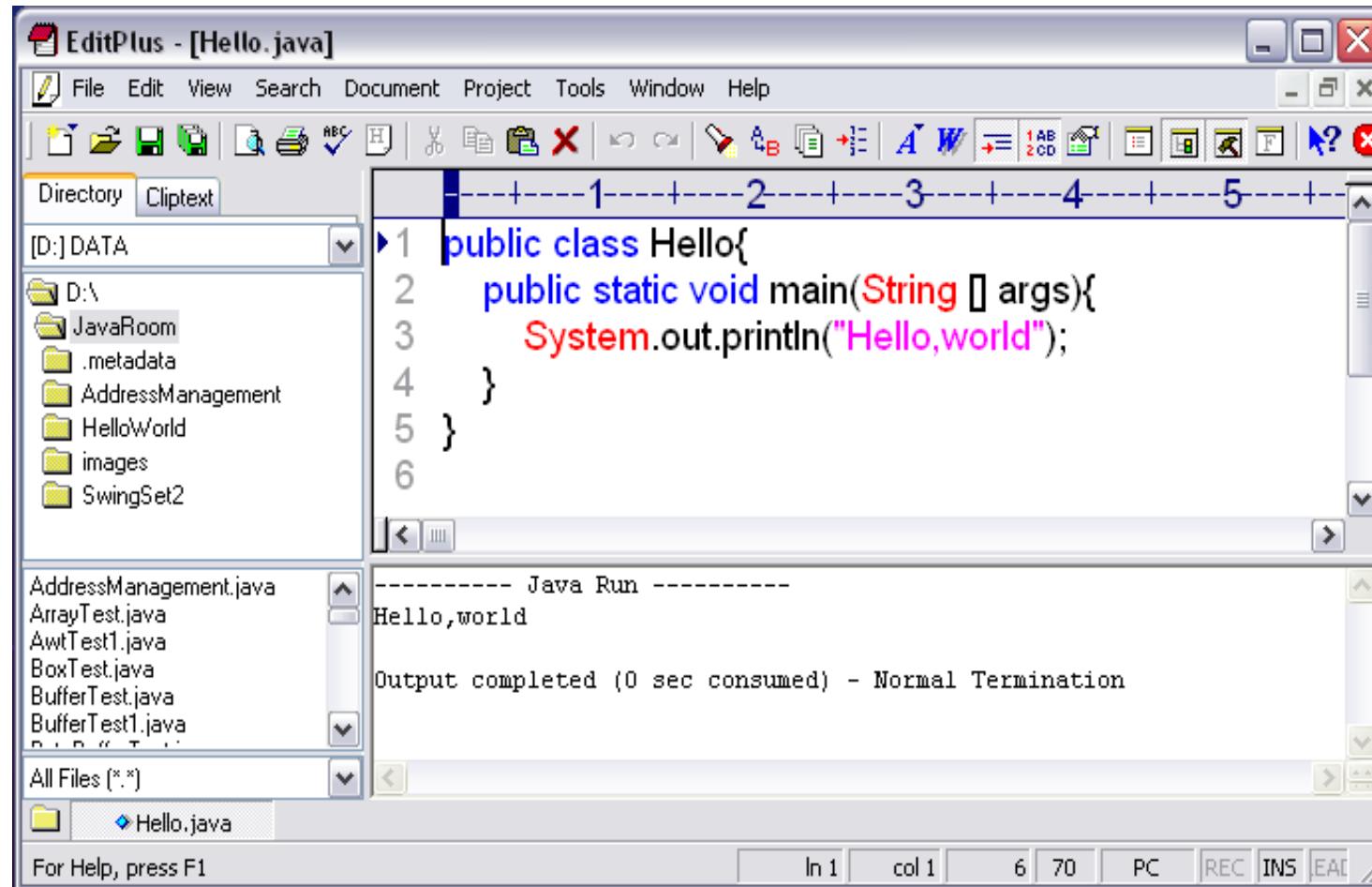
Text Editor - AcroEdit

- AcroEdit – (<http://www.acrosoft.pe.kr/>) – Freeware



Text Editor - EditPlus

- EditPlus – (<http://www.editplus.com/>) – Shareware



The screenshot shows the EditPlus application window. The title bar reads "EditPlus - [Hello.java]". The menu bar includes File, Edit, View, Search, Document, Project, Tools, Window, Help. The toolbar contains various icons for file operations like Open, Save, Find, and Print. The left sidebar shows a directory tree under "D:\DATA" with folders like JavaRoom, .metadata, AddressManagement, HelloWorld, images, and SwingSet2. Below the tree is a list of files: AddressManagement.java, ArrayTest.java, AwtTest1.java, BoxTest.java, BufferTest.java, BufferTest1.java, and Hello.java. The main editor area displays the following Java code:

```
1 public class Hello{  
2     public static void main(String [] args){  
3         System.out.println("Hello,world");  
4     }  
5 }  
6
```

Below the editor is a terminal window titled "Java Run" showing the output:

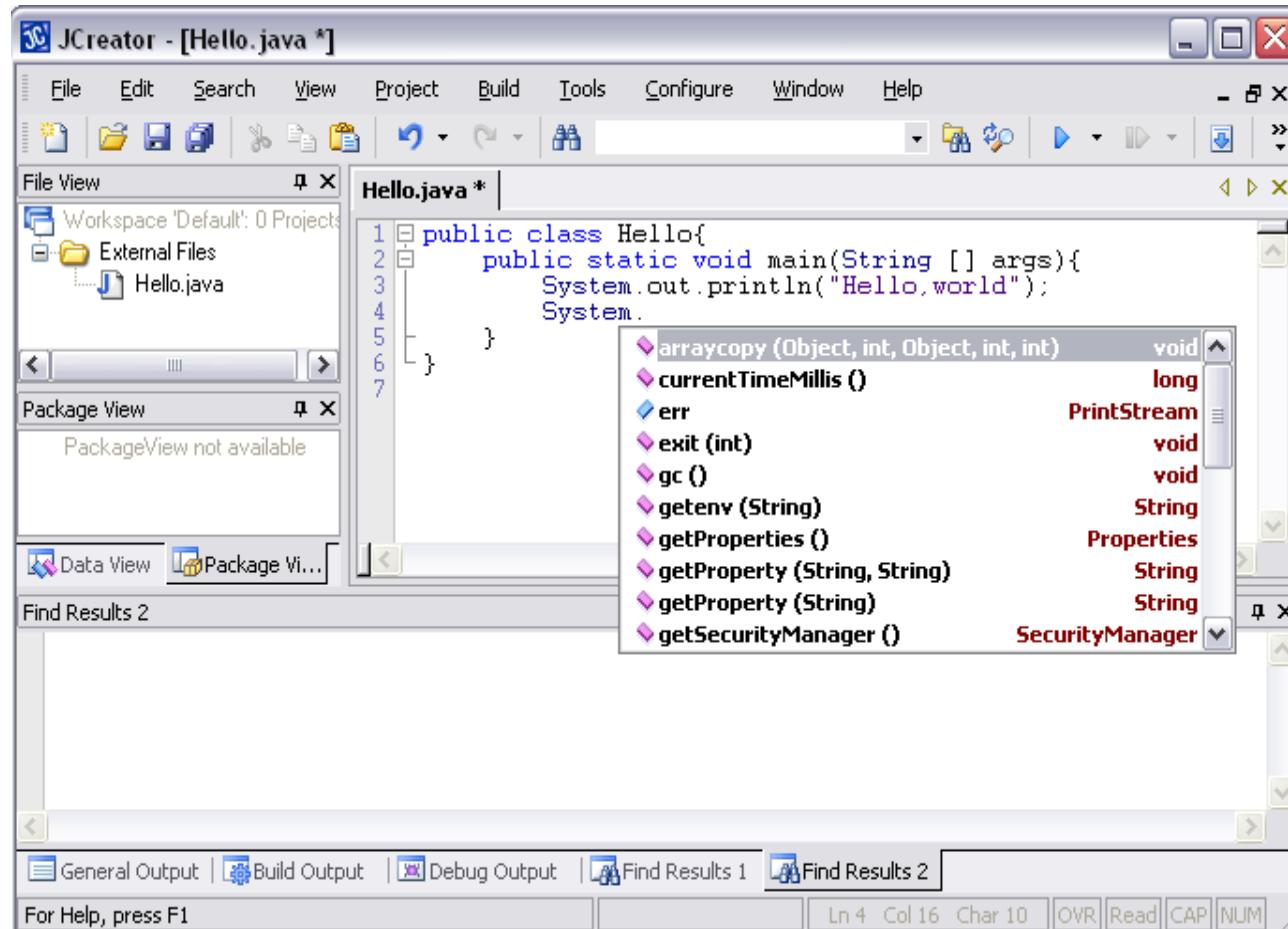
```
----- Java Run -----  
Hello,world  
Output completed (0 sec consumed) - Normal Termination
```

The status bar at the bottom shows "In 1 col 1 6 70 PC REC INS EAD".



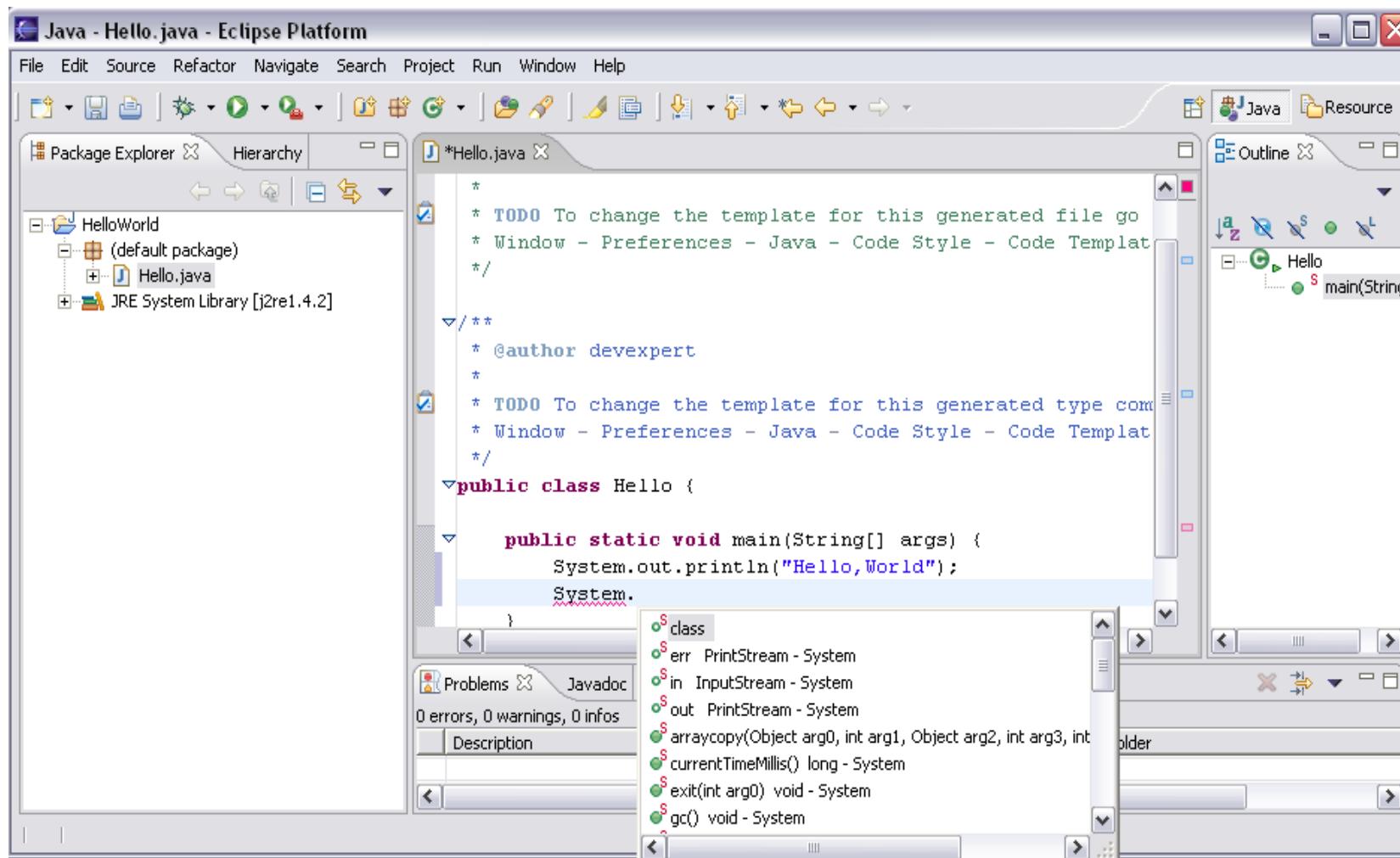
Java Text Editor – JCreator

■ JCreator Pro (<http://www.jcreator.com/>)



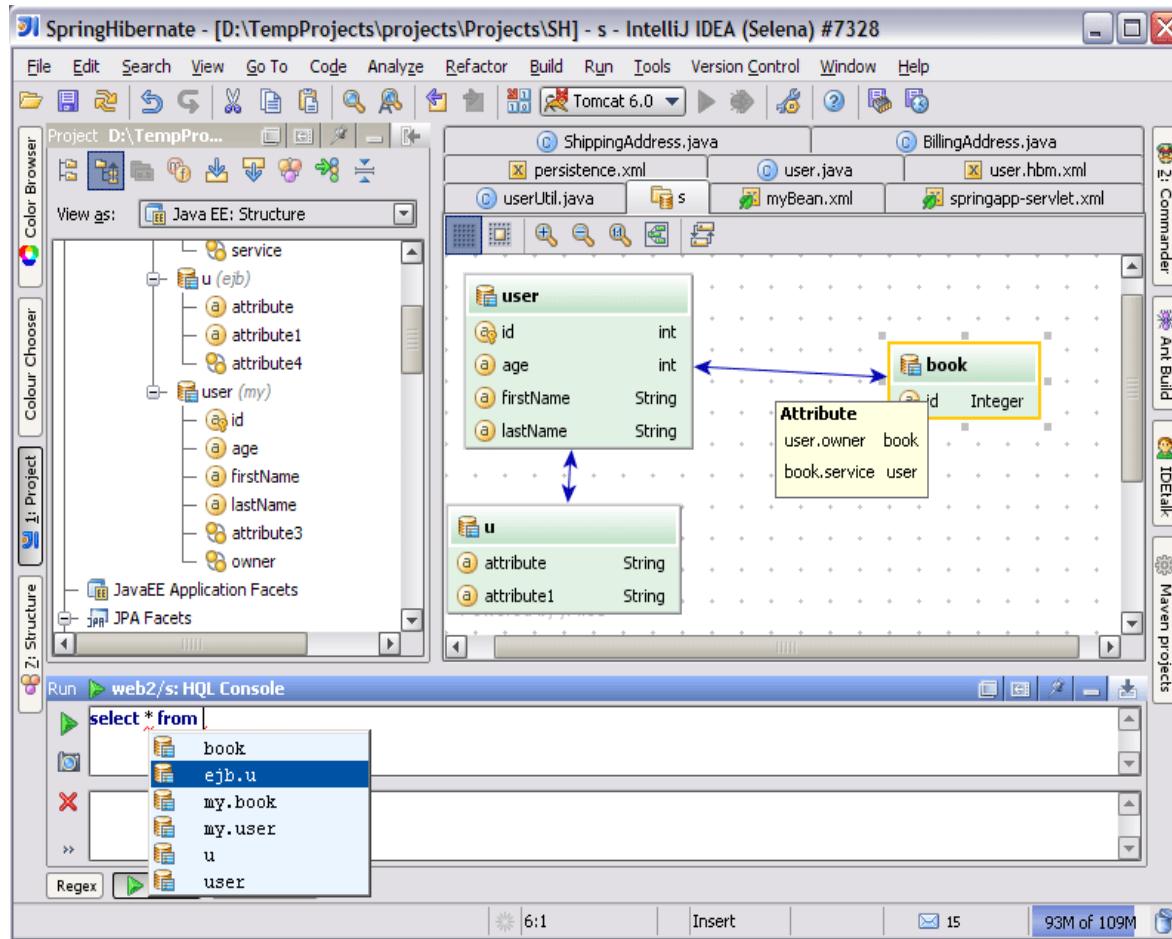
Java Text Editor - eclipse

Eclipse (<https://www.eclipse.org/>)



