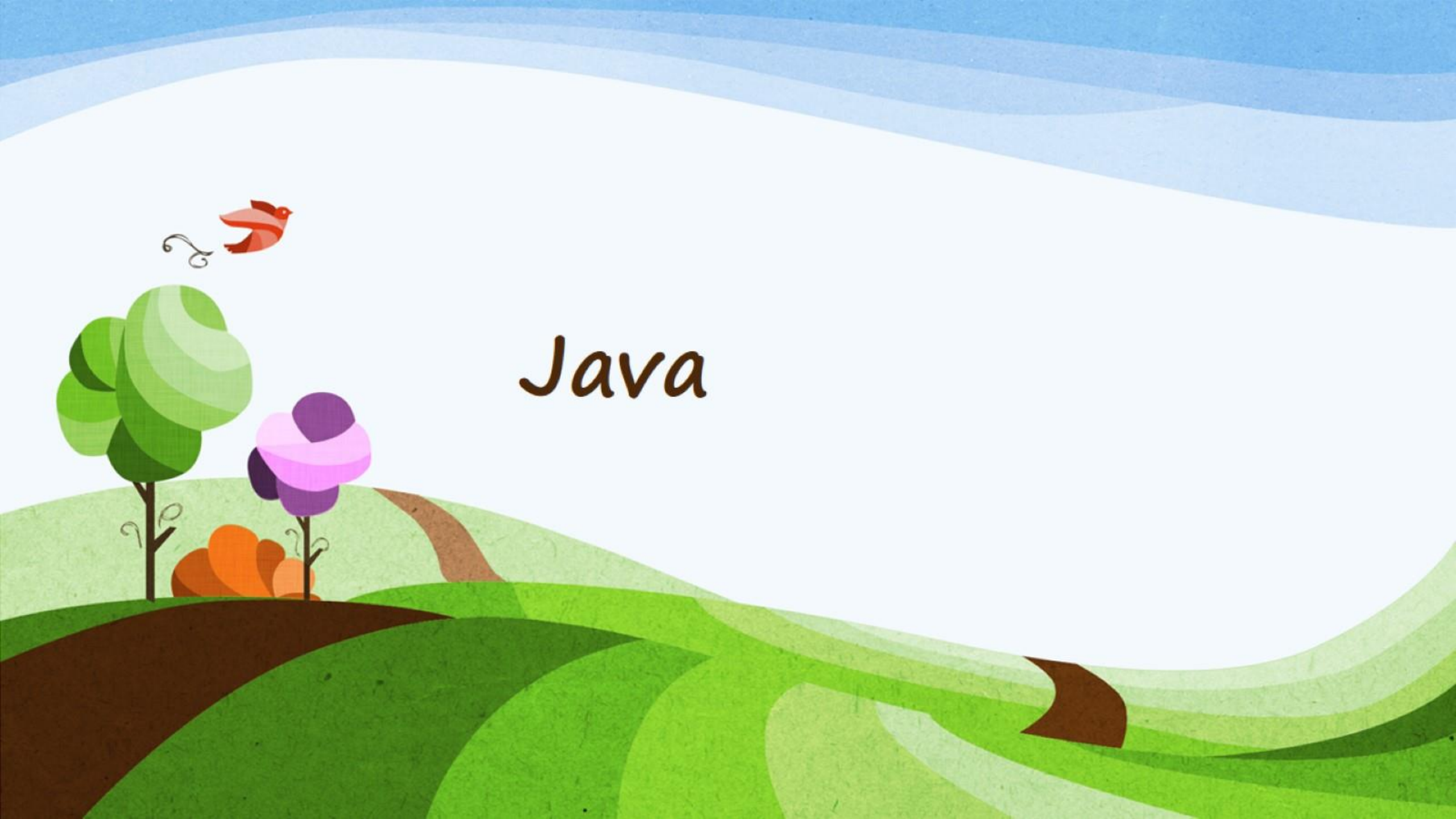


A stylized, layered landscape illustration. The foreground features rolling green hills in various shades of green, with a dark brown path or streambed winding through them. On the left, there is a green tree with a brown trunk, a purple flower, and some orange foliage. A small red bird is flying in the sky above the tree. The background consists of light blue and white wavy bands representing the sky.

Java

Java

- Java is a high-level programming language.
- Originally developed by Sun Microsystems and released in 1995.
- Java runs on a variety of platforms, such as Windows, Mac OS, and the various versions of UNIX.

A stylized landscape illustration featuring rolling green hills in the foreground, a small tree with a brown trunk and purple and pink foliage on the left, and blue and white wavy bands in the background representing a sky or distant mountains. The text "History of Java" is centered in the white area.

History of Java

History of Java

- James Gosling, Mike Sheridan, and Patrick Naughton initiated the Java language project in June 1991.
- The small team of sun engineers called Green Team.
- Originally designed for small, embedded systems in electronic appliances like set-top boxes.
- Firstly, it was called "Greentalk" by James Gosling and file extension was .gt.
- After that, it was called Oak and was developed as a part of the Green project.

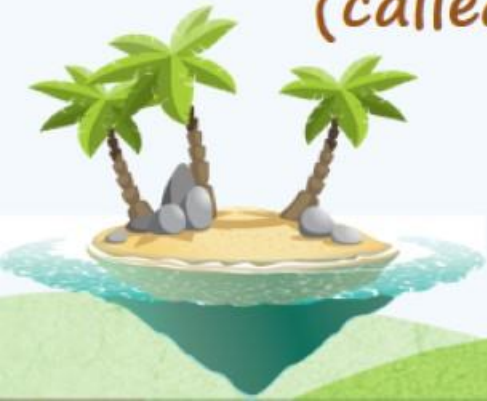
Why "Oak" name

- Oak is a symbol of strength and chosen as a national tree of many countries like U.S.A., France, Germany, Romania etc.
- In 1995, Oak was renamed as "Java" because it was already a trademark by Oak Technologies.



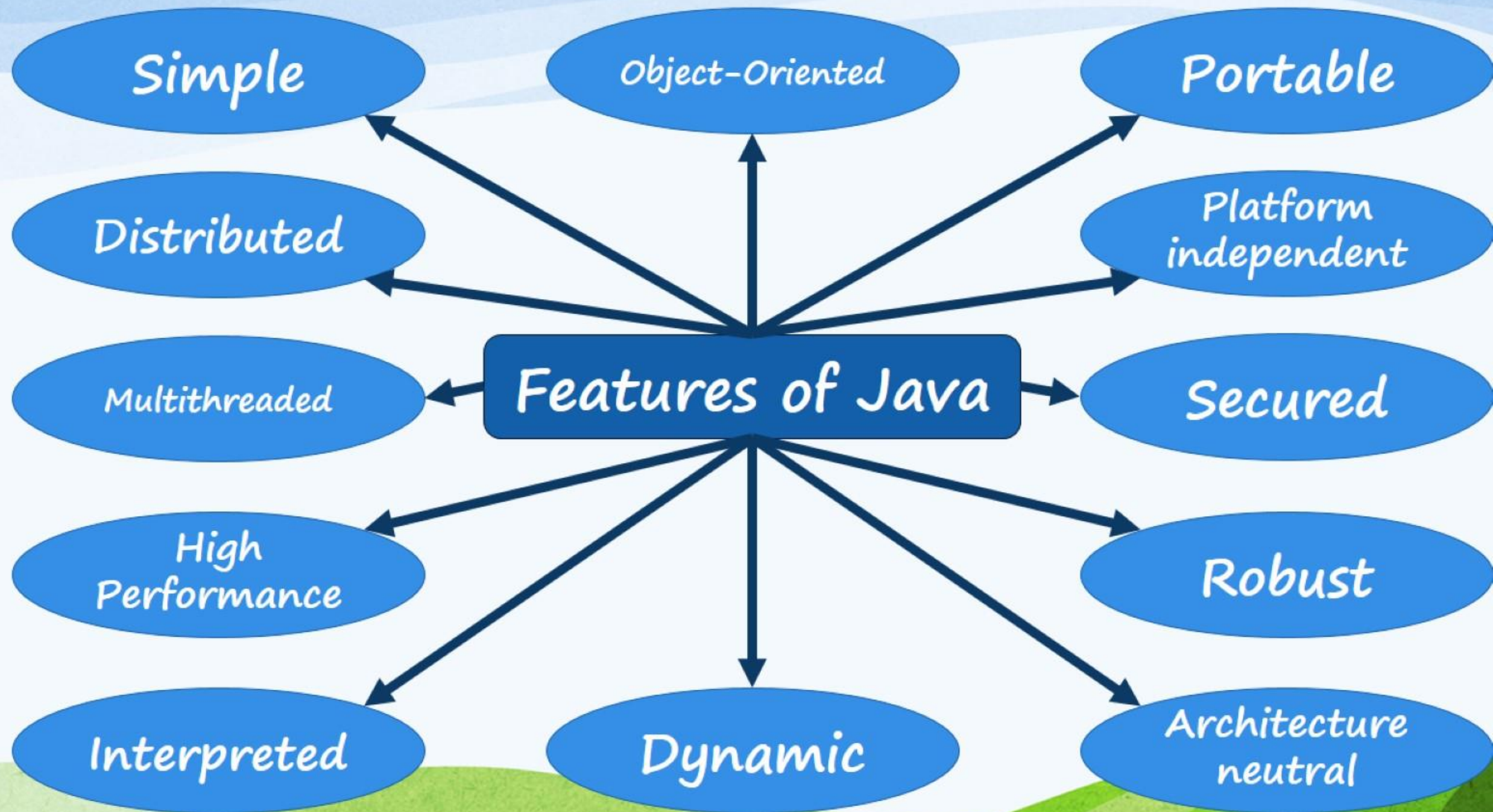
Why "Java" name

- The team gathered to choose a new name. The suggested words were "dynamic", "revolutionary", "Silk", "jolt", "DNA" etc.
- According to James Gosling "Java was one of the top choices along with Silk". Since java was so unique, most of the team members preferred java.
- Java is an island of Indonesia where first coffee was produced (called java coffee).



A stylized landscape illustration featuring rolling green hills in the foreground, a small tree with a brown trunk and purple and pink foliage on the left, and blue and white wavy hills in the background. The text "Features of Java" is centered in the white background area.

Features of Java





Simple

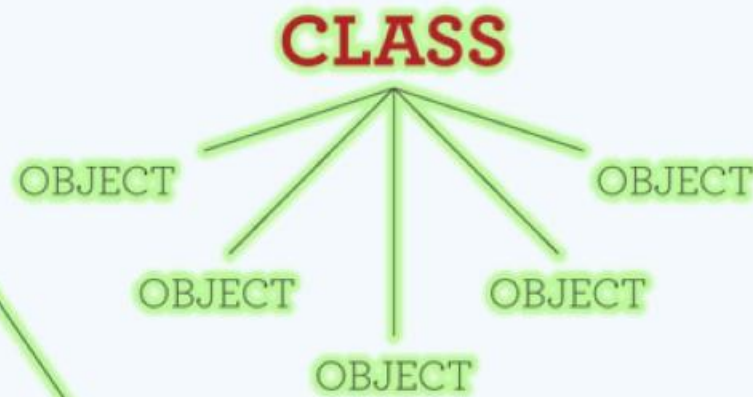
- According to Sun, Java language is simple because:
- Syntax is based on C++ (so easier for programmers to learn it after C++).
- Java is designed to be easy to learn.



Object-oriented

- In Java, everything is an *Object*. Java can be easily extended since it is based on the *Object* model.

OBJECT
ORIENTED
PROGRAMMING



Portable

- We may carry the java bytecode to any platform.



Platform Independent

- There are two types of platforms software-based and hardware-based.
- Java provides software-based platform.



Secured

- With Java's secure feature it enables to develop virus-free, tamper-free systems.



Robust

- Robust simply means strong.
- Java uses strong memory management.
- There is exception handling and type checking mechanism in java.
- Java makes an effort to eliminate error prone situations by emphasizing mainly on compile time error checking and runtime checking.



Architecture-neutral

- Java compiler generates an architecture-neutral object file format, which makes the compiled code executable on many processors, with the presence of Java runtime system.



Dynamic

- Java is considered to be more dynamic than C or C++ since it is designed to adapt to an evolving environment.
- Java programs can carry extensive amount of run-time information that can be used to verify and resolve accesses to objects on run-time.



