Eclipse Essentials 2013

Notes from a Lynda training series

ENVIRONMENT PREPARATION

- JavaSE 6r29 JDK(and JRE): java.oracle.com
- Set Path & Test: "C:\Program Files\Java\jre6\bin"
    - java -version
    - javac -version
- IDE
    - Eclipse: www.eclipse.org/downloads
        - Eclipse IDE for Java Developers/Jave EE Developers
    -

JARS(INCLUDE IN ECLIPSE PROJECT WHEN NEEDED):

- TestND: http://beust.com/eclipse
- Java Excel API: http://jexcelapi.sourceforge.net/
    - http://jexcelapi.sourceforge.net/resources/javadocs/2_3_8/docs/jxl/read/biff/BiffException.html
- JUnit: http://www.junit.org/
- Apache ANT (HTML reporting)
- Subversion http://subclipse.tigris.org/update_1.8.x
- Also check: http://download.eclipse.org/releases/juno/

HELP AND TUTORIALS

Java/Selenium Reading from Excel sheets:

- http://testerinyou.blogspot.com/2010/10/how-to-do-data-driven-testing-using.html
- http://functionaltestautomation.blogspot.com/2009/10/dataprovider-data-driven-testing-with.html
- http://www.youtube.com/watch?v=ty3q2wQdPmU&feature=BFp&list=WL18EEBB0491EF4A05

SHORTCUTS:

CTRL-SPACE	Code writing
CTRL + /	Add/remove comments
CTRL + SHFT + O	Organize imports (Add/remove imports)
ALT + UP/DOWN	Move a line of code up or down
CTRL + D	Delete Line
ALT+SHFT+J	Element Comment

STARTING ECLIPSE

ECLIPSE START.BAT: JDK7

This uses the JDK7 binaries:

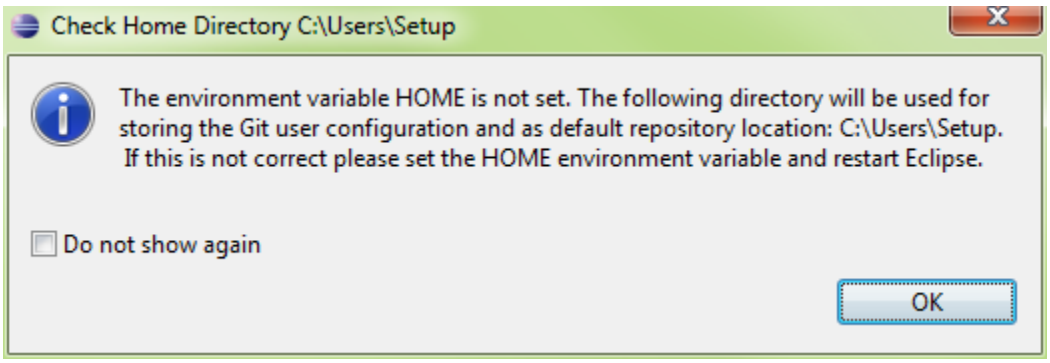
```
set DEV_HOME=D:\DEVL\Java
set JAVA_HOME=%DEV_HOME%\java32\jdk7
set PATH=%JAVA_HOME%\bin;%PATH%

start %DEV_HOME%\eclipse32\eclipse.exe -vm %JAVA_HOME%\bin\javaw.exe -showlocation -
vmargs -server -Xms512m -Xmx1024m -XX:MaxPermSize=128m
```

ECLIPSE.INI CONFIGURATION: JDK7

```
-startup
plugins/org.eclipse.equinox.launcher_1.3.0.v20120522-1813.jar
--launcher.library
plugins/org.eclipse.equinox.launcher.win32.win32.x86_1.1.200.v20120522-1813
-product
org.eclipse.epp.package.java.product
--launcher.defaultAction
openFile
--launcher.XXMaxPermSize
256M
-showsplash
org.eclipse.platform
--launcher.XXMaxPermSize
256m
--launcher.defaultAction
openFile
-vm
D:/DEVL/Java/java32/java32/jdk7/bin/javaw.exe
-vmargs
-Dosgi.requiredJavaVersion=1.5
-Dhelp.lucene.tokenizer=standard
-Xms40m
-Xmx512m
```

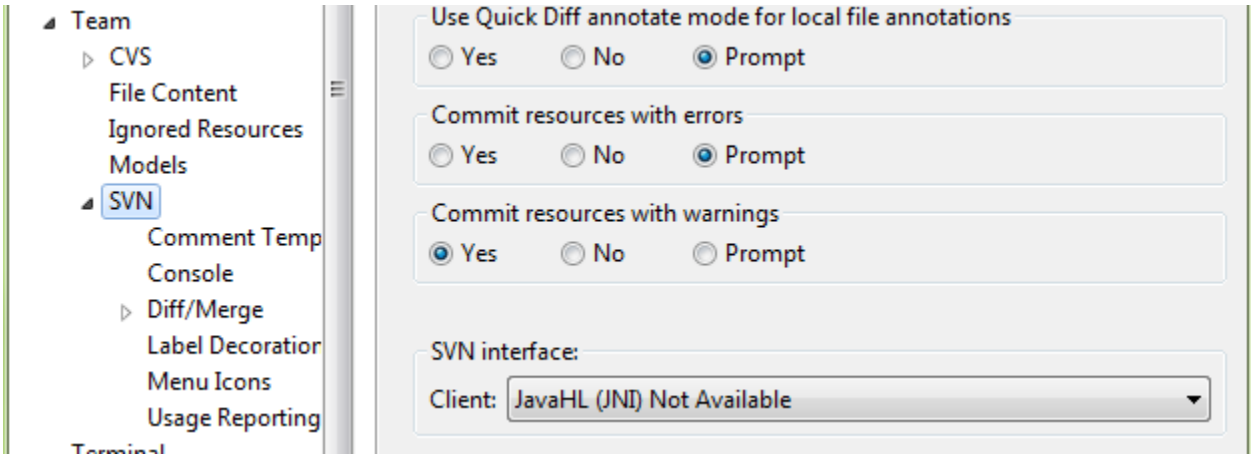
HOME ENVIRONMENT VARIABLE



INSTALLING THE SUBVERSION CLIENT

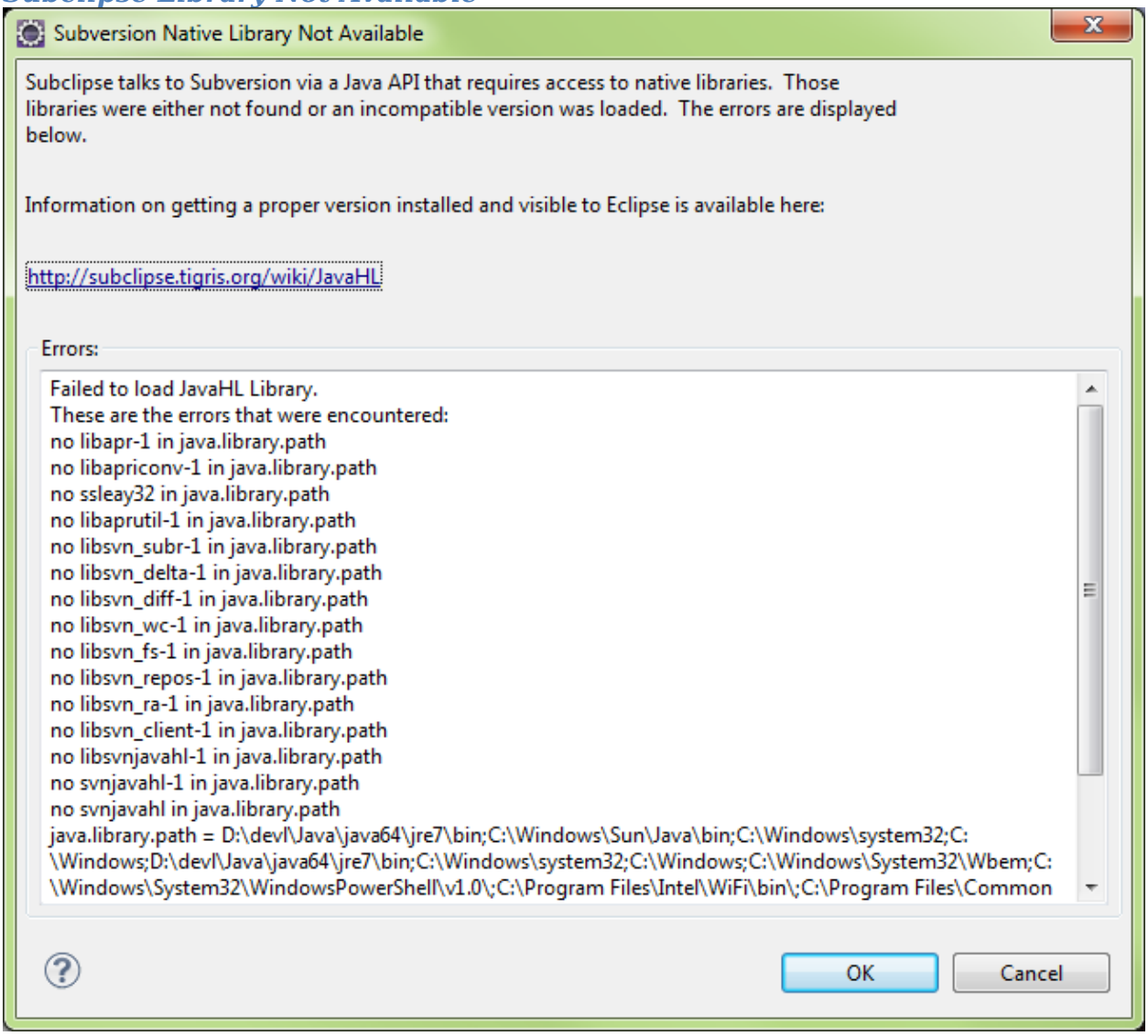
- Go to Help\Eclipse Marketplace and search by 'Subversion'
- Select Subclipse and Install…
- http://subclipse.tigris.org/update_1.8.x

- Go to Preferences\Team\SVN
- The SVN interface should be JavaHL(JNI)
- Here it is Not Available



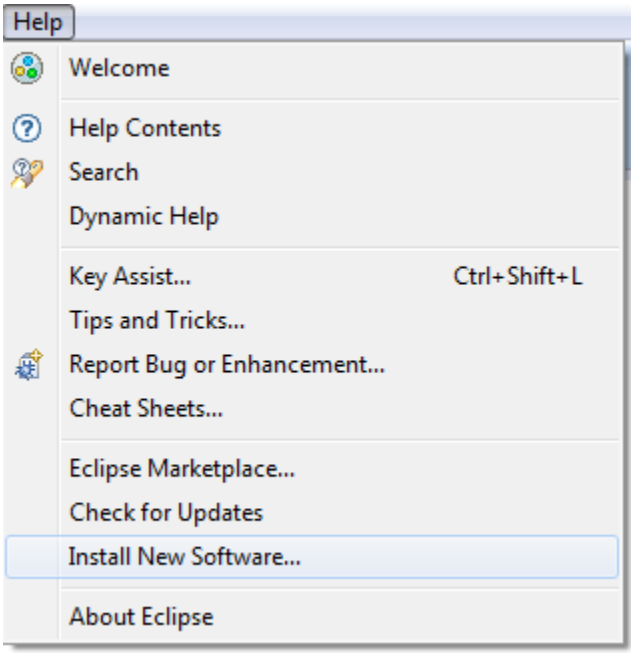
- If the Subclipse client plugins are missing, the following prompt will appear

Subclipse Library Not Available



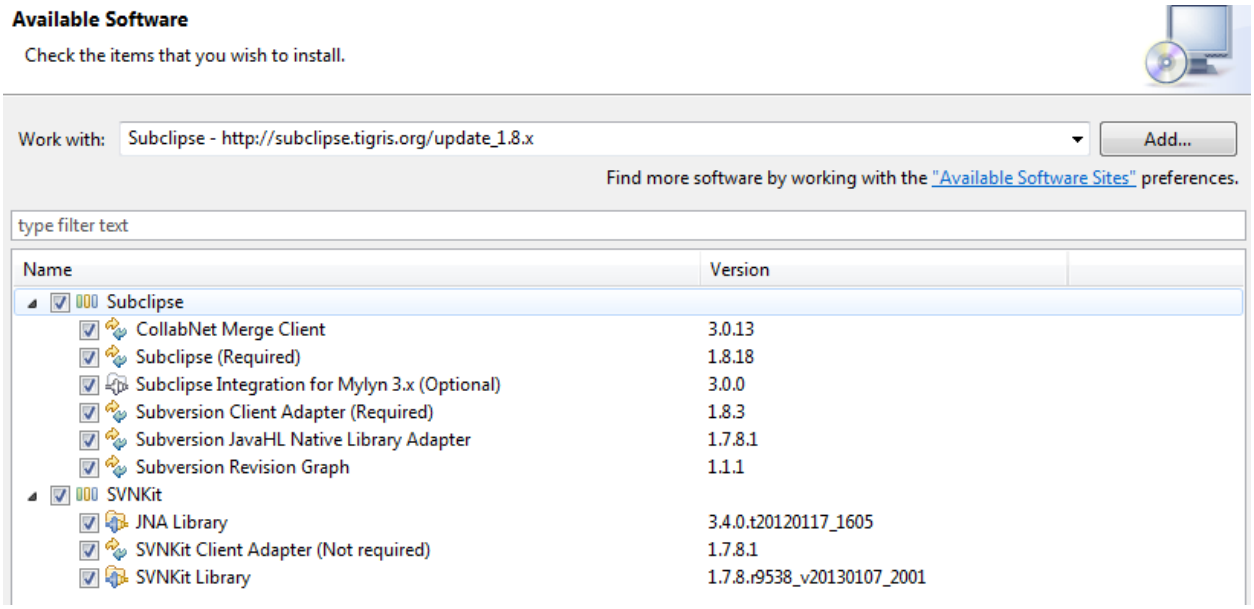
INSTALLING SUBCLIPSE FROM HELP\NEW SOFTWARE

- Go to Help\Install New Software…

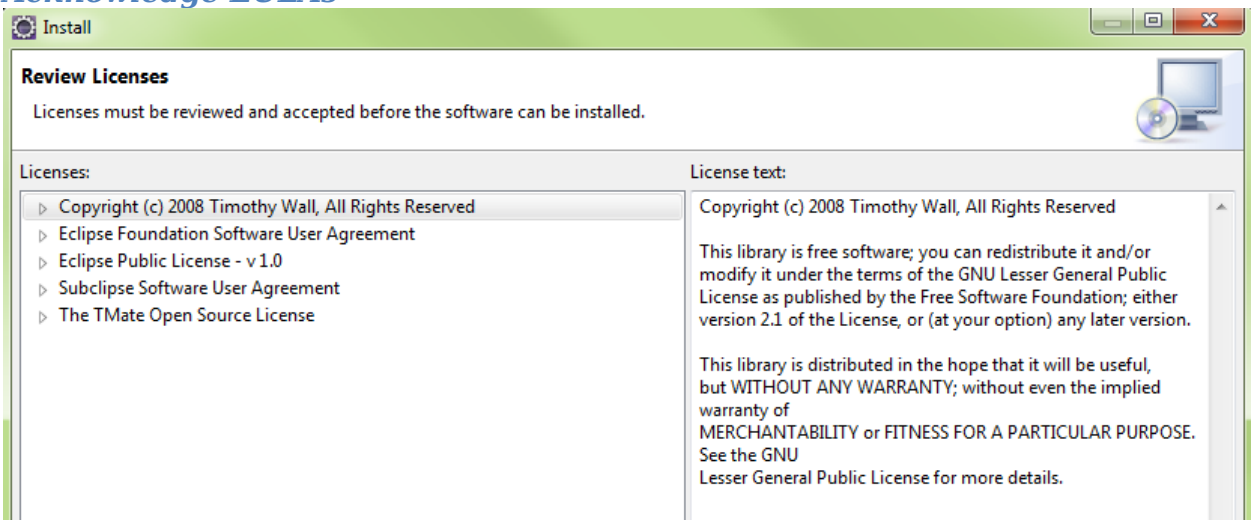


Locate "Subclipse – http://..."

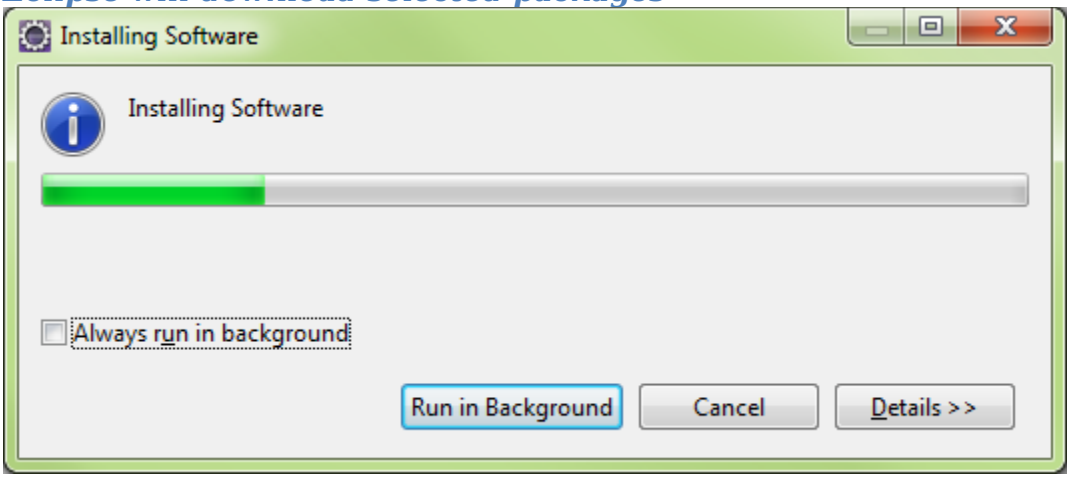
Select Subclipse option, Click Next



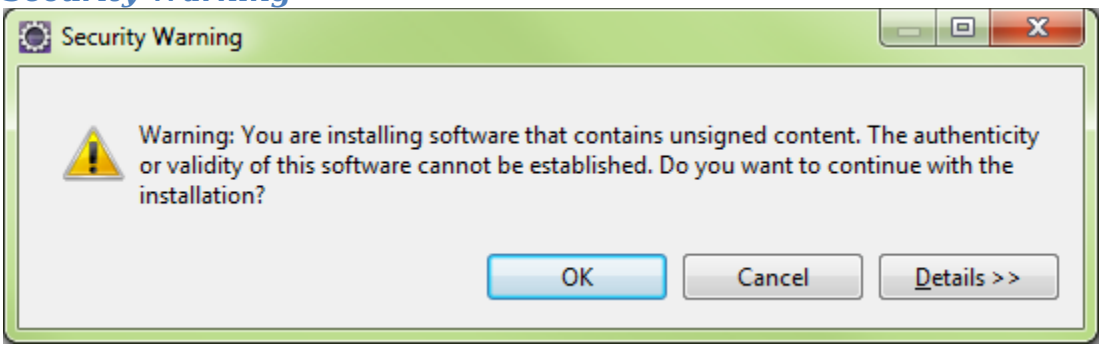
Acknowledge EULAs



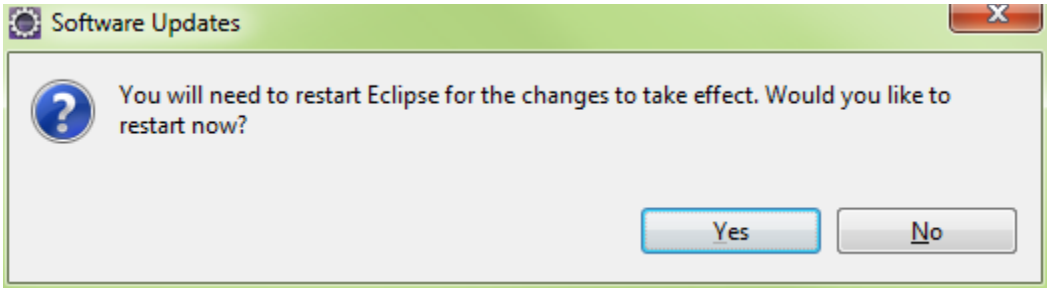
Eclipse will download selected packages



Security Warning

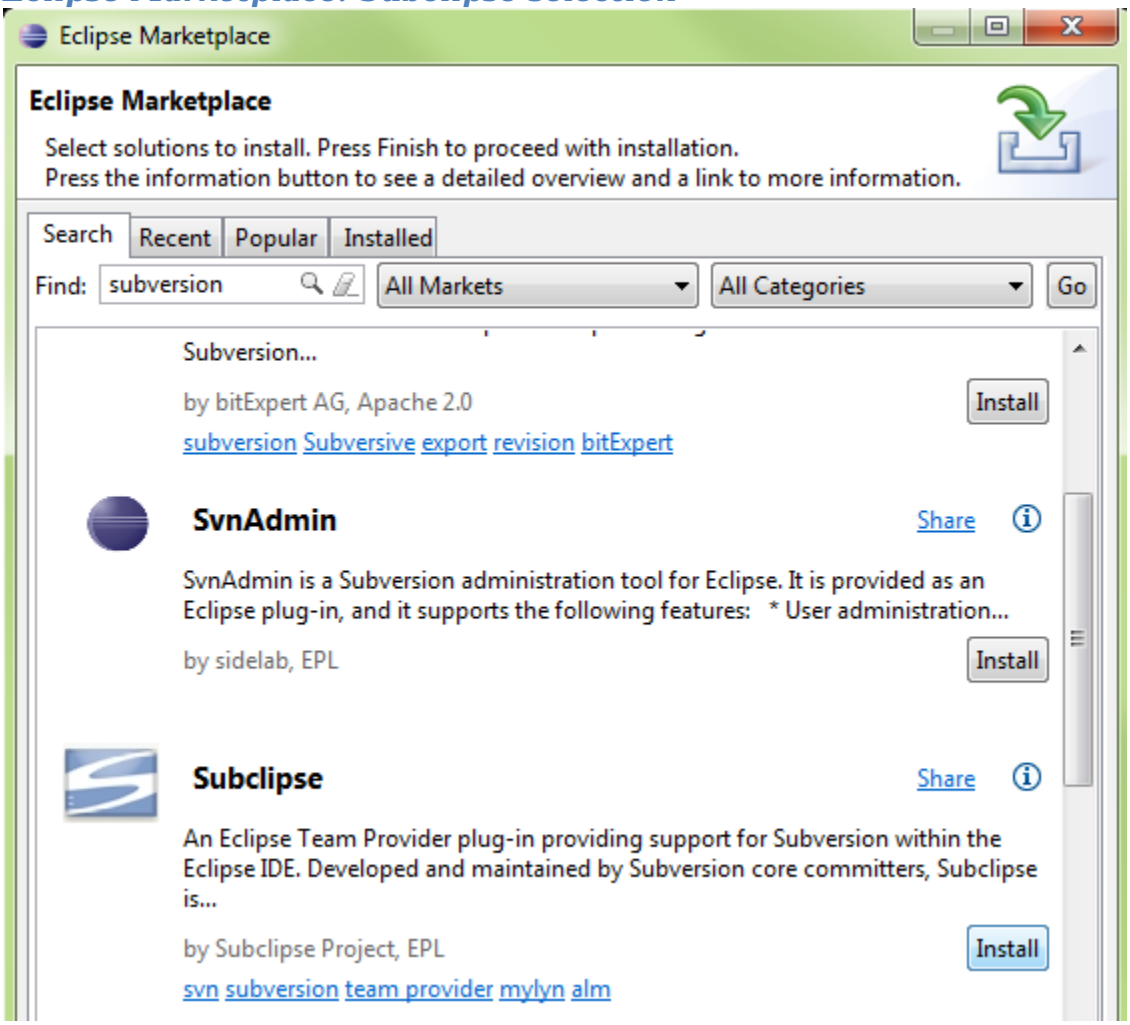


Eclipse will restart

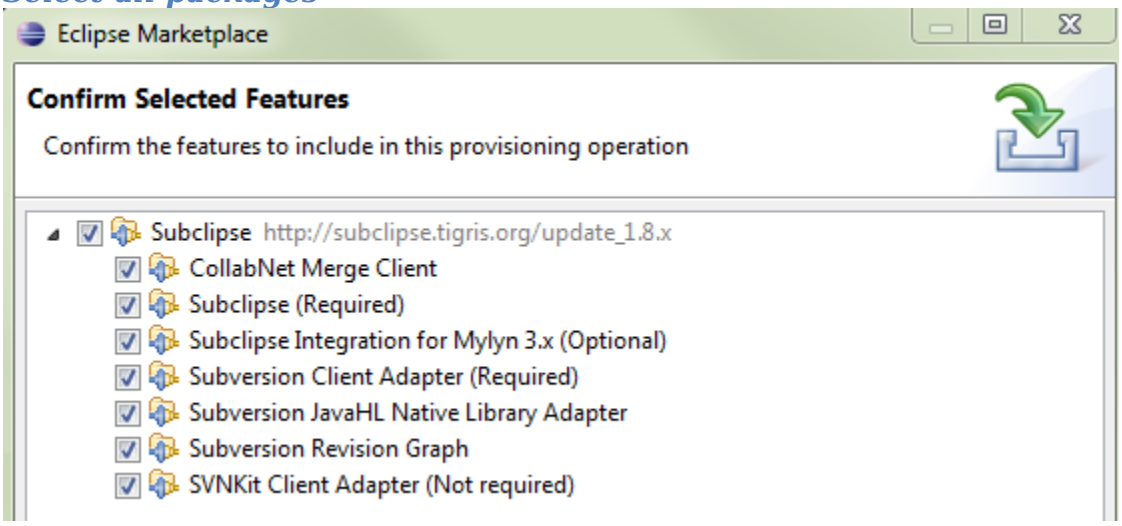


INSTALLING SUBCLIPSE FROM HELP\ECLIPSE MARKET PLACE…

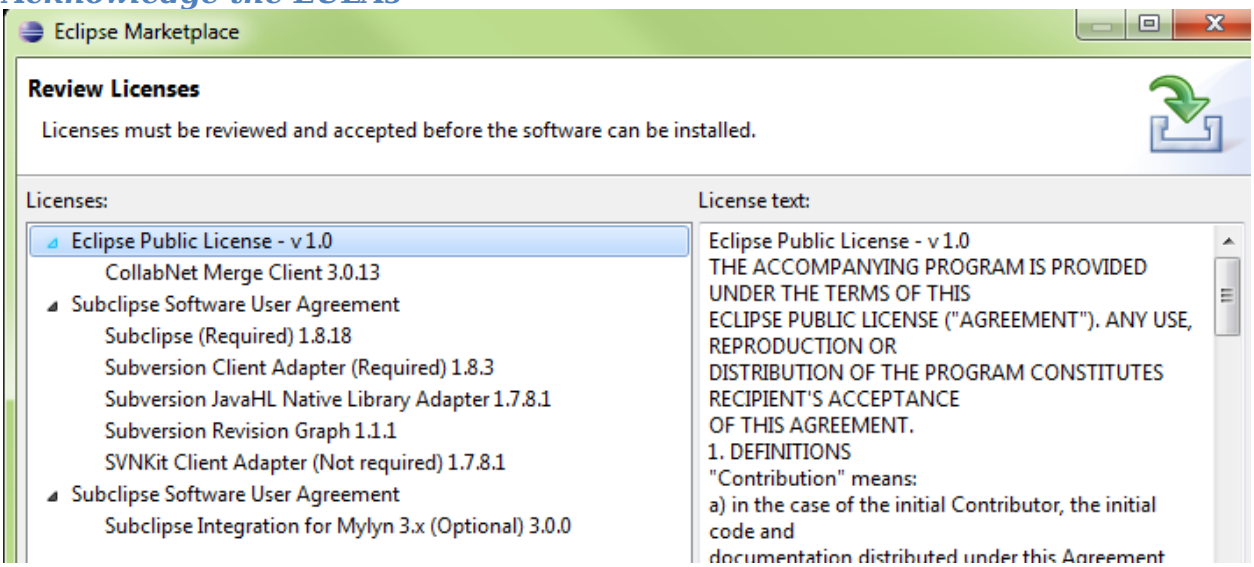
Eclipse Marketplace: Subclipse selection