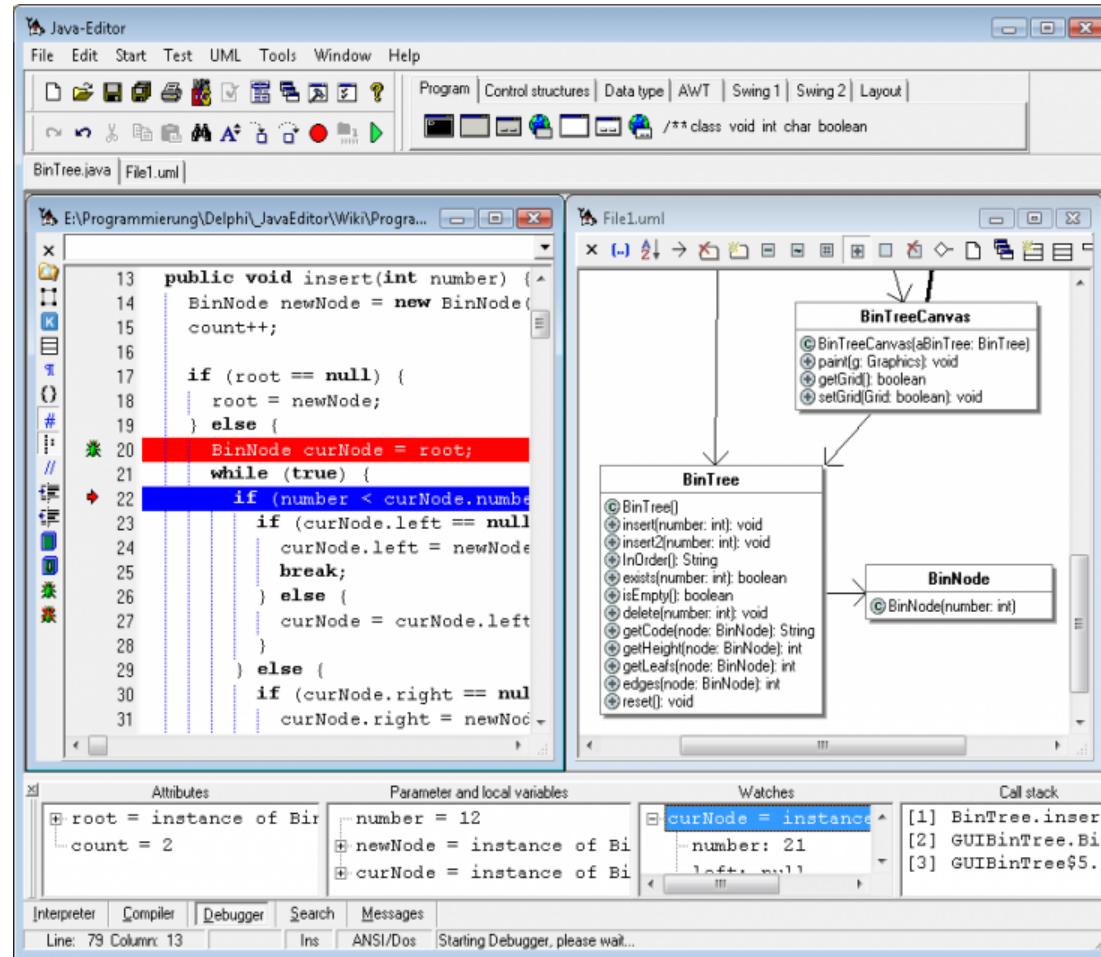
Java Text Editor - IntelliJ

- IntelliJ IDEA (<http://www.jetbrains.com/>)



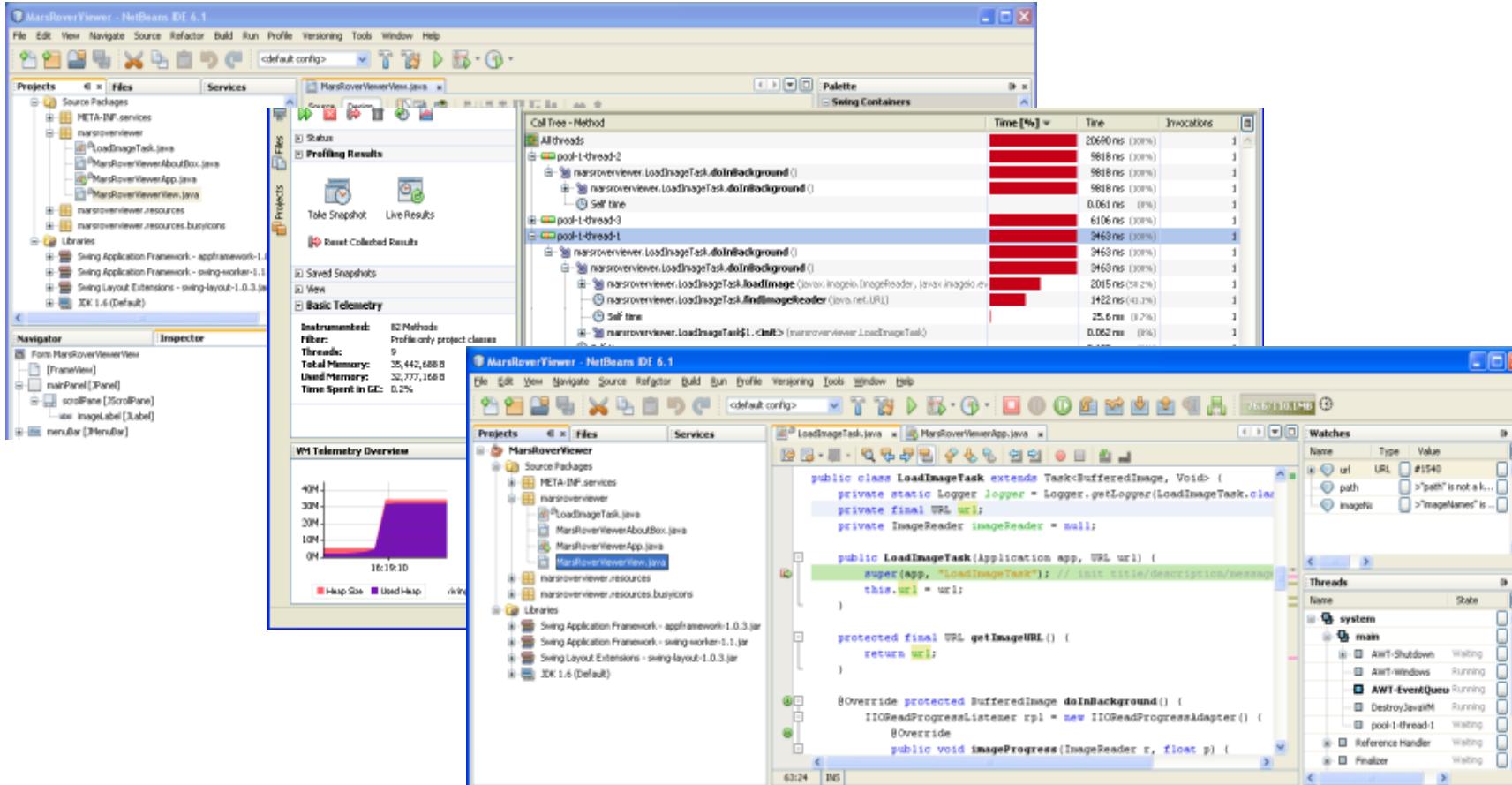
IDE Tools – Java-Editor

- Java-Editor (http://www.javaeditor.org/index.php/Main_Page)



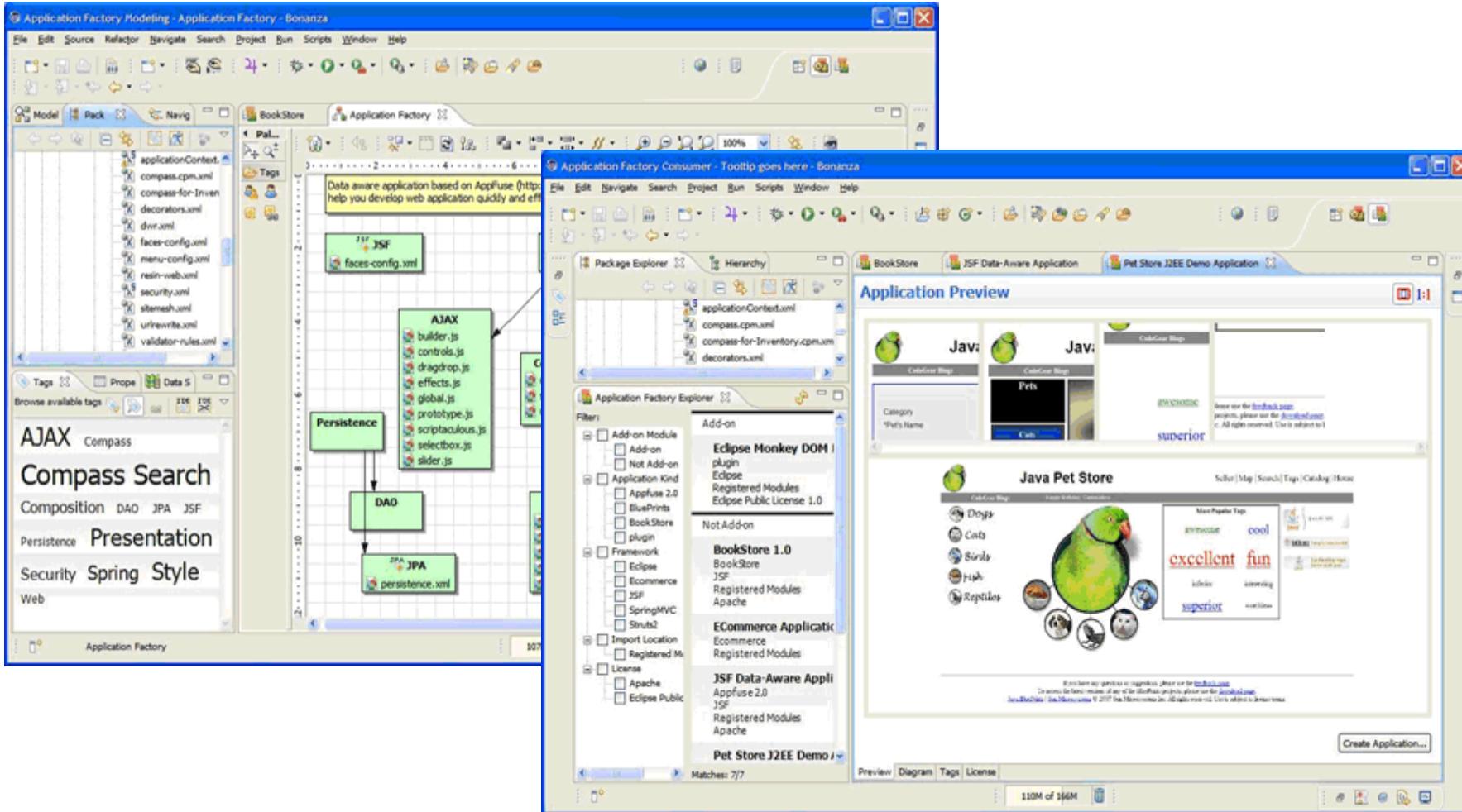
IDE Tools - NetBeans

NetBeans IDE (<http://www.netbeans.org/>)



IDE Tools - JBuilder

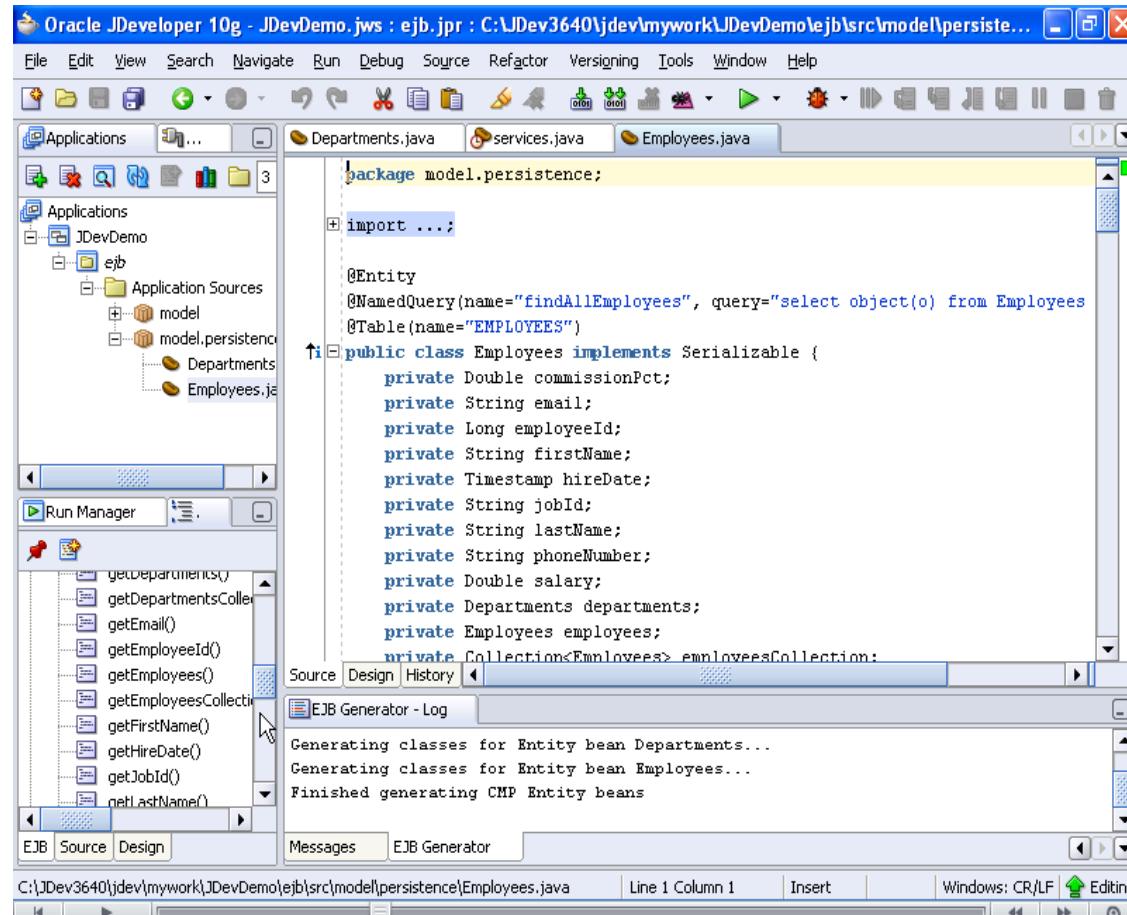
JBuilder (<https://www.embarcadero.com>)



IDE Tools - JDeveloper

JDeveloper

(<http://www.oracle.com/technology/products/jdev/index.html/>)