Interpreted

- The development process is more rapid and analytical since the linking is an incremental and light-weight process.



High Performance

- With the use of Just-In-Time compilers, Java enables high performance.





Multi-threaded

- With Java's multithreaded feature it is possible to write programs that can perform many tasks simultaneously.
- This design feature allows the developers to construct interactive applications that can run smoothly.

Distributed

- *Java is designed for the distributed environment of the internet.*



Tools required to run Java Program

- JDK
- Eclipse



Difference between JDK JRE and JVM

JDK

- Java Development Kit is the core component of Java Environment and provides all the tools, executable and binaries required to compile, debug and execute a Java Program.
- JDK is a platform specific software and that's why we have separate installers for Windows, Mac and Unix systems.

JVM

- JVM is the heart of java programming language.
- When we run a program, JVM is responsible to converting Byte code to the machine specific code.
- JVM is also platform dependent and provides core java functions like memory management, garbage collection, security etc. JVM is customizable and we can use java options to customize it, for example allocating minimum and maximum memory to JVM.
- JVM is called virtual because it provides a interface that does not depend on the underlying operating system and machine hardware.

JRE

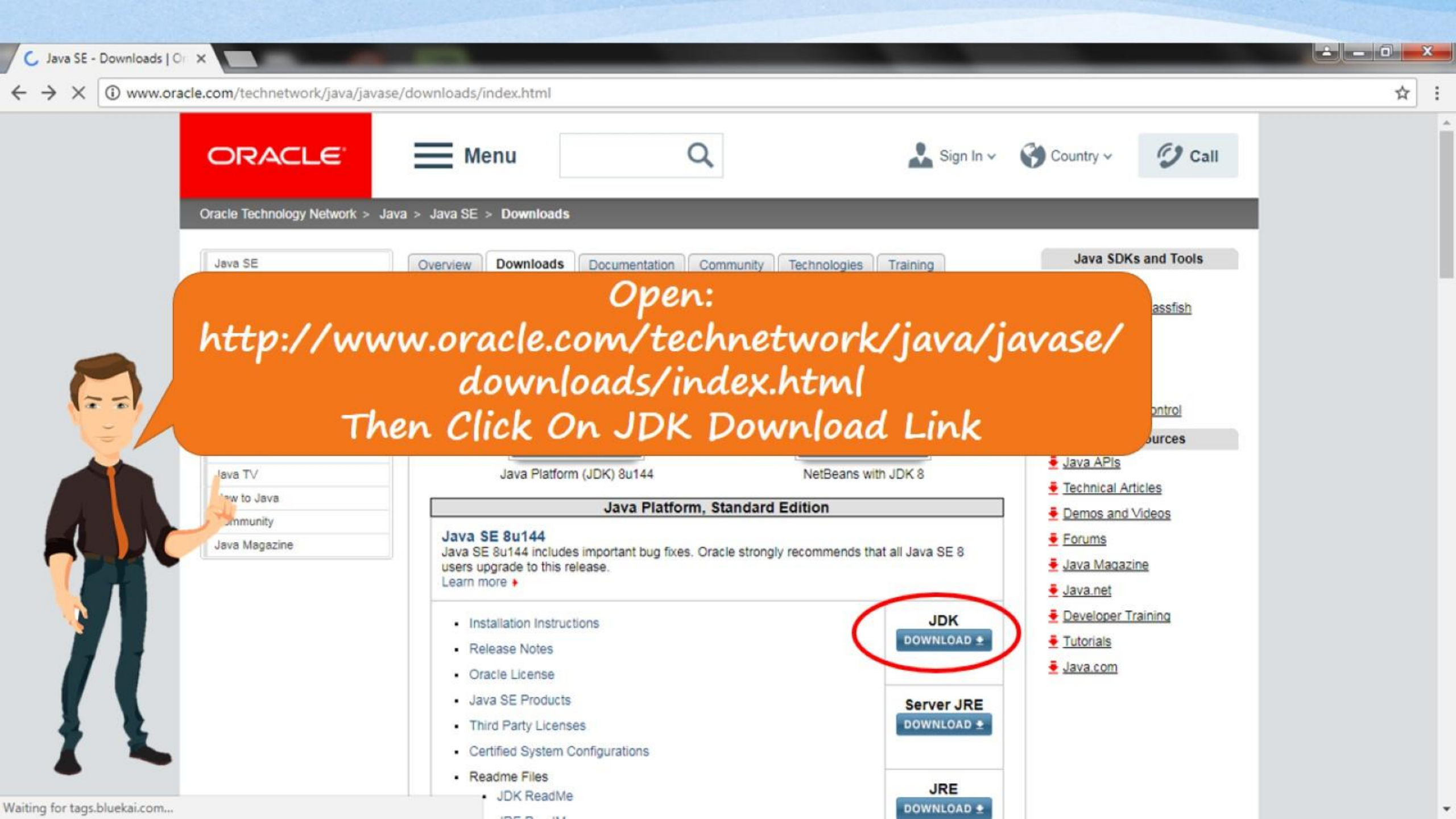
- JRE is the implementation of JVM, it provides platform to execute java programs.
- JRE consists of JVM and java binaries and other classes to execute any program successfully.
- JRE doesn't contain any development tools like java compiler, debugger etc.

JDK vs. JRE vs. JVM

- JDK is for development purpose whereas JRE is for running the java programs.
- JDK and JRE both contains JVM so that we can run our java program.
- JVM is the heart of java programming language and provides platform independence.

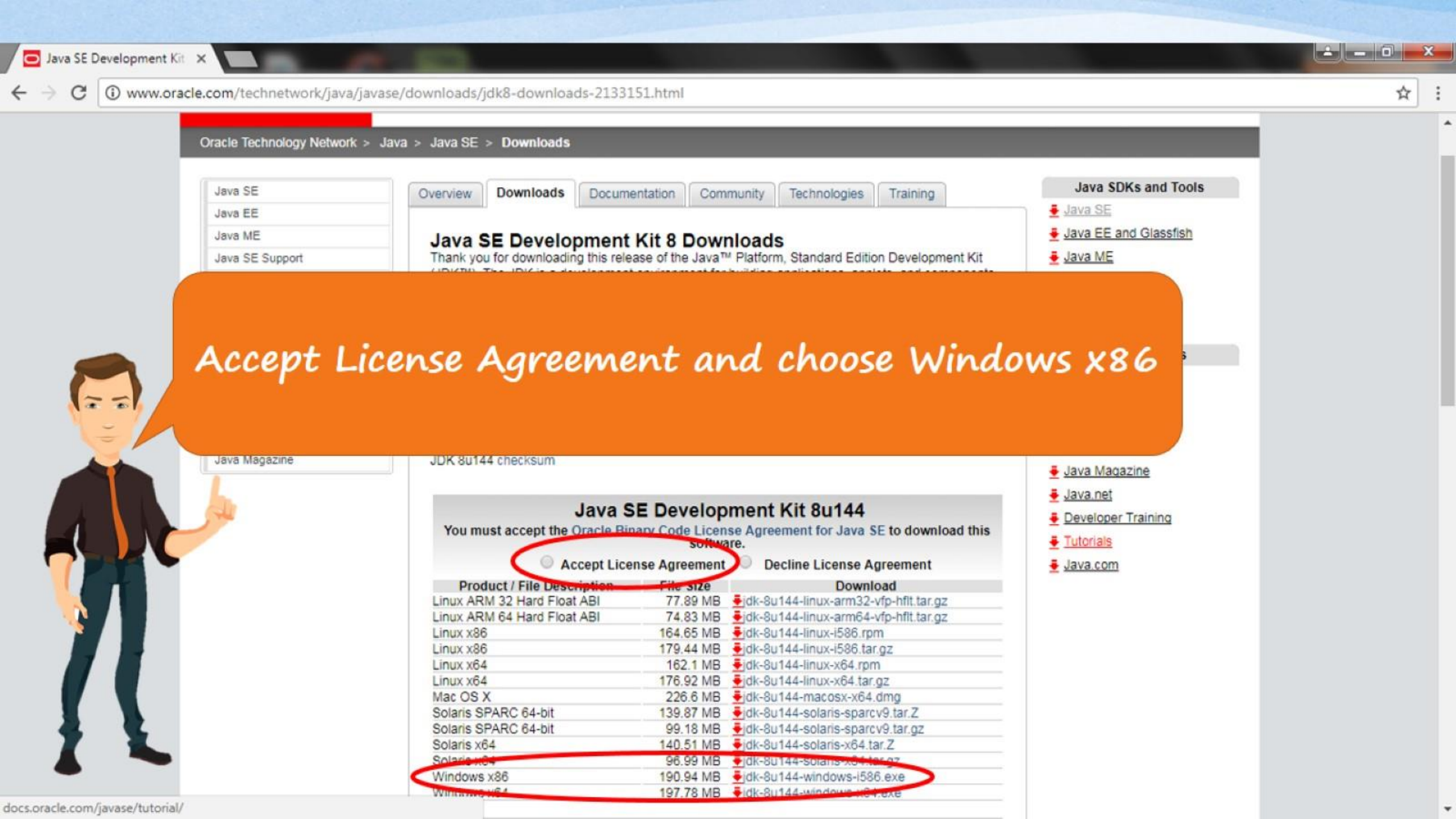
A stylized, hand-drawn illustration of a landscape. In the foreground, there are rolling green hills. To the left, a small tree with a brown trunk and a large, rounded, pink and purple canopy stands on a hill. Below the tree, there are some orange and brown shapes that look like rocks or a small bush. The background consists of light blue and white wavy lines representing a sky or distant hills.

Installation of JDK



Open:
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>
Then Click On JDK Download Link