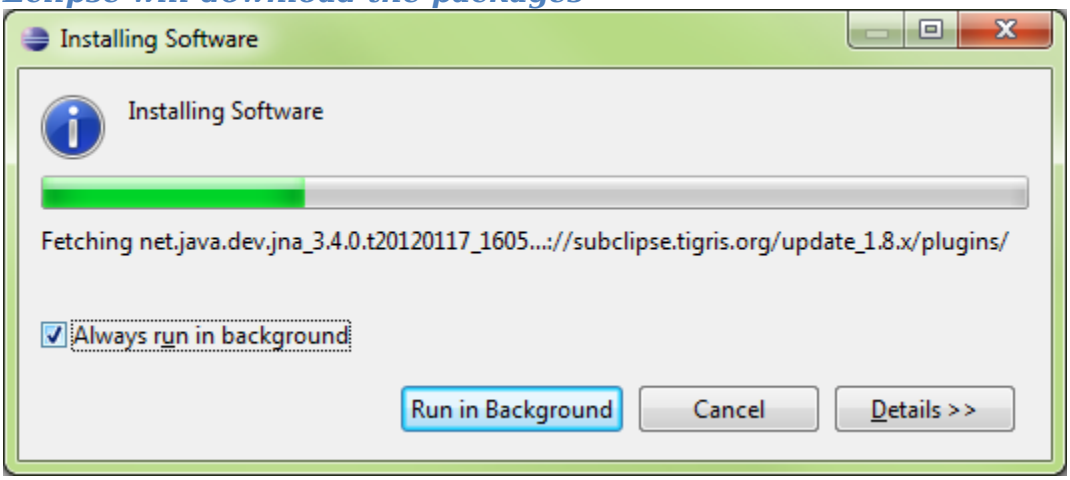
Select all packages



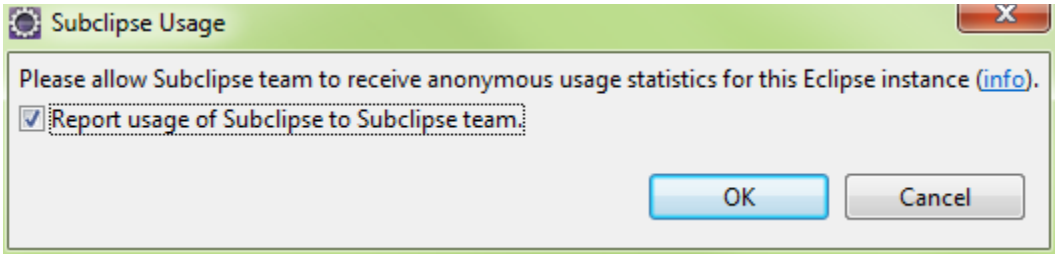
Acknowledge the EULAs



Eclipse will download the packages



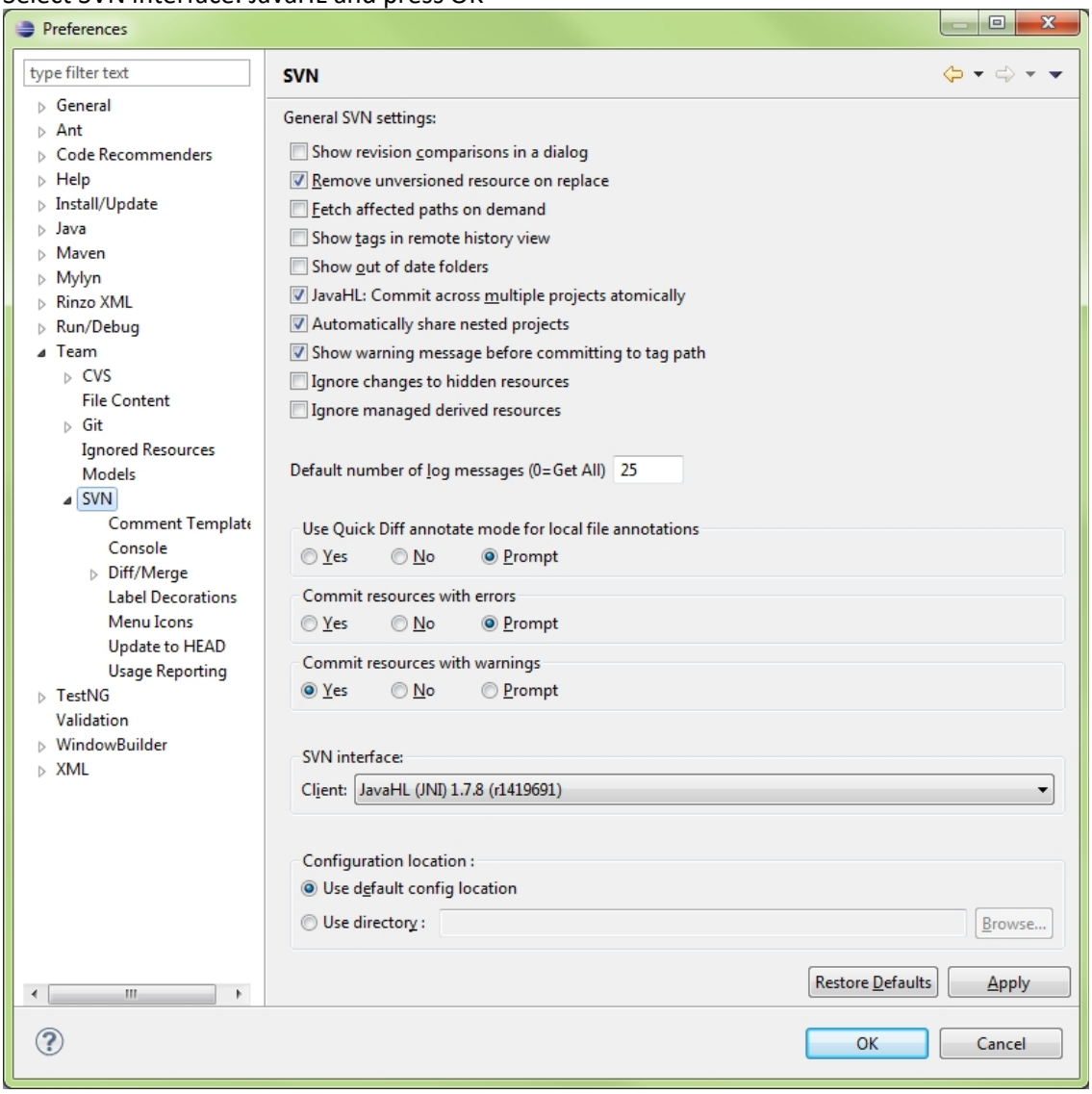
Upon restarting, Eclipse will prompt for communicating Subclipse usage



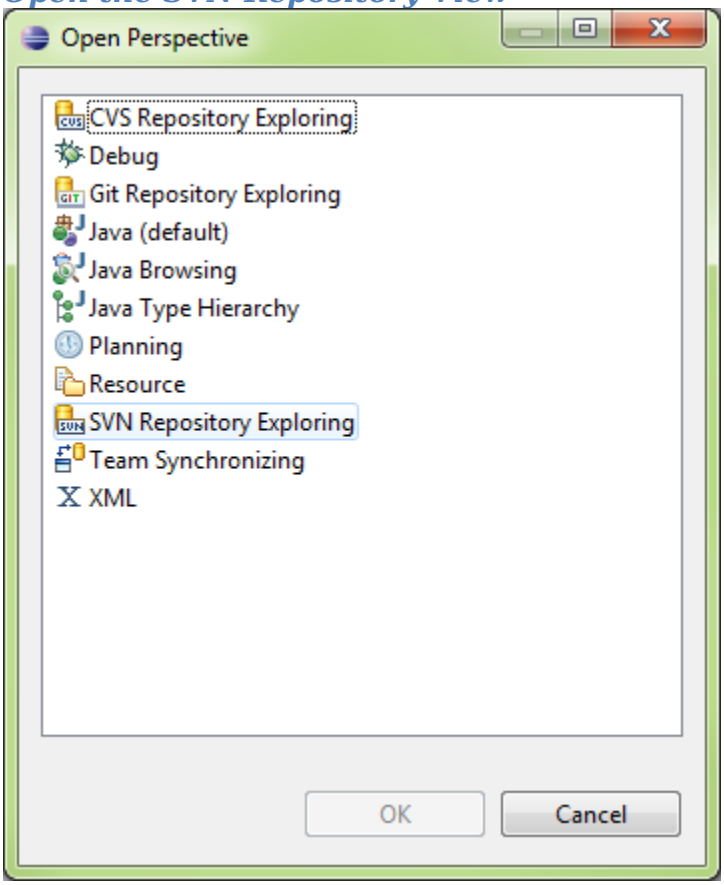
ENABLING THE SVN CONNECTOR AND PLUGIN

Eclipse\Preferences\Team\SVN

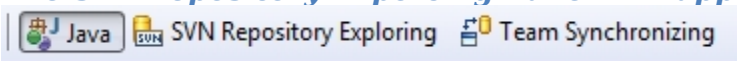
Select SVN interface: JavaHL and press OK



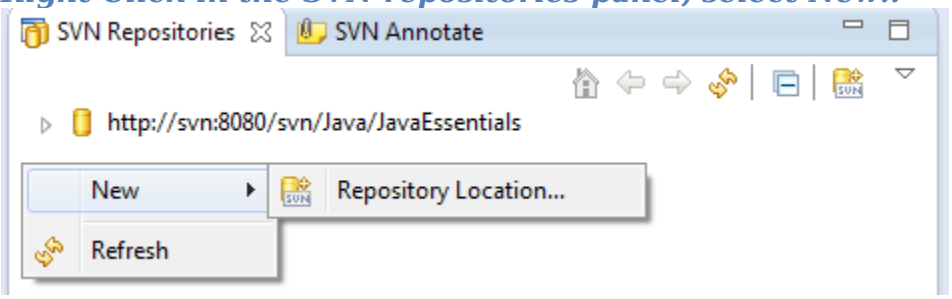
Open the SVN Repository View



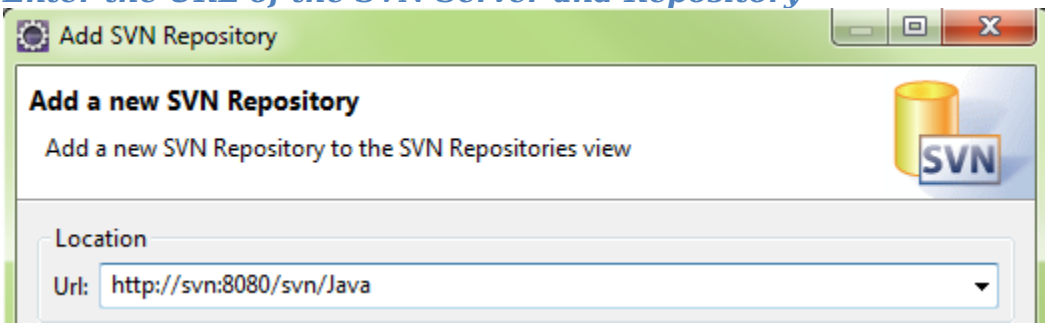
The SVN repository Exporting Panel will appear



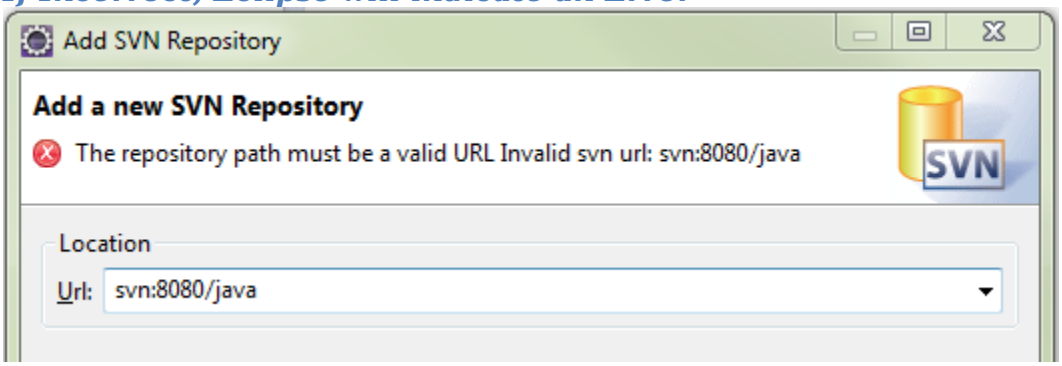
Right Click in the SVN repositories panel, select New..



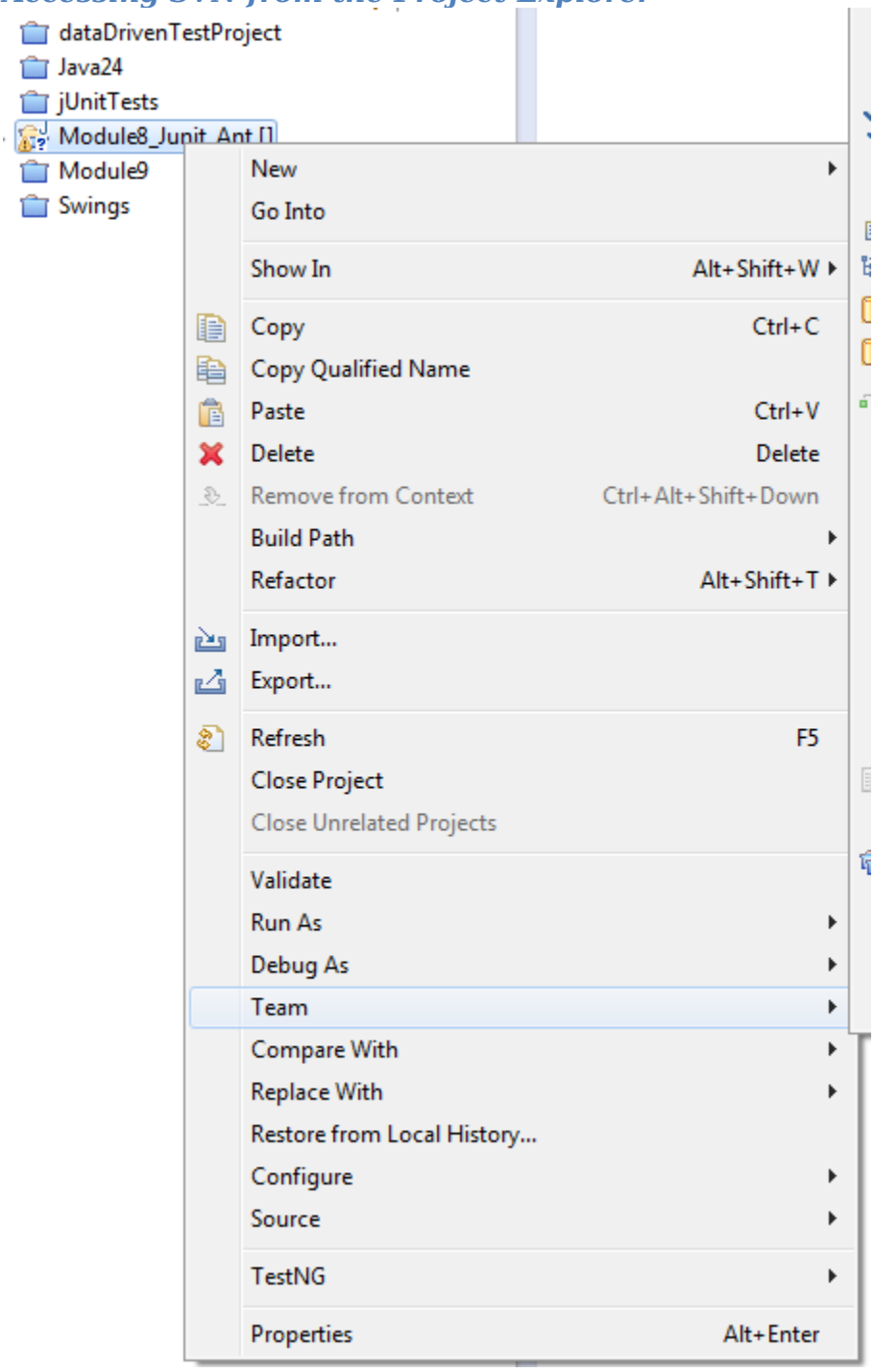
Enter the URL of the SVN Server and Repository



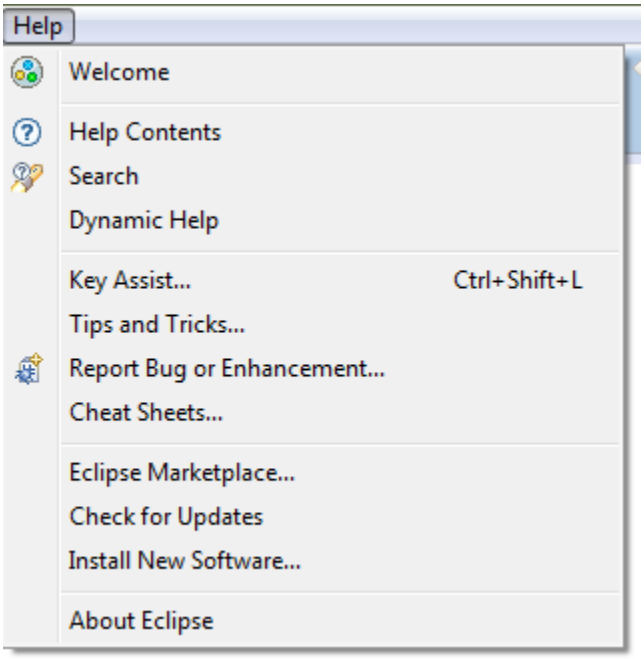
If Incorrect, Eclipse will indicate an Error