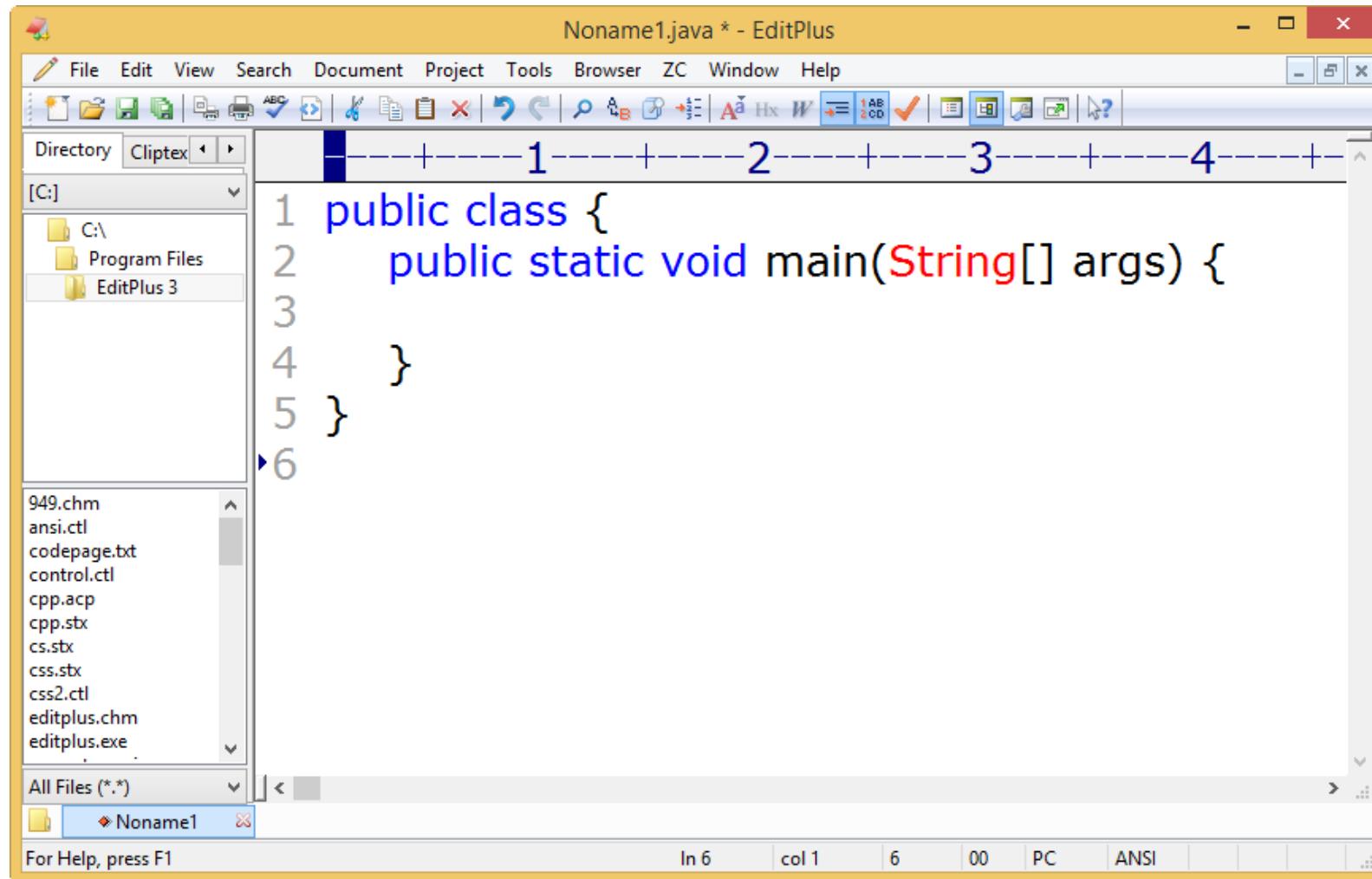
Etc Tools

- Code Warrior by Metrowerks : <http://www.metrowerks.com>
- TextPad Editor : <http://www.textpad.com>
- JEdit : <http://www.jedit.org>
- JGrasp : <http://www.jgrasp.org>
- BlueJ : <http://www.bluej.org>
- DrJava : <http://drjava.sourceforge.net>

EditPlus Setting on Windows Platform



Template Configuration



The screenshot shows the EditPlus text editor interface with the file "Noname1.java" open. The code is:

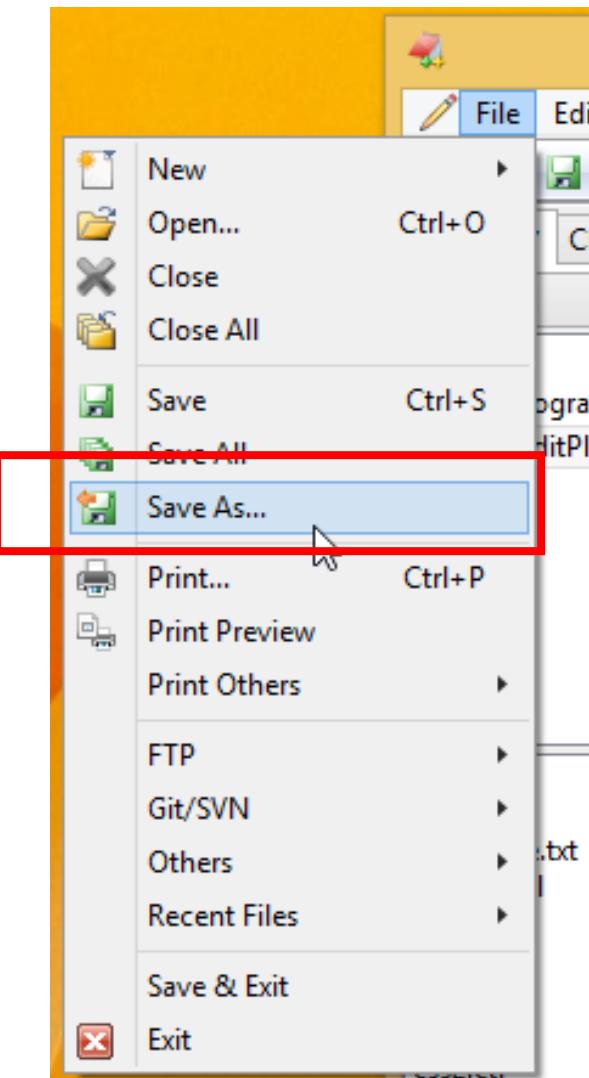
```
1 public class {
2     public static void main(String[] args) {
3
4     }
5
6 }
```

Numbered callouts (1 through 4) highlight specific parts of the code:

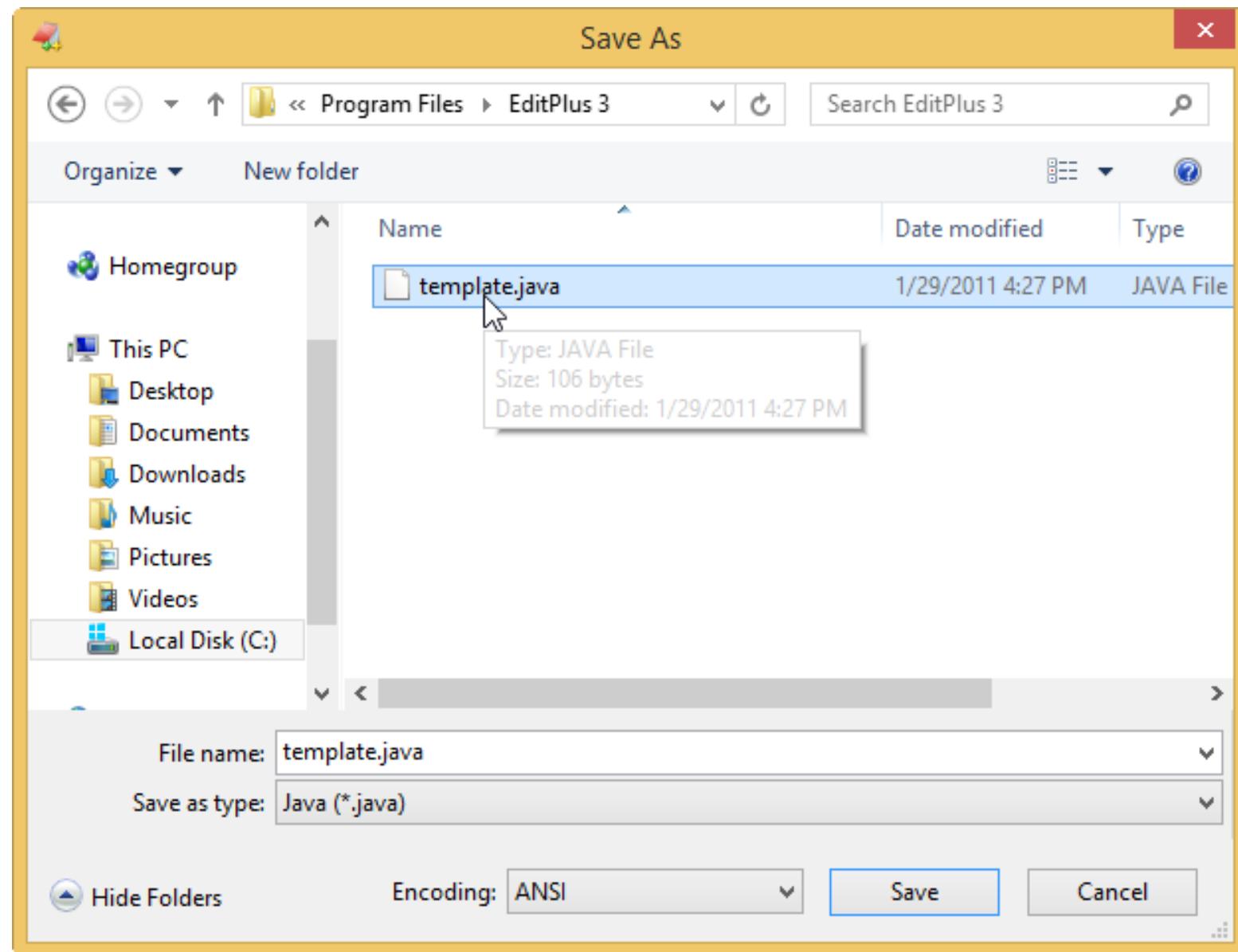
- Callout 1: Points to the first character of the word "public" in line 1.
- Callout 2: Points to the first character of the word "main" in line 2.
- Callout 3: Points to the first character of the opening brace "{" in line 4.
- Callout 4: Points to the first character of the closing brace "}" in line 5.

The left sidebar shows the file tree with "EditPlus 3" selected. The bottom status bar displays "In 6 col 1 6 00 PC ANSI".

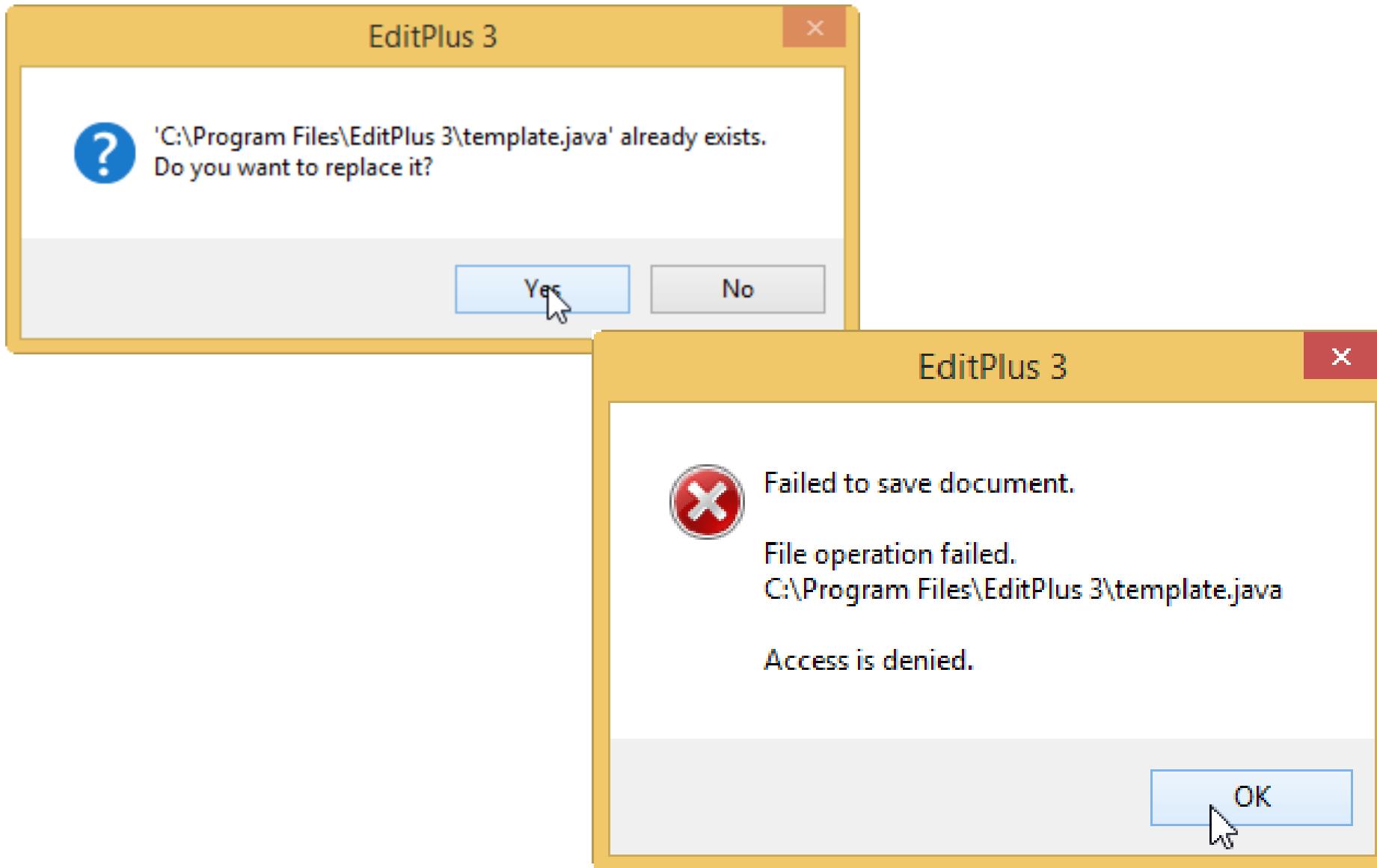
Template Configuration (Cont.)



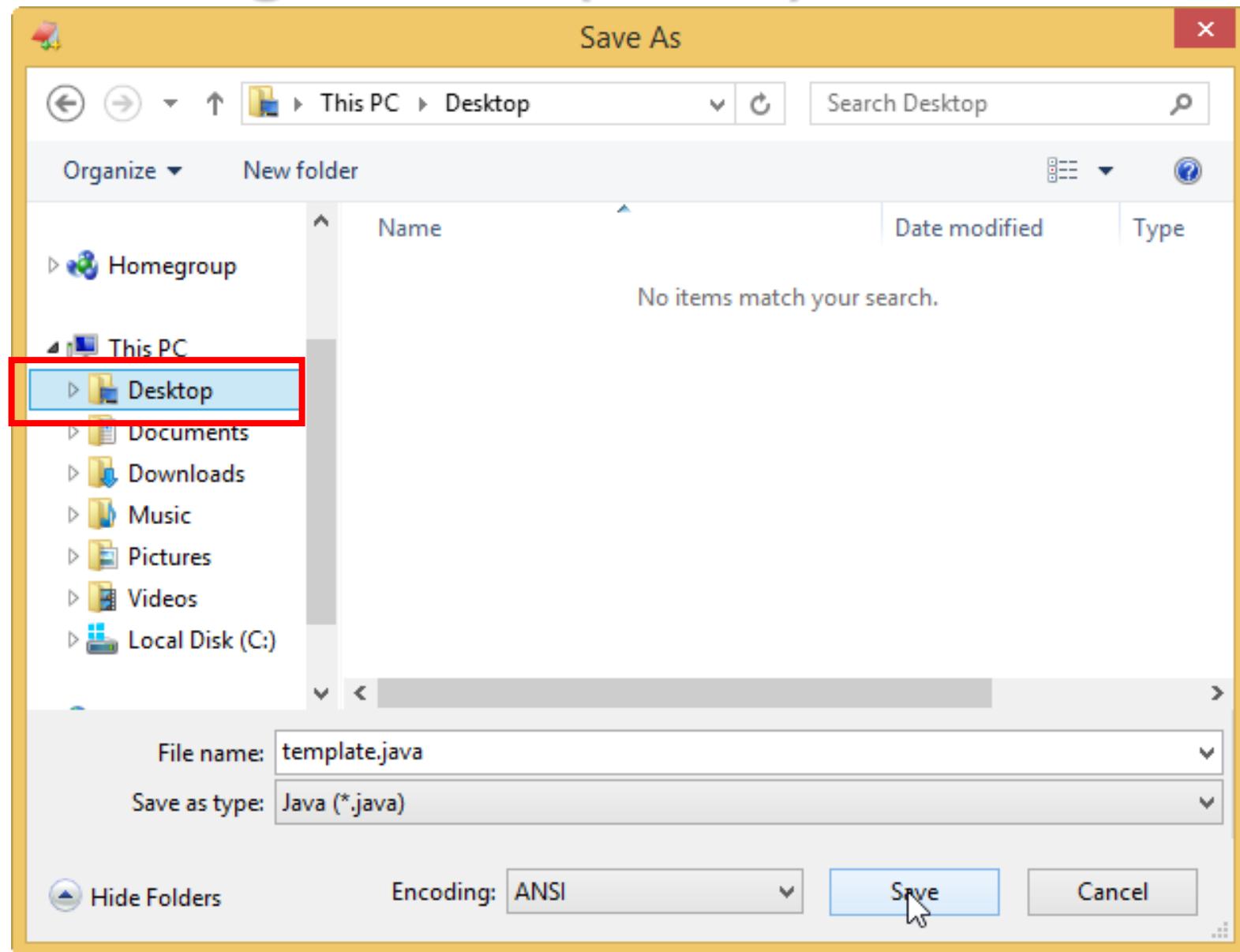
Template Configuration (Cont.)