Accept License Agreement and choose Windows x86

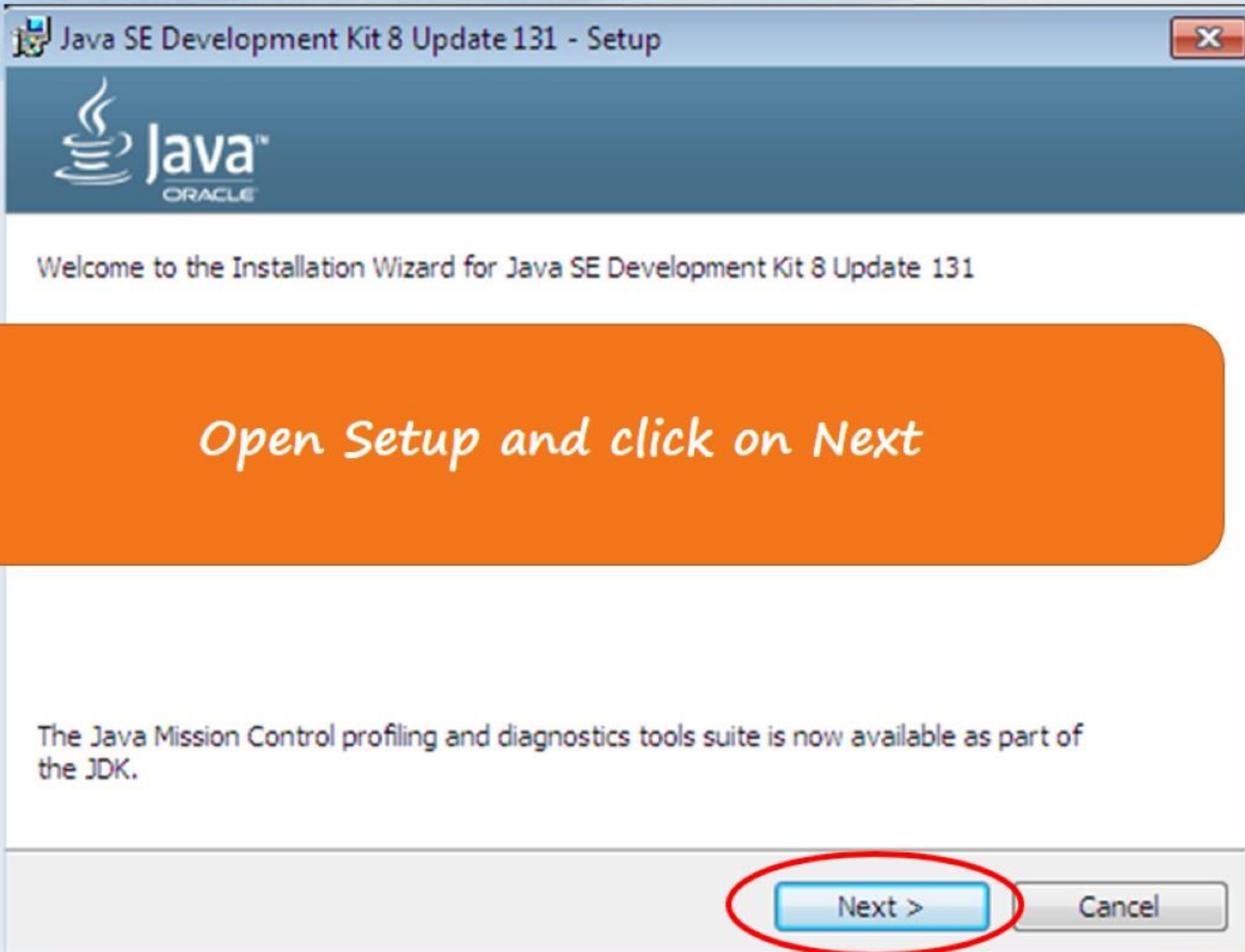
Java SE Development Kit 8u144

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

☒ Accept License Agreement

☐ Decline License Agreement

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.89 MB	jdk-8u144-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.83 MB	jdk-8u144-linux-arm64-vfp-hflt.tar.gz
Linux x86	164.65 MB	jdk-8u144-linux-i586.rpm
Linux x86	179.44 MB	jdk-8u144-linux-i586.tar.gz
Linux x64	162.1 MB	jdk-8u144-linux-x64.rpm
Linux x64	176.92 MB	jdk-8u144-linux-x64.tar.gz
Mac OS X	226.6 MB	jdk-8u144-macosx-x64.dmg
Solaris SPARC 64-bit	139.87 MB	jdk-8u144-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.18 MB	jdk-8u144-solaris-sparcv9.tar.gz
Solaris x64	140.51 MB	jdk-8u144-solaris-x64.tar.Z
Solaris x64	96.99 MB	jdk-8u144-solaris-x64.tar.gz
Windows x86	190.94 MB	jdk-8u144-windows-i586.exe
Windows x64	197.78 MB	jdk-8u144-windows-x64.exe

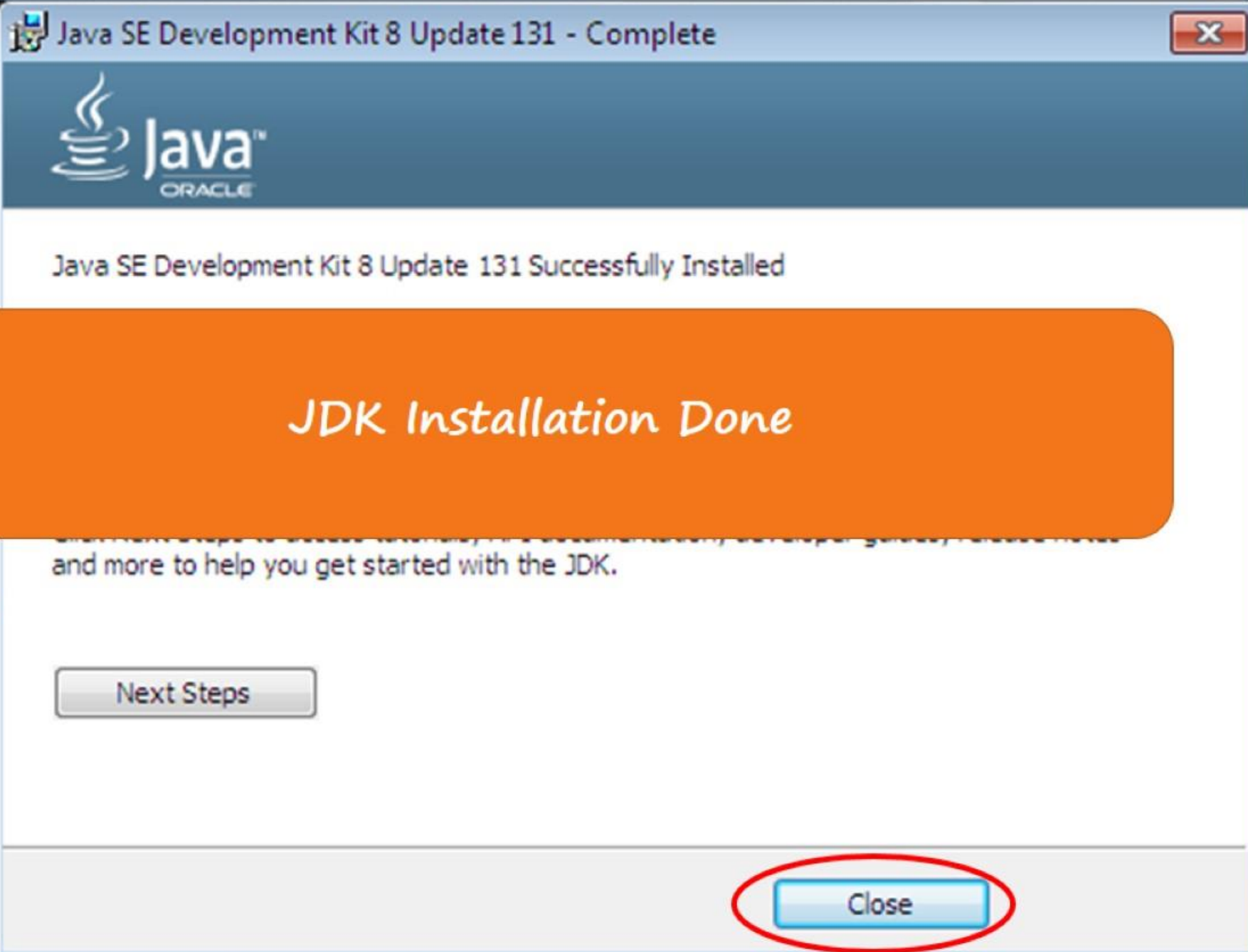


Open Setup and click on Next

The Java Mission Control profiling and diagnostics tools suite is now available as part of the JDK.

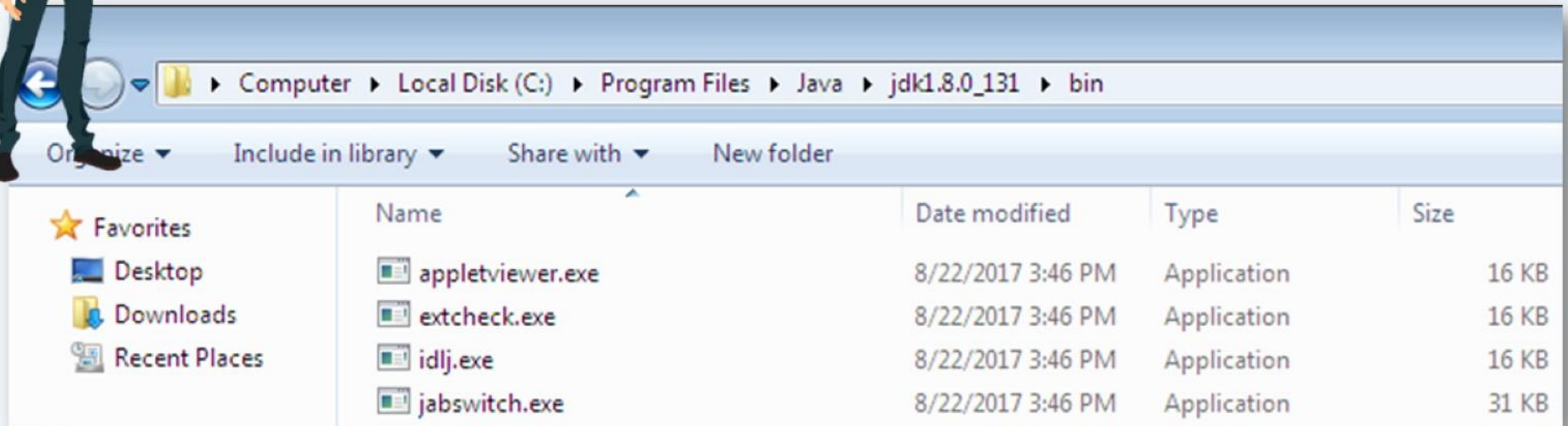
Next >

Cancel





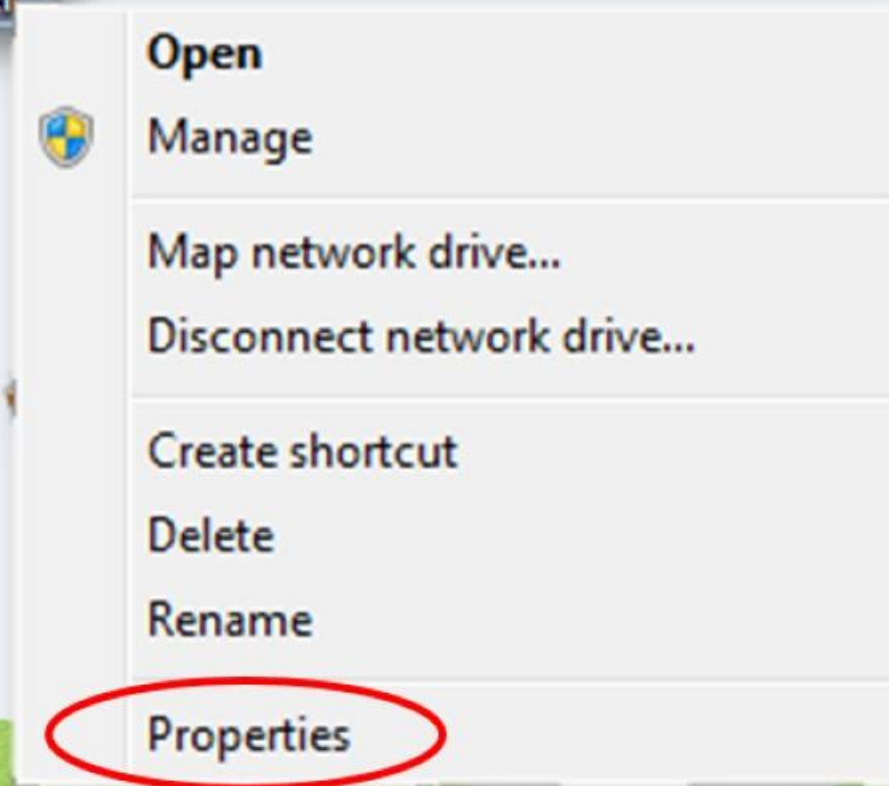
The path where your JDK installed



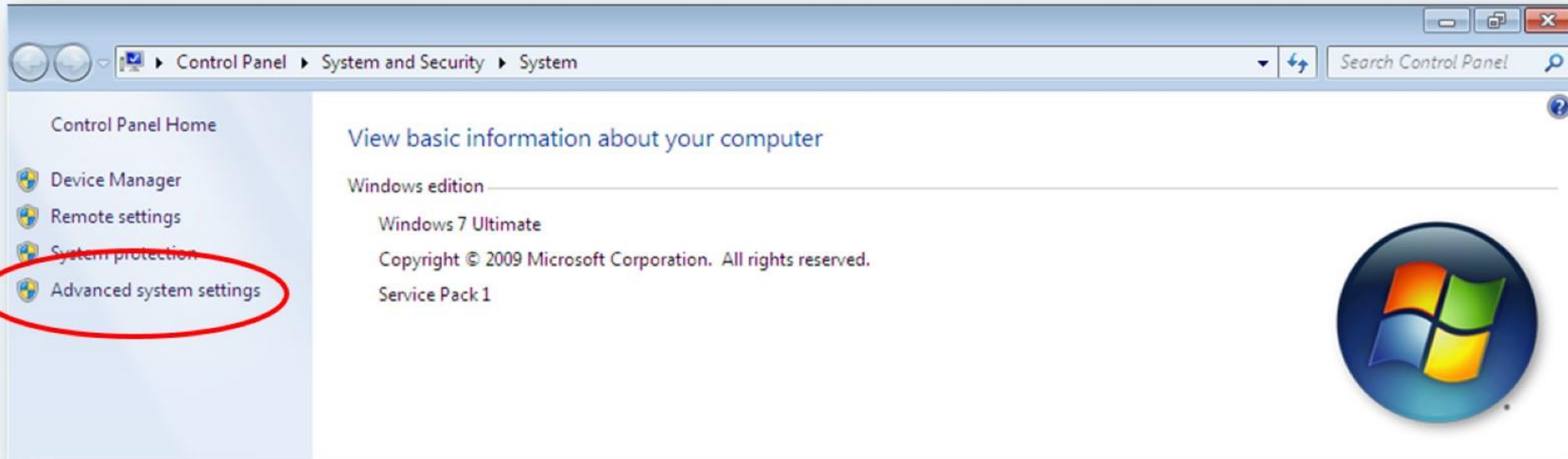
A stylized landscape illustration featuring rolling green hills in the foreground, a small tree with a brown trunk and purple and pink foliage on the left, and blue and white wavy lines representing hills or clouds in the background.