Accessing SVN from the Project Explorer

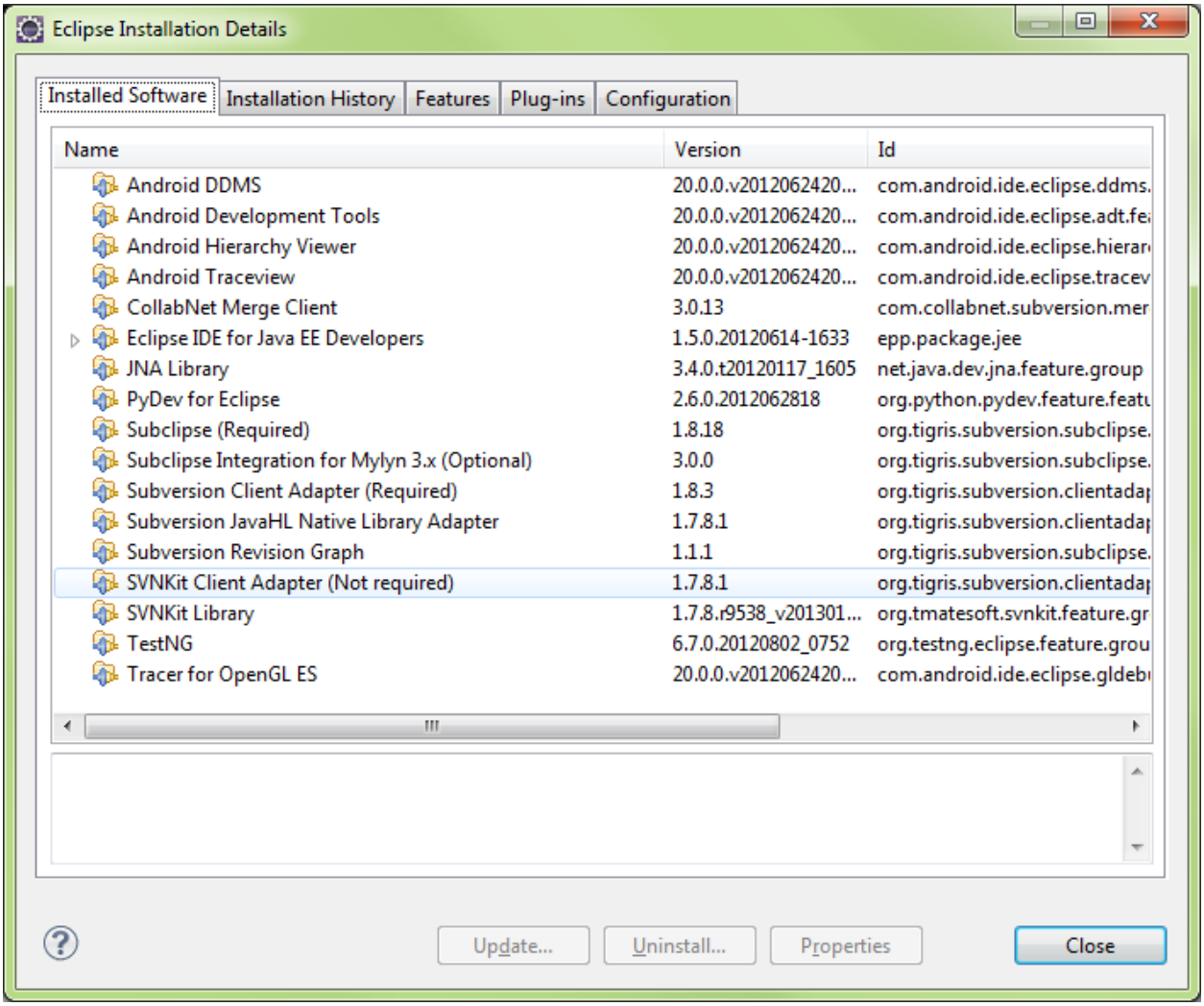


ECLIPSE ABOUT

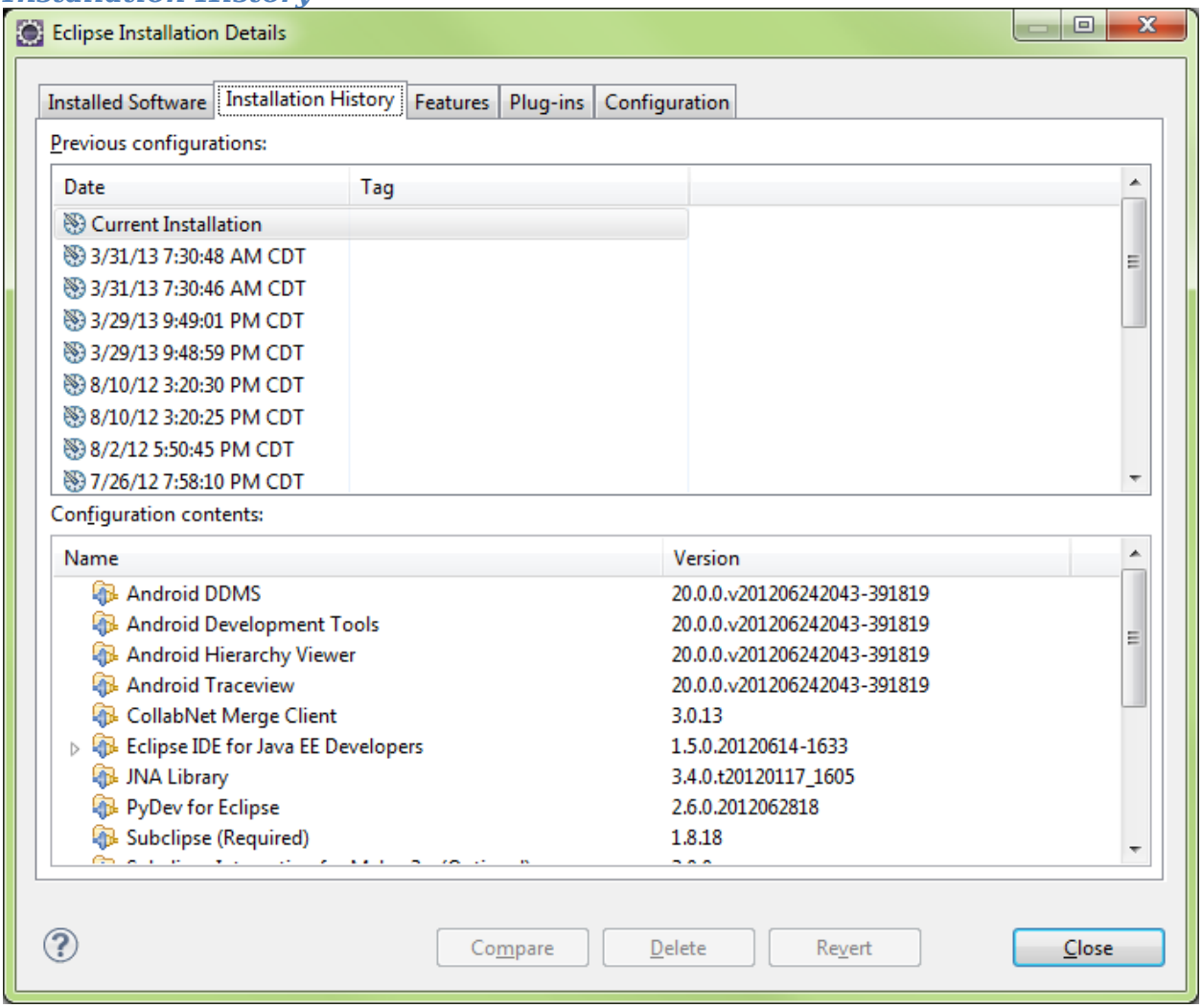


About Main Form

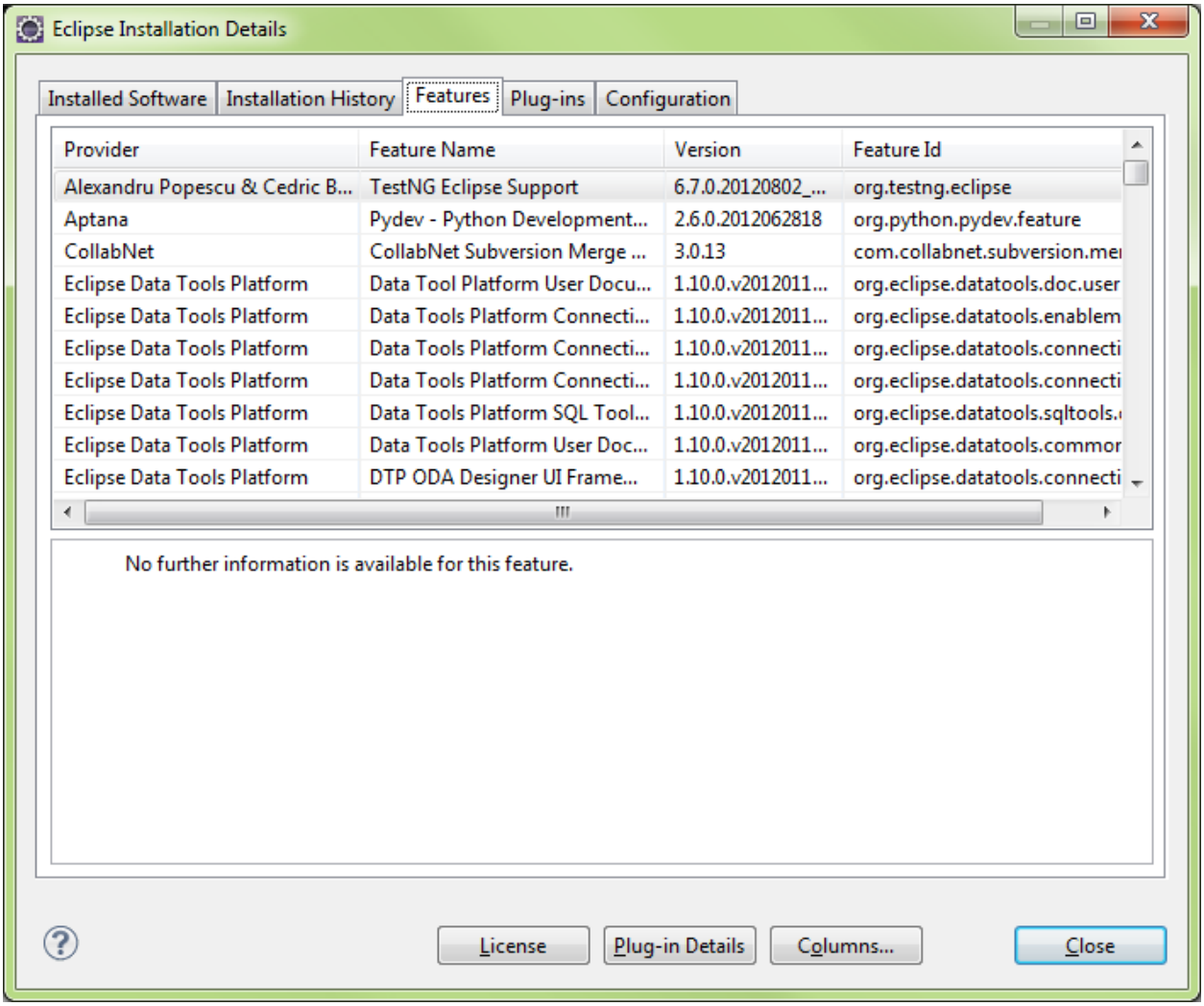
Installation Details



Installation History



Features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Installed Software
Installation History
Features
Plug-ins
Configuration
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Feature Name
Version
Feature Id
Alexandru Popescu & Cedric B...
TestNG Eclipse Support
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Aptana
Pydev - Python Development...
2.6.0.2012062818
org.python.pydev.feature
CollabNet
CollabNet Subversion Merge ...
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Eclipse Data Tools Platform
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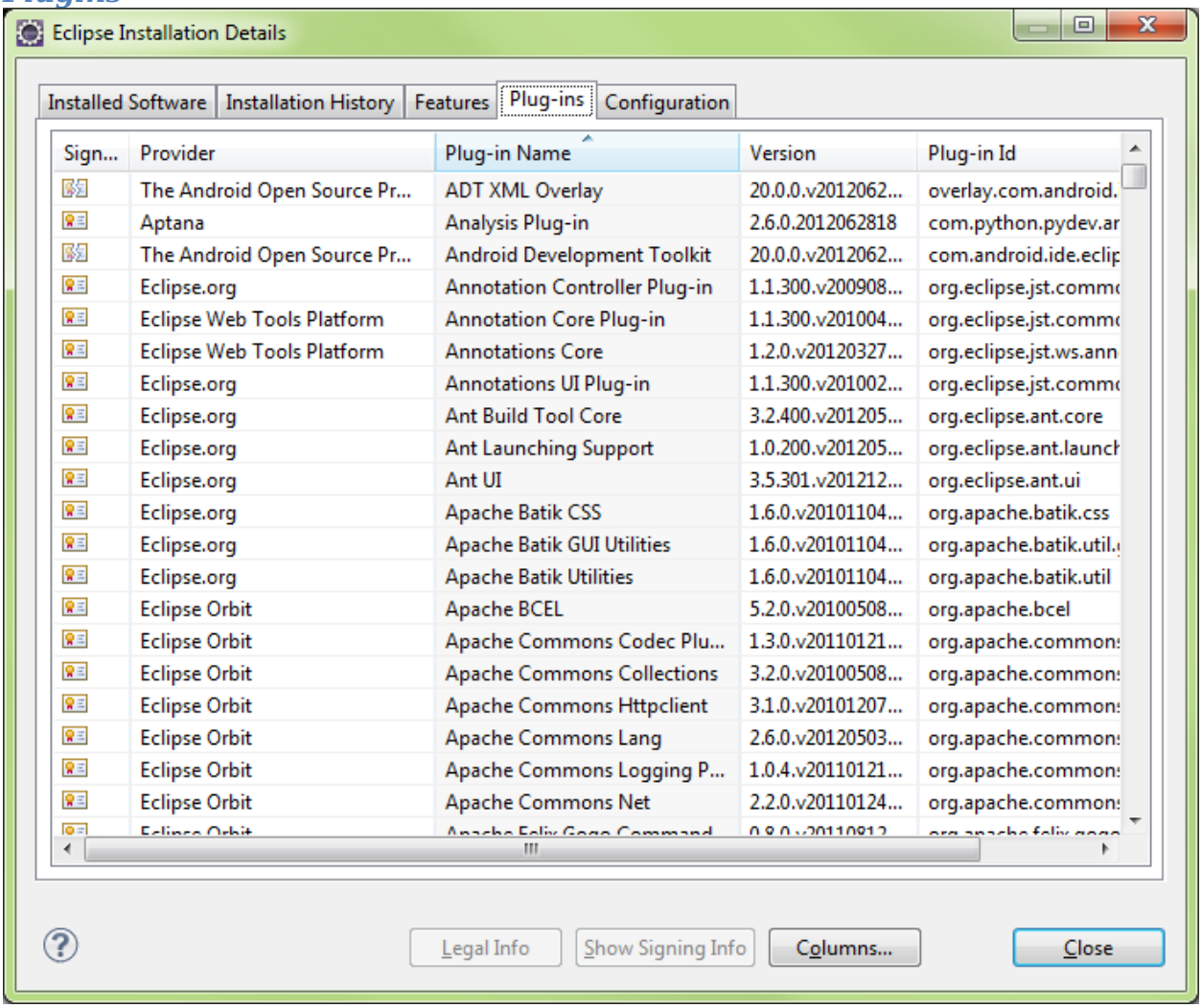
No further information is available for this feature.
License
Plug-in Details
Columns...
Close

Plugins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Installation History
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Version
Plug-in Id
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Eclipse Web Tools Platform Annotation Core Plug-in 1.1.300.v201004... org.eclipse.jst.comm
Eclipse Web Tools Platform Annotations Core 1.2.0.v20120327... org.eclipse.jst.ws.ann
Eclipse.org Annotations UI Plug-in 1.1.300.v201002... org.eclipse.jst.comm
Eclipse.org Ant Build Tool Core 3.2.400.v201205... org.eclipse.ant.core
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Show Signing Info
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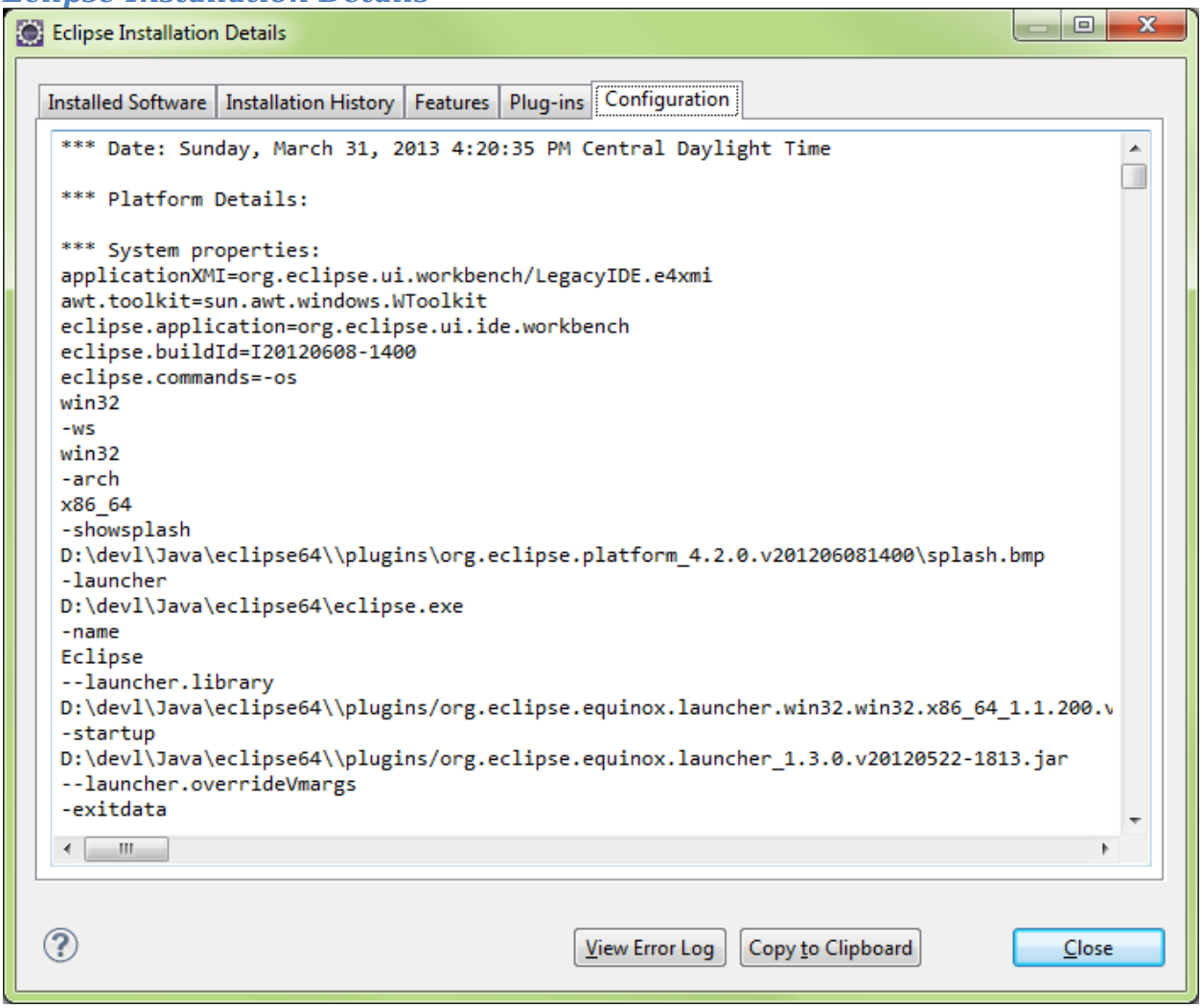
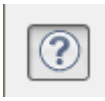
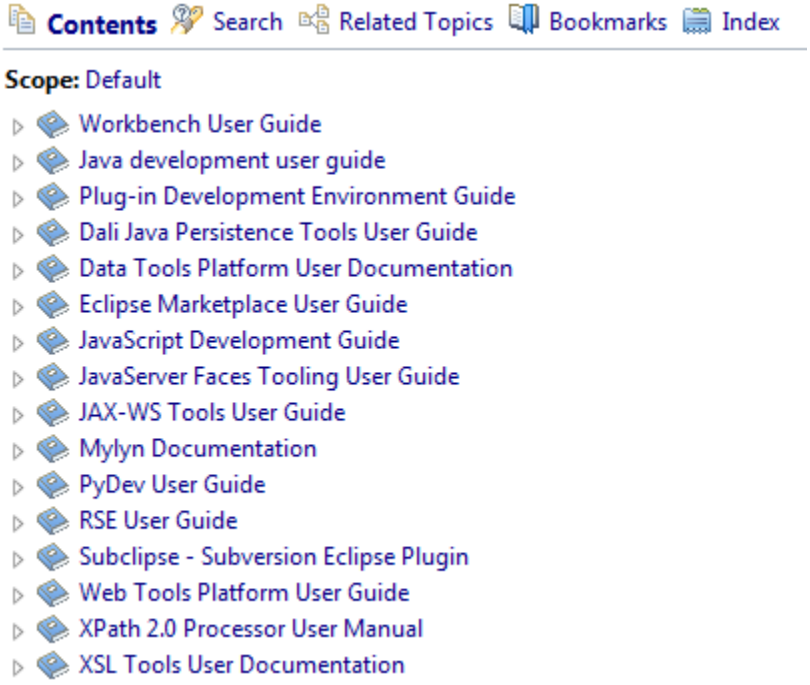
Eclipse Installation Details



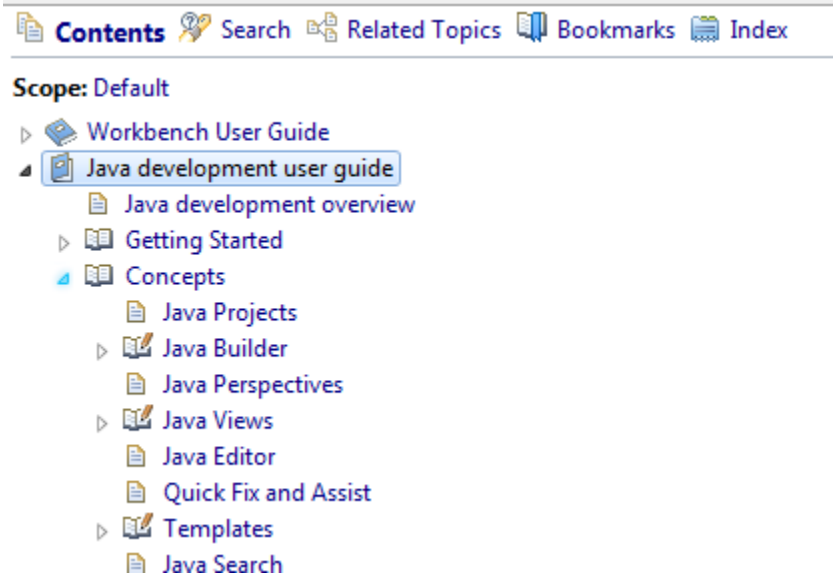
ECLIPSE HELP



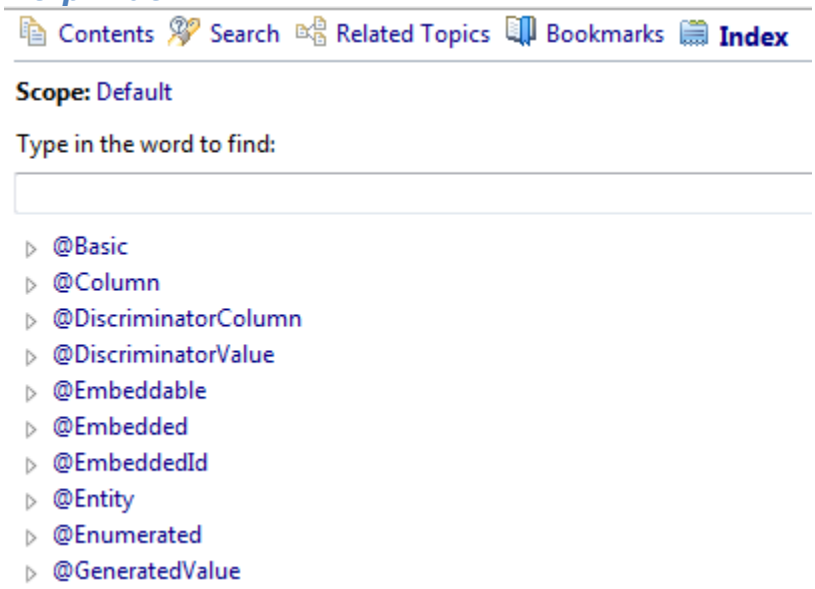
Main Contents View



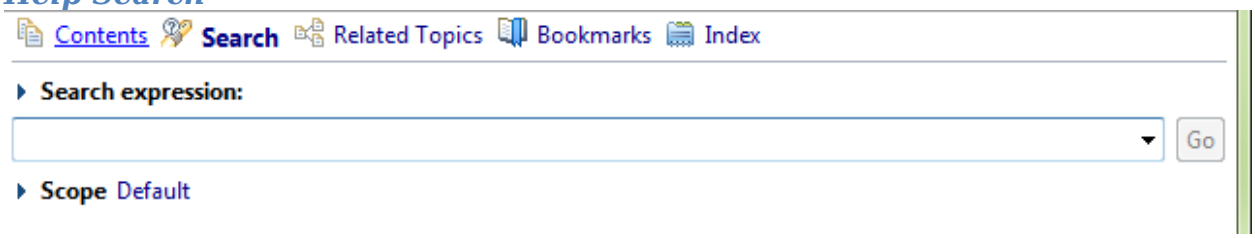
Help Contents Expanded

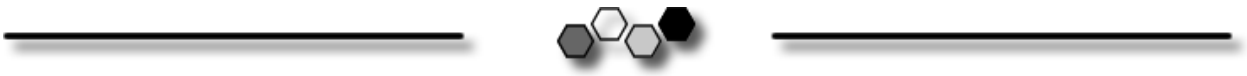


Help Index



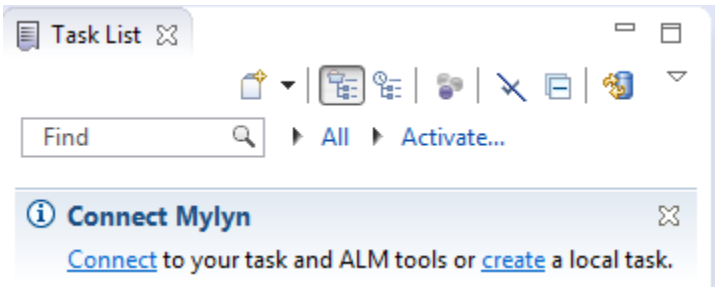
Help Search





MYLYN TASK MANAGER

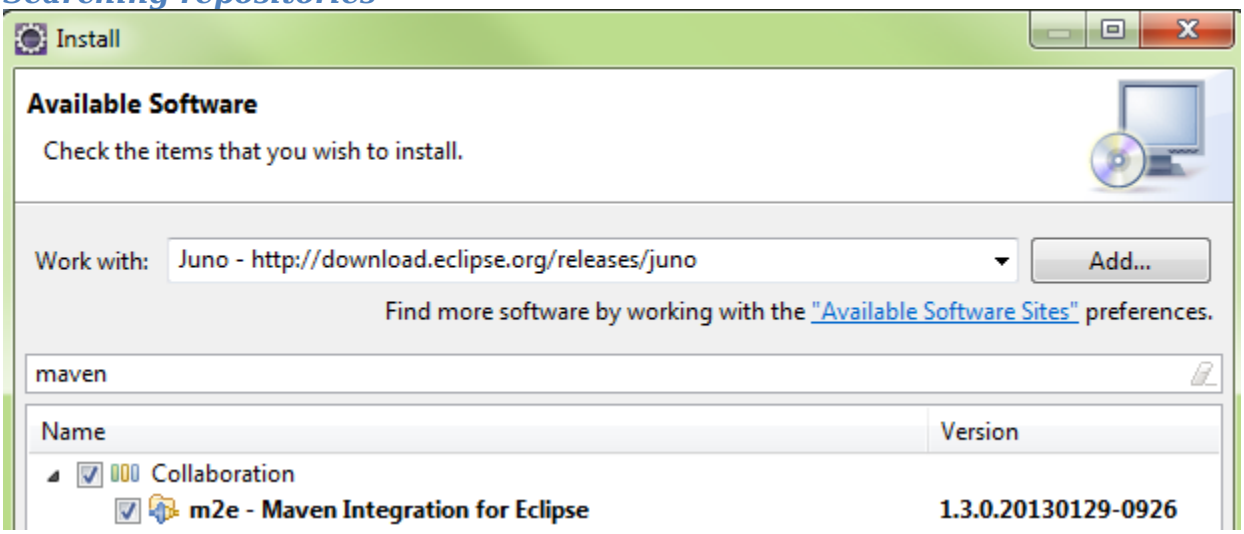
Mylyn is a Task-Focused Interface for Eclipse that reduces information overload and makes multi-tasking easy. It does this by making tasks a first class part of Eclipse, and integrating rich and offline editing for repositories such as Bugzilla, Trac, and JIRA. Once your tasks are integrated, Mylyn monitors your work activity to identify information relevant to the task-at-hand, and uses this task context to focus the Eclipse UI on the interesting information, hide the uninteresting, and automatically find what's related. This puts the information you need to get work done at your fingertips and improves productivity by reducing searching, scrolling, and navigation. By making task context explicit Mylyn also facilitates multitasking, planning, reusing past efforts, and sharing expertise.