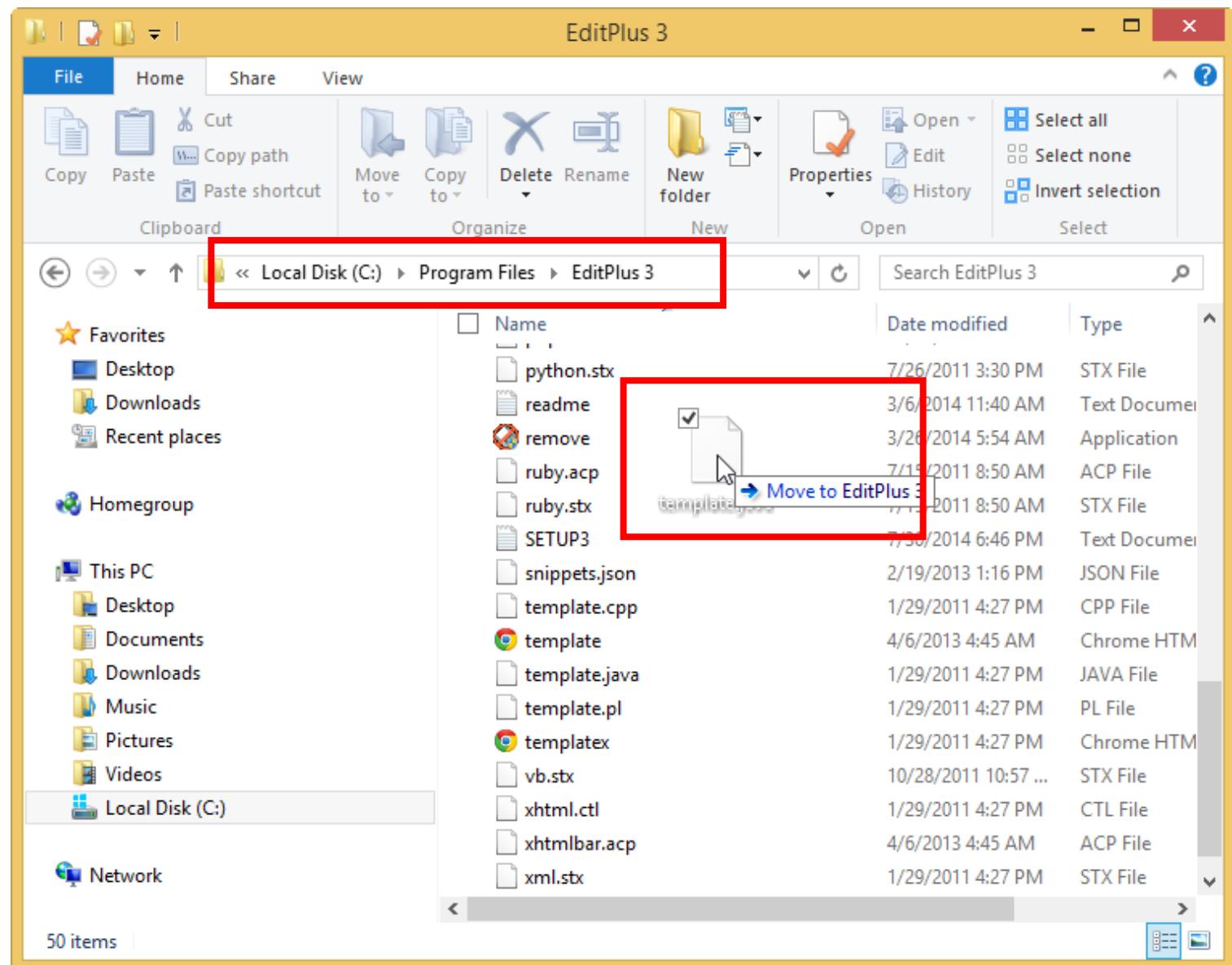
Template Configuration (Cont.)



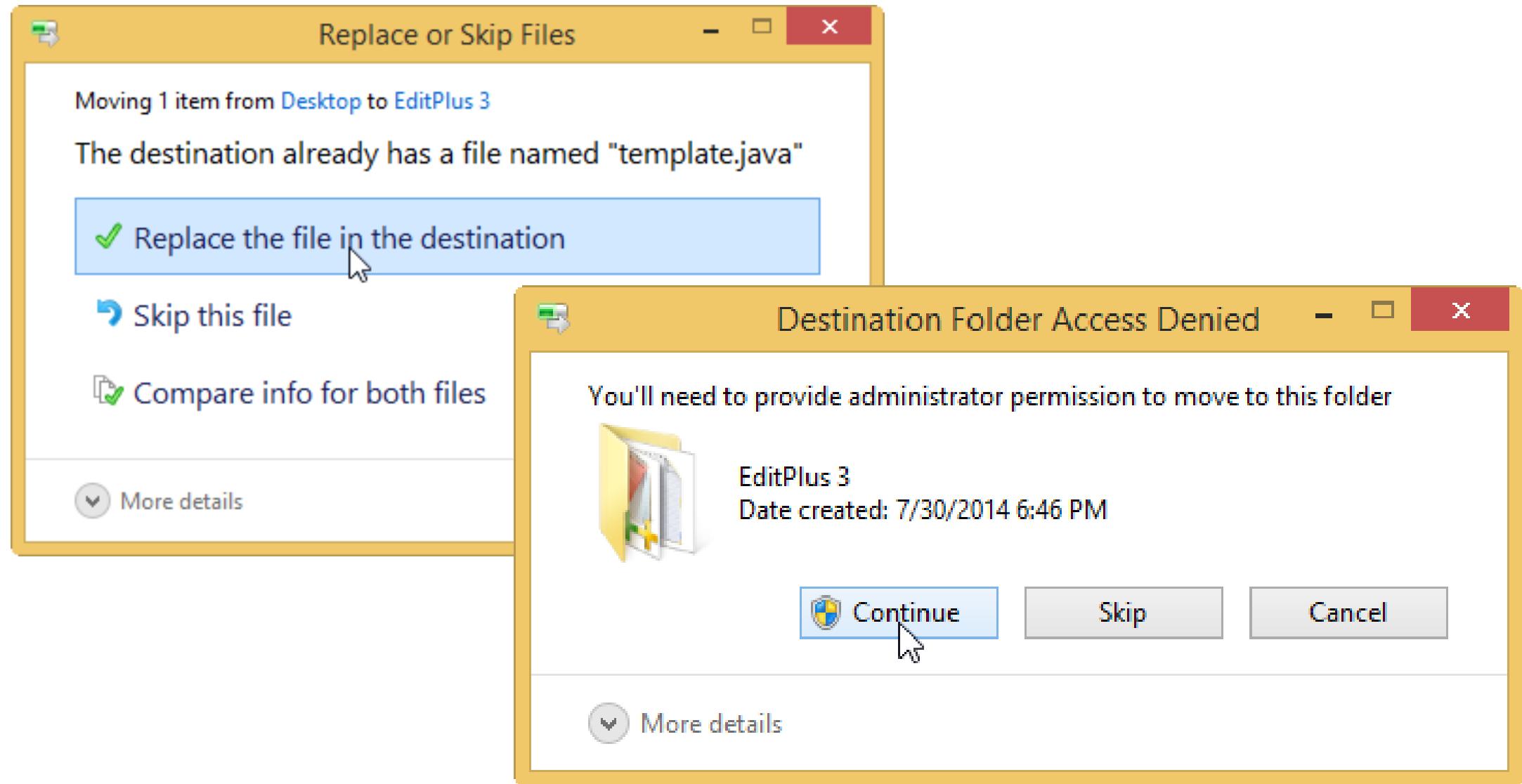
Template Configuration (Cont.)



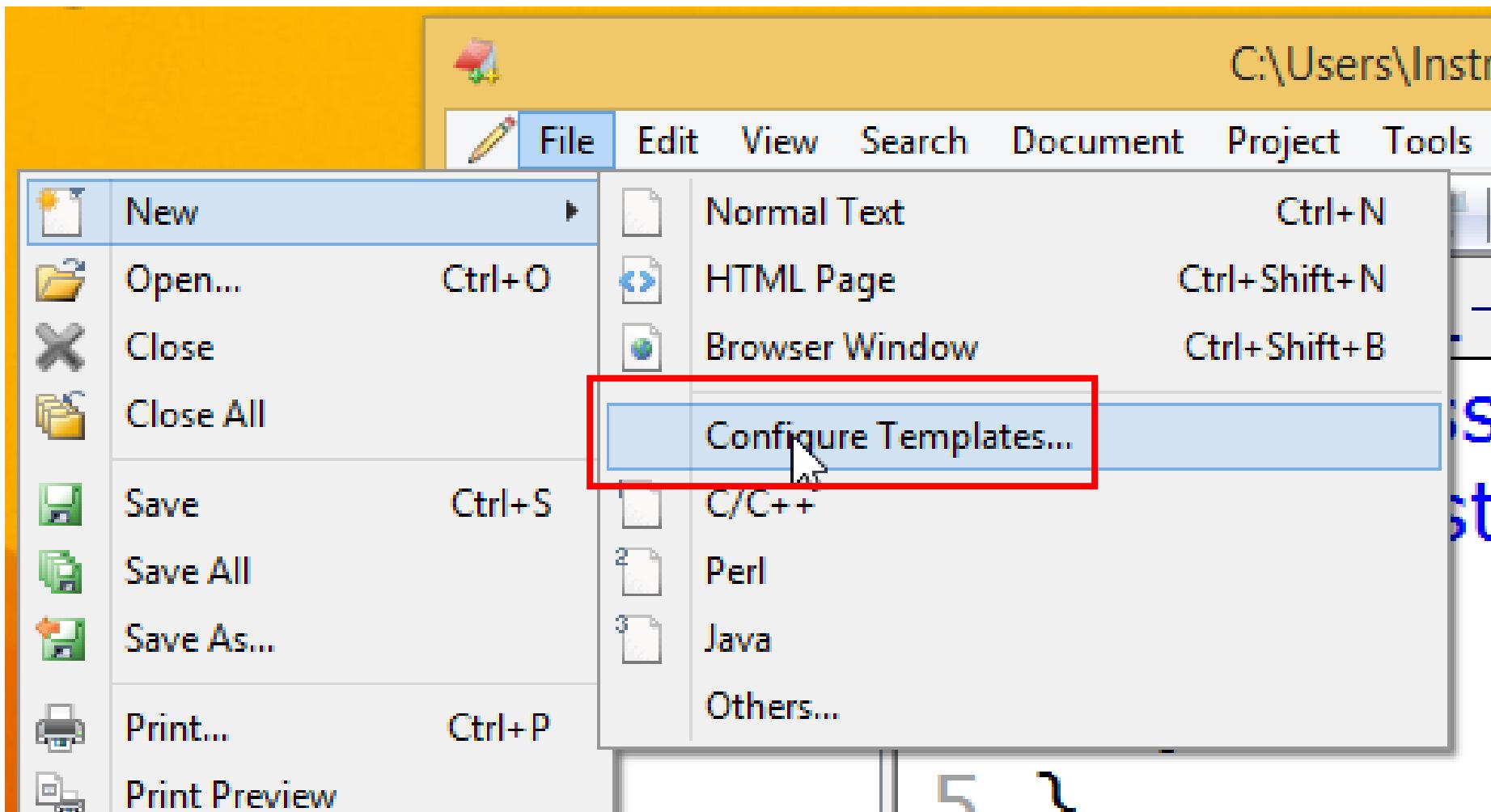
Template Configuration (Cont.)



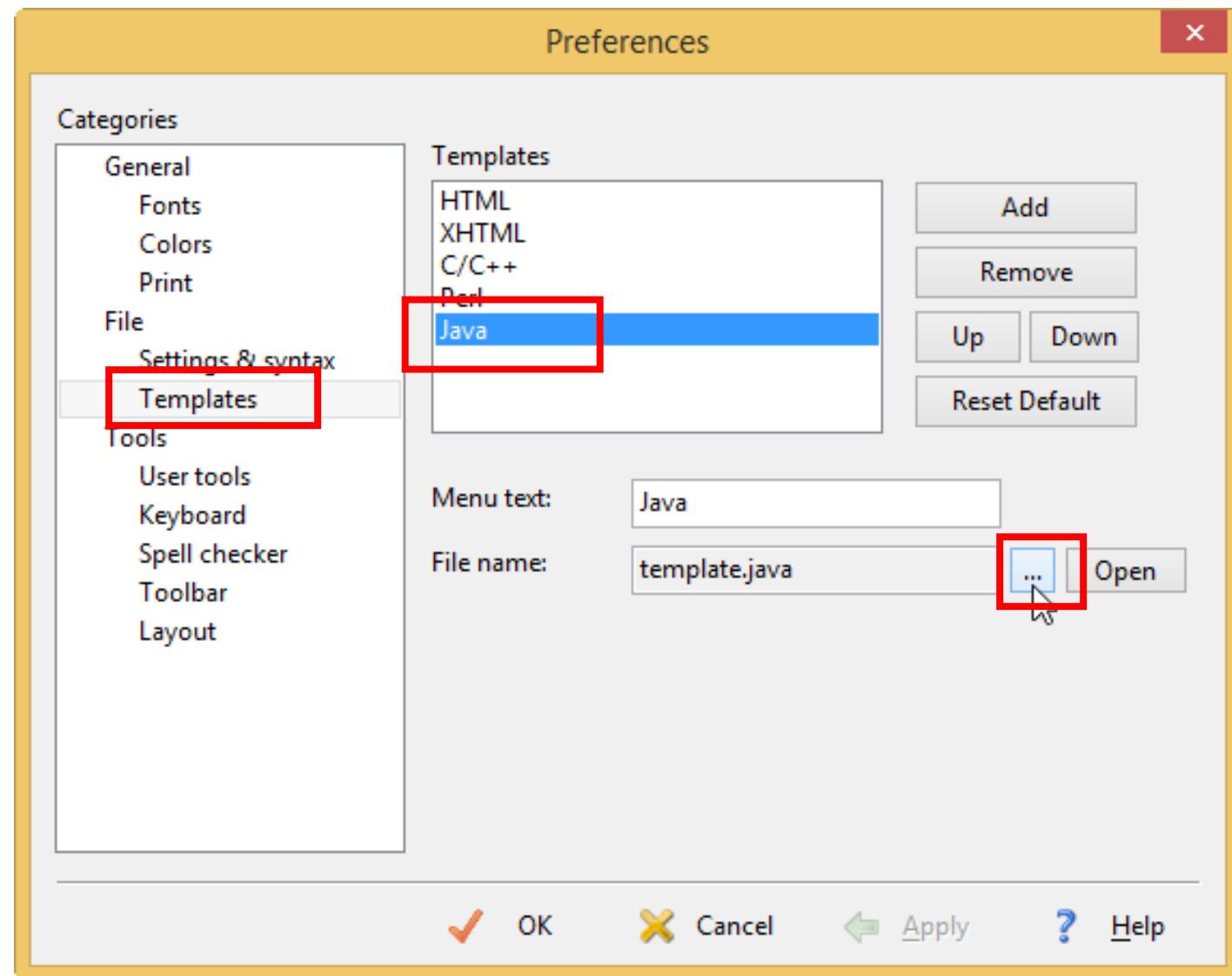
Template Configuration (Cont.)