Setup Environment Variables

Open you Computer Properties



Open Advance System settings



System Properties



Computer Name

Hardware

Advanced

System Protection

Remote

You must be logged on as an Administrator to make most of these changes.

Performance

Visual effects, processor scheduling, memory usage, and virtual memory

Settings...

User Profiles

Desktop settings related to your logon

Settings...

Startup and Recovery

System startup, system failure, and debugging information

Settings...

Environment Variables...

OK

Cancel

Apply

Environment Variables



User variables for PPT

Variable	Value
PATHEXT	%PATHEXT%;.RB;.RBW
TEMP	%USERPROFILE%\AppData\Local\Temp
TMP	%USERPROFILE%\AppData\Local\Temp

New...

Edit...

Delete

System variables

Variable	Value
ComSpec	C:\Windows\system32\cmd.exe
FP_NO_HOST_C...	NO
NUMBER_OF_P...	4
OS	Windows_NT

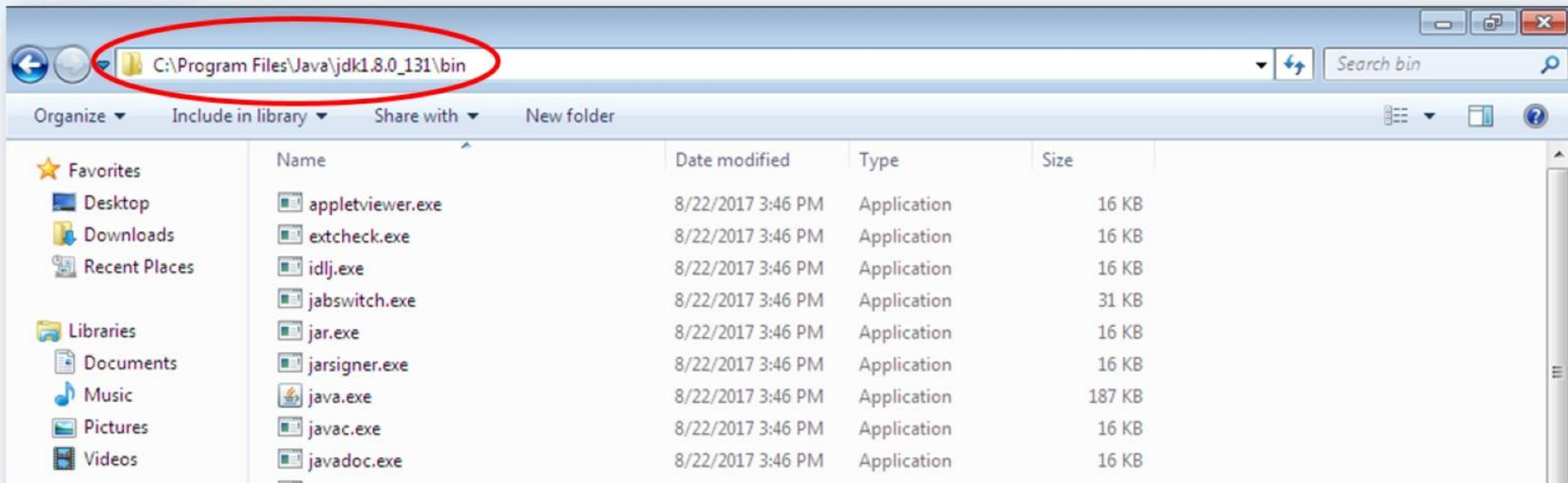
New...

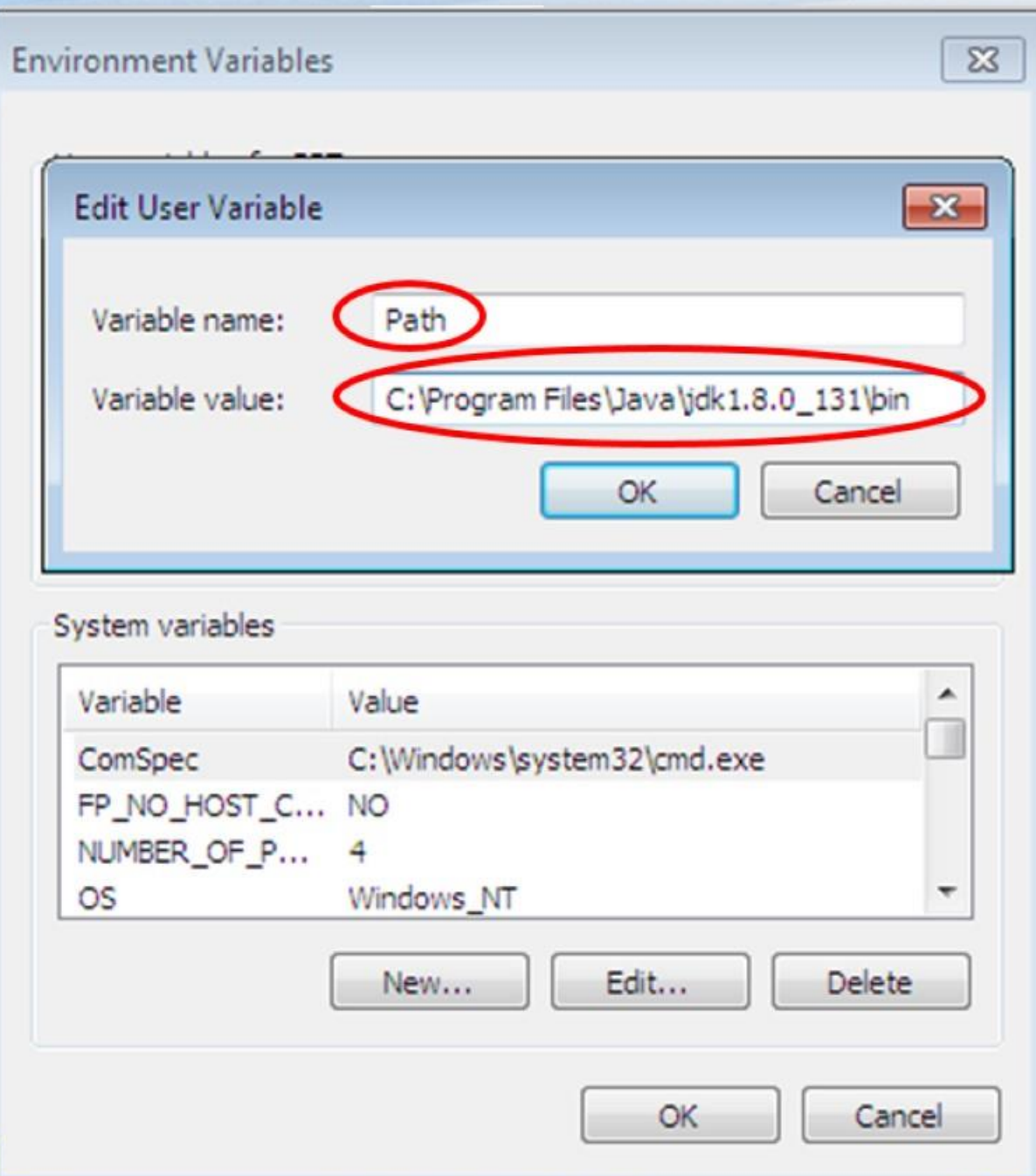
Edit...

Delete

OK

Cancel





Environment Variables



User variables for PPT

Variable	Value
Path	C:\Program Files\Java\jdk1.8.0_131\bin
PATHEXT	%PATHEXT%;.RB;.RBW
TEMP	%USERPROFILE%\AppData\Local\Temp
TMP	%USERPROFILE%\AppData\Local\Temp

New...

Edit...

Delete

System variables

Variable	Value
ComSpec	C:\Windows\system32\cmd.exe
FP_NO_HOST_C...	NO
NUMBER_OF_P...	4
OS	Windows_NT

New...

Edit...

Delete

OK

Cancel

Programs (1)

cmd.exe

Files (22)

- extensions.xml
- availables.xml
- gradlew.bat
- gradlew.bat
- extensions.xml
- availables.xml
- gradlew.bat
- docs.zip
- gradlew.bat
- gradlew.bat
- gradlew.bat
- gradlew.bat
- gradlew.bat
- StatementRegressionTest.java
- build.xml
- mysql-connector-java-5.1.41.zip
- extensions.xml
- availables.xml
- gradlew.bat

See more results

cmd

Shut down

C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PPT>

C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PPT>cd\

Write cd\
Cd is for change directory



C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PPT>cd\

C:\>

C:\Windows\system32\cmd.exe - javac

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\PPT>cd\

C:\>javac

Type javac
Javac stands for java compiler



```
C:\>javac
Usage: javac <options> <source files>
where possible options include:
  -g               Generate all debugging info
  -g:none          Generate no debugging info
  -g:{lines,vars,source} Generate only some debugging info
  -nowarn          Generate no warnings
  -verbose         Output messages about what the compiler is doing
  -deprecation     Output source locations where deprecated APIs are used
  -classpath <path> Specify where to find user class files and annotations processors
  -cp <path>       Specify where to find user class files and annotations processors
  -sourcepath <path> Specify where to find input source files
  -bootclasspath <path> Override location of bootstrap class files
  -extdirs <dirs>    Override location of installed extensions
  -endorseddirs <dirs> Override location of endorsed standards path
  -proc:{none,only} Control whether annotation processing and/or compilation is done.
  -processor <class1>[,<class2>,<class3>...] Names of the annotation processors to run; bypasses default discovery process
  -processorpath <path> Specify where to find annotation processors
  -parameters      Generate metadata for reflection on method parameters
  -d <directory>   Specify where to place generated class files
  -s <directory>   Specify where to place generated source files
  -h <directory>   Specify where to place generated native header files
  -implicit:{none,class} Specify whether or not to generate class files for implicitly referenced files
  -encoding <encoding> Specify character encoding used by source files
  -source <release>  Provide source compatibility with specified release
  -target <release>  Generate class files for specific VM version
  -profile <profile> Check that API used is available in the specified profile
  -version          Version information
  -help            Print a synopsis of standard options
  -Akey[=value]    Options to pass to annotation processors
  -X              Print a synopsis of nonstandard options
  -J<flag>         Pass <flag> directly to the runtime system
  -Werror          Terminate compilation if warnings occur
  @<filename>      Read options and filenames from file
```

C:\>

A stylized landscape illustration featuring rolling green hills in the foreground, a small tree with a brown trunk and purple and pink foliage on the left, and blue and white wavy bands representing hills or clouds in the background.