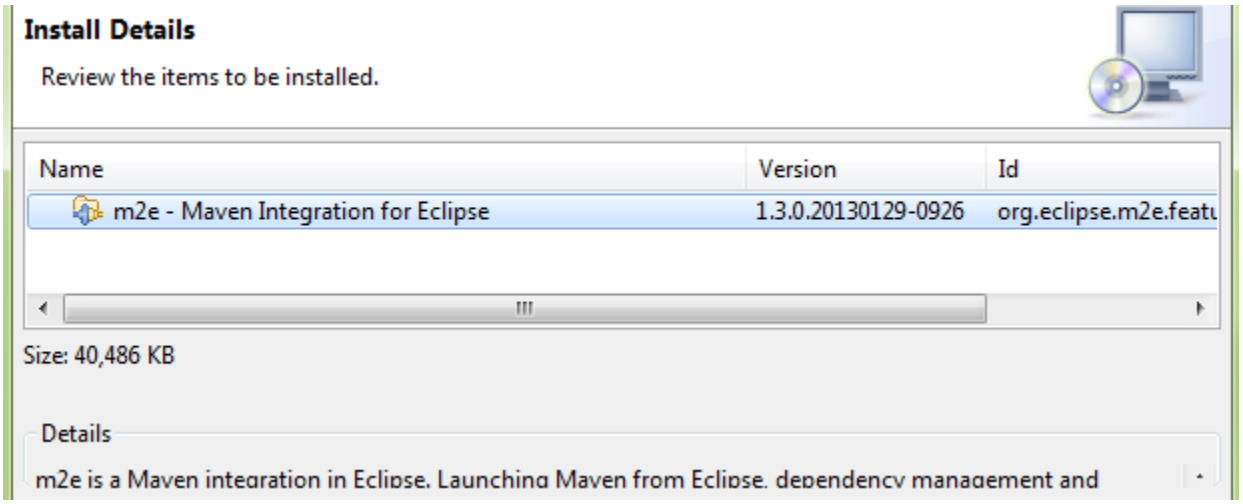
MAVEN

ECLIPSE M2E INSTALLATION

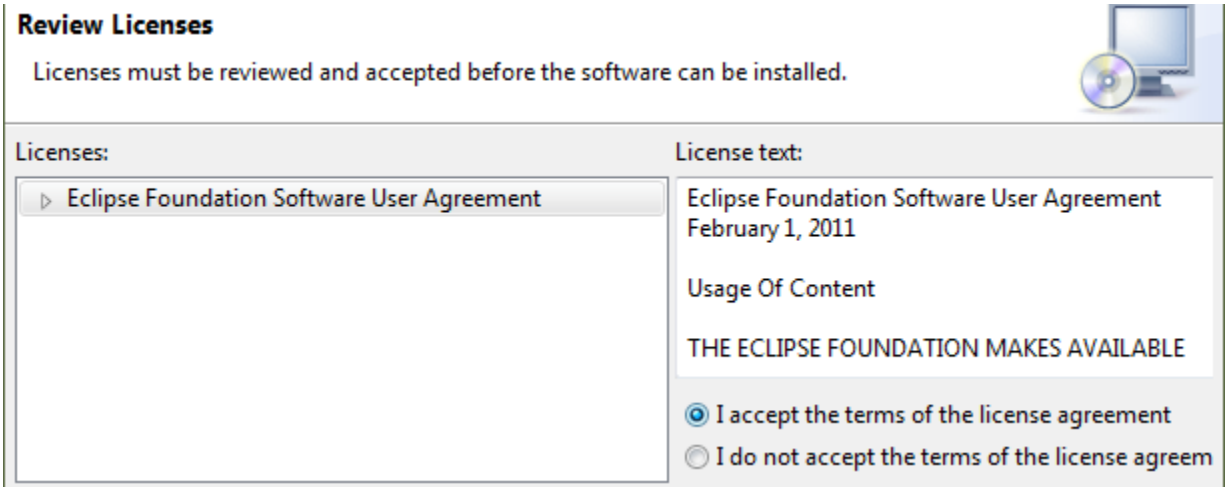
Searching repositories



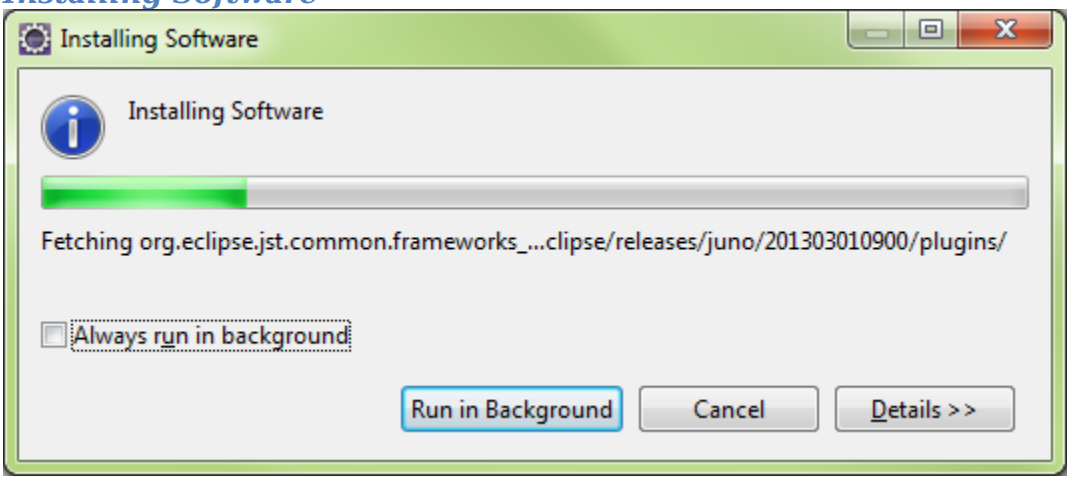
Install Details



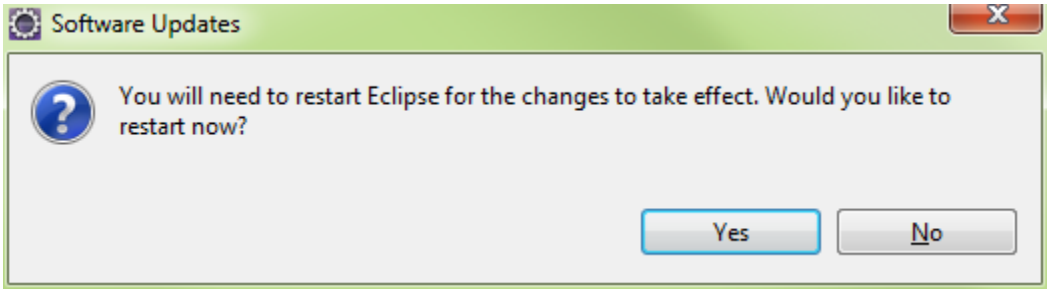
Review Licenses



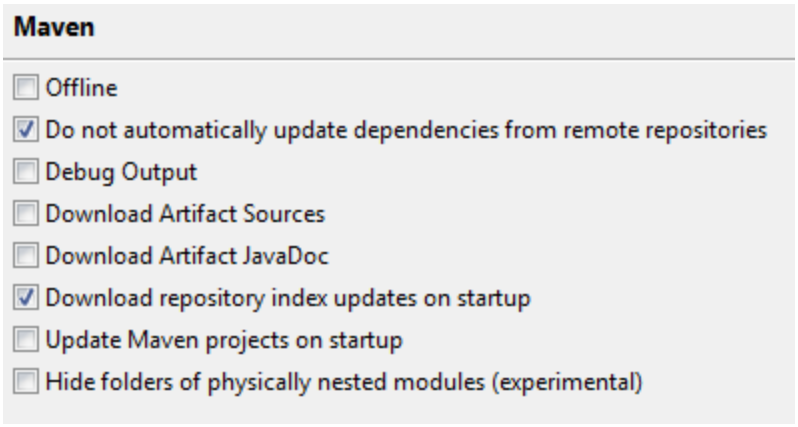
Installing Software

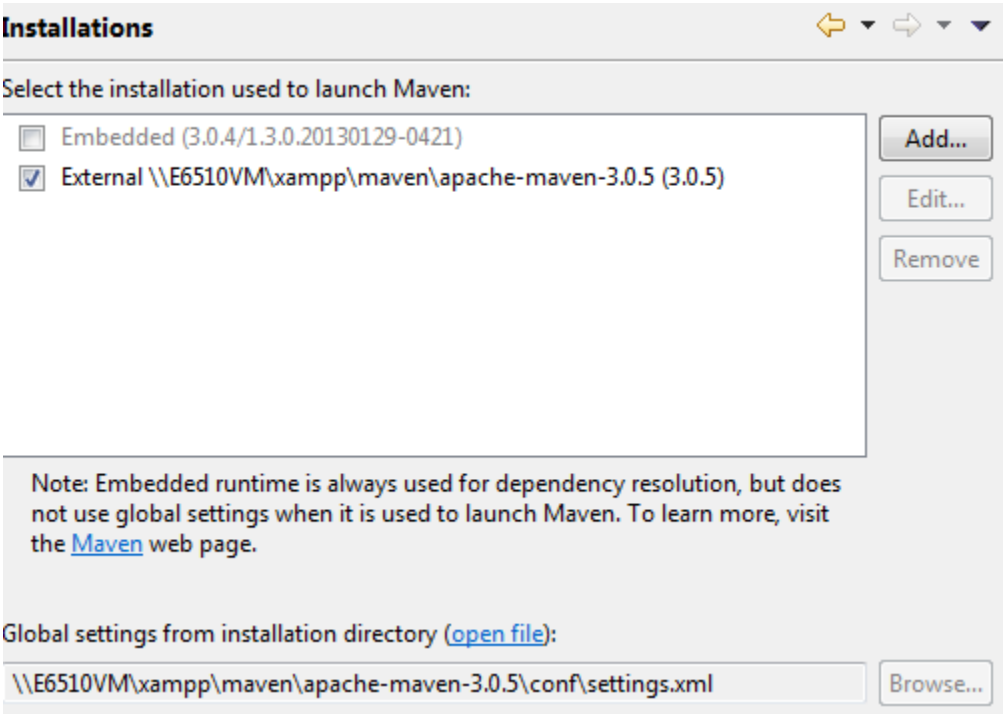


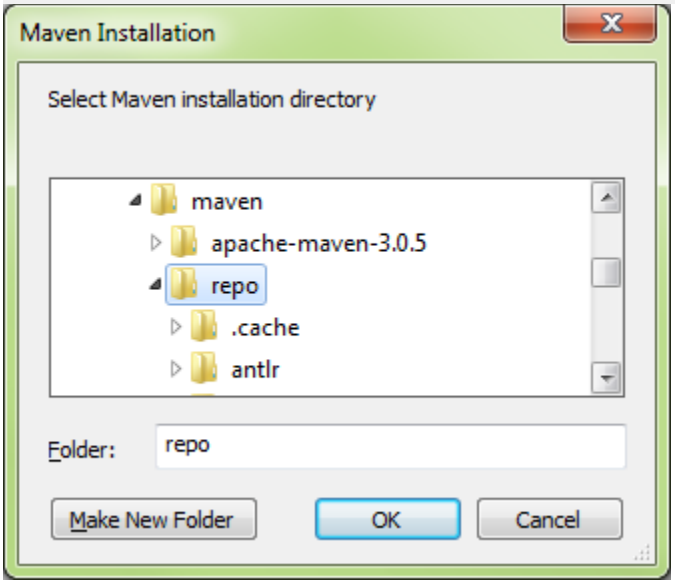
Restart

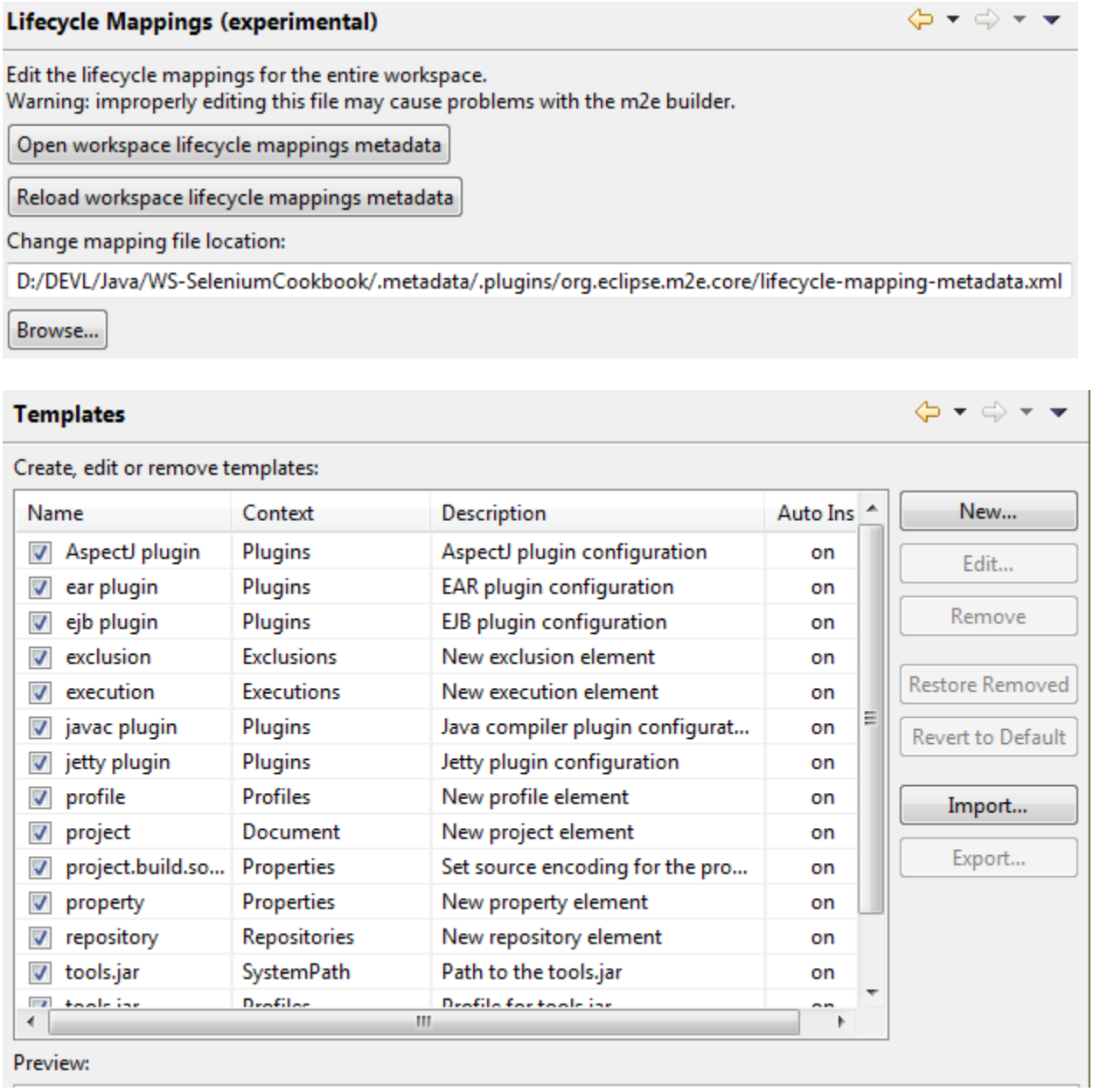


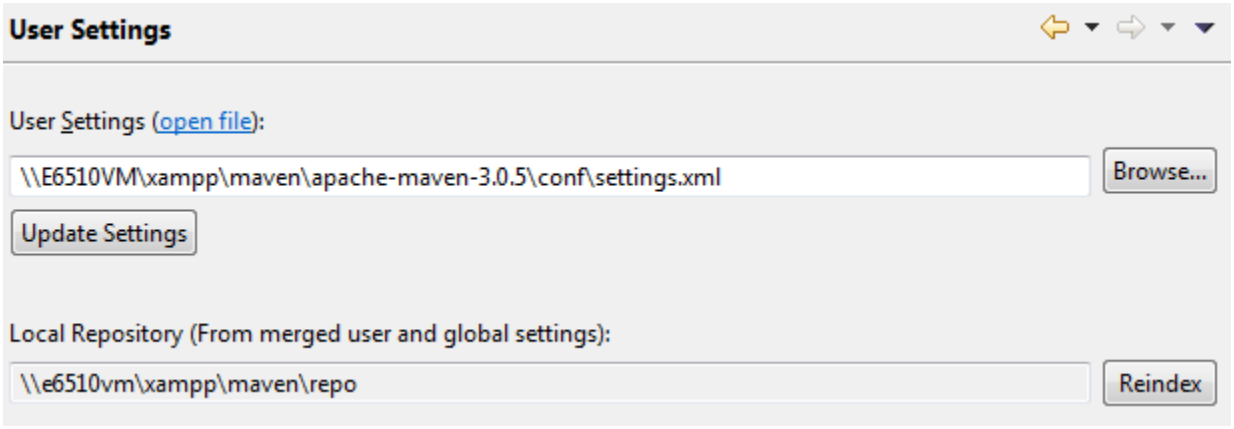
ECLIPSE MAVEN CONFIGURATION

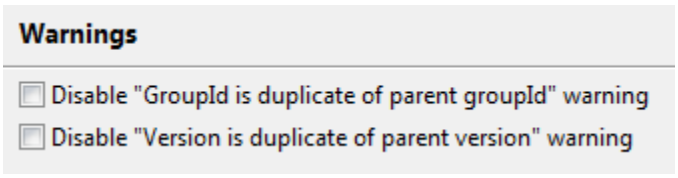

Maven
Offline
Do not automatically update dependencies from remote repositories
Debug Output
Download Artifact Sources
Download Artifact JavaDoc
Download repository index updates on startup
Update Maven projects on startup
Hide folders of physically nested modules (experimental)

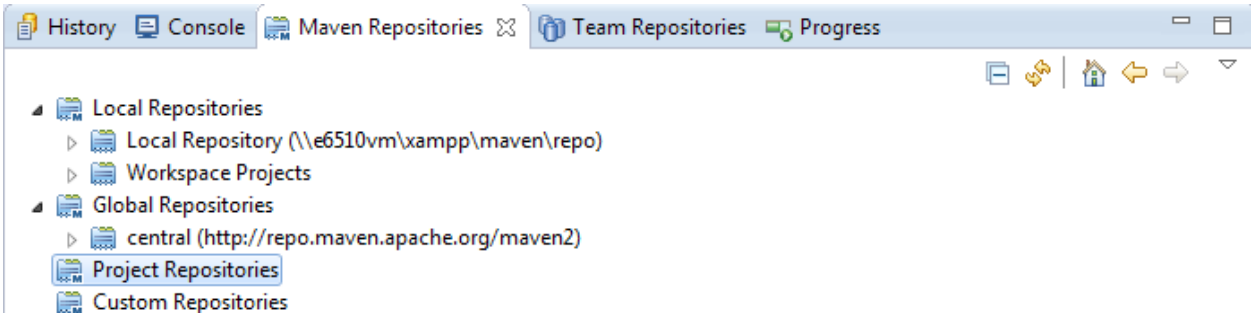

Installations
Select the installation used to launch Maven:
Embedded (3.0.4/1.3.0.20130129-0421)
External \\E6510VM\xampp\maven\apache-maven-3.0.5 (3.0.5)
Add...
Edit...
Remove
Note: Embedded runtime is always used for dependency resolution, but does not use global settings when it is used to launch Maven. To learn more, visit the Maven web page.
Global settings from installation directory (open file):
\\E6510VM\xampp\maven\apache-maven-3.0.5\conf\settings.xml
Browse...


Maven Installation
Select Maven installation directory
maven
apache-maven-3.0.5
repo
.cache
antlr
Folder:
repo
Make New Folder
OK
Cancel


Lifecycle Mappings (experimental)
Edit the lifecycle mappings for the entire workspace.
Warning: improperly editing this file may cause problems with the m2e builder.
Open workspace lifecycle mappings metadata
Reload workspace lifecycle mappings metadata
Change mapping file location:
D:/DEVL/Java/WS-SeleniumCookbook/.metadata/.plugins/org.eclipse.m2e.core/lifecycle-mapping-metadata.xml
Browse...
Templates
Create, edit or remove templates:
Name
Context
Description
Auto Ins
AspectJ plugin
Plugins
AspectJ plugin configuration
on
ear plugin
Plugins
EAR plugin configuration
on
ejb plugin
Plugins
EJB plugin configuration
on
exclusion
Exclusions
New exclusion element
on
execution
Executions
New execution element
on
javac plugin
Plugins
Java compiler plugin configurat...
on
jetty plugin
Plugins
Jetty plugin configuration
on
profile
Profiles
New profile element
on
project
Document
New project element
on
project.build.so...
Properties
Set source encoding for the pro...
on
property
Properties
New property element
on
repository
Repositories
New repository element
on
tools.jar
SystemPath
Path to the tools.jar
on
New...
Edit...
Remove
Restore Removed
Revert to Default
Import...
Export...
Preview:
User Interface
Open XML page in the POM editor by default
Hide warning for incomplete mapping



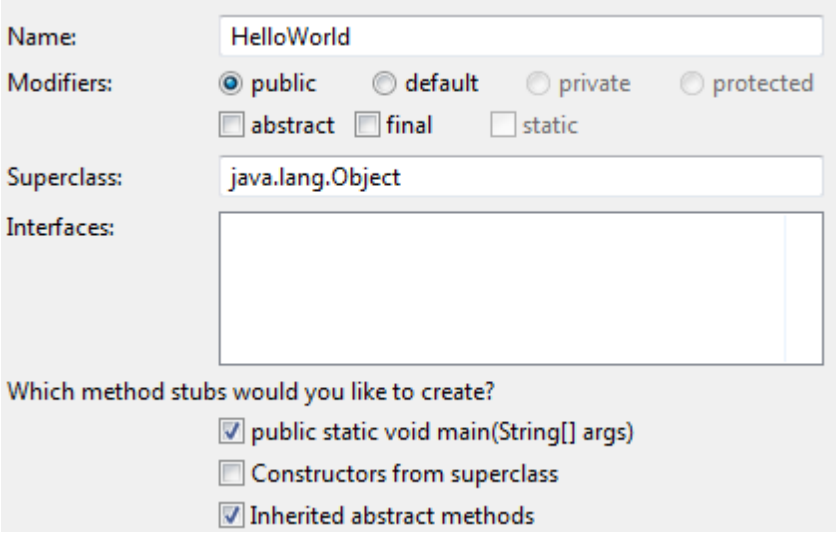




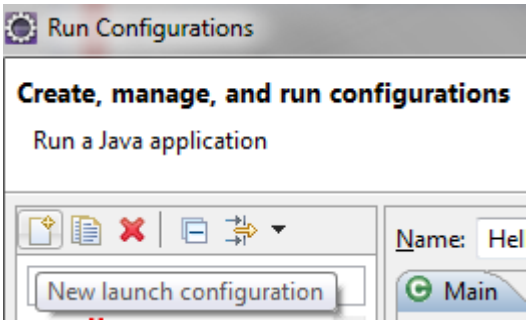
ECLIPSE DEVELOPMENT

CREATE WORKSPACE

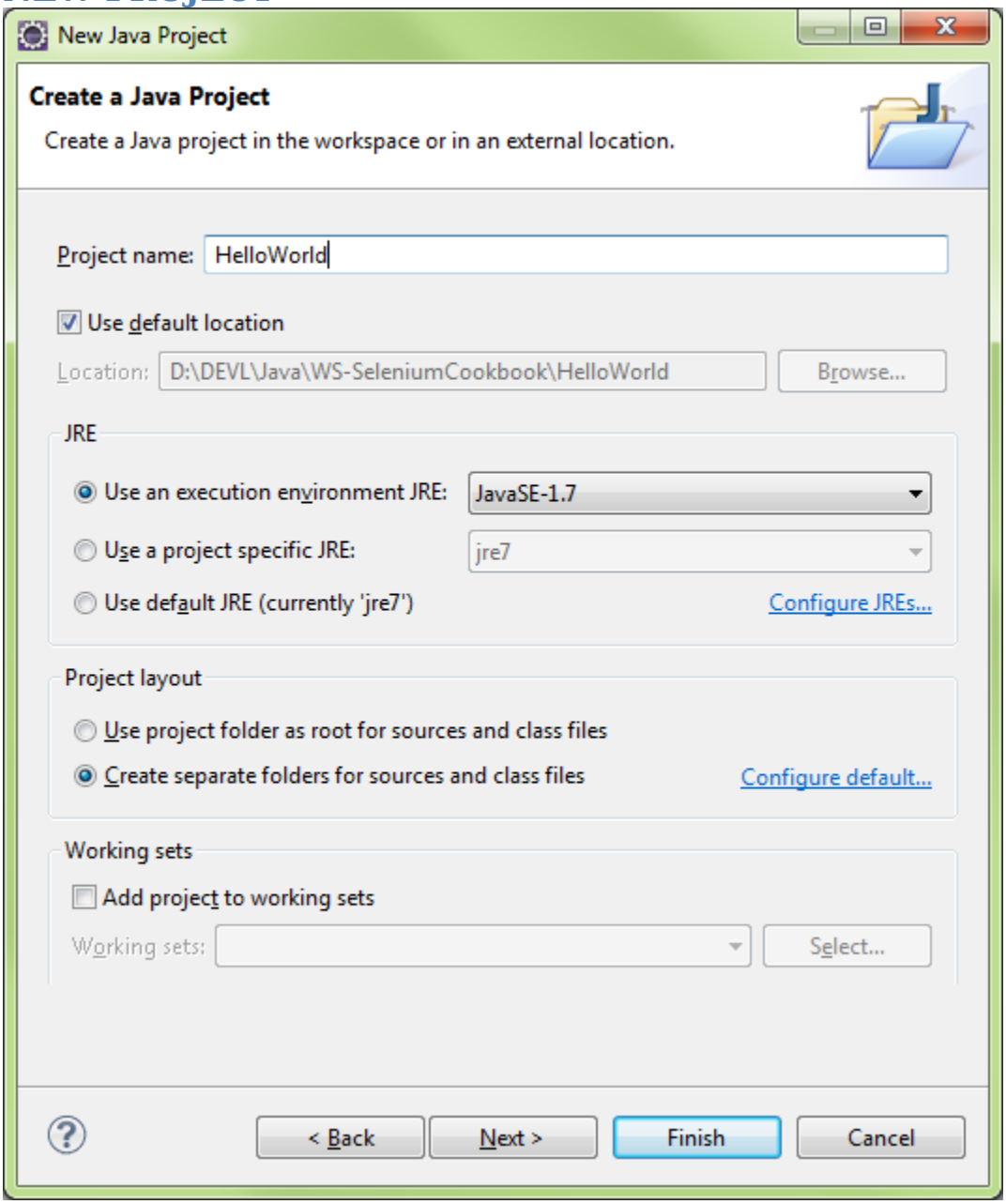
- Create WORKSPACE folder to contain PROJECTS
- New, Project....
- New, Class....(.java file is the class)