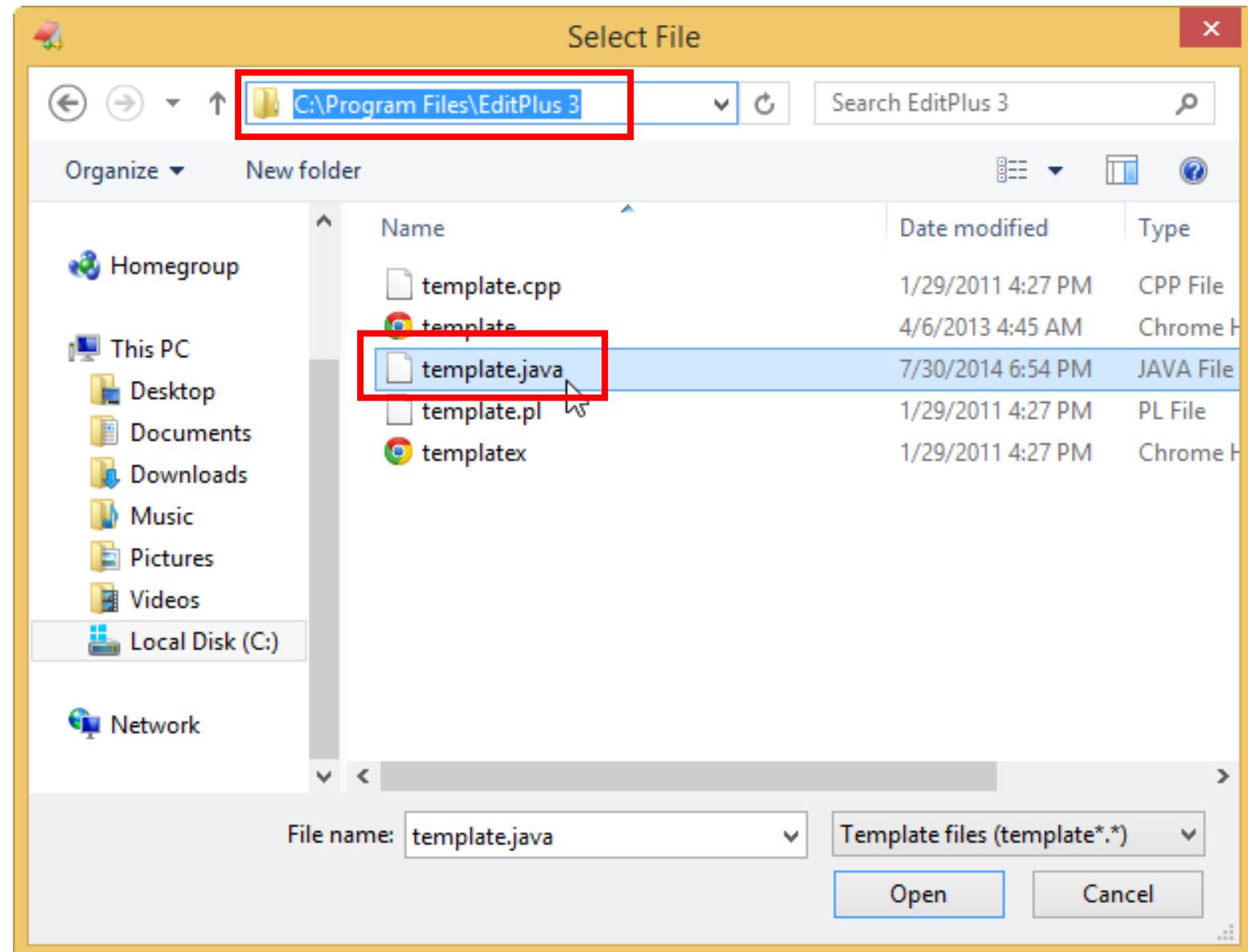
Template Configuration (Cont.)



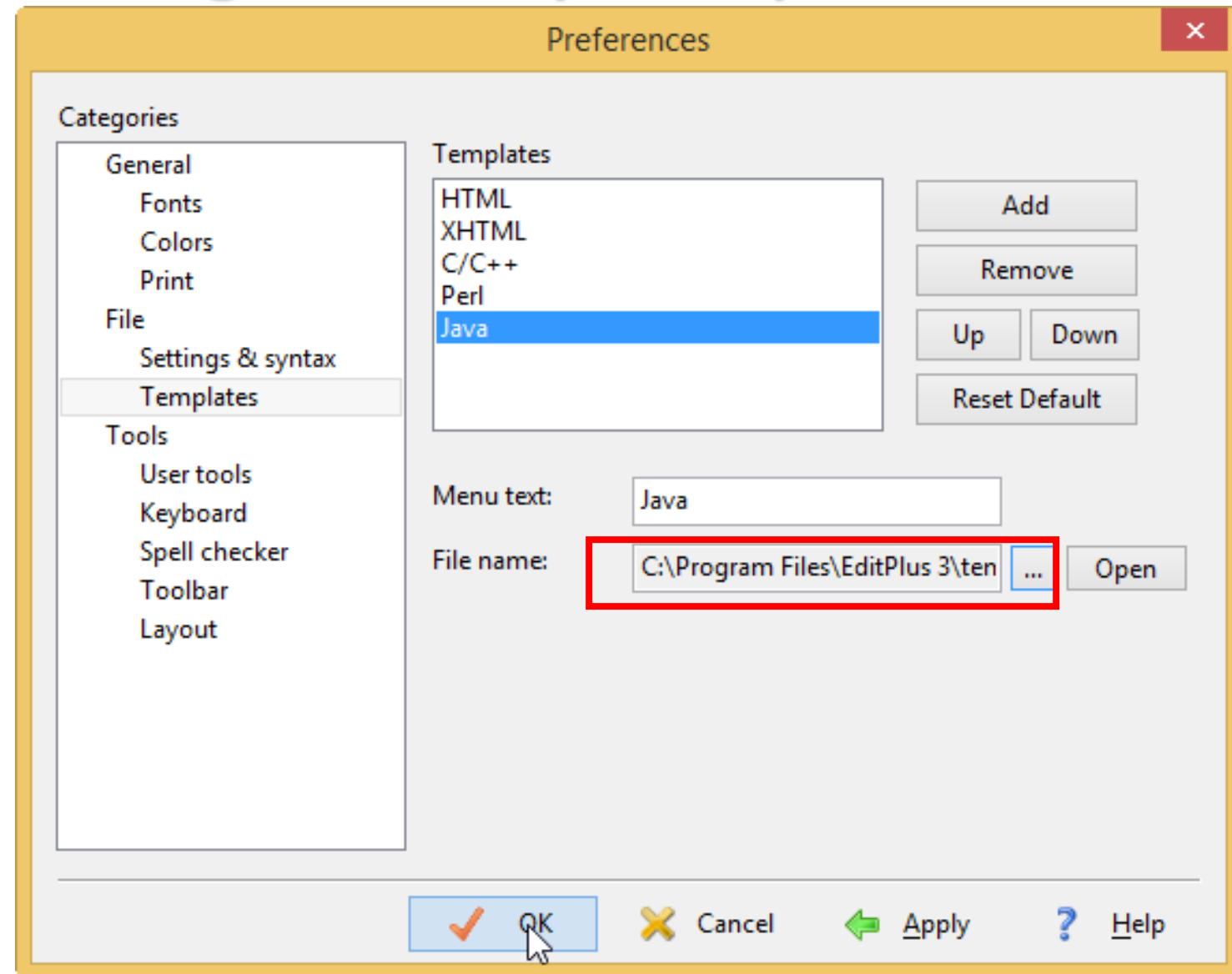
Template Configuration (Cont.)



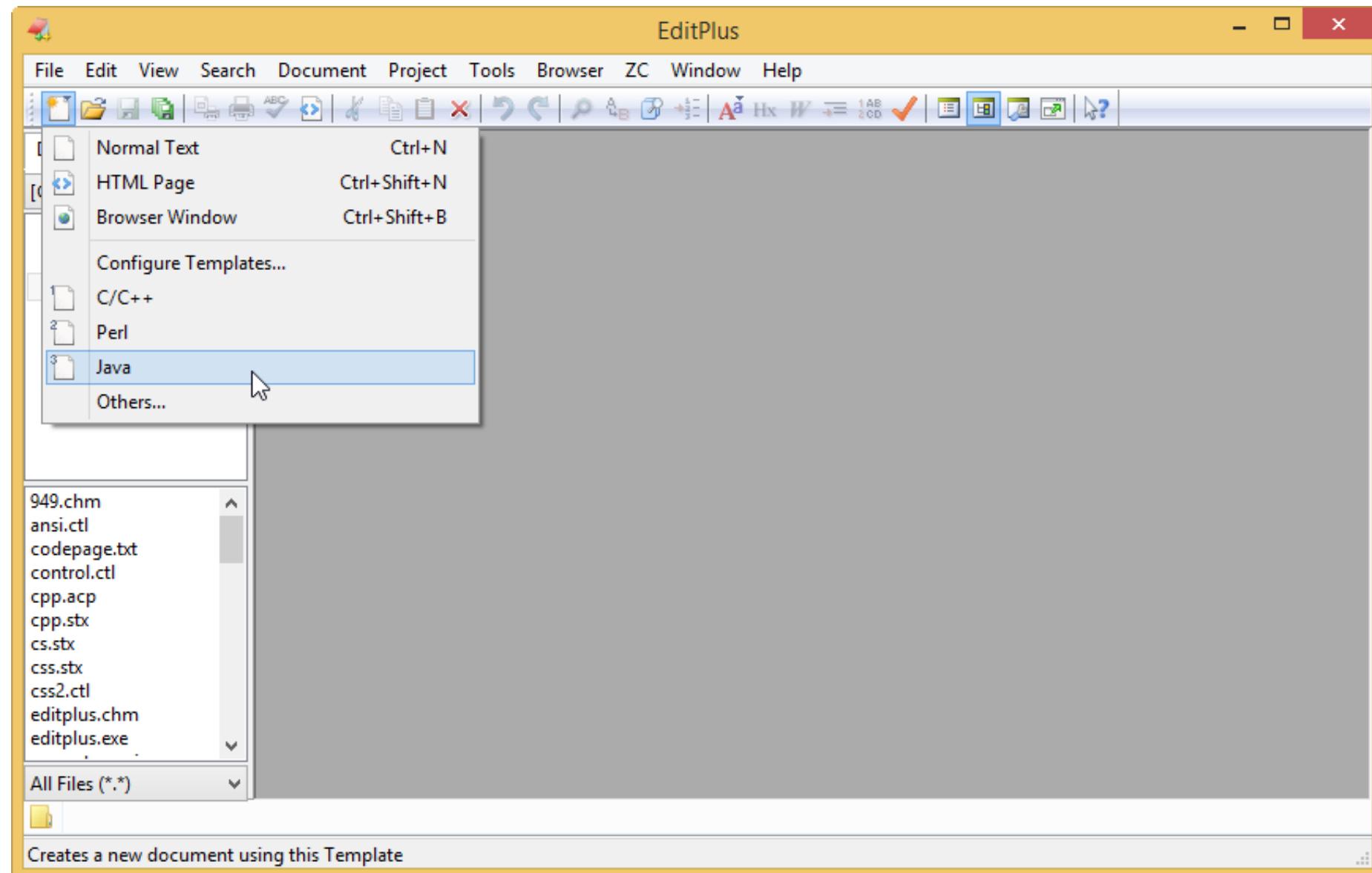
Template Configuration (Cont.)



Template Configuration (Cont.)



Template Configuration (Cont.)



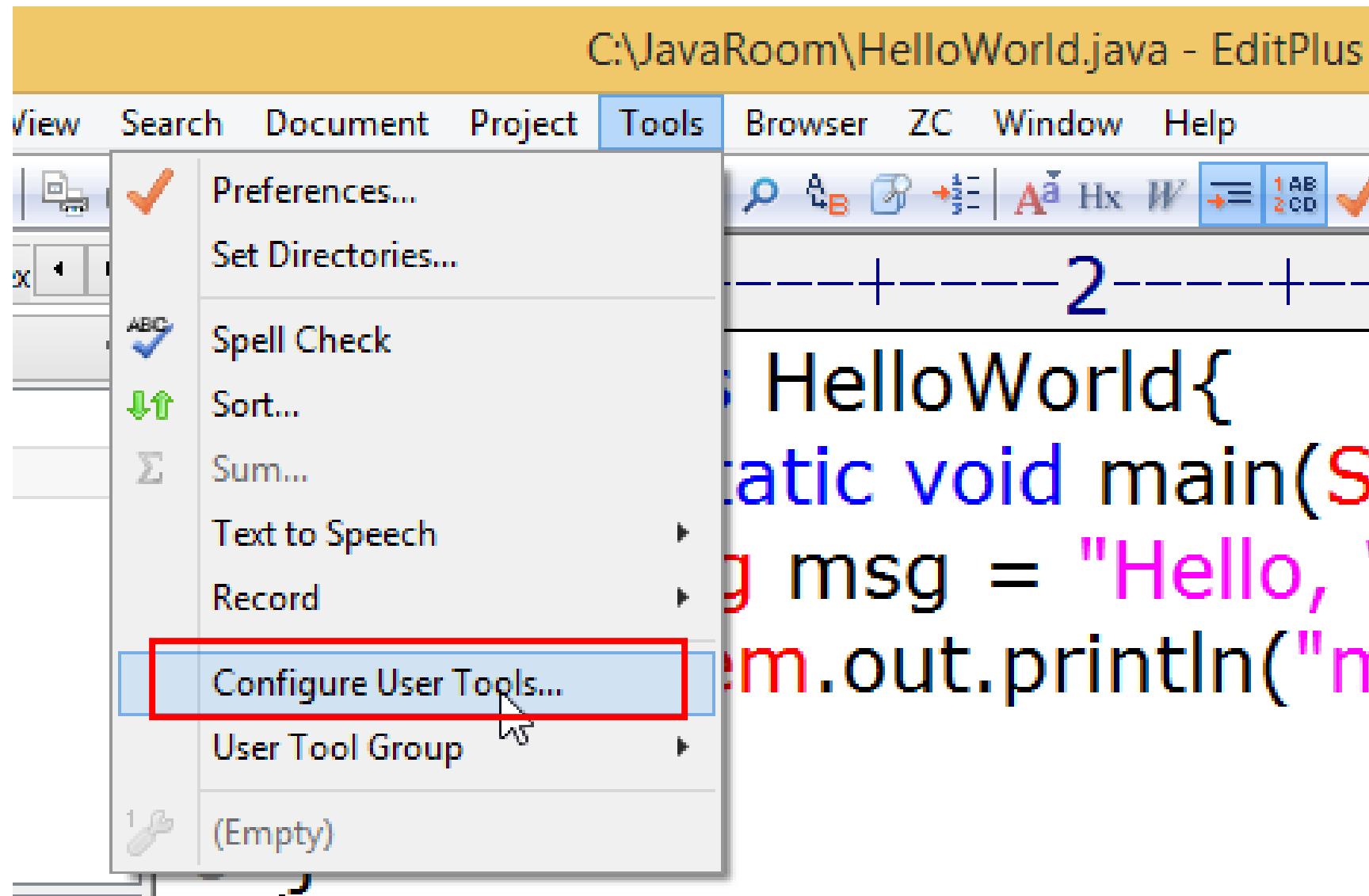
Configure User Tools

The screenshot shows the EditPlus text editor interface. The title bar reads "C:\JavaRoom\HelloWorld.java - EditPlus". The menu bar includes File, Edit, View, Search, Document, Project, Tools, Browser, ZC, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Find. The left sidebar shows a directory tree with "C:" selected, displaying "C:\" and "JavaRoom". A file list shows "HelloWorld.java" selected. The main editor area displays the following Java code:

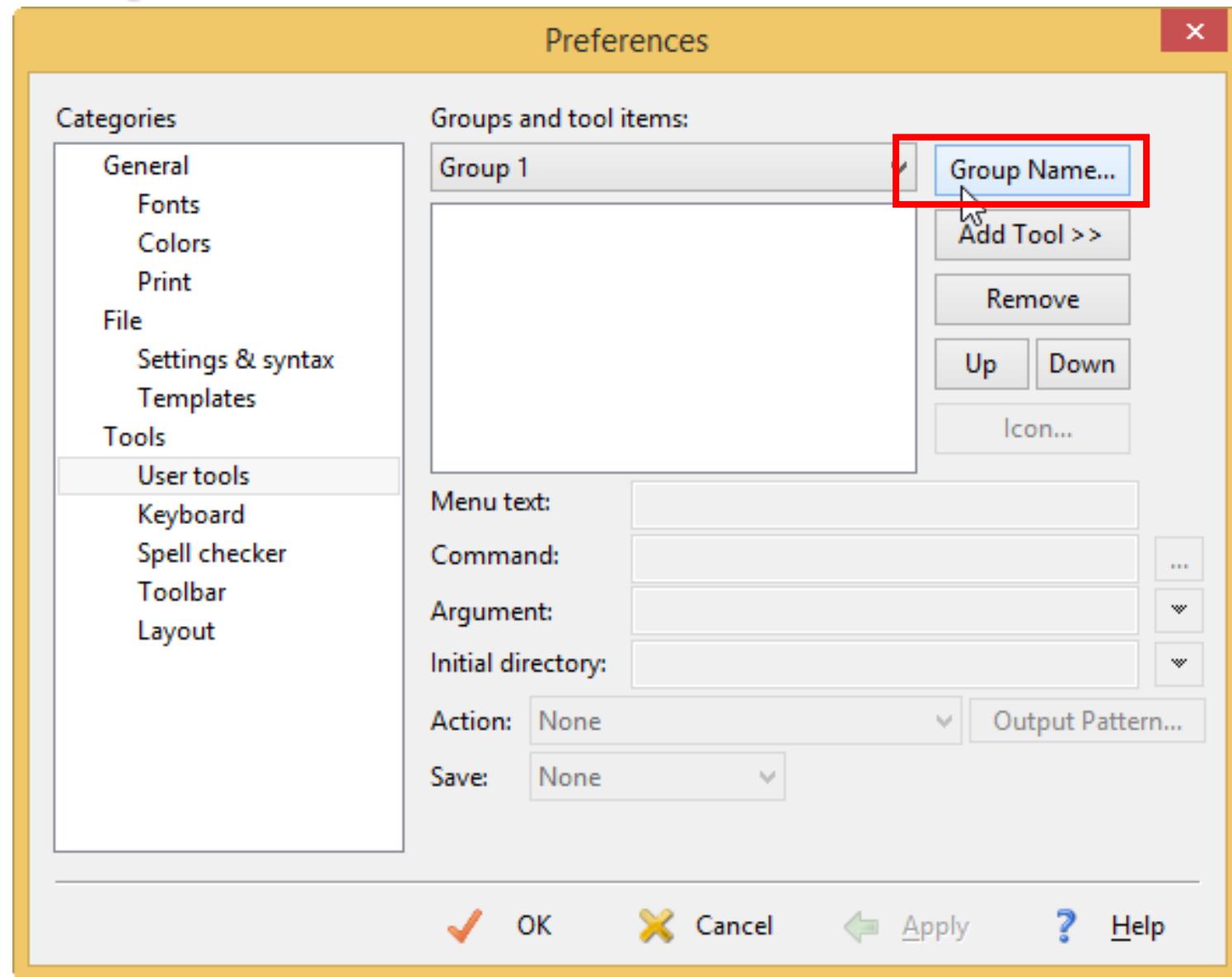
```
1 public class HelloWorld{  
2     public static void main(String[] args) {  
3         String msg = "Hello, World";  
4         System.out.println("msg = " + msg);  
5     }  
6 }  
7
```

The status bar at the bottom shows "In 7 col 1 7 00 PC ANSI".