How to run java program

Write this basic print program in notepad
and save it as pro1.java

```
class print {
```

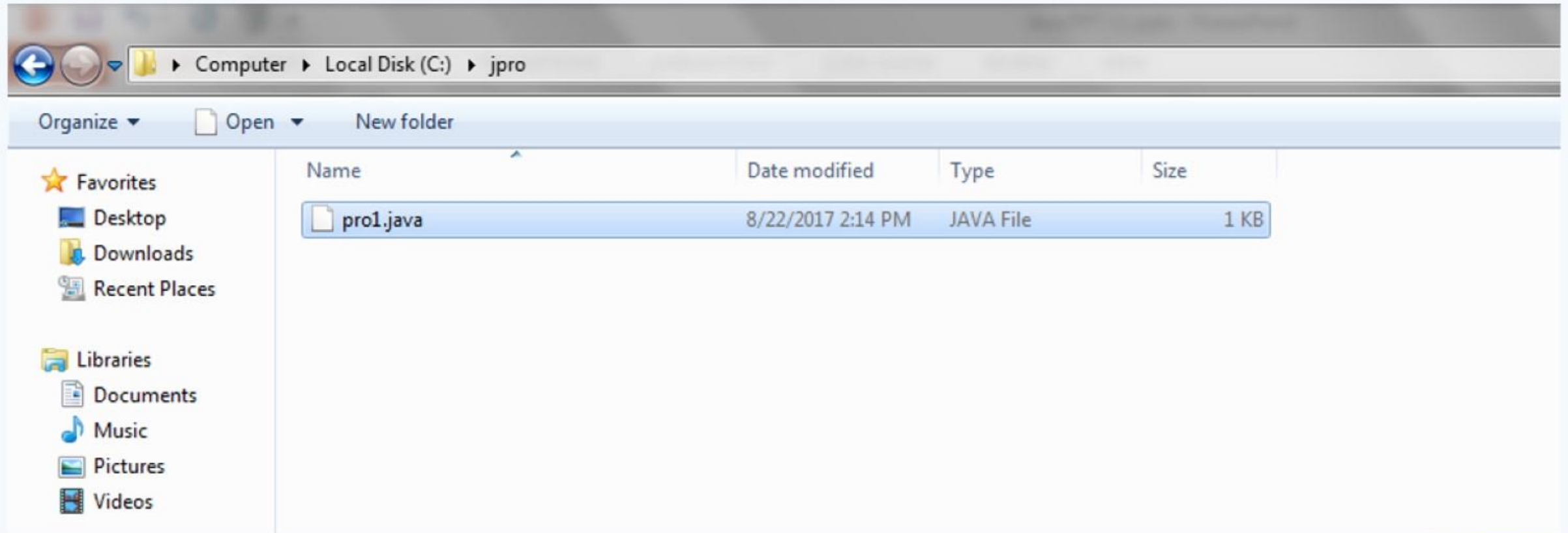
```
    public static void main(String[] ar) {
```

```
        System.out.println("Hello World");
```

```
    }
```

```
}
```

Make a folder jpro in C drive and save java file here



C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Piford>cd\

C:\>dir

Type dir
To see all directory



C:\Windows\system32\cmd.exe

Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Piford>cd\

C:\>dir

Volume in drive C has no label.

Volume Serial Number is F075-BF71

Directory of C:\

06/11/2009	03:12 AM		24	autoexec.bat
06/11/2009	03:12 AM		10	config.sys
09/12/2016	11:10 AM	<DIR>		Intel
08/25/2017	12:39 PM	<DIR>		jpro
07/14/2009	08:07 AM	<DIR>		PerfLogs
08/18/2017	02:54 PM	<DIR>		Program Files
05/29/2017	04:38 PM	<DIR>		Python36-32
04/07/2017	01:57 PM	<DIR>		TurboC++
02/23/2017	10:12 AM	<DIR>		Users
08/19/2017	10:13 AM	<DIR>		Windows
04/19/2017	11:16 AM	<DIR>		xampp
		2 File(s)	34	bytes
		9 Dir(s)	32,094,928,896	bytes free

C:\>

C:\Windows\system32\cmd.exe

Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Piford>cd\

C:\>dir

Volume in drive C has no label.

Volume Serial Number is F075-BF71

Directory of C:\

06/11/2009	03:12 AM		24	autoexec.bat
06/11/2009	03:12 AM		10	config.sys
09/12/2016	11:10 AM	<DIR>		Intel
08/25/2017	12:39 PM	<DIR>		jpro
07/14/2009	08:07 AM	<DIR>		PerfLogs
08/18/2017	02:54 PM	<DIR>		Program Files
05/29/2017	04:38 PM	<DIR>		Python36-32
04/07/2017	01:57 PM	<DIR>		TurboC++
02/23/2017	10:12 AM	<DIR>		Users
08/19/2017	10:13 AM	<DIR>		Windows
04/19/2017	11:16 AM	<DIR>		xampp
		2 File(s)	34	bytes
		9 Dir(s)	32,094,928,896	bytes free

C:\>cd jpro_

C:\Windows\system32\cmd.exe

C:\>dir

Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\

06/11/2009	03:12	AM	24	autoexec.bat
06/11/2009	03:12	AM	10	config.sys
09/12/2016	11:10	AM		Intel
08/25/2017	12:39	PM		jpro
07/14/2009	08:07	AM		PerfLogs
08/18/2017	02:54	PM		Program Files
05/29/2017	04:38	PM		Python36-32
04/07/2017	01:57	PM		TurboC++
02/23/2017	10:12	AM		Users
08/19/2017	10:13	AM		Windows
04/19/2017	11:16	AM		xampp
			2 File(s)	34 bytes
			9 Dir(s)	32,094,928,896 bytes free

C:\>cd jpro

C:\jpro>

C:\jpro>dir

C:\Windows\system32\cmd.exe

```
08/18/2017 02:54 PM <DIR> Program Files
05/29/2017 04:38 PM <DIR> Python36-32
04/07/2017 01:57 PM <DIR> TurboC++
02/23/2017 10:12 AM <DIR> Users
08/19/2017 10:13 AM <DIR> Windows
04/19/2017 11:16 AM <DIR> xampp
          2 File(s)              34 bytes
          9 Dir(s)  32,094,928,896 bytes free
```

C:\>cd jpro

C:\jpro>

C:\jpro>dir

Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\jpro

```
08/25/2017 12:39 PM <DIR> .
08/25/2017 12:39 PM <DIR> ..
08/22/2017 02:14 PM      108 pro1.java
          1 File(s)             108 bytes
          2 Dir(s)  32,138,674,176 bytes free
```

C:\jpro>_

C:\Windows\system32\cmd.exe

```
08/18/2017 02:54 PM <DIR> Program Files
05/29/2017 04:38 PM <DIR> Python36-32
04/07/2017 01:57 PM <DIR> TurboC++
02/23/2017 10:12 AM <DIR> Users
08/19/2017 10:13 AM <DIR> Windows
04/19/2017 11:16 AM <DIR> xampp
      2 File(s)              34 bytes
      9 Dir(s)  32,094,928,896 bytes free
```

C:\>cd jpro

C:\jpro>

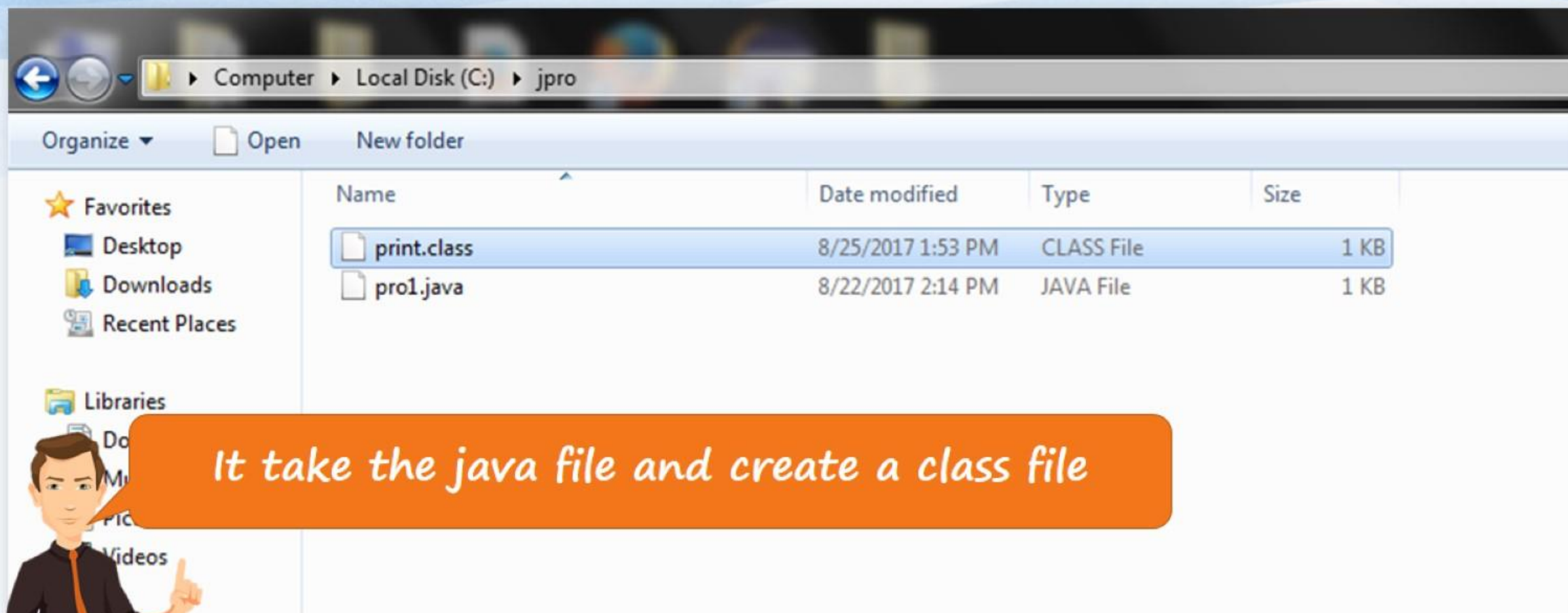
C:\jpro>dir

Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\jpro

```
08/25/2017 12:39 PM <DIR> .
08/25/2017 12:39 PM <DIR> ..
08/22/2017 02:14 PM      108 pro1.java
      1 File(s)              108 bytes
      2 Dir(s)  32,138,674,176 bytes free
```

C:\jpro>javac pro1.java



C:\Windows\system32\cmd.exe

Directory of C:\jpro

```
08/25/2017  12:39 PM    <DIR>          .
08/25/2017  12:39 PM    <DIR>          ..
08/22/2017  02:14 PM                108 pro1.java
                1 File(s)                108 bytes
                2 Dir(s)  32,138,674,176 bytes free
```

C:\jpro>javac pro1.java

C:\jpro>dir

Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\jpro

```
08/25/2017  01:53 PM    <DIR>          .
08/25/2017  01:53 PM    <DIR>          ..
08/25/2017  01:53 PM                414 print.class
08/22/2017  02:14 PM                108 pro1.java
                2 File(s)                522 bytes
                2 Dir(s)  32,109,686,784 bytes free
```

C:\jpro>

C:\Windows\system32\cmd.exe

Directory of C:\jpro

```
08/25/2017  12:39 PM    <DIR>          .
08/25/2017  12:39 PM    <DIR>          ..
08/22/2017  02:14 PM                108 pro1.java
                1 File(s)                108 bytes
                2 Dir(s)  32,138,674,176 bytes free
```

C:\jpro>javac pro1.java

C:\jpro>dir

Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\jpro

```
08/25/2017  01:53 PM    <DIR>          .
08/25/2017  01:53 PM    <DIR>          ..
08/25/2017  01:53 PM                414 print.class
08/22/2017  02:14 PM                108 pro1.java
                2 File(s)                522 bytes
                2 Dir(s)  32,109,686,784 bytes free
```

C:\jpro>java print_

C:\Windows\system32\cmd.exe

```
08/25/2017 12:39 PM <DIR> .
08/25/2017 12:39 PM <DIR> ..
08/22/2017 02:14 PM          108 pro1.java
                1 File(s)          108 bytes
                2 Dir(s)  32,138,674,176 bytes free
```

C:\jpro>javac pro1.java

C:\jpro>dir
Volume in drive C has no label.
Volume Serial Number is F075-BF71

Directory of C:\jpro

```
08/25/2017 01:53 PM <DIR> .
08/25/2017 01:53 PM <DIR> ..
08/25/2017 01:53 PM          414 print.class
08/22/2017 02:14 PM          108 pro1.java
                2 File(s)          522 bytes
                2 Dir(s)  32,109,686,784 bytes free
```