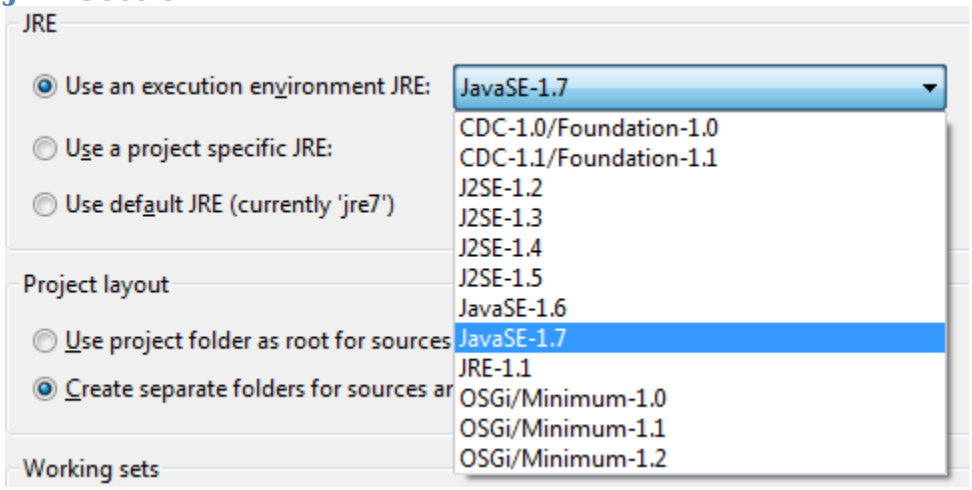
- Window > Prefrences > General > Appearance > Colors and Fonts.. > Text Font
- Run > Run Configurations... >



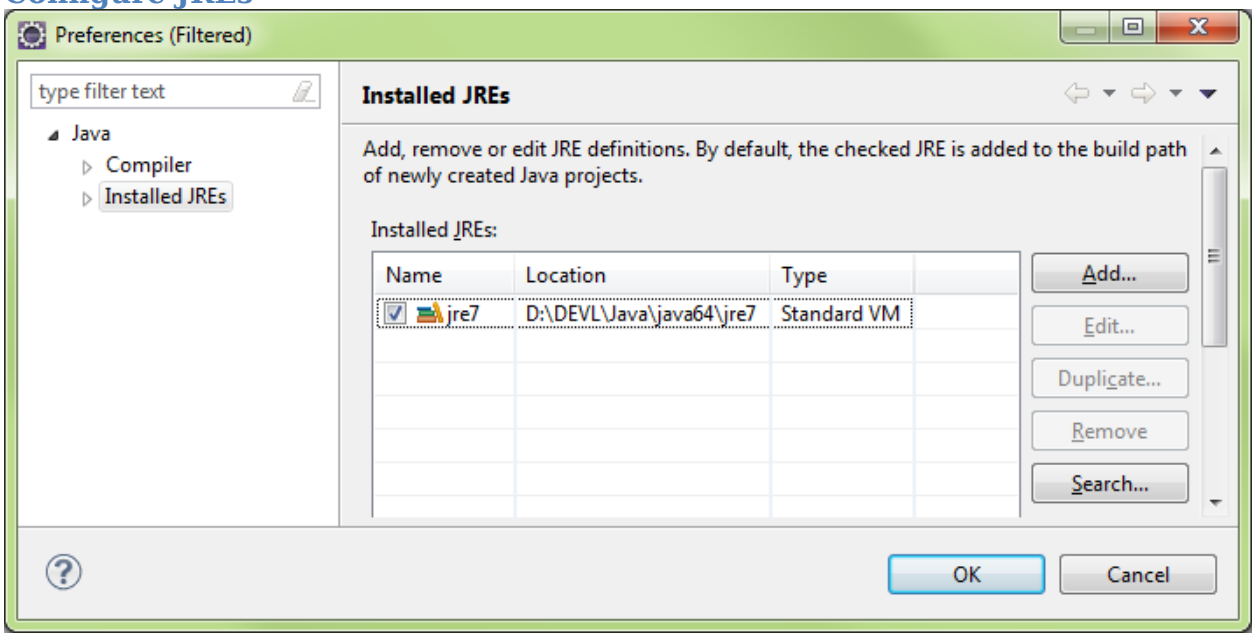
NEW PROJECT


New Java Project
Create a Java Project
Create a Java project in the workspace or in an external location.
Project name: HelloWorld
Use default location
Location: D:\DEVL\Java\WS-SeleniumCookbook\HelloWorld
Browse...
JRE
Use an execution environment JRE: JavaSE-1.7
Use a project specific JRE: jre7
Use default JRE (currently 'jre7')
Configure JREs...
Project layout
Use project folder as root for sources and class files
Create separate folders for sources and class files
Configure default...
Working sets
Add project to working sets
Working sets:
Select...
< Back
Next >
Finish
Cancel

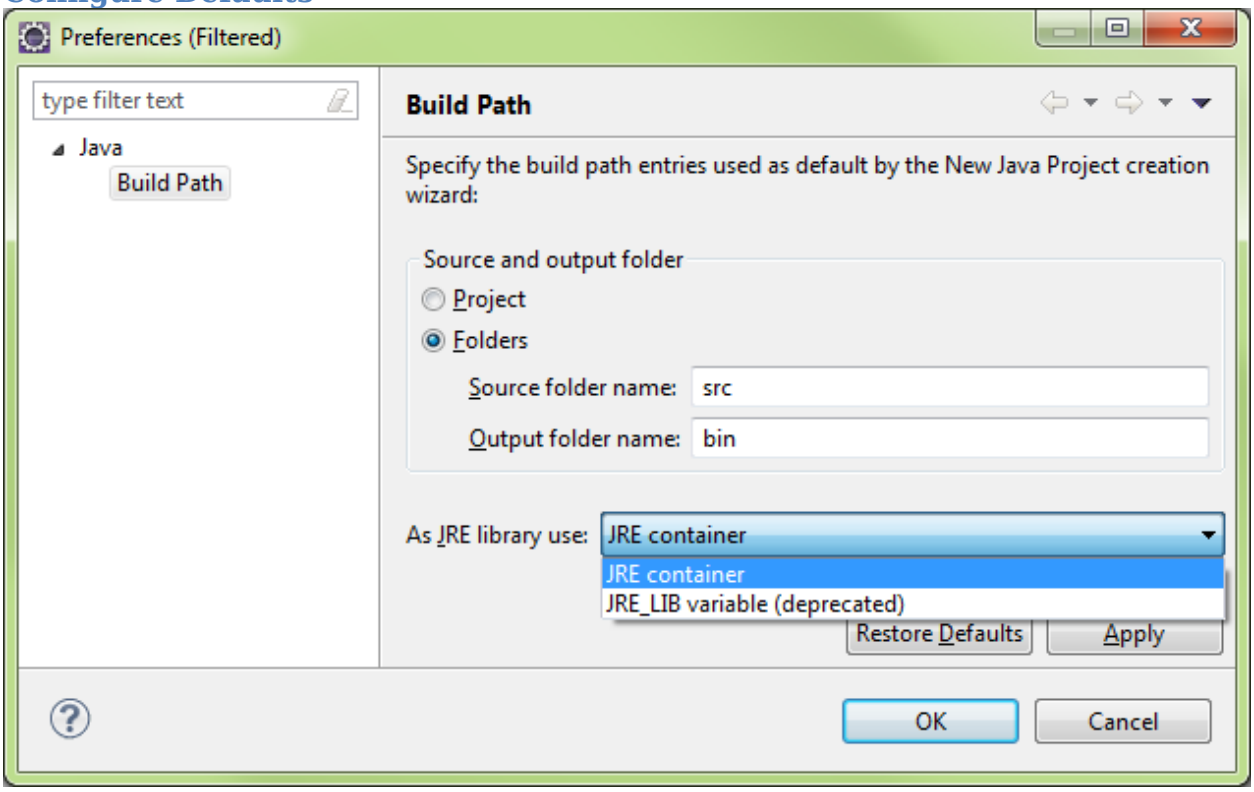
JRE Section



Configure JREs



Configure Defaults

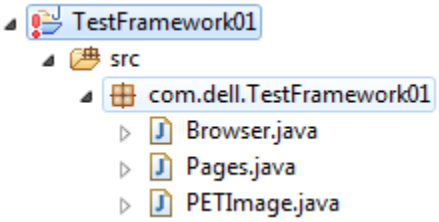


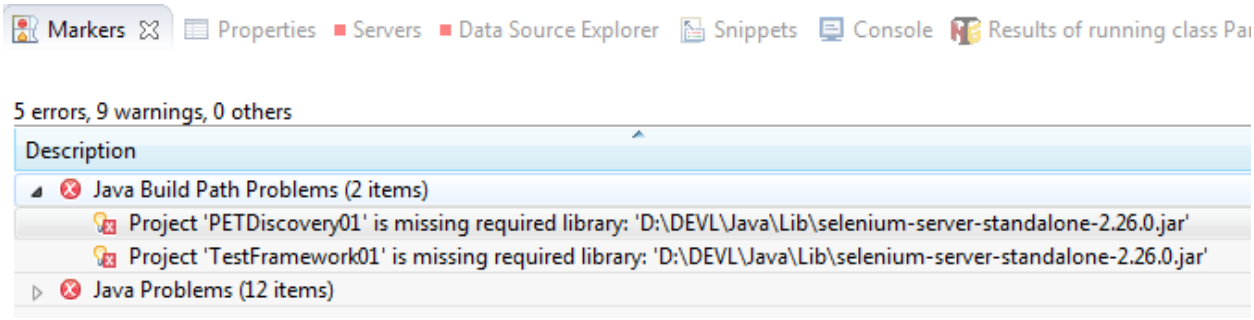
IMPORT PROJECTS

- File > Import > General > Existing Project into Workspace
  - Exploded Project (Root Dir)
  - Zipped Project (Archive File)
  - Root Dir, OK
  - Eclipse will autodetect projects
  - Copy projects into workspace
- Close projects that aren't in use (Right-Click, Close Project)
  - Projects remain in workspace, just not open

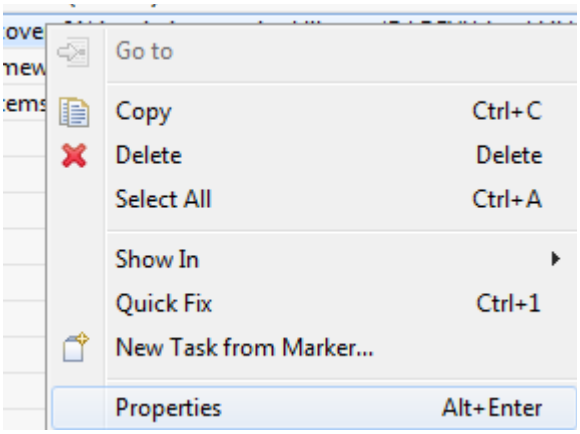
MISSING DEPENDENCIES AND REFERENCES

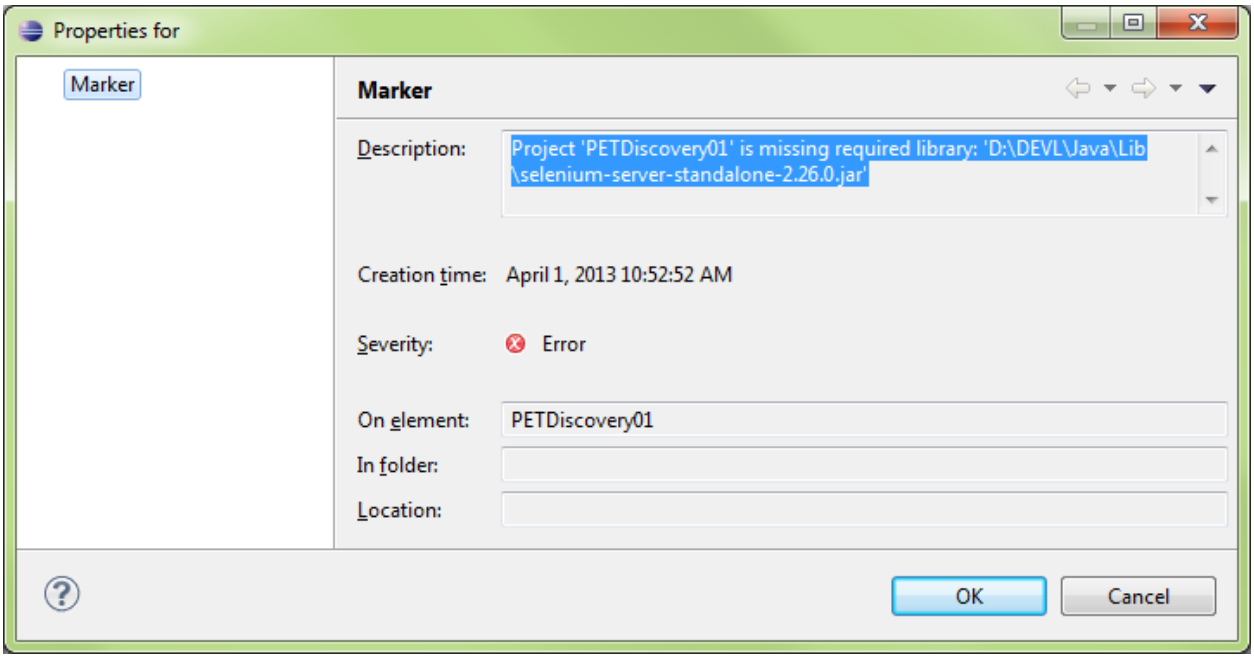
When opening a project, several errors can occur, such as missing depencies or references.
In this case, there is a missing JAR file



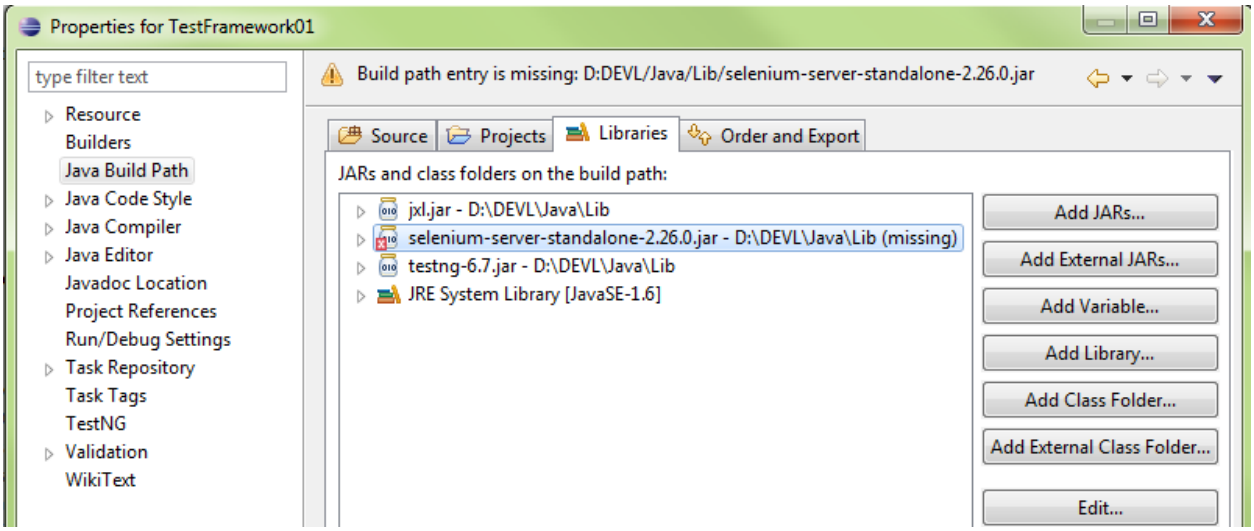


Right-click the error and select properties for more detailed look





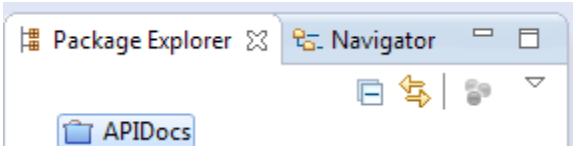
Right-click the project and select properties or press ALT-ENTER to bring u the project properties
Select the missing package and press Edit to select a new path to the file

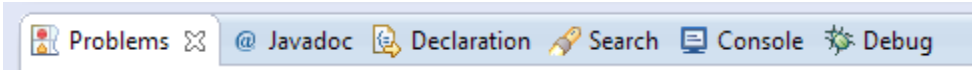


IDE LAYOUT

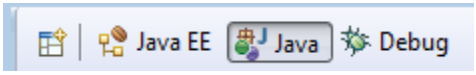
HutuBBB

Views/Panels





PERSPECTIVES

- Arrangement of Views
- 

- Custom Perspectives: **Window > Save Perspective As....**

COMMAND LINE

- Dir to PROJECT\SRC
- `javac Main.java`
    - `dir = Main.class`
    - `java Main`
- `javac Main.java -d ..\bin`
    - `\src\Main.class`
- `javac Main.java -verbose`

Note: Access Denied Errors

If **Access Denied** error occurs, set folder permissions to Everyone and give **Full Control** access.

```
D:\Eclipse\Java\CommandLine\src>javac Main.java -d D:\Eclipse\Java\CommandLine\bin
Main.java:2: error while writing Main: D:\Eclipse\Java\CommandLine\bin\Main.class
(Access is denied

public class Main {
      ^
```

CLASSPATH

Similar to the classic dynamic loading behavior, when executing Java programs, the Java Virtual Machine finds and loads classes lazily (it loads the bytecode of a class only when this class is first used). The classpath tells Java where to look in the filesystem for files defining these classes.

The virtual machine searches for and loads classes in this order:

1. bootstrap classes: the classes that are fundamental to the Java Platform (comprising the public classes of the Java Class Library, and the private classes that are necessary for this library to be functional).
2. extension classes: packages that are in the *extension* directory of the JRE or JDK, jre/lib/ext/
3. user-defined packages and libraries

By default only the packages of the JDK standard API and extension packages are accessible without needing to set where to find them. The path for all user-defined packages and libraries must be set in the command-line (or in the Manifest associated with the Jar file containing the classes).

SETTING THE PATH THROUGH AN ENVIRONMENT VARIABLE

The environment variable named CLASSPATH may be alternatively used to set the classpath. For the above example, we could also use on Windows:

Sometimes you have to check the JAVA_HOME also, if it is pointing towards the right JDK version

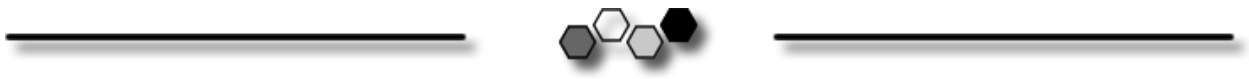
set CLASSPATH=D:\myprogram

java org.mypackage.HelloWorld

DIAGNOSE

Application programmers may want to find out/debug the current settings under which the application is running:

System.getProperty("java.class.path")



COMPILING AND RUNNING

Java package statement implies the directory structure where it exists within the project.
Should be unique

- package **com**.**lynda**.**javatraining**;
- \src**com****lynda****javatraining****HelloWorld**.java

When compiling, use javac in the project root:

- C:\JavaProjects\HelloWorld>javac com\lynda\javatraining\HelloWorld.java
  - HelloWorld.class
  - HelloWorld.java

When running, use package reference and filename **without** ".java" extension

- C:\JavaProjects\HellowWorld>java **com**.**lynda**.**javatraining**.**HelloWorld**

public class **HelloWorld** {

public static void main(String[] args) {

- **Static: allows class to be called directly?**

public class **HelloWorld** {

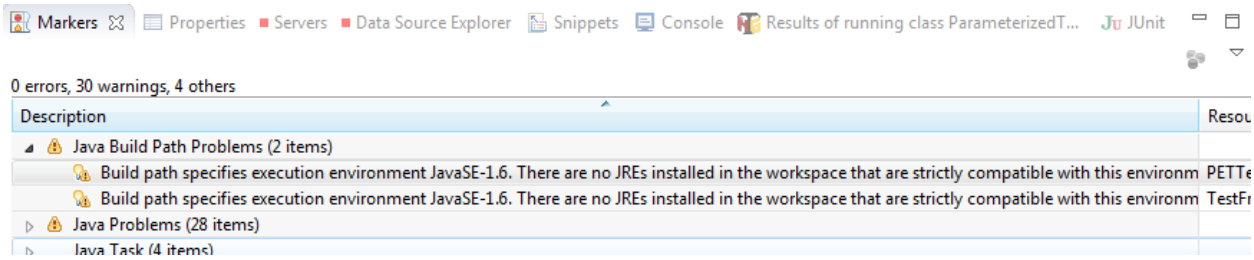
public static void main(String[] args) {

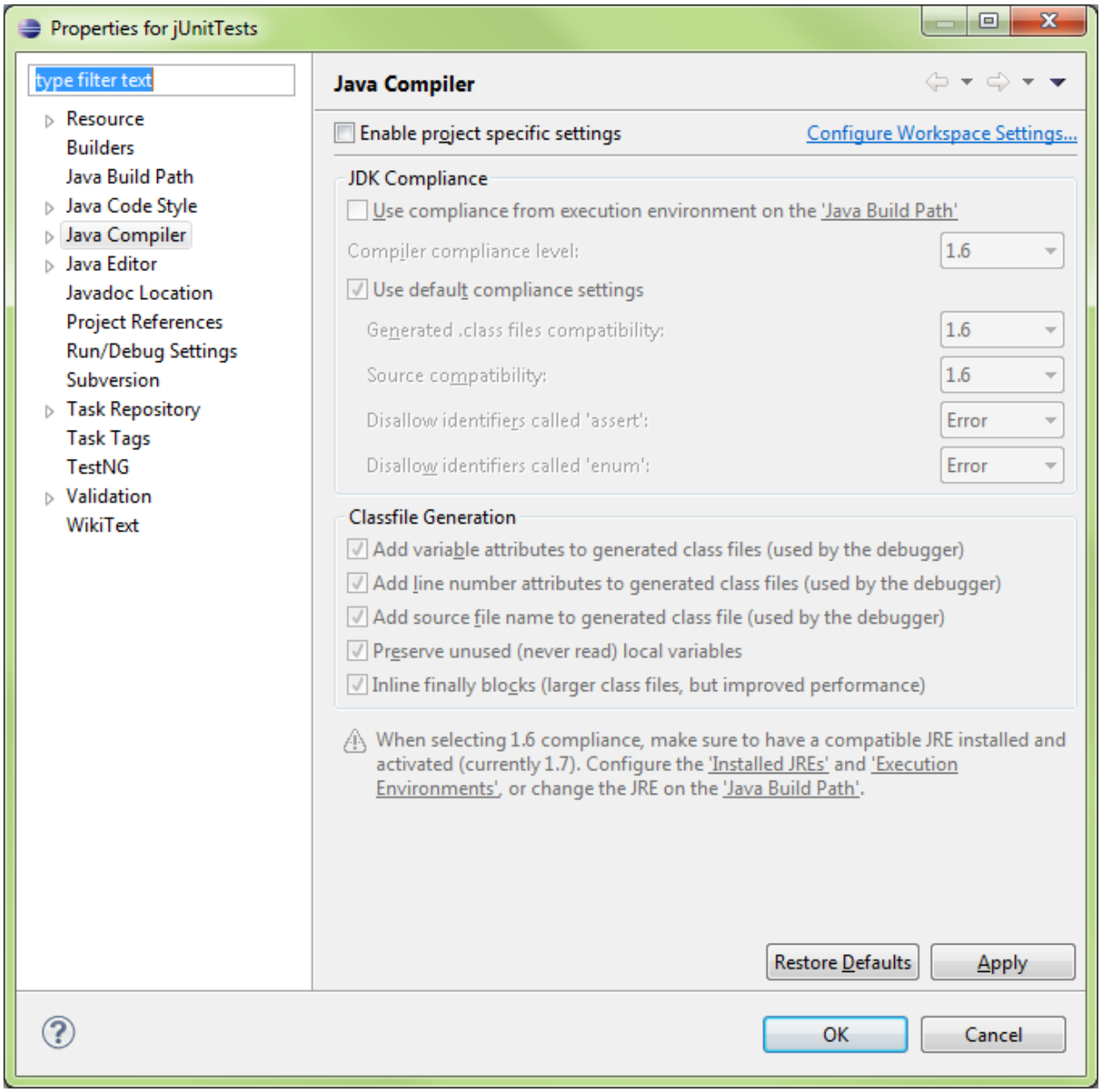
- **Static: allows class to be called directly?**