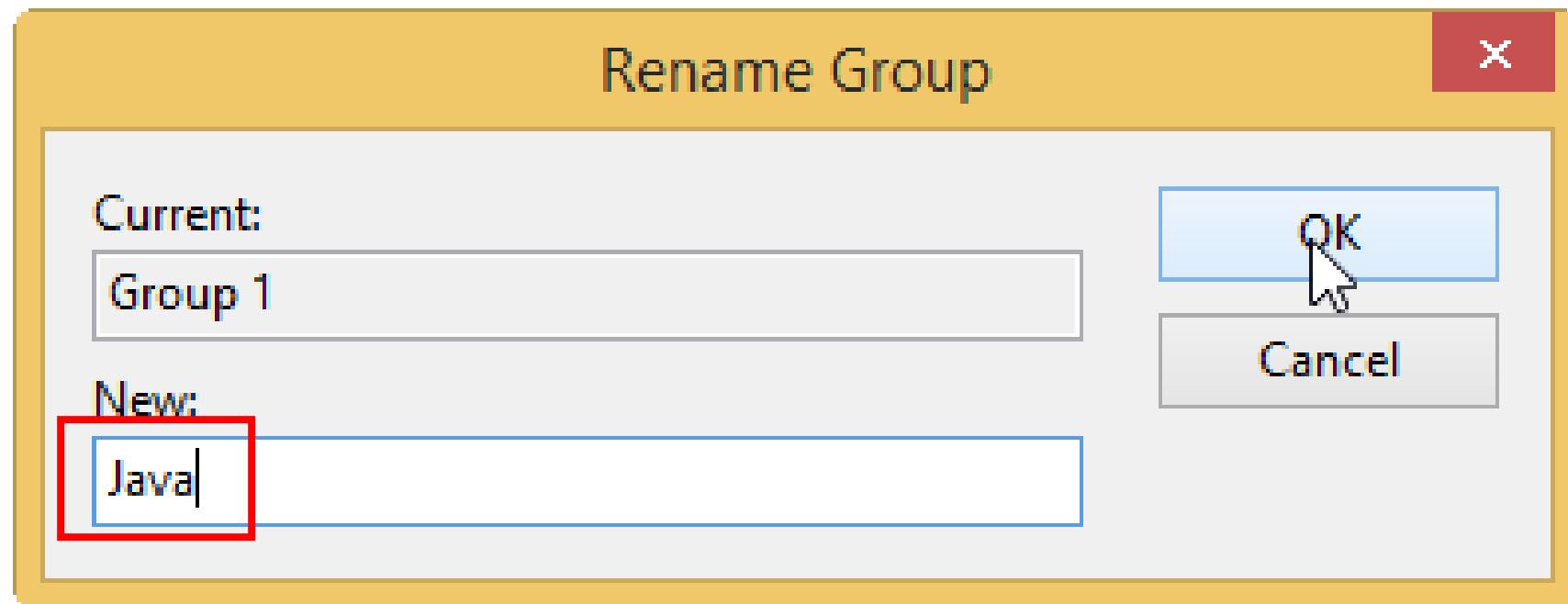
Configure User Tools



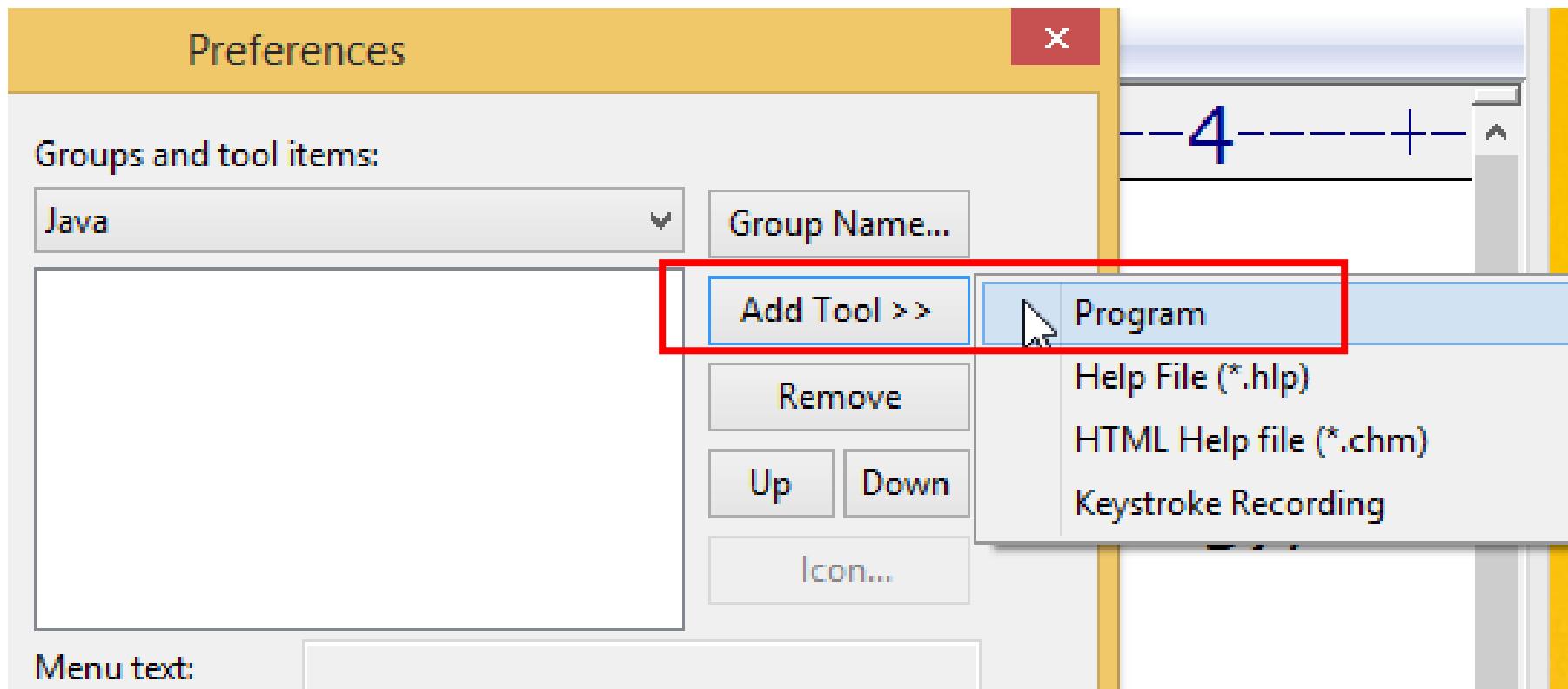
Change Group Name



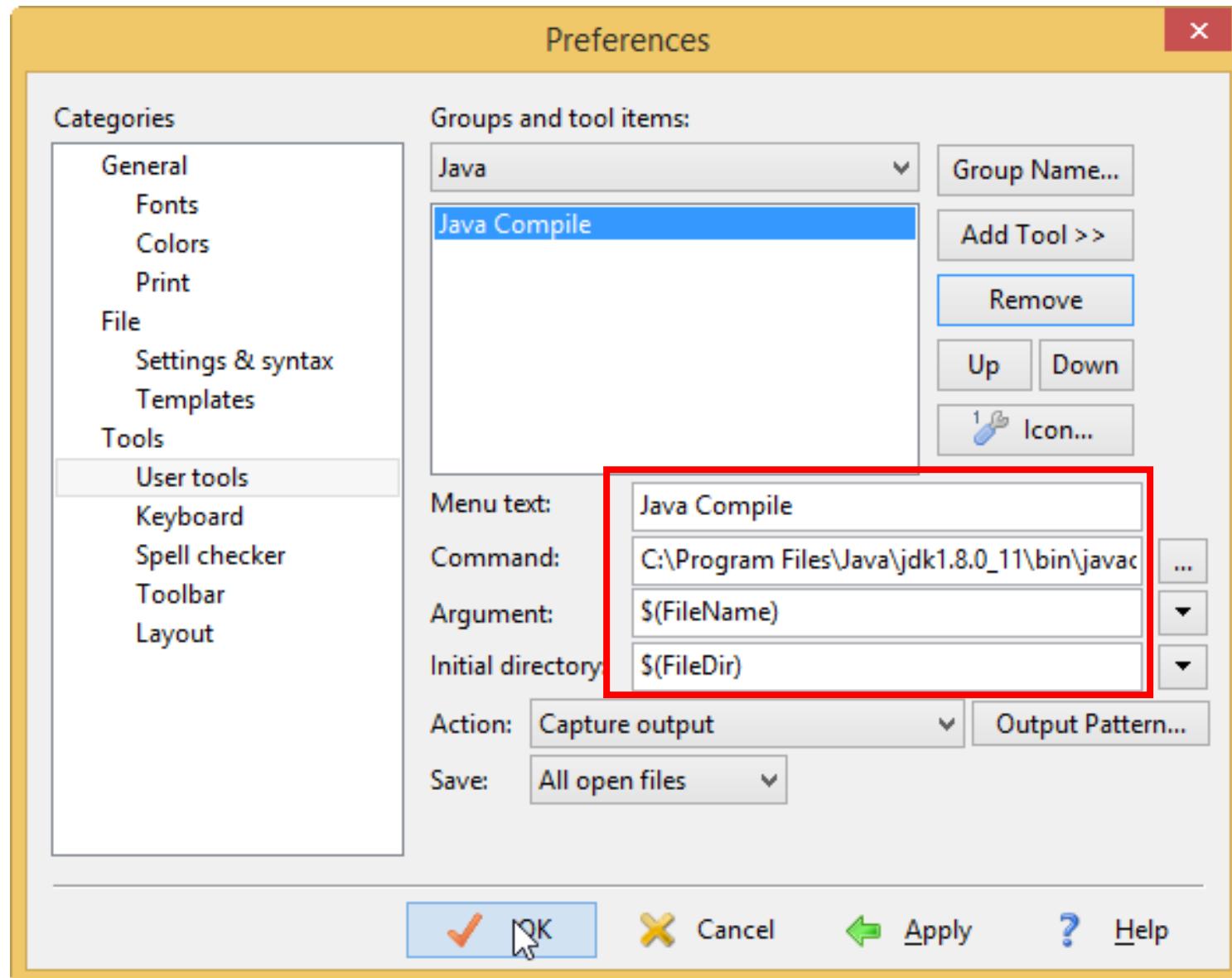
Change Group Name (Cont.)



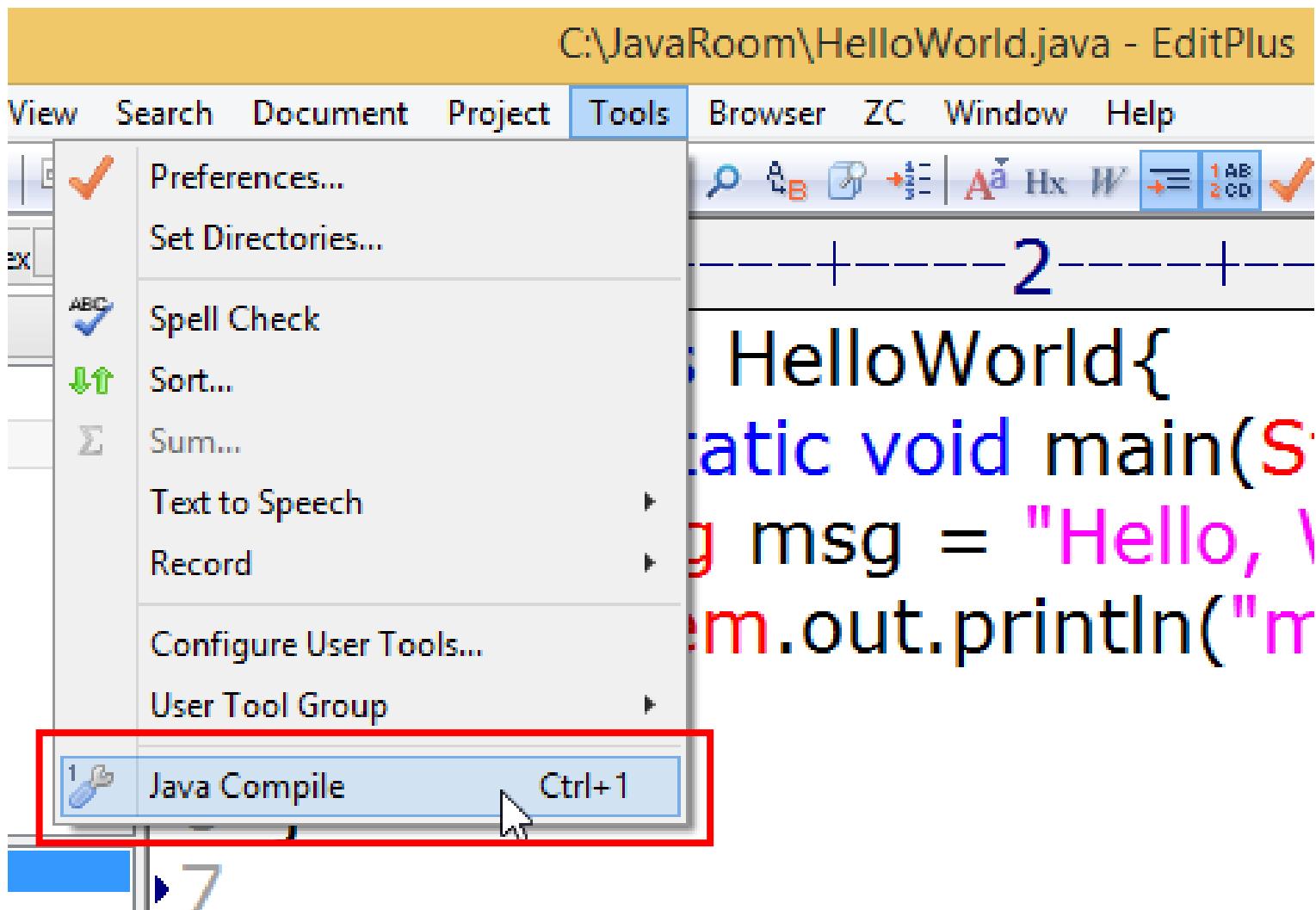
Register Compiler Tool



Register Compiler Tool (Cont.)



Register Compiler Tool (Cont.)