C:\jpro>java print
Hello World

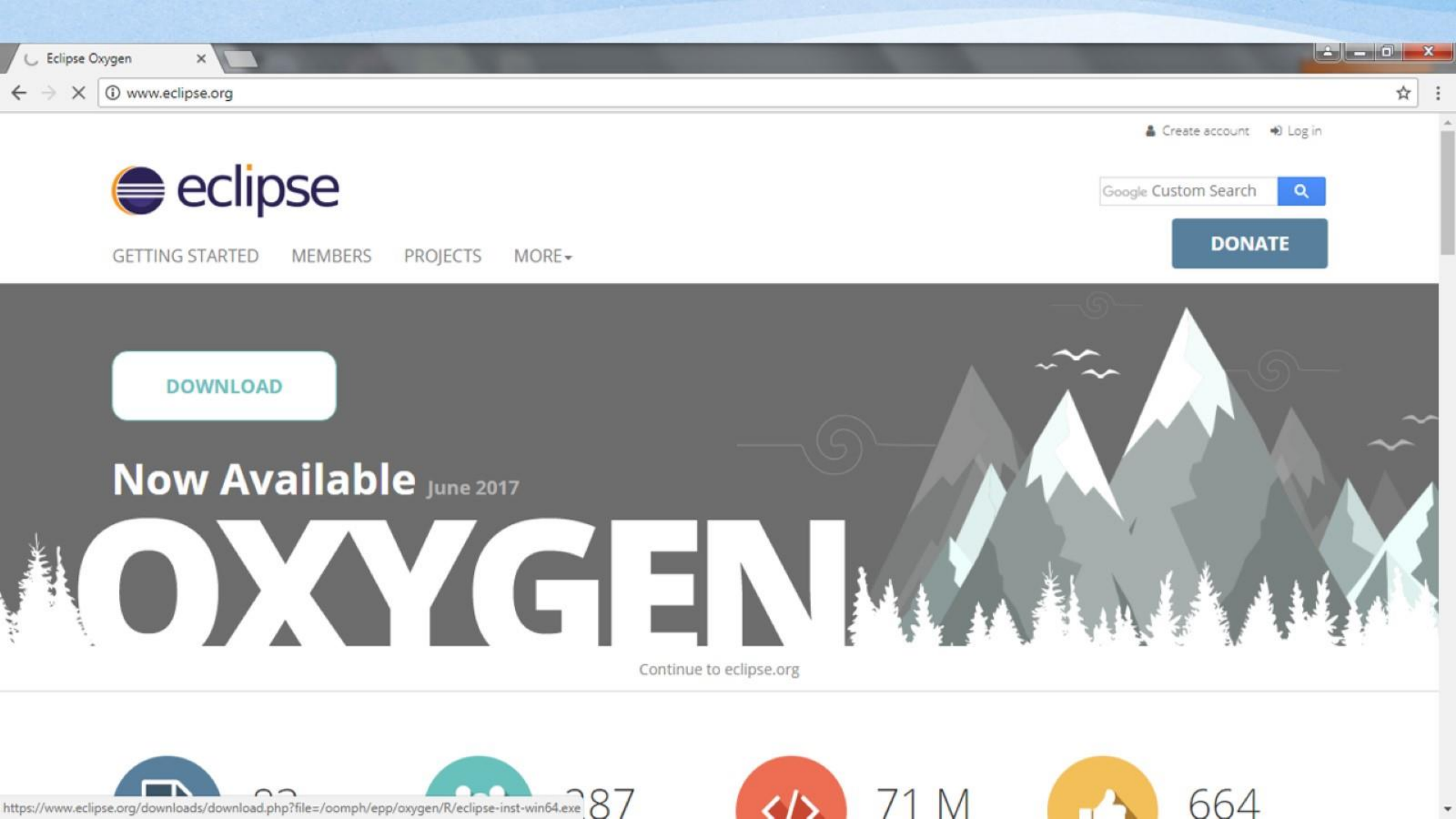
C:\jpro>



Installation and run java program in Eclipse

Installation

- *There is no need to install Eclipse.*
- *You have to download Eclipse zip file and extract it.*
- *Click on the Eclipse icon and its ready to go.*



Create account Log in

Google Custom Search

DONATE

DOWNLOAD

Now Available June 2017

OXYGEN

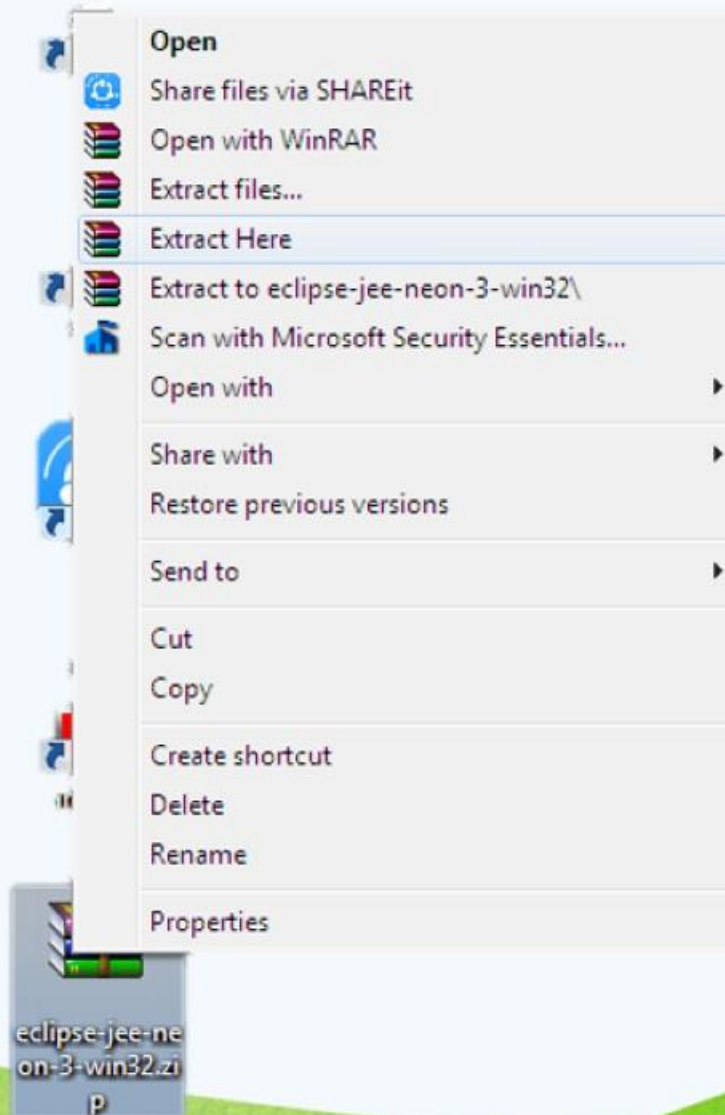
Continue to eclipse.org

https://www.eclipse.org/downloads/download.php?file=/oomph/epp/oxygen/R/eclipse-inst-win64.exe 387