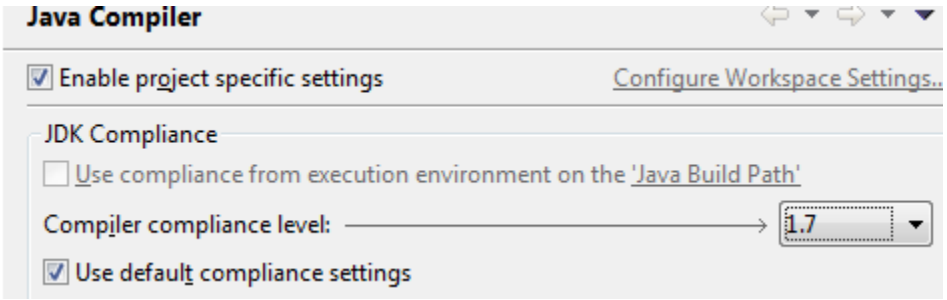
PROJECT ERRORS

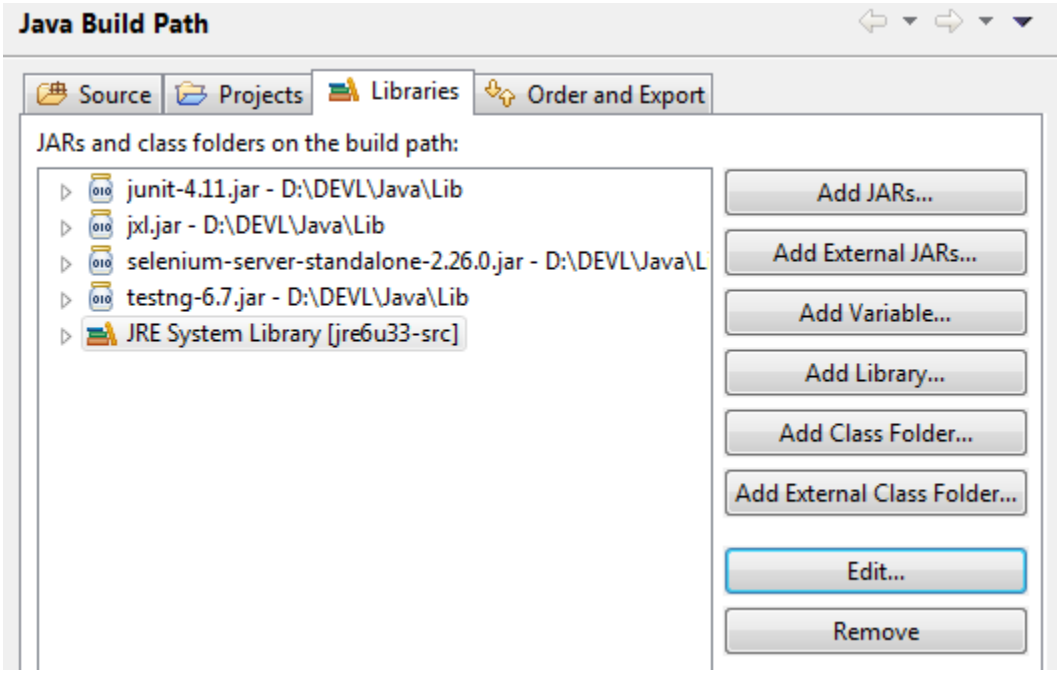
Error: Build Path specifics execution environment JavaSE1.6. There are no FREs installed in the workspace that are strictly compatible with the environment…

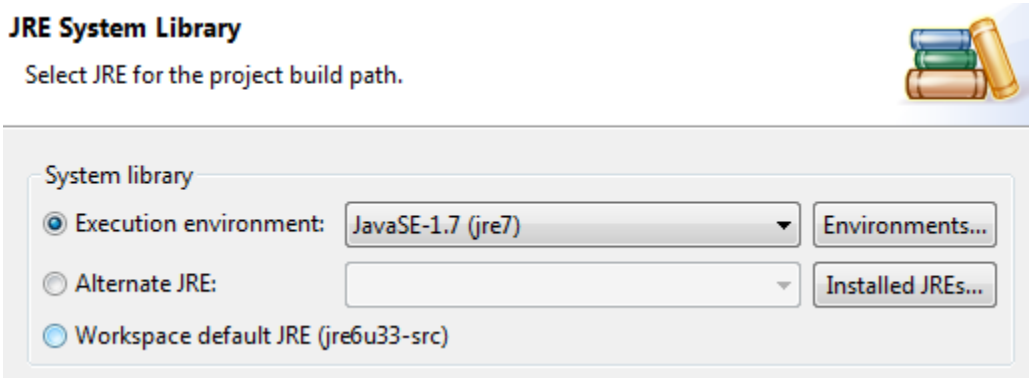
Fix: Add an additional JRE Library to the project and reference that in lieu of JRE7



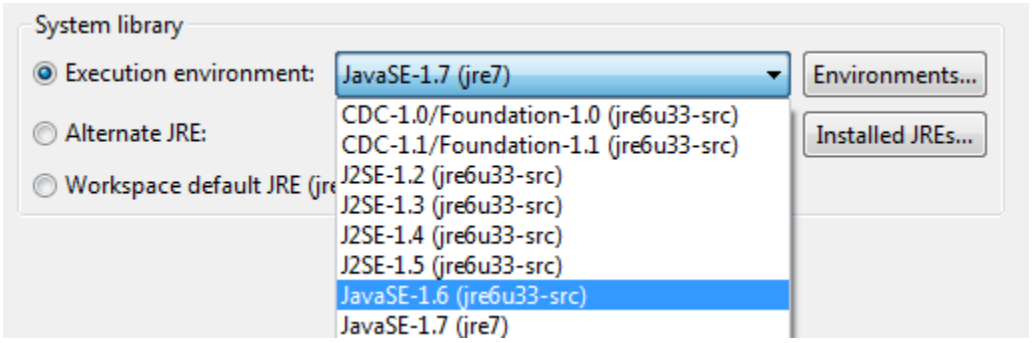

Properties for jUnitTests
type filter text
Resource
Builders
Java Build Path
Java Code Style
Java Compiler
Java Editor
Javadoc Location
Project References
Run/Debug Settings
Subversion
Task Repository
Task Tags
TestNG
Validation
WikiText
Java Compiler
Enable project specific settings
Configure Workspace Settings...
JDK Compliance
Use compliance from execution environment on the 'Java Build Path'
Compiler compliance level:
1.6
Use default compliance settings
Generated .class files compatibility:
1.6
Source compatibility:
1.6
Disallow identifiers called 'assert':
Error
Disallow identifiers called 'enum':
Error
Classfile Generation
Add variable attributes to generated class files (used by the debugger)
Add line number attributes to generated class files (used by the debugger)
Add source file name to generated class file (used by the debugger)
Preserve unused (never read) local variables
Inline finally blocks (larger class files, but improved performance)
When selecting 1.6 compliance, make sure to have a compatible JRE installed and activated (currently 1.7). Configure the 'Installed JREs' and 'Execution Environments', or change the JRE on the 'Java Build Path'.
Restore Defaults
Apply
OK
Cancel


Java Compiler
Enable project specific settings
Configure Workspace Settings...
JDK Compliance
Use compliance from execution environment on the 'Java Build Path'
Compiler compliance level:
1.7
Use default compliance settings

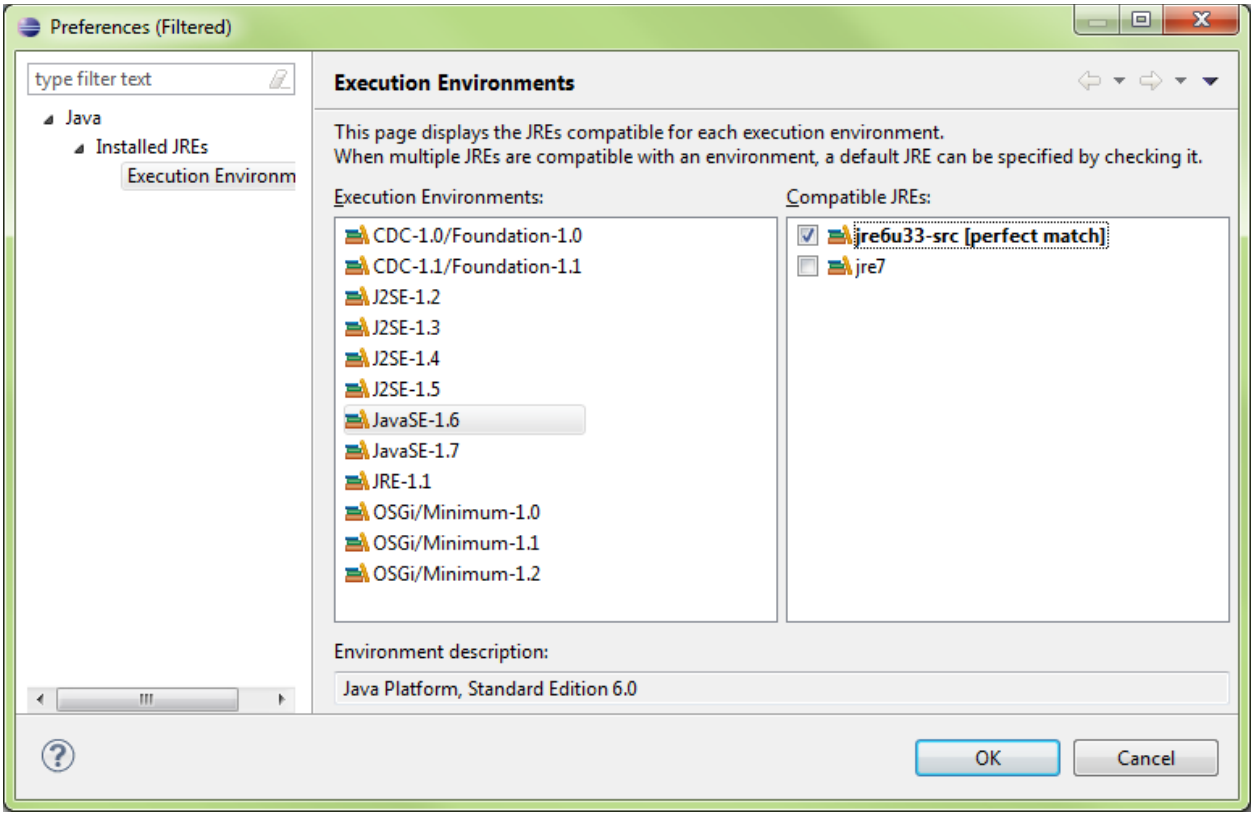




Press the Environments button to update the package refences



- IN this case, JavaSE-1.6 was mentioned in the error message so probably best to find a matching JRE for it
- jre6u33-src shows to be a [perfect match] for the requirement, so we'll select it.



JAVA LANGUAGE TOOLS

MAIN CLASS

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

Required by Class:

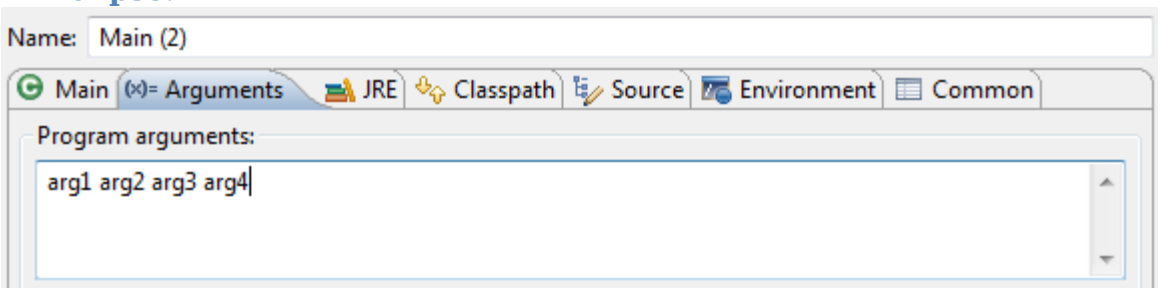
- public - can be called anywhere
- static - no instance required to run
- void - nothing returned by class
- String[] args
    - [] - an array
    - args - default variable to hold passed data
    - Passed by Java's JVM

PASSING ARGS

Command Line

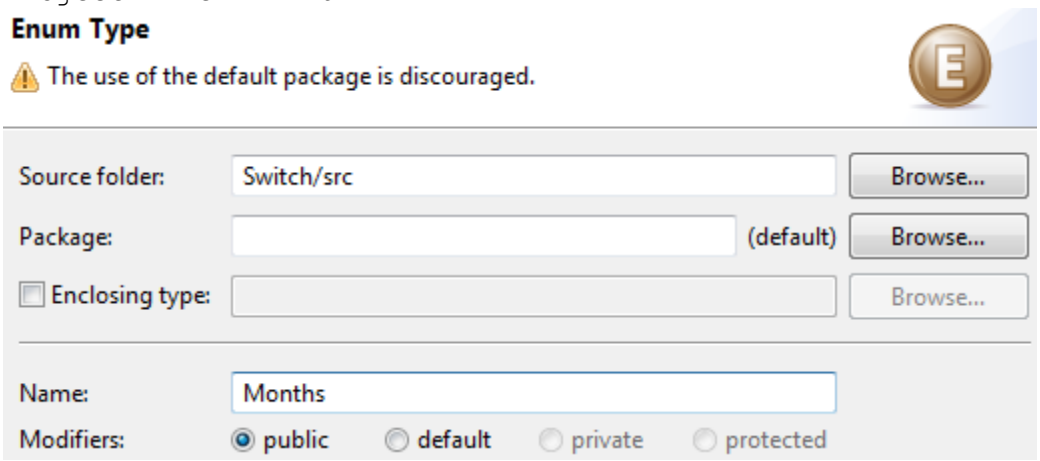
```
java Main arg1 arg2
```

In Eclipse:



SWITCH STATEMENTS: ENUMS

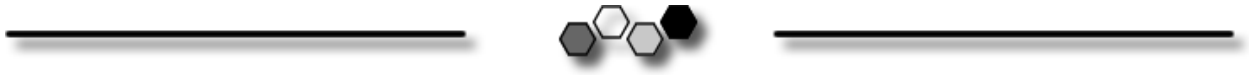
```
Project > New > Enum
```



Code:

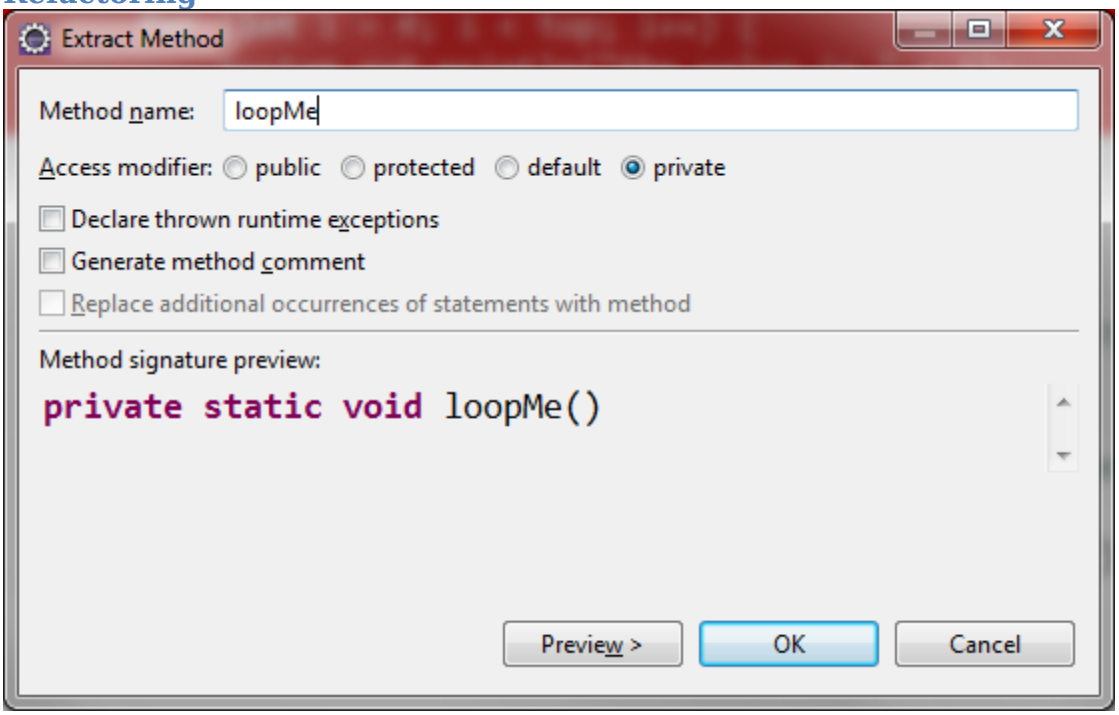
```
public enum Month {
   JANUARY, FEBRUARY, MARCH; //Constants of enum class
}


public class SwitchWithEnums {
   // Enumerations
   public static void main(String[] args) {

//     int month = 1;
       Month month = Month.FEBRUARY;

       switch(month) {
       case JANUARY:
            System.out.println("It's the first month");
            break;
```

```
        case FEBRUARY:
              System.out.println("It's the second month");
              break;
        case MARCH:
              System.out.println("Its the third month");
        }

    }

}
```



METHODS

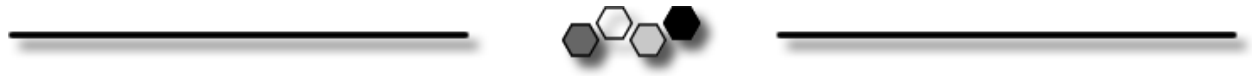
Refactoring



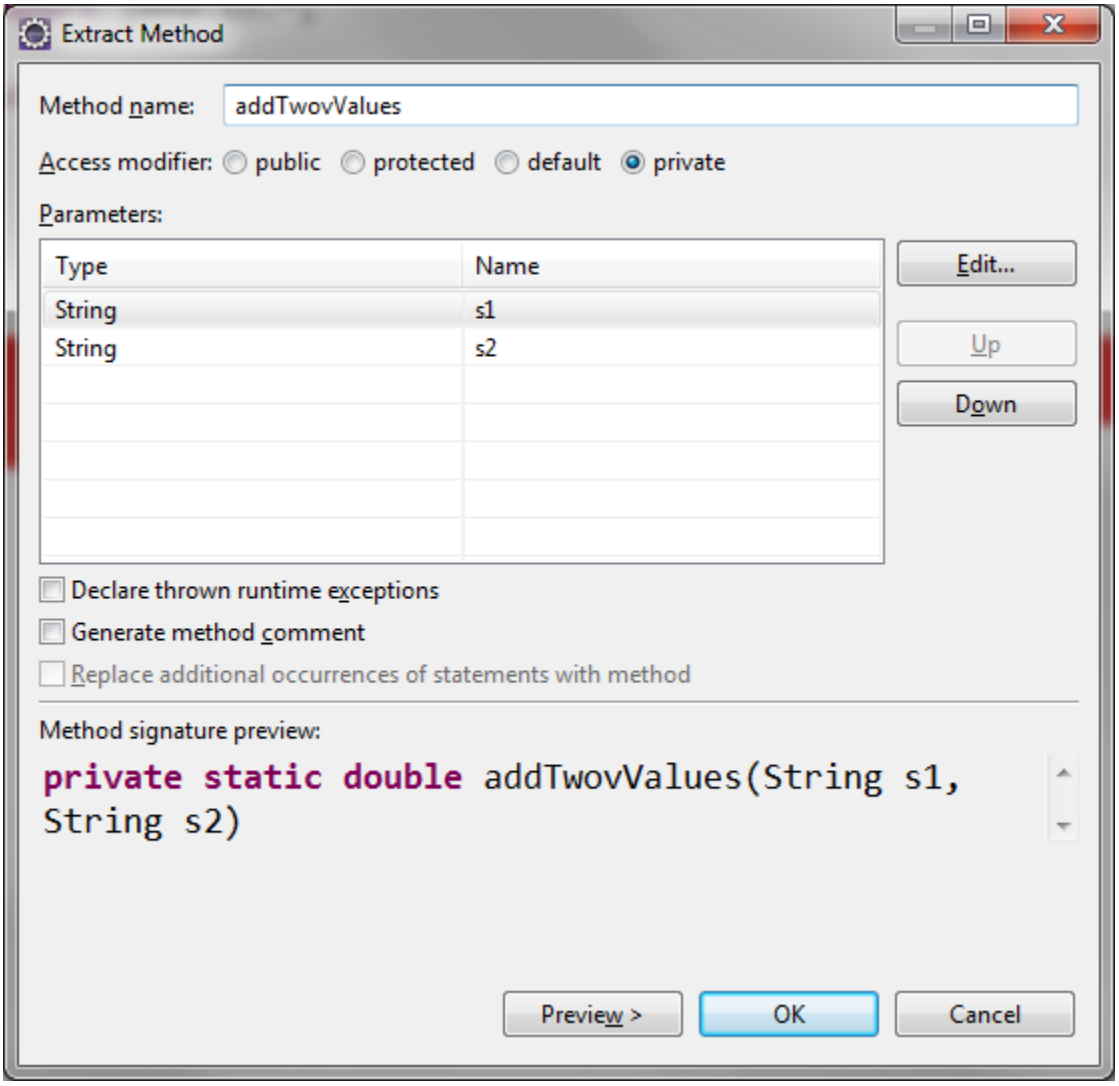
Code:

```
public class Main {

   public static void main(String[] args) {
       doSomething();
       //refactoring, copy code, Refactor..
       //will create a new method and reference it here
       loopMe();
   }

   private static void loopMe() {
       int top = 10;
       for (int i = 0; i < top; i++) {
```

```
            System.out.println("the value is " + i);
        }
    }


    //Access modifier public, private, protected (inheritance), none (protected package)
    //Static - class method, only used inside class
    //non-Static - used in instances
    //Static must create instance to call non-Static '.method()'

    private static void doSomething() {
        System.out.println("This method has been called");
    }


}
```



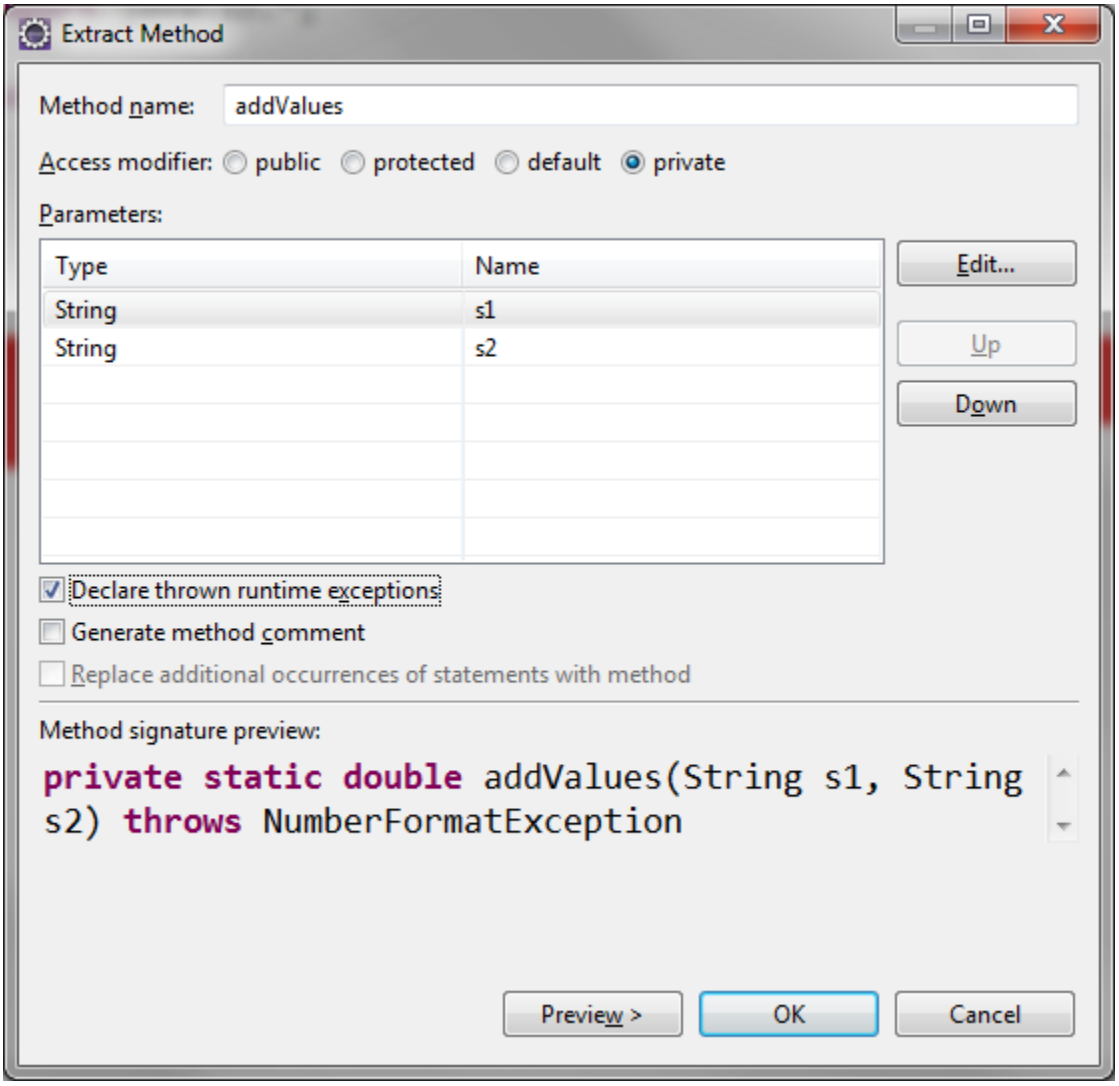
EXTRACTING A METHOD



Code:

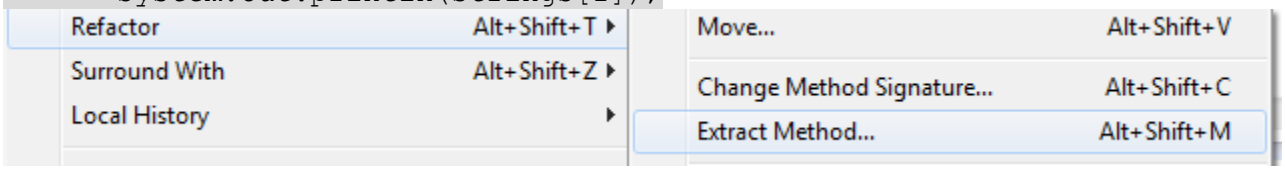
```
import java.io.*;

public class Calculator {

   public static void main(String[] args) {
      String s1 = getInput("Enter a numeric value: ");
      String s2 = getInput("Enter a numeric value: ");
// Extracting a Method
      double result = addTwovValues(s1, s2);

      System.out.println("The answer is " + result);
   }

// Extracted Method
   private static double addTwovValues(String s1, String s2) {
      double d1 = Double.parseDouble(s1);
      double d2 = Double.parseDouble(s2);
      double result = d1 + d2;
      return result;
   }

   private static String getInput(String prompt) {
      BufferedReader stdin = new BufferedReader(
                new InputStreamReader(System.in));

      System.out.print(prompt);
      System.out.flush();

      try {
            return stdin.readLine();
      } catch (Exception e) {
            return "Error: " + e.getMessage();
      }
   }

}
```