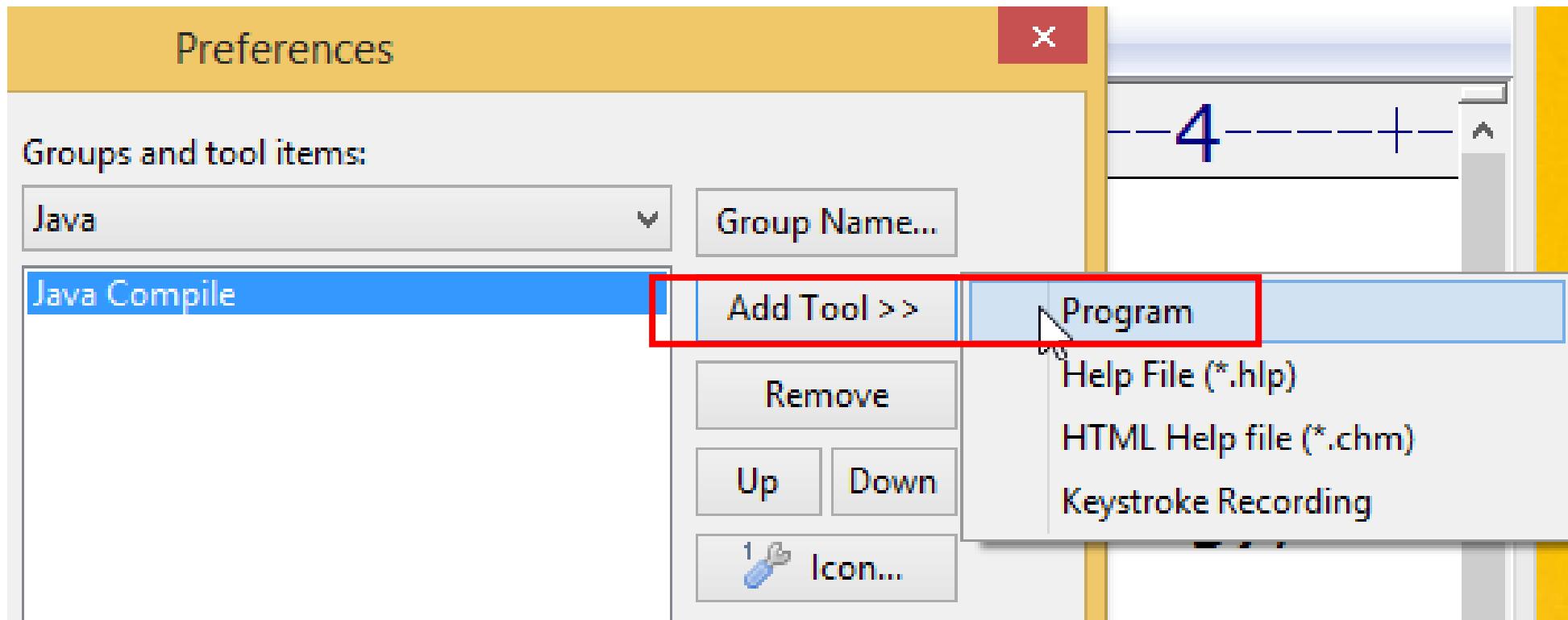
Register Compiler Tool (Cont.)

The screenshot shows the EditPlus text editor interface with the following details:

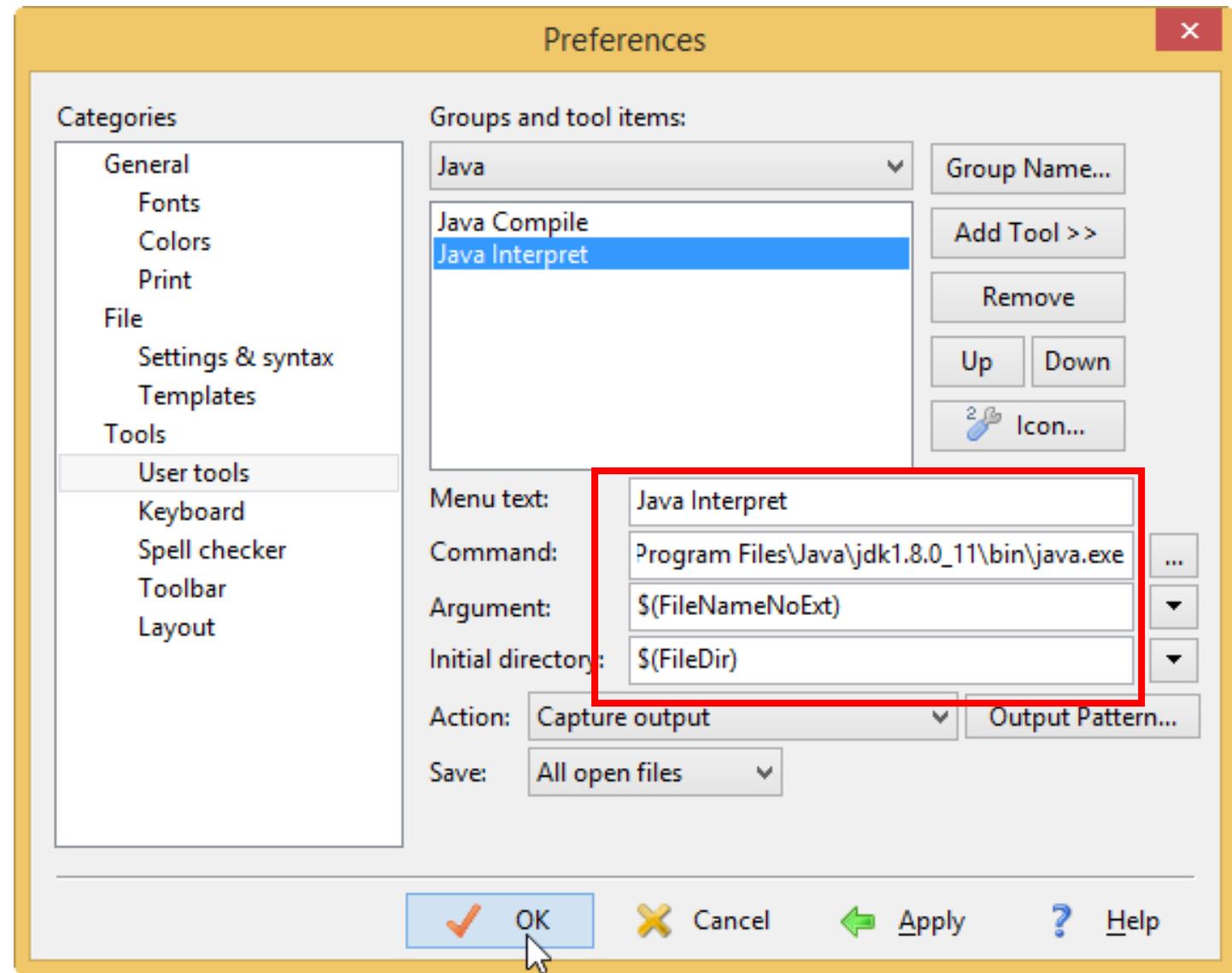
- Title Bar:** C:\JavaRoom\HelloWorld.java - EditPlus
- Menu Bar:** File, Edit, View, Search, Document, Project, Tools, Browser, ZC, Window, Help
- Toolbar:** Includes icons for New, Open, Save, Print, Find, Replace, Cut, Copy, Paste, Undo, Redo, etc.
- Directory List:** Shows [C:] and the JavaRoom folder.
- Code Editor:** Displays the following Java code:

```
1 public class HelloWorld{
2     public static void main(String[] args) {
3         String msg = "Hello, World";
4         System.out.println("msg = " + msg);
5     }
6 }
7 }
```
- Status Bar:** Shows "----- Java Compile -----" and "Output completed (0 sec consumed) - Normal Termination". This message is highlighted with a red rectangular box.
- Bottom Navigation:** All Files (*.*) and HelloWorld.java.
- Bottom Footer:** For Help, press F1, In 7, col 1, 7, 00, PC, ANSI.

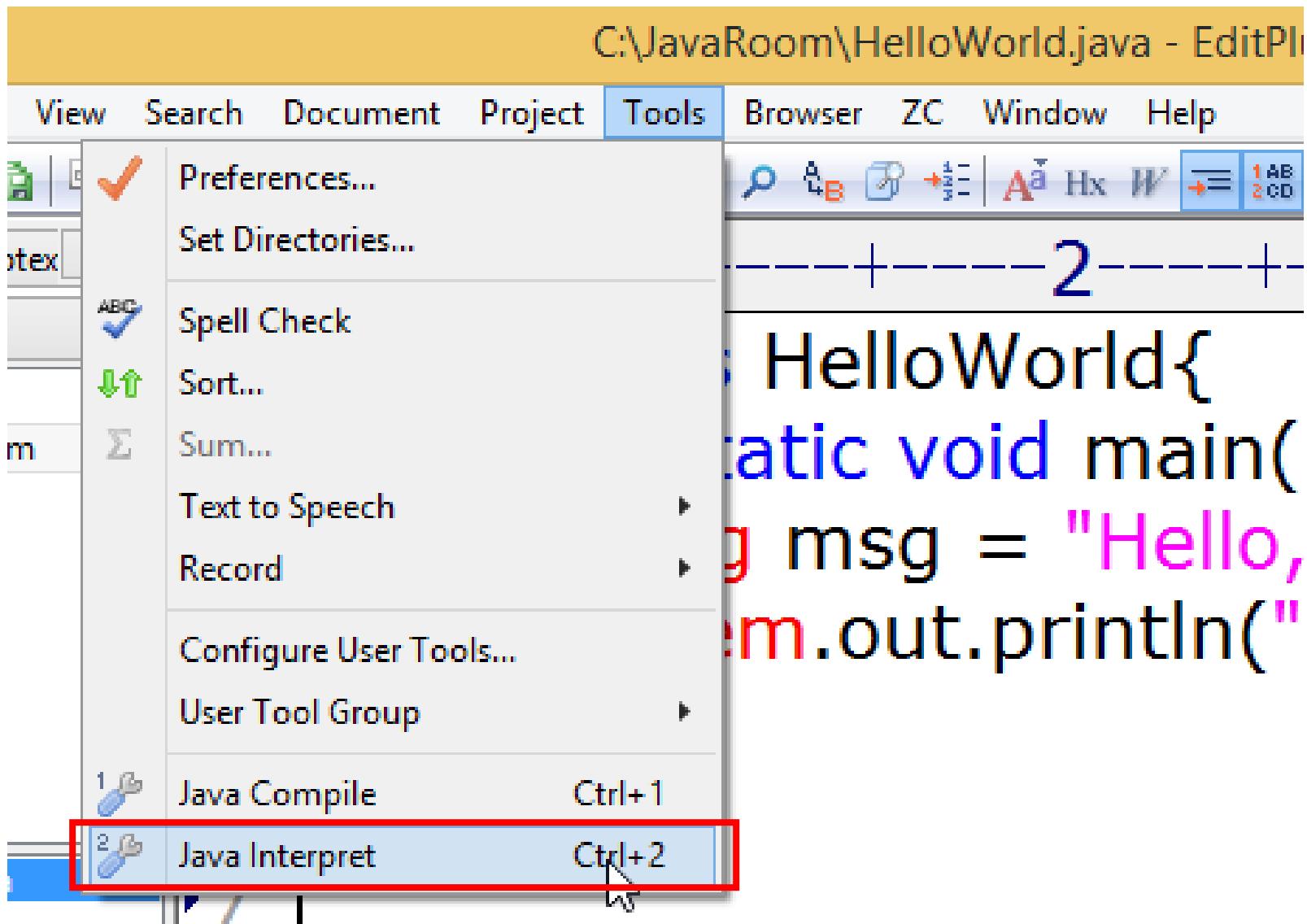
Register Interpreter Tool



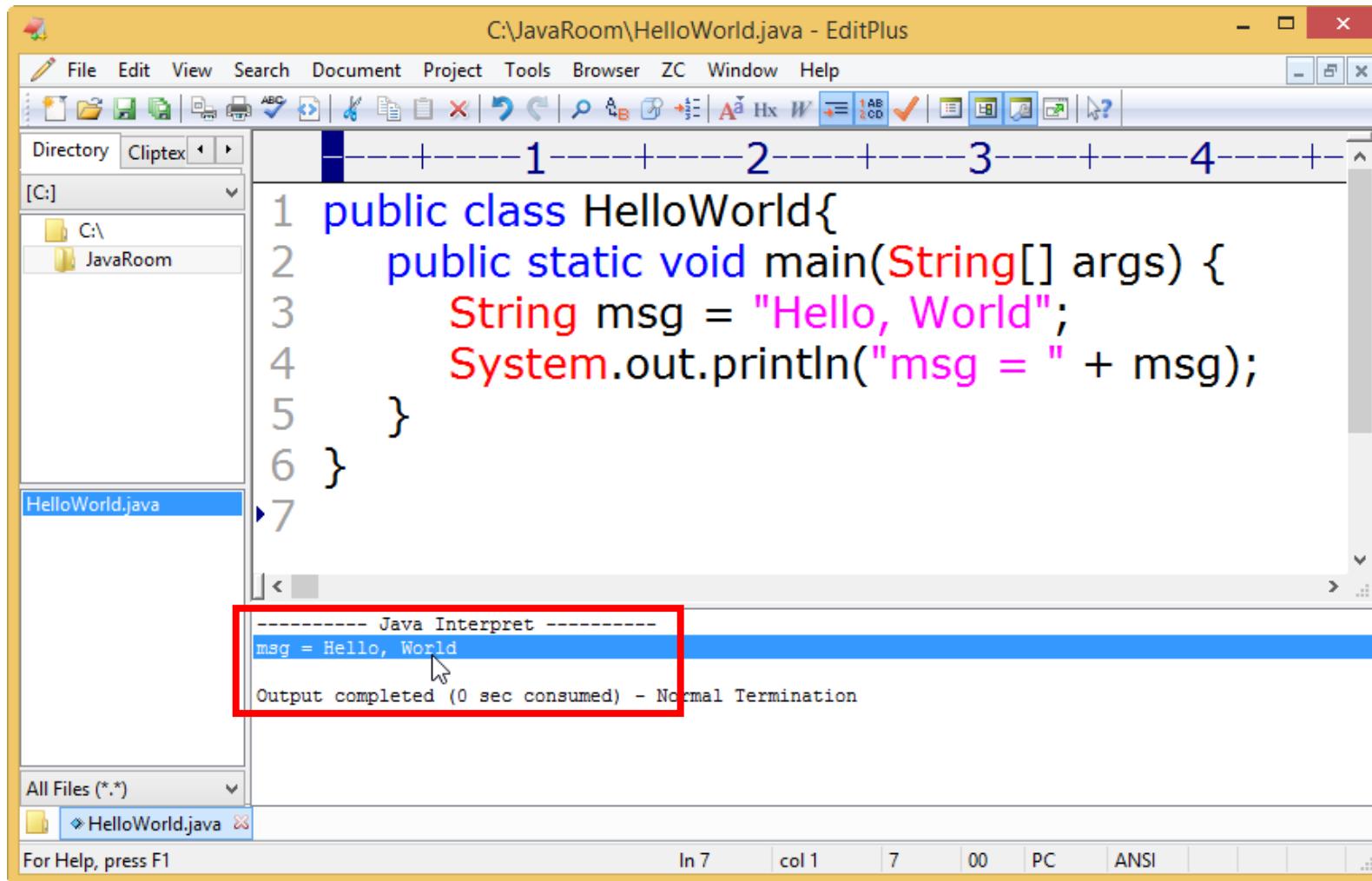
Register Interpreter Tool (Cont.)



Register Interpreter Tool (Cont.)



Register Interpreter Tool (Cont.)



The screenshot shows the EditPlus text editor interface. The title bar reads "C:\JavaRoom\HelloWorld.java - EditPlus". The menu bar includes File, Edit, View, Search, Document, Project, Tools, Browser, ZC, Window, and Help. The toolbar contains various icons for file operations like Open, Save, Print, and Find. The left sidebar shows a directory tree with "C:\JavaRoom" selected, and a file list with "HelloWorld.java" highlighted. The main code editor window displays the following Java code:

```
1 public class HelloWorld{  
2     public static void main(String[] args) {  
3         String msg = "Hello, World";  
4         System.out.println("msg = " + msg);  
5     }  
6 }  
7
```

Below the code editor is a terminal-like window showing the output of the Java interpreter:

```
----- Java Interpret -----  
msg = Hello, World  
Output completed (0 sec consumed) - Normal Termination
```

The output text is highlighted with a red border. The status bar at the bottom shows "In 7 col 1 7 00 PC ANSI".

Eclipse Setting on Ubuntu Platform



Connect to <https://www.eclipse.org>

The screenshot shows the Eclipse Foundation homepage in a Mozilla Firefox browser window. The title bar reads "Enabling Open Innovation & Collaboration | The Eclipse Foundation - Mozilla Firefox". The main content features the Eclipse Foundation logo and the tagline "The Platform for Open Innovation and Collaboration". Below this, a paragraph describes the foundation's mission: "The Eclipse Foundation provides our global community of individuals and organizations with a mature, scalable and commercially-friendly environment for open source software collaboration and innovation." There are four orange buttons labeled "Members", "Working Groups", "Discover Projects", and "Business Value", each accompanied by a corresponding icon. A large orange "Download" button is highlighted with a red box and a hand cursor icon. At the bottom, there is a section for "Eclipse IDE 2019-06" with a "Get the latest version" link. A cookie consent banner at the bottom states: "Some Eclipse Foundation pages use cookies to better serve you when you return to the site. You can set your browser to notify you before you receive a cookie or turn off cookies. If you do so, however, some areas of some sites may not function properly. To read Eclipse Foundation Privacy Policy click here." It includes "Decline" and "Allow cookies" buttons.