</> 71 M

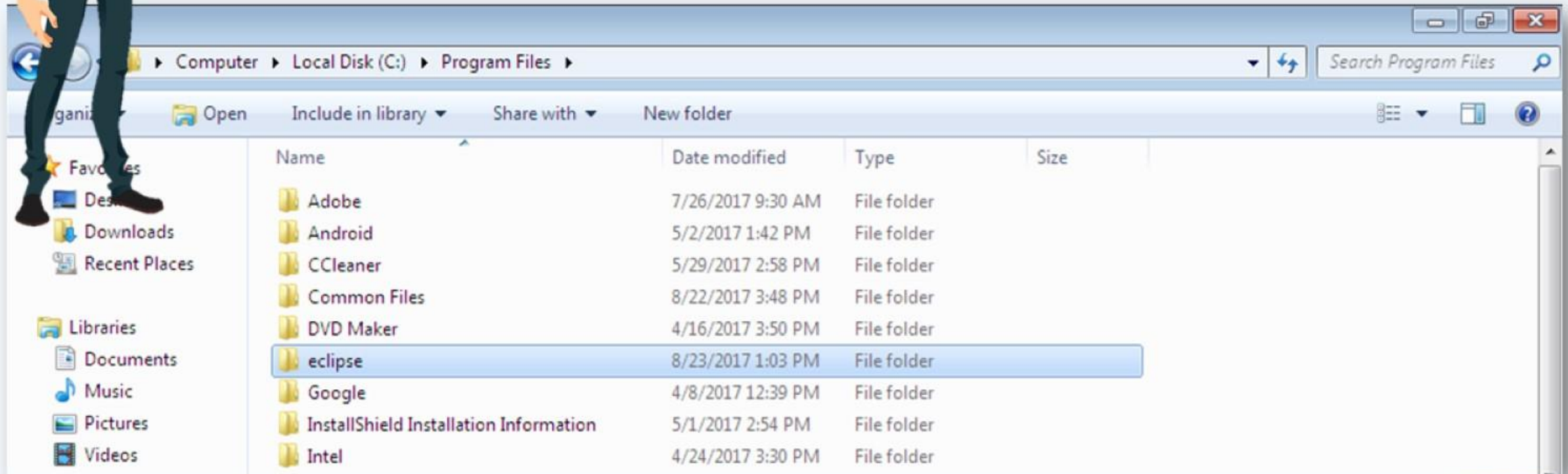
664

Extract Zip File

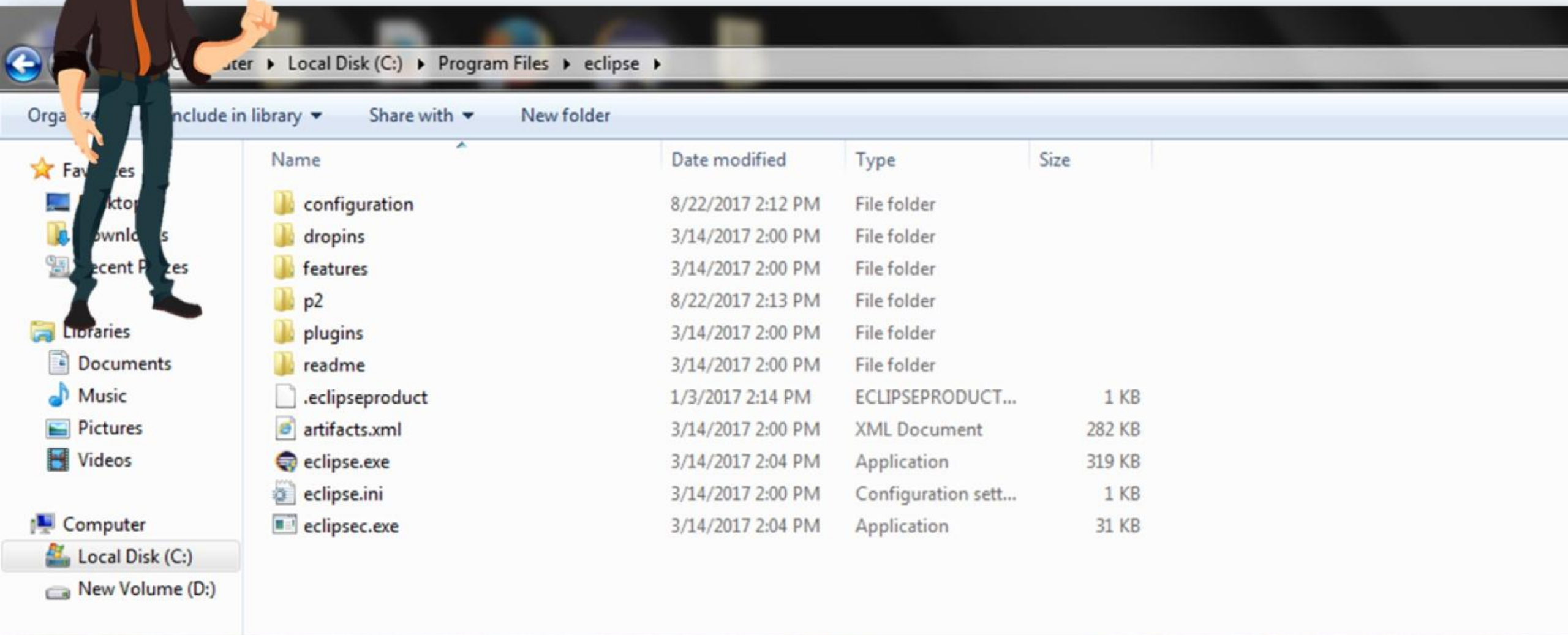


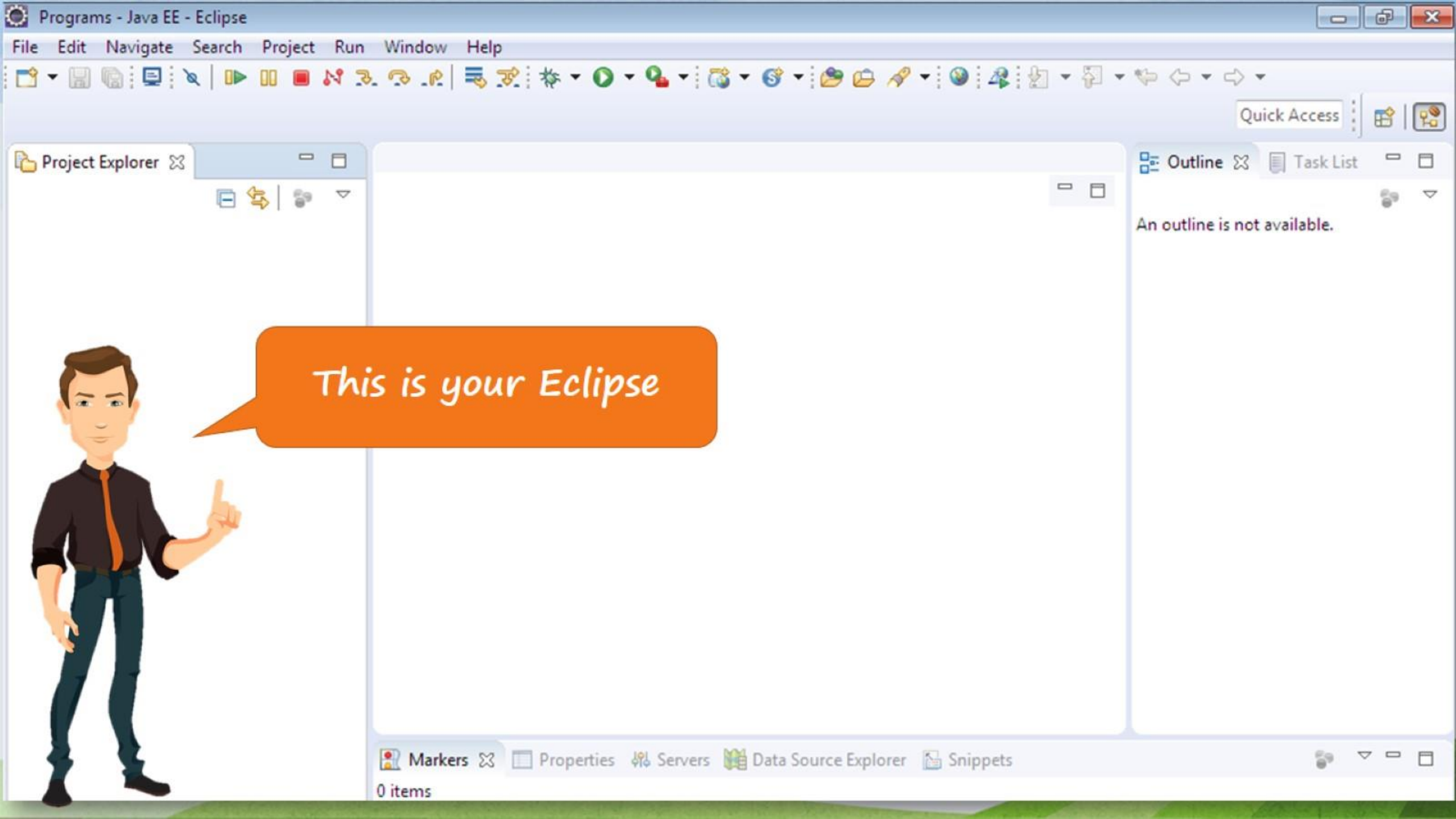


Place the extracted folder in Program Files

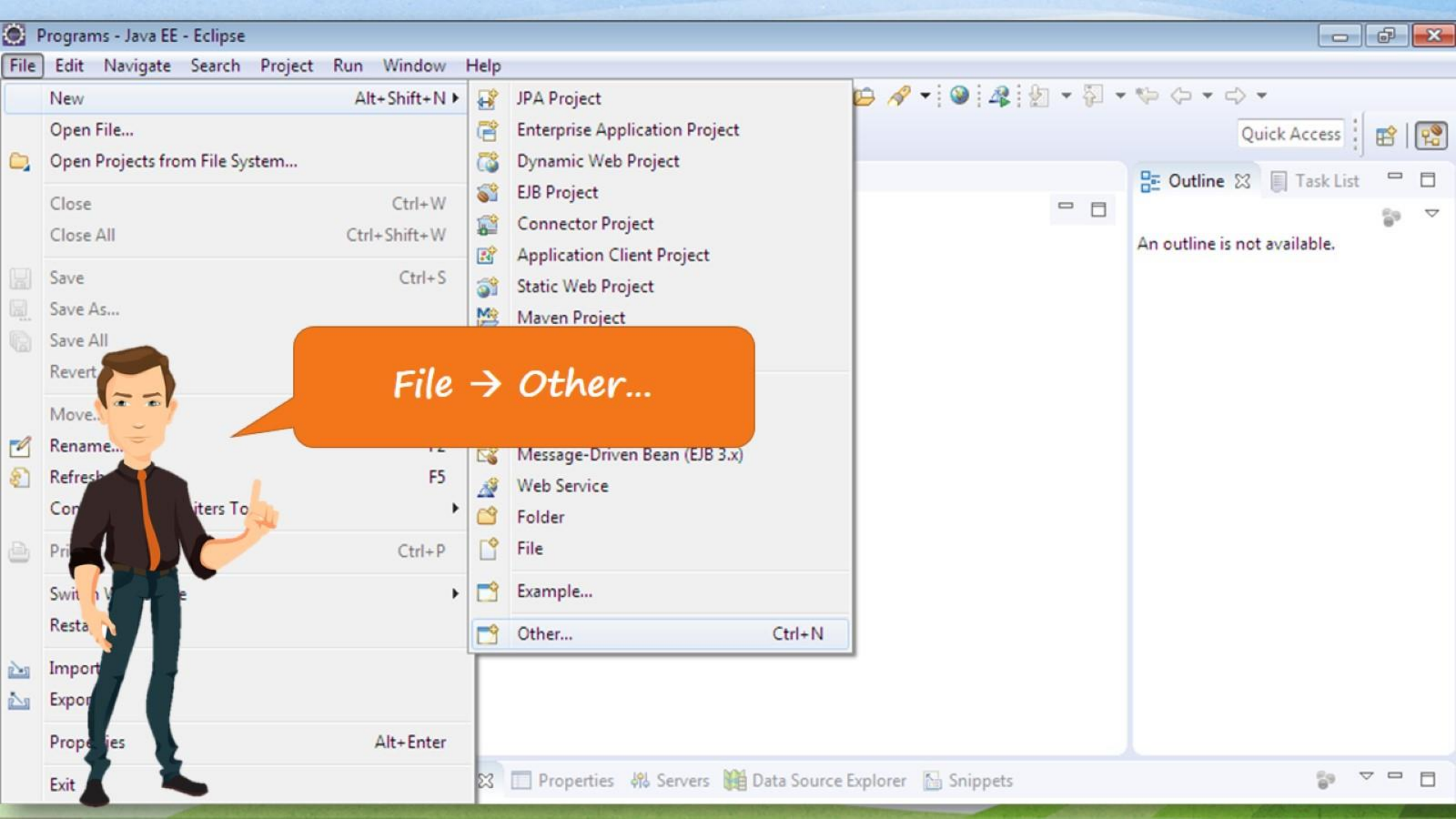


You can create a shortcut of eclipse for desktop

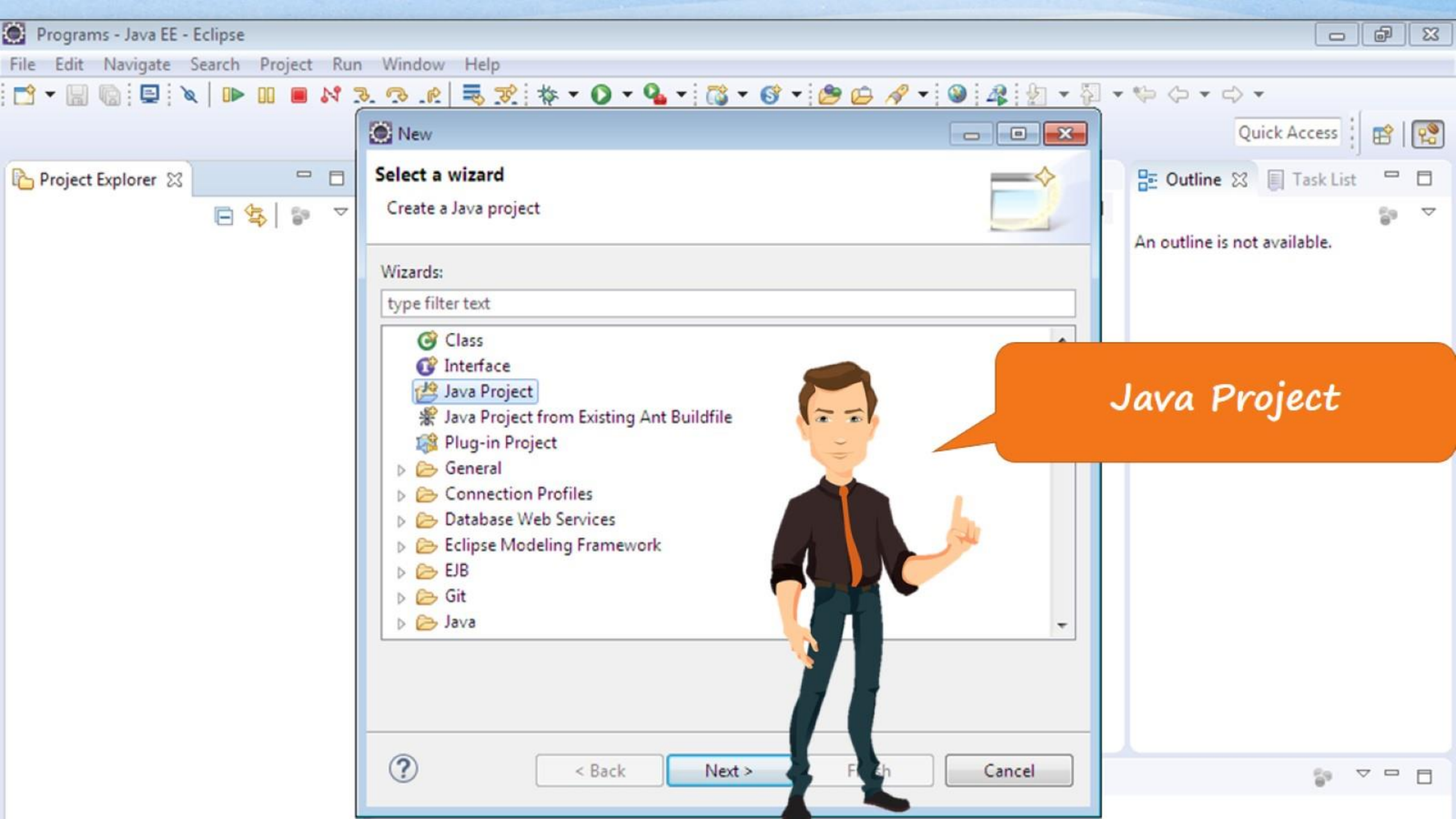




This is your Eclipse

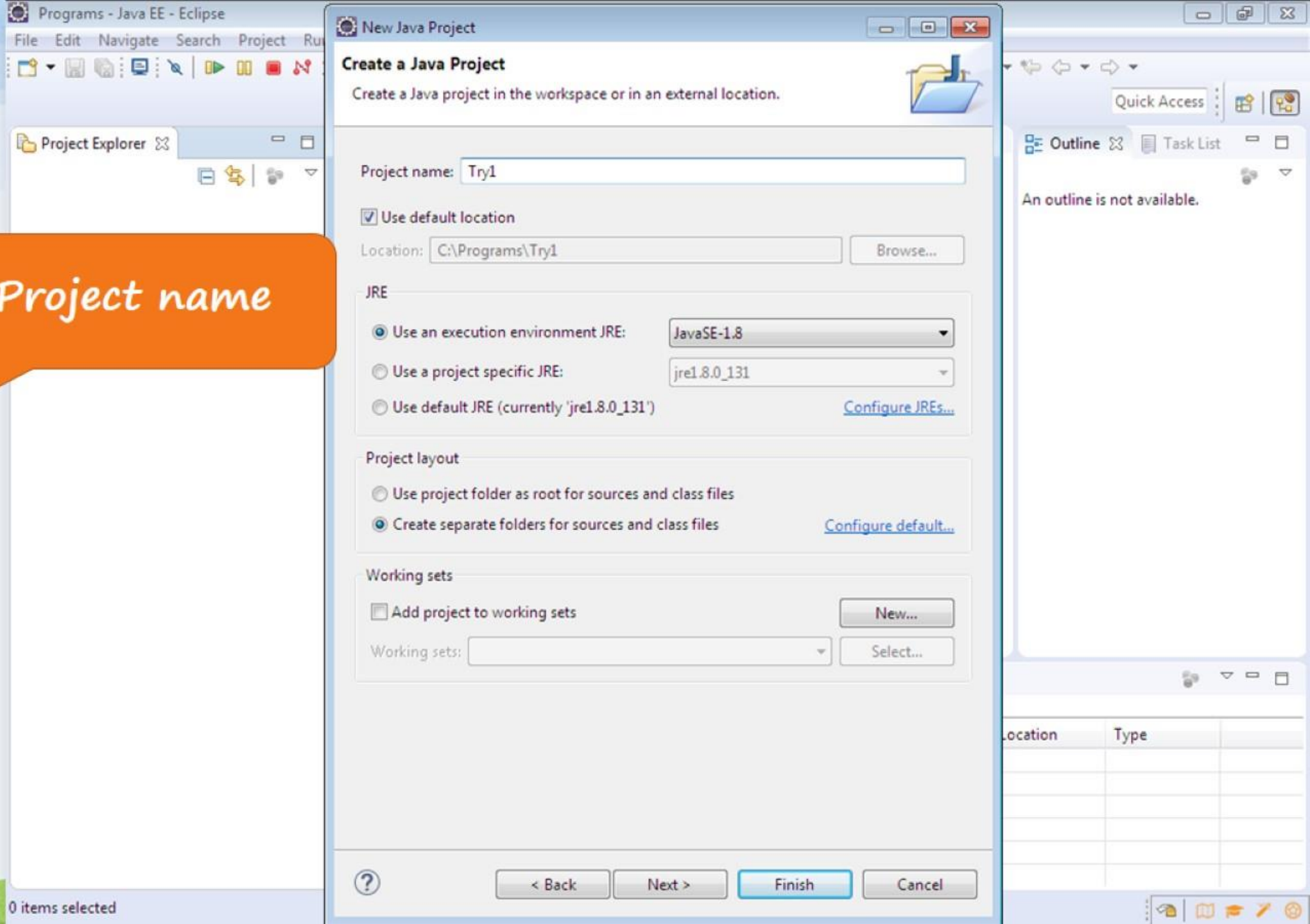


File → Other...



Java Project

Type Project name



Programs - Java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help



Package Explorer

Try1

Quick Access

Task List



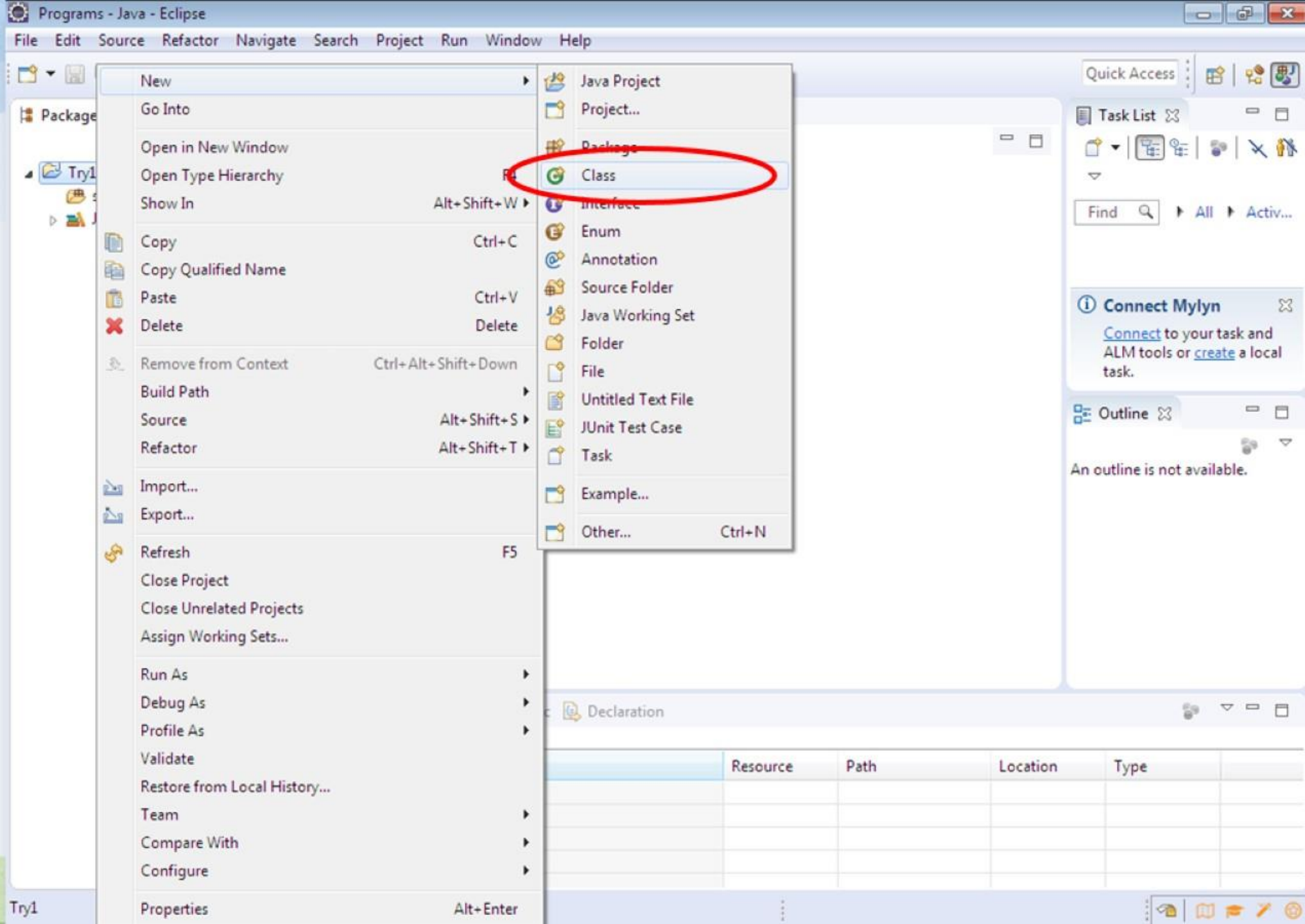
Find All Activ...

Connect Mylyn

[Connect](#) to your task and ALM tools or [create](#) a local task.

Outline

An outline is not available.



Quick Access

Task List

Find

Connect Mylyn

Outline

An outline is not available.

Declaration

	Resource	Path	Location	Type

Type class name,
Select public static void
main(String[] args)



Try1

Project Run Window Help

Quick Access

Task List

nd Search All Activ...