EXTRACT METHOD WITH ERROR HANDLING



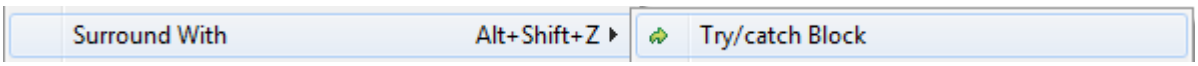
EXTRACTING AND ERROR HANDLING WITH TRY/CATCH BLOCK: REVISITED

```
    String[] strings = {"Welcome!"};
     System.out.println(strings[1]);
```




```
..
            getArrayItem(); //refactored getArrayItem()
..
     private static void getArrayItem()
      throws ArrayIndexOutOfBoundsException {
      String[] strings = {"Welcome!"};
      System.out.println(strings[1]);
```

```
    }
```




```
      try {
            getArrayItem(); //refactored getArrayItem()
      } catch (ArrayIndexOutOfBoundsException e) {
            // e.printStackTrace(); // <--- throws ugly message
            System.out.println("Array item was out of bounds");
      }
```

Code:

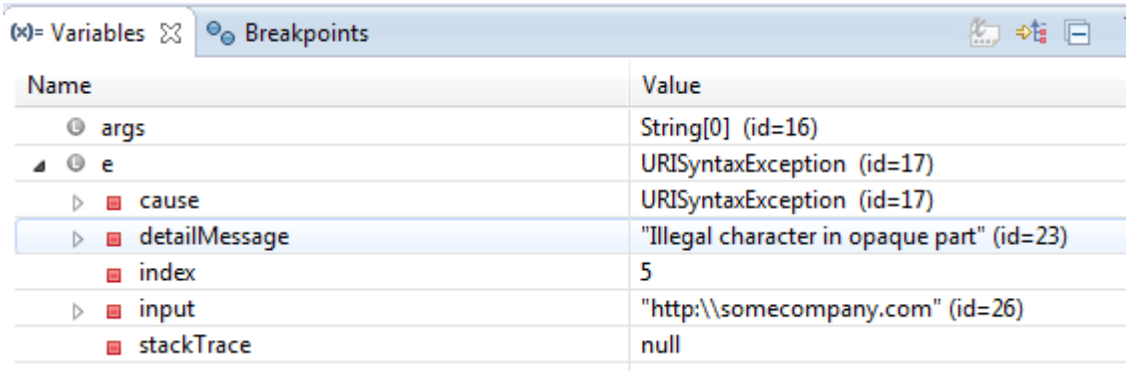
```
public class Main {

    public static void main(String[] args) {
      //Extrac Method with Error Handling
      //Surround with try/catch blcok
      try {
            getArrayItem(); //refactored getArrayItem()
      } catch (ArrayIndexOutOfBoundsException e) {
            // e.printStackTrace(); // <--- throws ugly message
            System.out.println("Array item was out of bounds");
            //Array item was out of bounds
      }
    }

    private static void getArrayItem()
      throws ArrayIndexOutOfBoundsException {
      String[] strings = {"Welcome!"};
      System.out.println(strings[1]);
    }

}
```

DEBUGGER

Finding Possible Exceptions

Highlight command > Help > Dynamic Help > JavaDoc > CONSTRUCTOR > METHOD

```
 URI uri = new URI("http:\\somecompany.com");

java.net.URISyntaxException: Illegal character in opaque part at index 5: http:\
somecompany.com
    at java.net.URI$Parser.fail(Unknown Source)
    at java.net.URI$Parser.checkChars(Unknown Source)
    at java.net.URI$Parser.parse(Unknown Source)
    at java.net.URI.<init>(Unknown Source)
    at Main.main(Main.java:10)
```



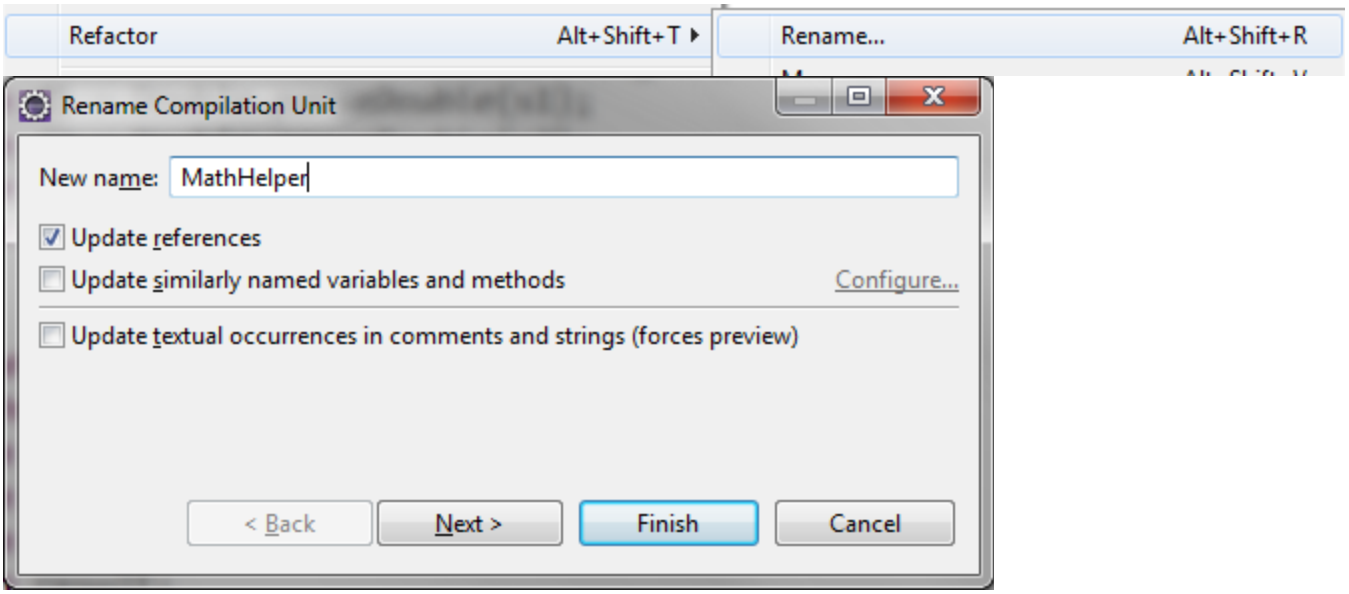

```
From  e.printStackTrace();
To    System.out.println(e.getMessage());
```

Code:

```
import java.net.URI;
import java.net.URISyntaxException;


public class Main {

    public static void main(String[] args) {
       //Uniform Resource Identifier
       try {
             URI uri = new URI("http:\\somecompany.com");
       } catch (URISyntaxException e) {
             System.out.println(e.getMessage());
             /*
             e.printStackTrace();
             java.net.URISyntaxException: Illegal character in opaque part at index 5:
http:\somecompany.com
             at java.net.URI$Parser.fail(Unknown Source)
             at java.net.URI$Parser.checkChars(Unknown Source)
             at java.net.URI$Parser.parse(Unknown Source)
             at java.net.URI.<init>(Unknown Source)
             at Main.main(Main.java:10)
             */
       }

       System.out.println("I'm alive!");
       //Exception in thread "main" java.lang.Error: Unresolved compilation problem:
       //    Unhandled exception type URISyntaxException
       //    at Main.main(Main.java:8)

    }

}
```

CLASSES

- Class = Filename.java
- Only one public class per java file
- Multiple classes only accessible within the files
- Refactoring is process of pulling code out, creating method/class
    - Also changing class name is refactoring



Code:

From

```
result = divideValues(s1, s2);
```

To

```
result = SimpleMath.divideValues(s1, s2);
```

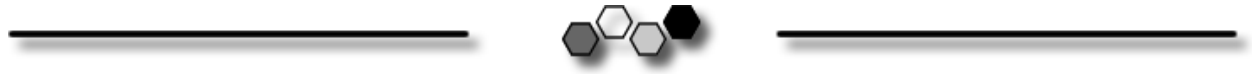
From

```
-------------------------------------------------------
public class Calculator2 {

   private static double divideValues(String s1, String s2) {
         double d1 = Double.parseDouble(s1);
         double d2 = Double.parseDouble(s2);
         double result = d1 / d2;
         return result;
-------------------------------------------------------
```

To

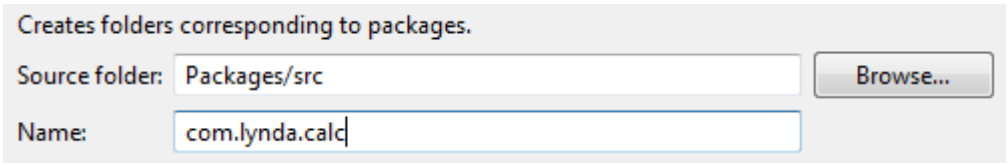
```
-------------------------------------------------------
public class SimpleMath {

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

```
}

public static double divideValues(String s1, String s2) {
        double d1 = Double.parseDouble(s1);
        double d2 = Double.parseDouble(s2);
        double result = d1 / d2;
        return result;
-------------------------------------------------------------
```



PACKAGES

- If class is anywhere but default package, it must be declared
- when creating packages, use reverse domain...
    - com.silosix.calc



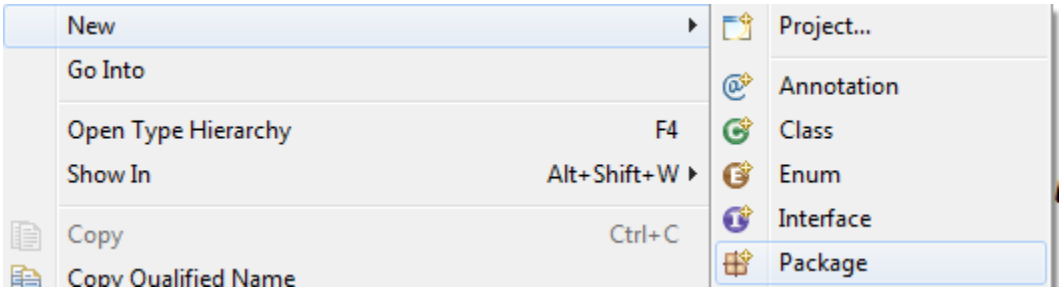
Importing Packages

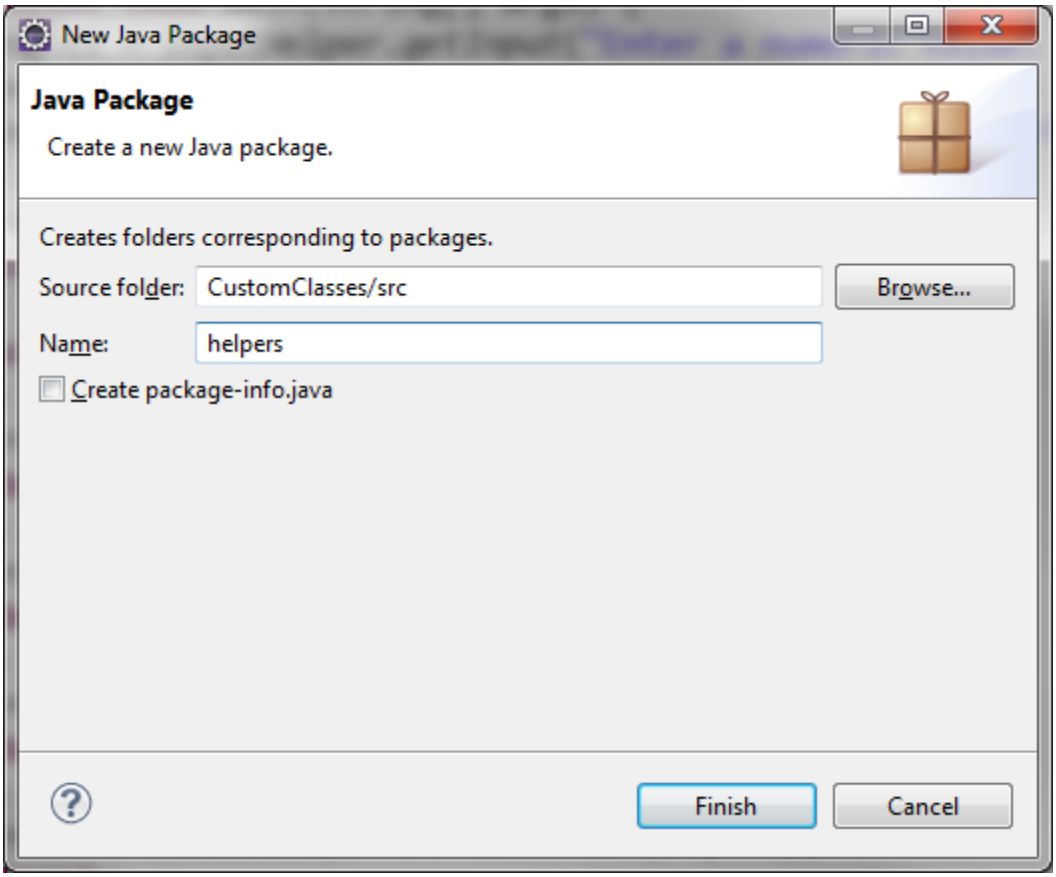
```
package com.lynda.calc;
import com.lynda.calc.helpers.InputHelper;
import com.lynda.calc.helpers.MathHelper;
```

same as:

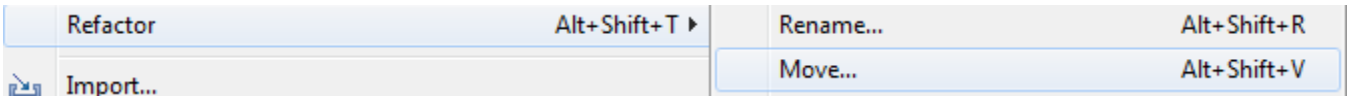
```
package com.lynda.calc;
import com.lynda.calc.helpers.*;
```

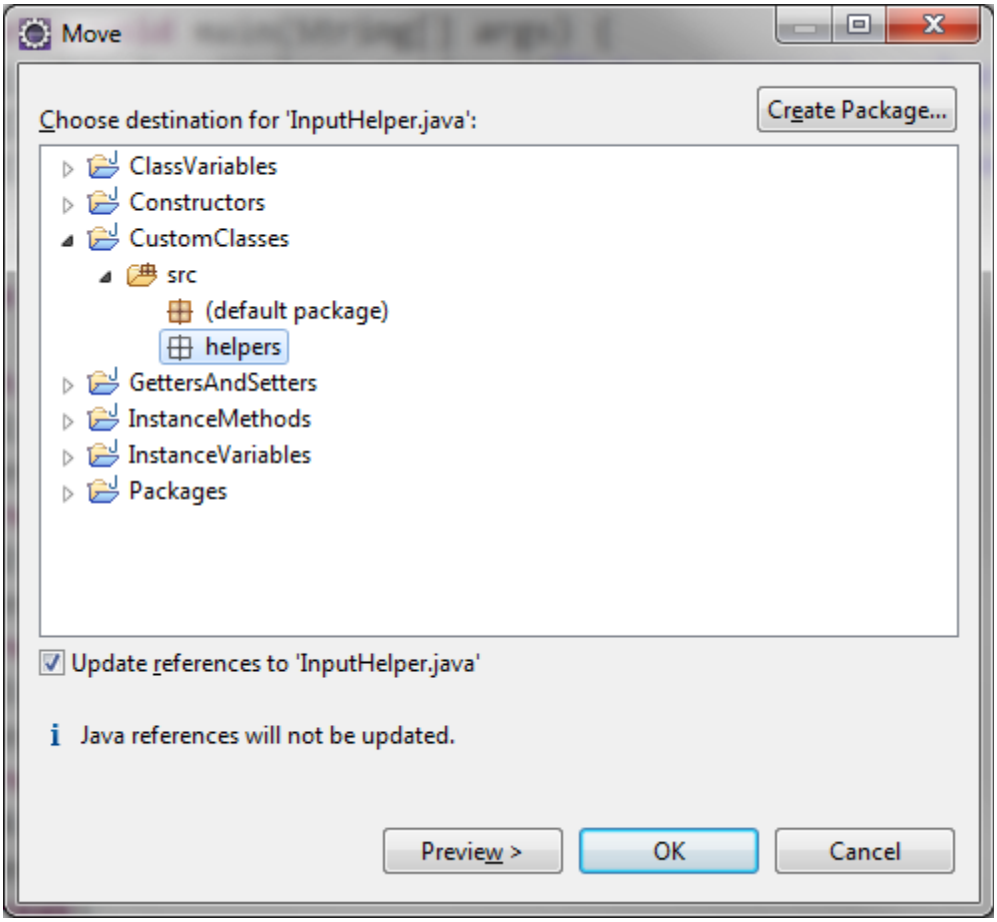
CTRL-O will change * to specific class imports

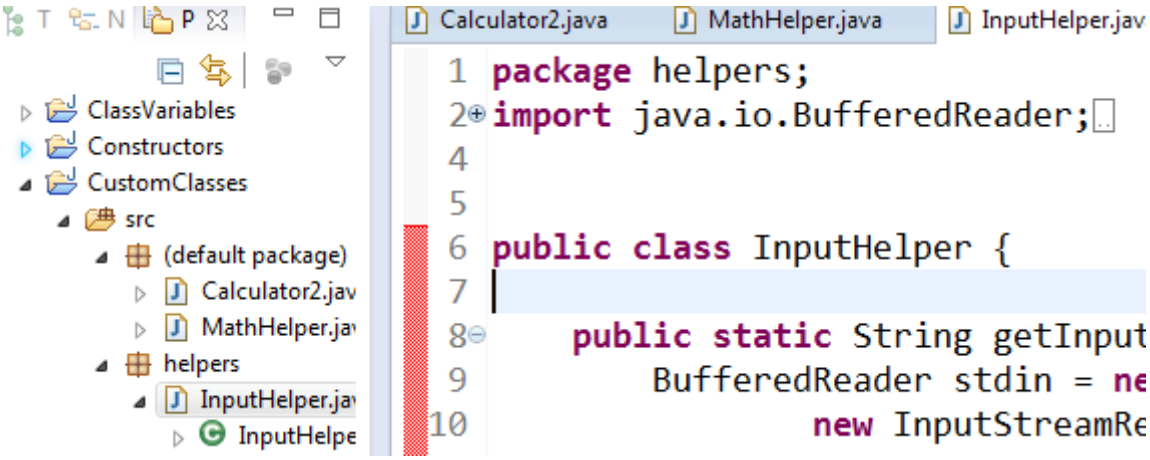




Refactor > Move



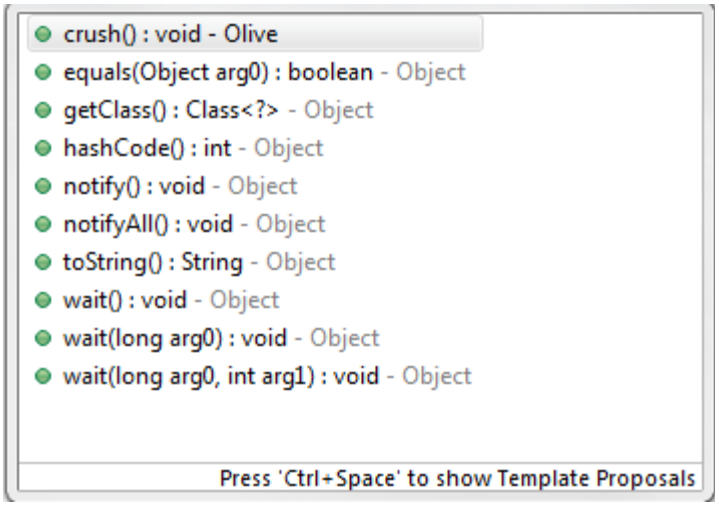

Move
Choose destination for 'InputHelper.java':
Create Package...
ClassVariables
Constructors
CustomClasses
src
(default package)
helpers
GettersAndSetters
InstanceMethods
InstanceVariables
Packages
Update references to 'InputHelper.java'
Java references will not be updated.
Preview >
OK
Cancel


ClassVariables
Constructors
CustomClasses
src
(default package)
Calculator2.jav
MathHelper.jav
helpers
InputHelper.jav
InputHelpe
Calculator2.java
MathHelper.java
InputHelper.jav
1 package helpers;
2 import java.io.BufferedReader;
4
5
6 public class InputHelper {
7
8 public static String getInput
9 BufferedReader stdin = ne
10 new InputStreamRe

INSTANCE METHODS

- Class method called from definition of the class
  - building up utility functions that pass all data in the call
  - STATIC present
- Instance method call from instance of the class - OBJECT
  - objects stick around and retain their data so its always accessible.
  - STATIC missing
- Method declarations
  - static - class method
  - public - called anywher ein ap
  - private - only within class
  - protected - only within this class or its subclasses

- Object Superclass methods with
- Olive()'s crush() method
- Olive inherits Object() methods/properties



Code: Main.java

```
package com.lynda.olivepress;

import com.lynda.olivepress.olives.Olive;
import com.lynda.olivepress.press.OlivePress;

public class Main {
    public static void main(String[] args) {
       //creating 3 anonymous Olive objects
       Olive[] olives = {new Olive(), new Olive(), new Olive()};
       OlivePress press = new OlivePress();
       press.getOil(olives);
    }
}
```

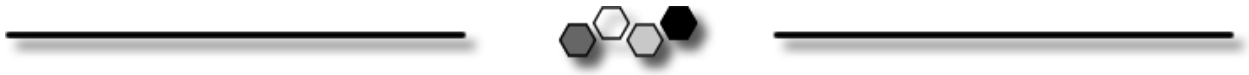
Code: OlivePress.java

```
package com.lynda.olivepress.press;

import com.lynda.olivepress.olives.Olive;
```

```
public class OlivePress {
    public void getOil(Olive[] olives)    {
       for (Olive olive : olives) {
            olive.crush();
       }
    }
}
```

Code: Olive.java

```
package com.lynda.olivepress.olives;

public class Olive {

    public void crush() {
       System.out.println("Ouch!");
    }
}
```



CONSTRUCTORS

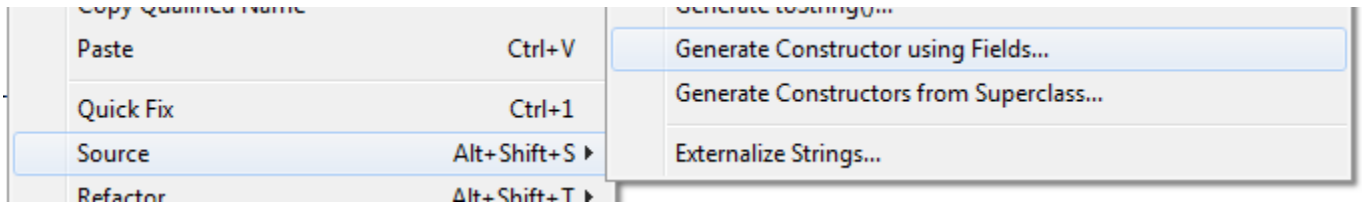
- Constructors have no return value (void, int, etc)
- can create multiple constructors (overloading) with different input specs
- Always create a 'no argument' constructor for clarity
    - public OlivePress() { }
- Can Create a new constructor with fields....

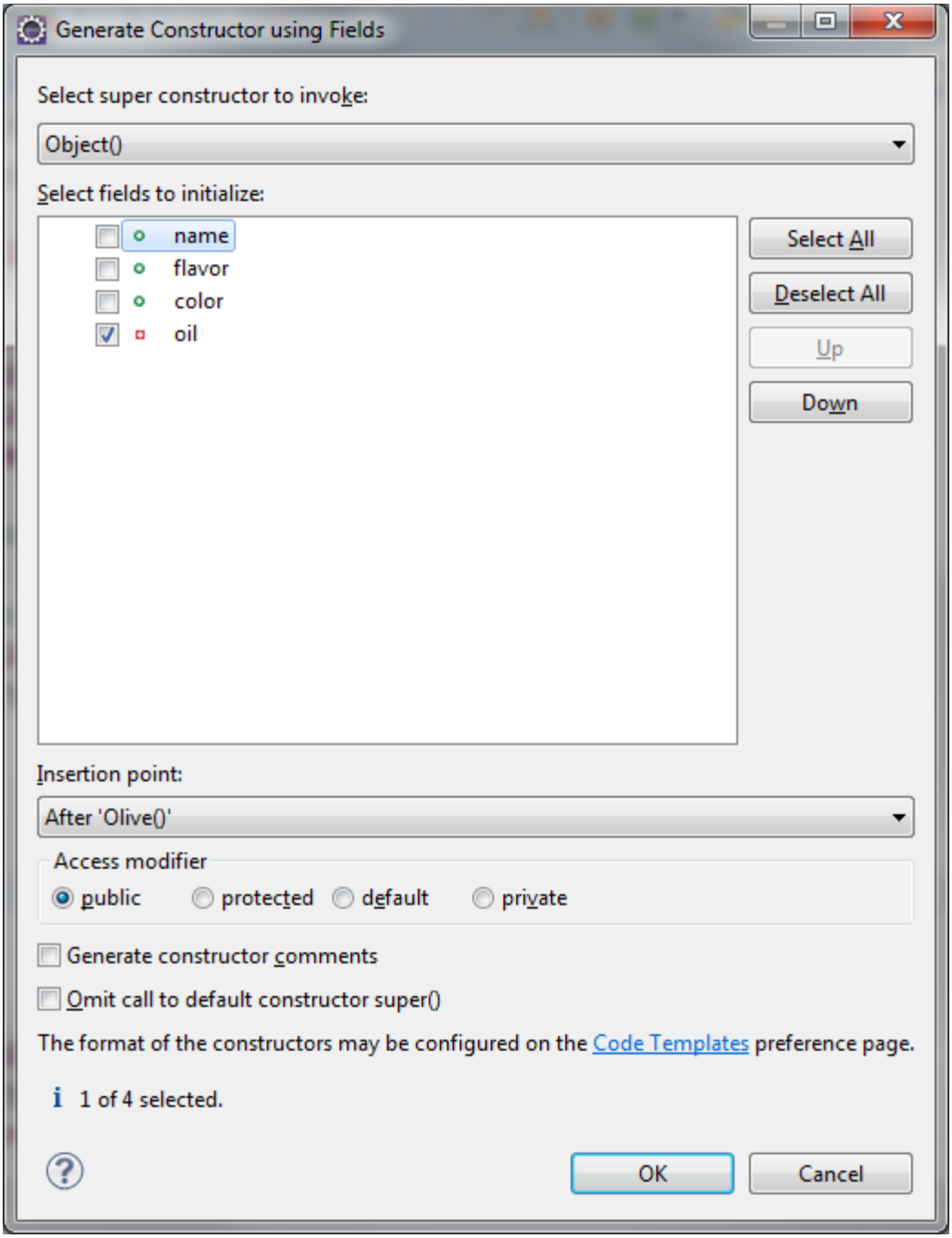
Constructor of the Olive() class