Enabling Open Innovation & Collaboration | The Eclipse Foundation - Mozilla Firefox

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The screenshot shows a web browser displaying the Eclipse Downloads page at <https://www.eclipse.org/downloads/>. The main heading is "Download Eclipse Technology that is right for you". On the left, there's a section for "Eclipse IDE 2019-06" with a "Download 64 bit" button and a "Download Packages" link, which is highlighted with a red box. A large hand cursor icon is positioned over the "Download Packages" link. To the right, there's a "Tool Platforms" section featuring "Eclipse Che" and "ORION". A sponsored advertisement for "ca technologies" is visible on the right side. A cookie consent banner at the bottom asks if the user wants to receive cookies, with "Allow cookies" being the accepted option.

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Eclipse Downloads from <https://www.eclipse.org/downloads/packages/> (Cont.)

Screenshot of the Eclipse Packages download page (<https://www.eclipse.org/downloads/packages/>) showing three Eclipse IDE packages:

- Eclipse IDE for Enterprise Java Developers**: 346 MB, 297,706 DOWNLOADS. Includes Java EE IDE tools. Download links: Linux 64-bit, Windows 64-bit, Mac Cocoa 64-bit, Linux 64-bit.
- Eclipse IDE for Java Developers**: 195 MB, 180,371 DOWNLOADS. The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Mylyn, Maven and Gradle integration. Download links: Windows 64-bit, Mac Cocoa 64-bit, Linux 64-bit. This section is highlighted with a red box and a hand cursor icon pointing at the "Windows 64-bit" link.
- Eclipse IDE for Eclipse Committers**: 322 MB, 23,389 DOWNLOADS. Package suited for development of Eclipse itself at Eclipse.org; based on the Eclipse Platform adding PDE, Git, Marketplace Client, source code and developer documentation. Download links: Windows 64-bit, Mac Cocoa 64-bit, Linux 64-bit.

Related Links:

- Compare & Combine Packages
- New and Noteworthy
- Install Guide
- Documentation
- Updating Eclipse
- Forums
- Simultaneous Release

More Downloads:

- Other builds
- Eclipse 2019-03 (4.11)
- Eclipse 2018-12 (4.10)
- Eclipse 2018-09 (4.9)
- Eclipse Photon (4.8)
- Eclipse Oxygen (4.7)
- Eclipse Neon (4.6)

Eclipse Downloads from <http://www.eclipse.org/downloads/packages/> (Cont.)

The screenshot shows a web browser window displaying the Eclipse download page at <https://www.eclipse.org/downloads/download.php?file=/technology/epp/downloads/releasedata>. The main content area displays a large orange "Download" button and a message indicating all downloads are provided under the Eclipse Foundation Software User Agreement. Below this, it shows a download link for "eclipse-java-2019-06-R-linux-gtk-x86_64.tar.gz" with SHA-512 checksum. A "Select Another Mirror" link is also present. A modal window titled "Choose a mirror close to you" lists mirrors categorized by continent. The "Asia" section includes links for Japan (Japan Advanced Institute of Science and Technology, Yamagata University), Korea (Kakao Corp.), China (TUNA), and the highlighted option for Korea (Daum Kakao Corp.), which is enclosed in a red rectangle and has a hand cursor icon pointing at it. To the right of the modal, there is a sidebar for "ORACLE Enterprise Pack for Eclipse" featuring its logo and a "Download" button. Below the sidebar, there is a "Related Links" section with links to "Donate", "Becoming a mirror site", "Updating and installing Eclipse components", and "Eclipse forums".

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- [Eclipse forums](#)

Unzip Files

- \$ **tar xvfvz eclipse*.tar.gz**

```
instructor@Ubuntu-Desktop:~/Downloads$ ls  
eclipse-java-2019-06-R-linux-gtk-x86_64.tar.gz  
instructor@Ubuntu-Desktop:~/Downloads$ tar xvfvz eclipse*.tar.gz
```

Move Files

- **\$ sudo mv eclipse /usr/local/Eclipse**

```
instructor@Ubuntu-Desktop:~/Downloads$ sudo mv eclipse /usr/local/Eclipse  
[sudo] password for instructor:
```

Creates desktop shortcut file

- **\$ sudo vi /usr/share/applications/eclipse.desktop**

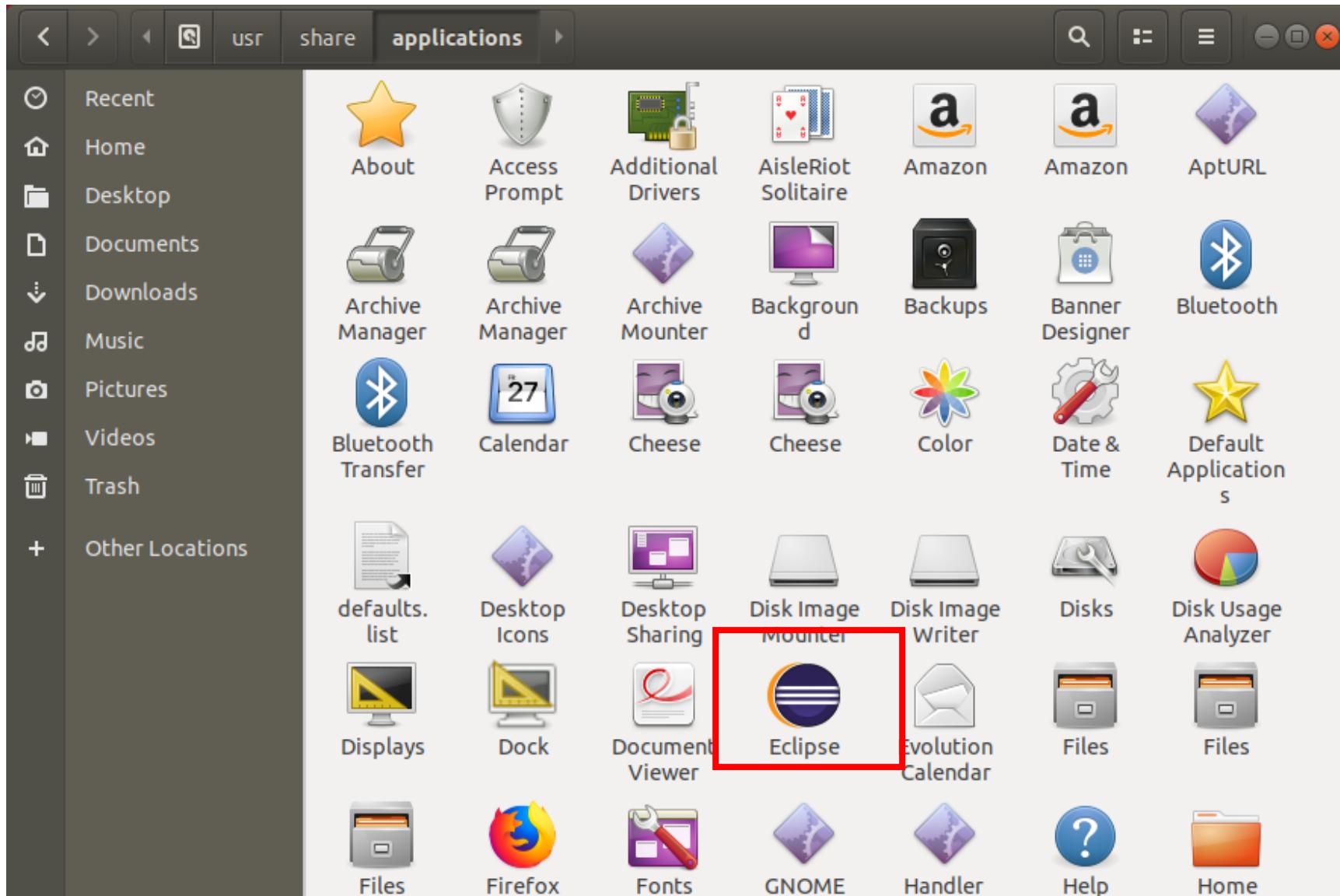
```
instructor@Ubuntu-Desktop:~/Downloads$ sudo vi /usr/share/applications/eclipse.desktop
```

Creates desktop shortcut file (Cont.)

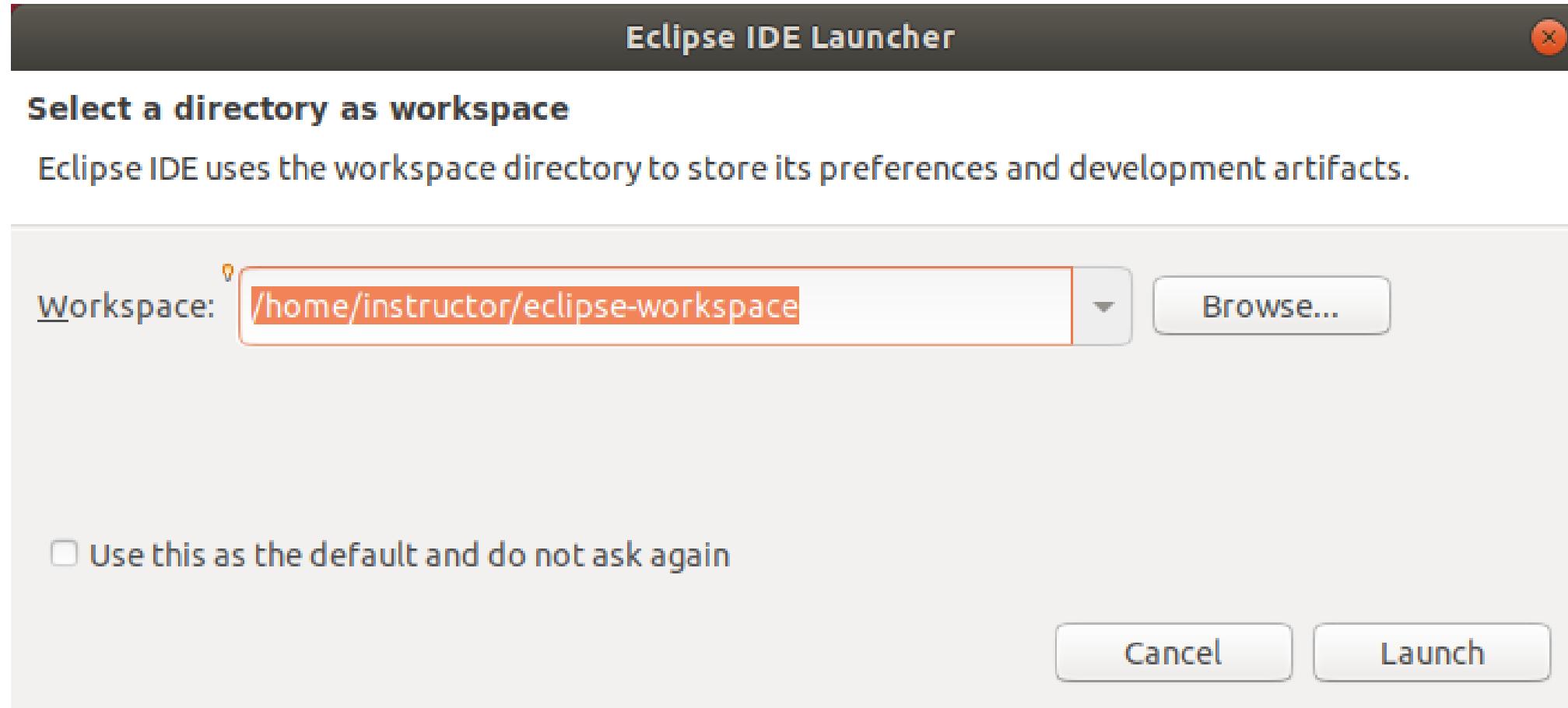
```
instructor@Ubuntu-Desktop:~/Downloads$ cat /usr/share/applications/eclipse.deskt  
op  
[Desktop Entry]  
Type=Application  
Name=Eclipse  
Comment=Eclipse Integrated Development Environment  
Icon=/usr/local/Eclipse/icon.xpm  
Exec=env UBUNTU_MENUPROXY= /usr/local/Eclipse/eclipse  
Terminal=false  
Categories=Development;ID Java;
```



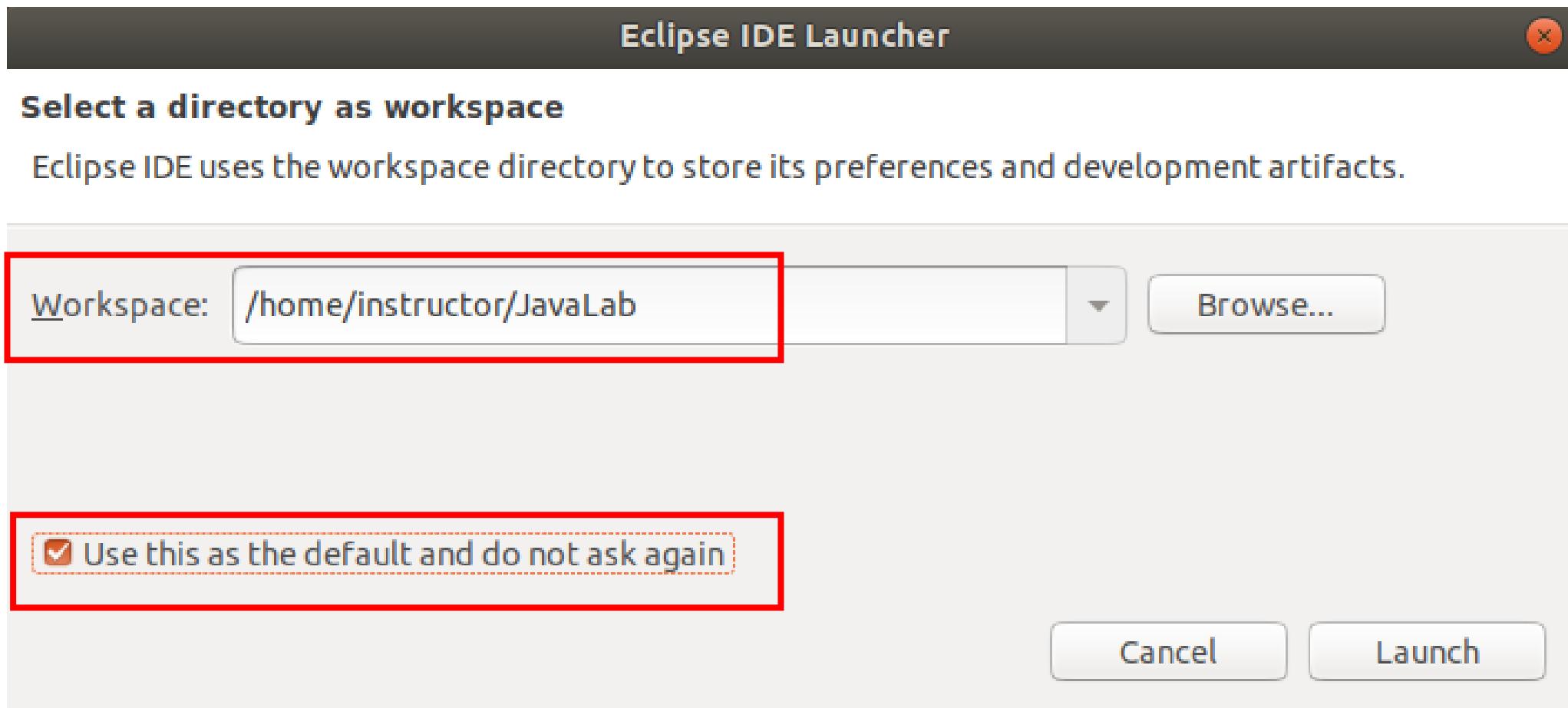
Running Eclipse



Running Eclipse (Cont.)



Setting Workspace





File Edit Navigate Search Project Run Window Help

Welcome



Welcome to the Eclipse IDE for Java Developers



Workbench



Review IDE configuration settings

Review the IDE's most fiercely contested preferences



Create a Hello World application

A guided walkthrough to create the famous Hello World in Eclipse



Create a new Java project

Create a new Java Eclipse project



Checkout projects from Git

Checkout Eclipse projects hosted in a Git repository



Import existing projects

Import existing Eclipse projects from the filesystem or archive



Launch the Eclipse Marketplace

Enhance your IDE with additional plugins and install your Marketplace favorites



Overview

Get an overview of the features



Tutorials

Go through tutorials



Samples

Try out the samples



What's New

Find out what is new

Always show Welcome at start up