Connect Mylyn

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Outline

Outline is not available.

Type

Try1

New Java Class

Java Class

The use of the default package is discouraged.

Source folder: Try1/src Browse...

Package: (default) Browse...

Enclosing type: Browse...

Name: Print

Modifiers: ☒ public ☐ package ☐ private ☐ protected
☐ abstract ☐ final ☐ static

Superclass: java.lang.Object Browse...

Interfaces: Add... Remove

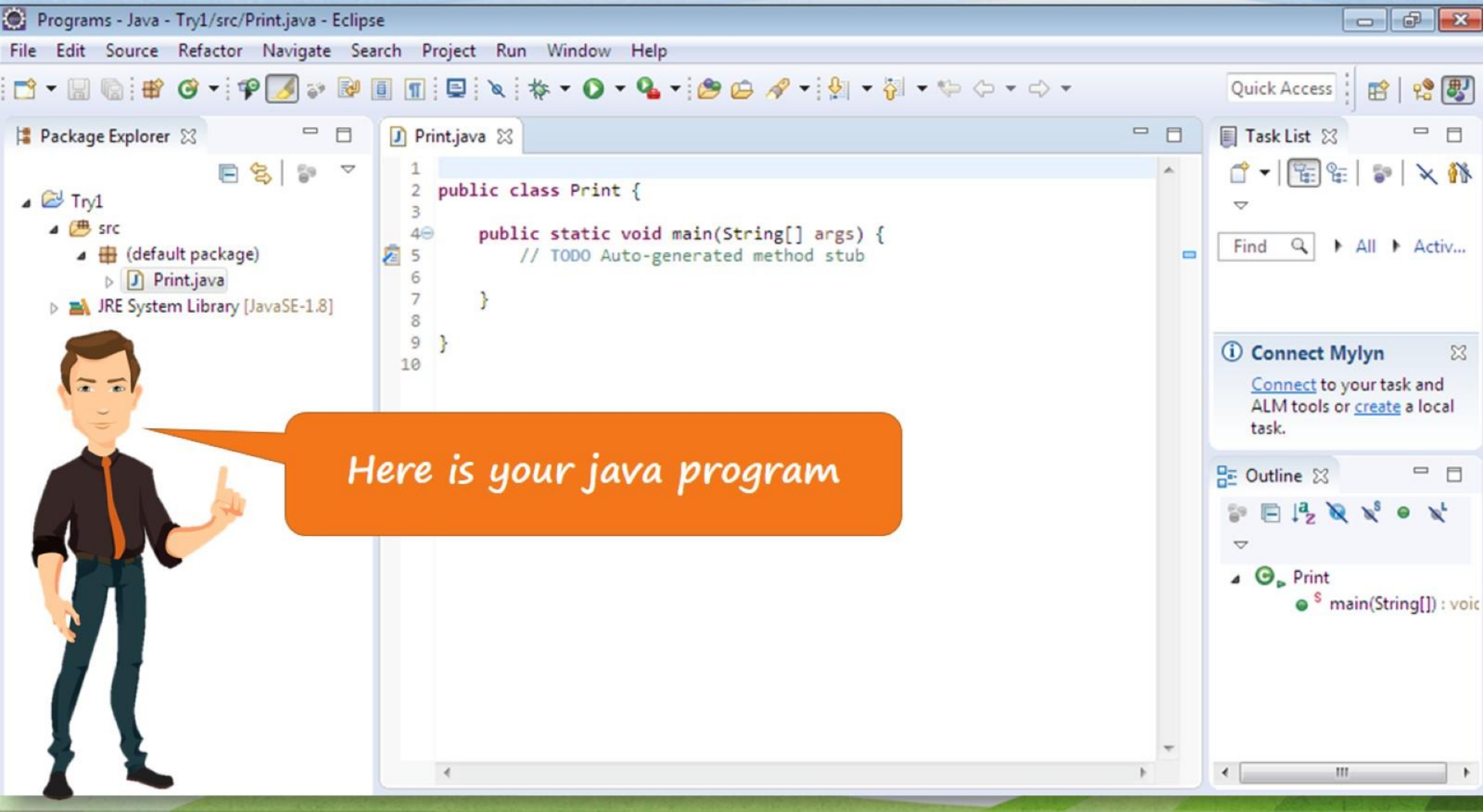
Which method stubs would you like to create?

☒ public static void main(String[] args)
☐ Constructors from superclass
☒ Inherited abstract methods

Do you want to add comments? (Configure templates and default value [here](#))

☐ Generate comments

Finish Cancel



Here is your java program



Package Explorer

try1

Print.java

```
1 package try1;
2
3 public class Print {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         System.out.println("Hello World");
8     }
9
10 }
11
```



If you want to print something,
you have to add a code line