```
    public Olive() {
      System.out.println("Constructor of " + this.name);
    }
```

Creating another constructor to catch argument and populate a field:

```
    public Olive(int oil) {
//this.oil means field(instance variable
//otherwise refers to argument
      this.oil = oil;

    }
```

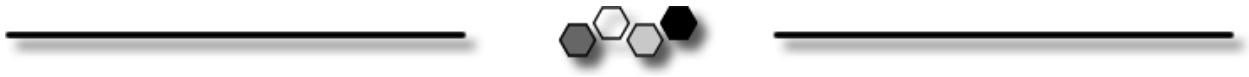




Code:

```
package com.lynda.olivepress.olives;

public class Olive {

    public String name = "Kalamata";
    public String flavor = "Grassy";
    public long color = 0x000000;
    private int oil = 3;

    //constructor, same name as class
    //no return on constructors
    //can overload the constructor
    public Olive() {
```

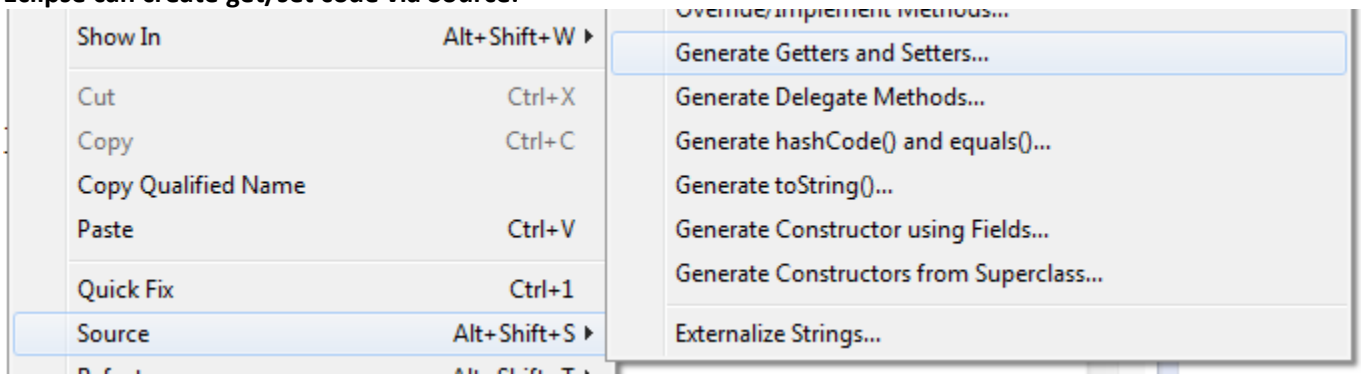
```
      System.out.println("Constructor of " + this.name);
    }

    public Olive(int oil) {
      this.oil = oil;
    }

    public int crush() {
      System.out.println("ouch!");
      return oil;
    }
}
```

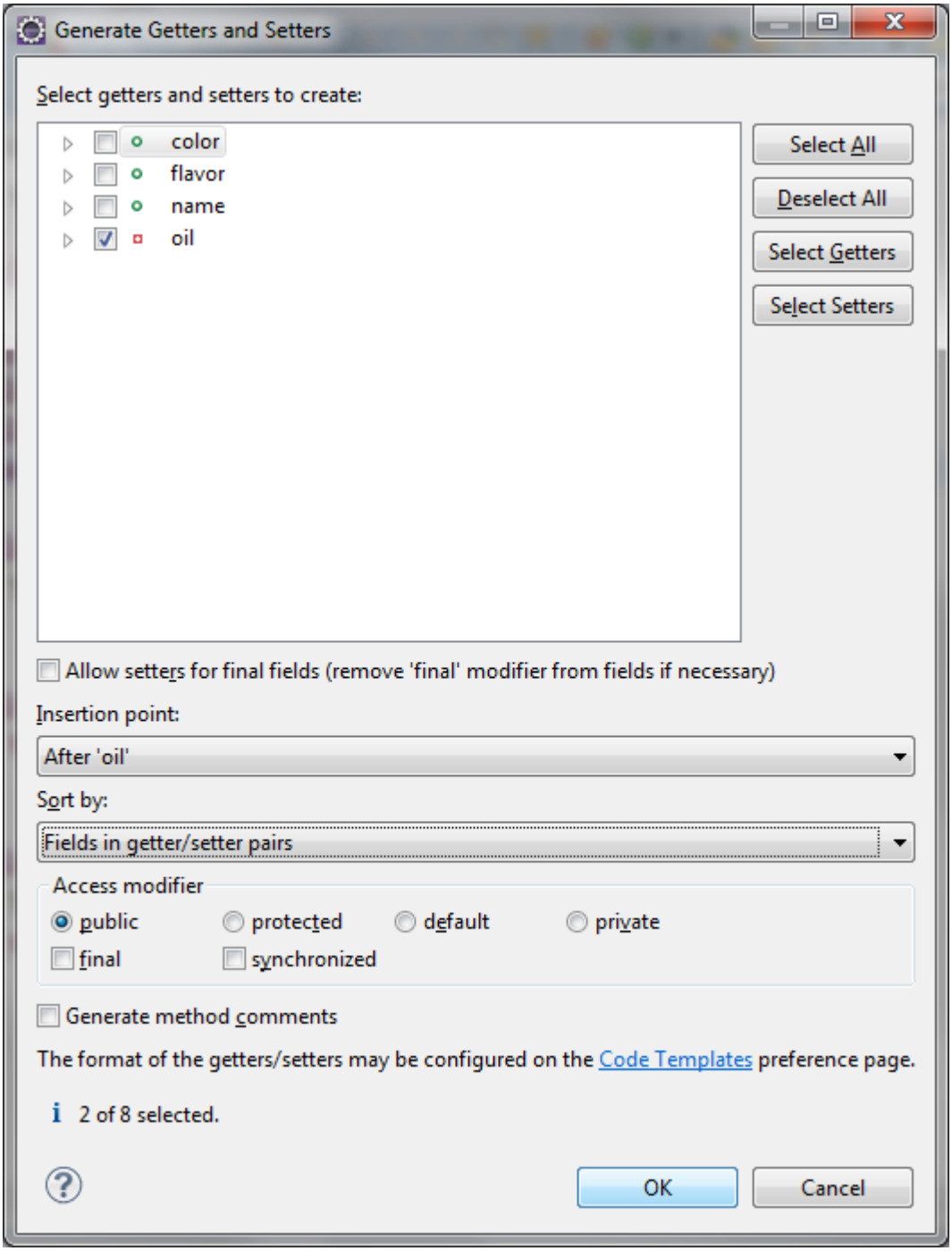


GETTERS/SETTERS

- OO development patters
- Fields should be private
- Get to data with get/set
    - Create private get() and set()

Eclipse can create get/set code via Source:





Creates:

```
    public int getOil() {
      return oil;
  }

  public void setOil(int oil) {
     this.oil = oil;
  }
```

Code: Main.java

```
package com.lynda.olivepress;

import java.util.ArrayList;

import com.lynda.olivepress.olives.Olive;
import com.lynda.olivepress.press.OlivePress;

public class Main {

    public static void main(String[] args) {

       ArrayList<Olive> olives = new ArrayList<Olive>();

       Olive olive;

       olive = new Olive(2);
       System.out.println(olive.name);
       olives.add(olive);

       olive = new Olive(1);
       System.out.println(olive.name);
       olives.add(olive);

       olive = new Olive(2);
       System.out.println(olive.name);
       olives.add(olive);

       OlivePress press = new OlivePress();
       press.getOil(olives);
       System.out.println("You got " + press.getTotalOil() + " units of oil");

       press.getOil(olives);
       System.out.println("You got " + press.getTotalOil() + " units of oil");
    }

}
```

Code: OlivePress.java

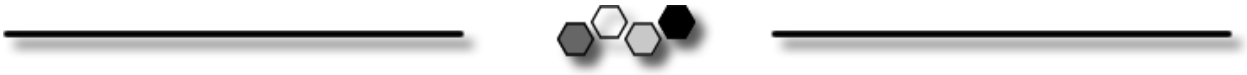
```
package com.lynda.olivepress;

import java.util.ArrayList;

import com.lynda.olivepress.olives.Olive;
import com.lynda.olivepress.press.OlivePress;

public class Main {

    public static void main(String[] args) {

       ArrayList<Olive> olives = new ArrayList<Olive>();

       Olive olive;
```

```
        olive = new Olive(2);
        System.out.println(olive.name);
        olives.add(olive);

        olive = new Olive(1);
        System.out.println(olive.name);
        olives.add(olive);

        olive = new Olive(2);
        System.out.println(olive.name);
        olives.add(olive);

        OlivePress press = new OlivePress();
        press.getOil(olives);
        System.out.println("You got " + press.getTotalOil() + " units of oil");

        press.getOil(olives);
        System.out.println("You got " + press.getTotalOil() + " units of oil");
    }

}
```

Code: Olive.java

```
package com.lynda.olivepress;

import java.util.ArrayList;

import com.lynda.olivepress.olives.Olive;
import com.lynda.olivepress.press.OlivePress;

public class Main {

    public static void main(String[] args) {

        ArrayList<Olive> olives = new ArrayList<Olive>();

        Olive olive;

        olive = new Olive(2);
        System.out.println(olive.name);
        olives.add(olive);

        olive = new Olive(1);
        System.out.println(olive.name);
        olives.add(olive);

        olive = new Olive(2);
        System.out.println(olive.name);
        olives.add(olive);

        OlivePress press = new OlivePress();
        press.getOil(olives);
        System.out.println("You got " + press.getTotalOil() + " units of oil");
```

```
        press.getOil(olives);
        System.out.println("You got " + press.getTotalOil() + " units of oil");
    }

}
```



CLASS VARIABLES

- Java has no CONSTANT declaration so.....

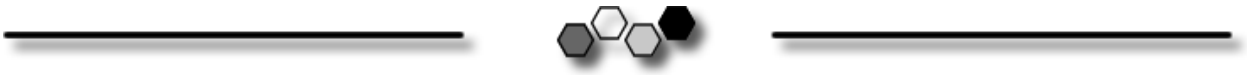
```
// public - accessible from entire app
// static - class var
// final - value can't be changed
```

IN Olive()...

```
public static final long BLACK= 0x000000;
```

using it

```
public long color = Olive.BLACK;
```



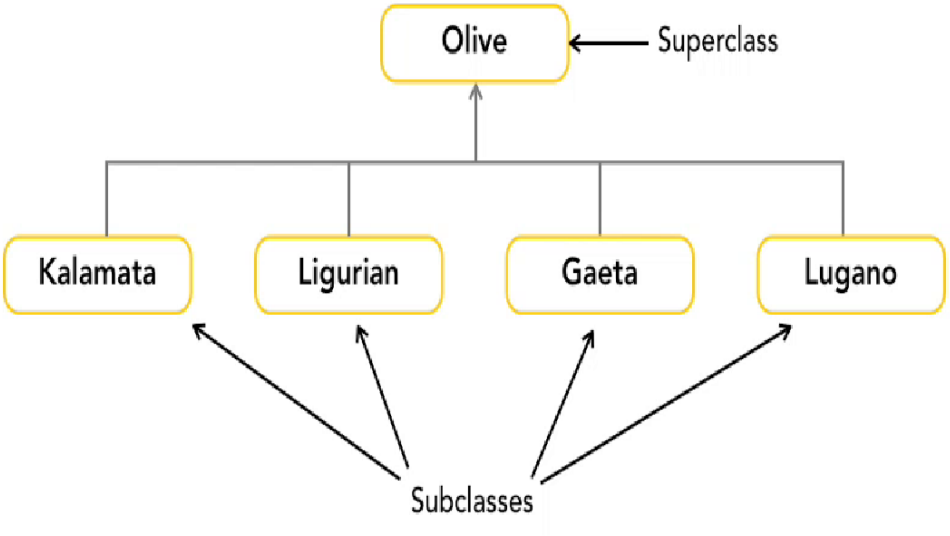
INHERITANCE

- Java has only single inheritance - only one inherited parent
- Parent/child
- Base/derived
- Superclass/subclass <- Preferred Java nomenclature
    - By default Object() is the superclass unless directly specified

POLYMORPHISM

- Can used as Superclass or Subclass
- Declare the object by Superclass

Superclass can have more than one subclass



- **Private - only called within own class**
- **Protected - called by own class or subclass**
- **Public - called from anywhere**

Subclasses extend superclass

extending Olive by setting inital volume (setVolume)

```
public class Kalamata extends Olive() {
      public Kalamata() {this.setVolume(2);}
}
public class Liguria extends Olive() {
      public Liguria () {this.setVolume(5);}
}
```

…..this creates inheritance

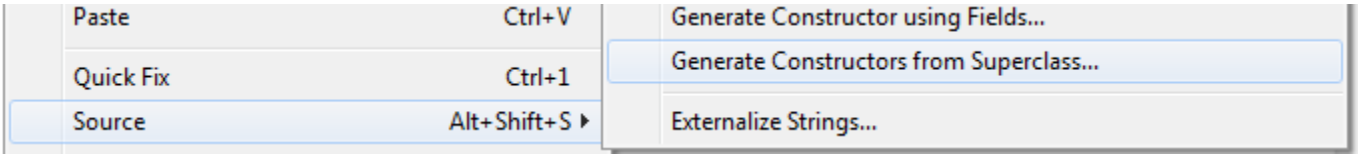
```
Olive[] olives = {new Kalamata(), new Liguria(), new Kalamata()};
OlivePress press = new OlivePress(olives);
OliveOil oil - press.getOil;
```

Takes Kalamata() class and fits into Superclass Olive()

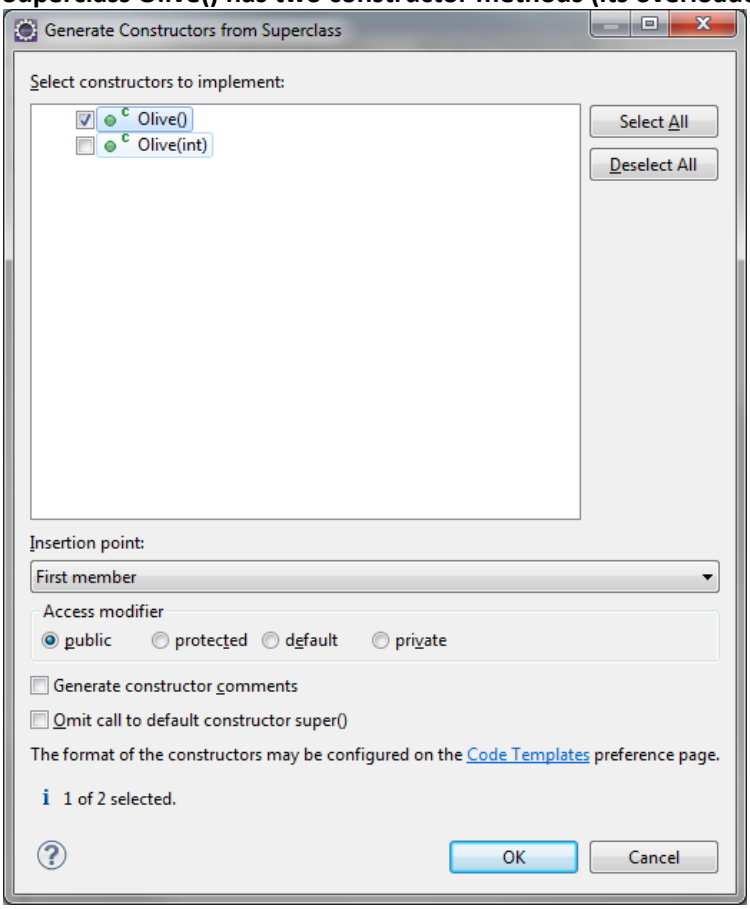
EXTENDING CUSTOM CLASSES

- Superclass doesnot pass on its constructor so...
- Each subclass needs its own constructor

In subclass... use IDE to copy constructors from the Superclass
Can select all or one...



Superclass Olive() has two constructor methods (its overloaded)



Creates...

```
      public Kalamata() {
       super();//calling superclass constructor method
       // TODO Auto-generated constructor stub
    }
```

Code: Main

```
package com.lynda.olivepress;

import java.util.ArrayList;

import com.lynda.olivepress.olives.Kalamata;
import com.lynda.olivepress.olives.Ligurian;
import com.lynda.olivepress.olives.Olive;
import com.lynda.olivepress.press.OlivePress;

public class Main {

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

```
      ArrayList<Olive> olives = new ArrayList<Olive>();

      Olive olive;

      //olive = new Olive(2); //Was calling SuperClass
      olive = new Kalamata();
      System.out.println(olive.name);
      olives.add(olive);

      olive = new Ligurian();
      System.out.println(olive.name);
      olives.add(olive);

      olive = new Kalamata();
      System.out.println(olive.name);
      olives.add(olive);

      OlivePress press = new OlivePress();
      press.getOil(olives);

      System.out.println("You got " + press.getTotalOil() +
                  " units of oil");

      press.getOil(olives);

      System.out.println("You got " + press.getTotalOil() +
                  " units of oil");
   }
}
```

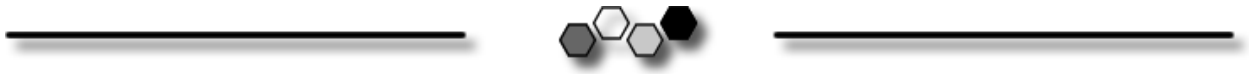
Code:Olive.java

```
package com.lynda.olivepress.olives;

public class Olive {

   public static final long BLACK = 0x000000;
   public static final long GREEN = 0x00ff00;

   public String name = "Kalamata";
   public String flavor = "Grassy";
   public long color = Olive.BLACK;
   private int oil = 3;

   public int getOil() {
      return oil;
   }

   public void setOil(int oil) {
      this.oil = oil;
   }

   public Olive() {
      System.out.println("Constructor of " + this.name);
   }
```

```
    public Olive(int oil) {
       setOil(oil);
    }

    public int crush() {
       System.out.println("ouch!");
       return oil;
    }
}
```

Code:Kalamata

```
package com.lynda.olivepress.olives;

public class Kalamata extends Olive {

    public Kalamata() {
       super(2); //calling superclass constructor method and passing '2'
       this.name = "Kalamata";
       this.flavor = "Grassy";
       this.color = Olive.BLACK;
    }

}
```



OVERRIDING METHODS (SUPER.SOMETHING();)

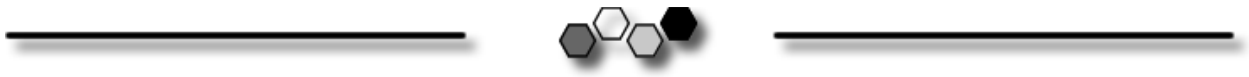
Code: Olive.java

```
package com.lynda.olivepress.olives;

public class Olive {

    public static final long BLACK = 0x000000;
    public static final long GREEN = 0x00FF00;

    public String name = "Kalamata";
    public String flavor = "Grassy";
    public long color = Olive.BLACK;
    private int oil = 3;

    public int getOil() {
       return oil;
    }

    public void setOil(int oil) {
       this.oil = oil;
    }

    public Olive() {
       System.out.println("Constructor of " + this.name);
    }
```

```
    public Olive(int oil) {
       setOil(oil);
    }

    public int crush() {
       System.out.println("crush from superclass");
       //System.out.println("ouch!");
       return oil;
    }

}
```

Code: Kalamata.java

```
package com.lynda.olivepress.olives;

public class Kalamata extends Olive {

    public Kalamata() {
       super(2);
       this.name = "Kalamata";
       this.flavor = "Grassy";
       this.color = Olive.BLACK;
    }

    //Annotation wth @...data type MUST match (super.crush())
    @Override
    public int crush() {
       System.out.println("crush from subclass");
       return super.crush();
    }

}
```



CASTING OBJECTS

- As in conversion...upward/downward (int -> long / long -> int)
- casting
    - upcasting - subclass as superclass (SAFE)
    - downcasting - superclass as subclass (RISKY)

```
//Downcasting - will cause compiler error
 Kalamata olive1 =olives.get(0);

//Downcasting Excplicitly
 Kalamata olive1 = (Kalamata)olives.get(0);
```

Problems | Javadoc | Declaration | Search | Console | Debug

1 error, 0 warnings, 0 others

Description	Resource	Path	Location	Type
Errors (1 item)				
Type mismatch: cannot convert from Olive to Kalamata	Main.java	/CastingObjects/sr...	line 39	Java Problem

Create a Kalamata() olive1 from Olive() in ArrayList[0], position 0

```
Kalamata olive1 = olives.get(0);
```

Create a Kalamata() olive1 from Kalamata() Olive() in ArrayList[0], position 0

```
Kalamata olive1 = (Kalamata)olives.get(0);
```

Code:

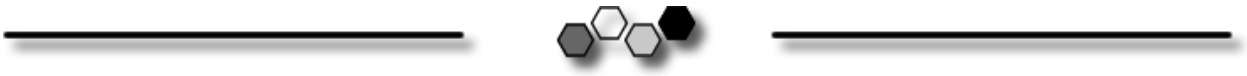
Main.java

```
//Downcasting
 Kalamata olive1 = (Kalamata)olives.get(0);
//downcast Olive() to (Kalamata)
//(Kalamata)olives.get(0) means USE SUBCLASS
 System.out.println("Olive 1 is from " + olive1.getOrigin());
```

Kalamata.java (only in the Kalamata subclass, not others..)

getOrigin extends Olive()

```
public String getOrigin() {
 return "Greece";
}
```



INTERFACES

- Allows definition of classes' structure
  - final fields
  - method names
  - return data type
- Interfaces provides definition for creating classes
  - Allows for polymorphism due to similarities

Code:

This method only accept ArrayLists (part of Collection data type I/F)

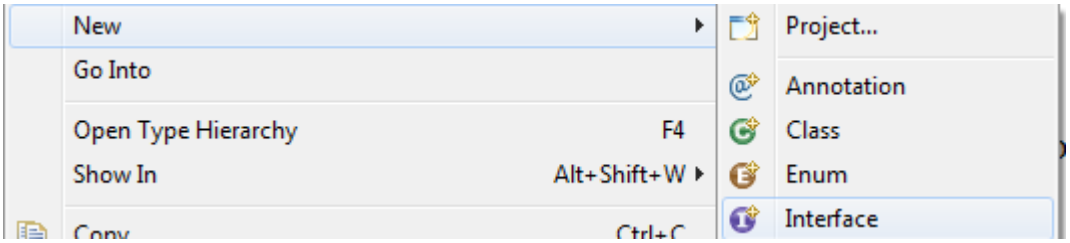
```
public void getOil(ArrayList<Olive> olives) {}
```

This is more flexible and can take any Data Type that implements the Collection I/F

```
public void getOil(Collection<Olive> olives) {
```

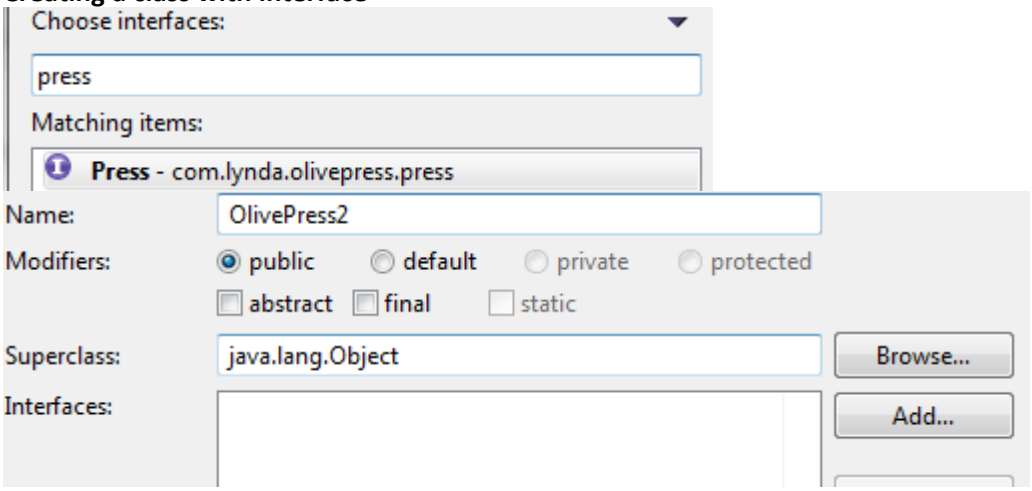
CREATING INTERFACES

- No constructor methods or other class elements
- Modeling behavior, not dynamic managment of data
- MUST BE PUBLIC




```
package com.lynda.olivepress.press;

public interface Press {
}
```

Creating a class with interface



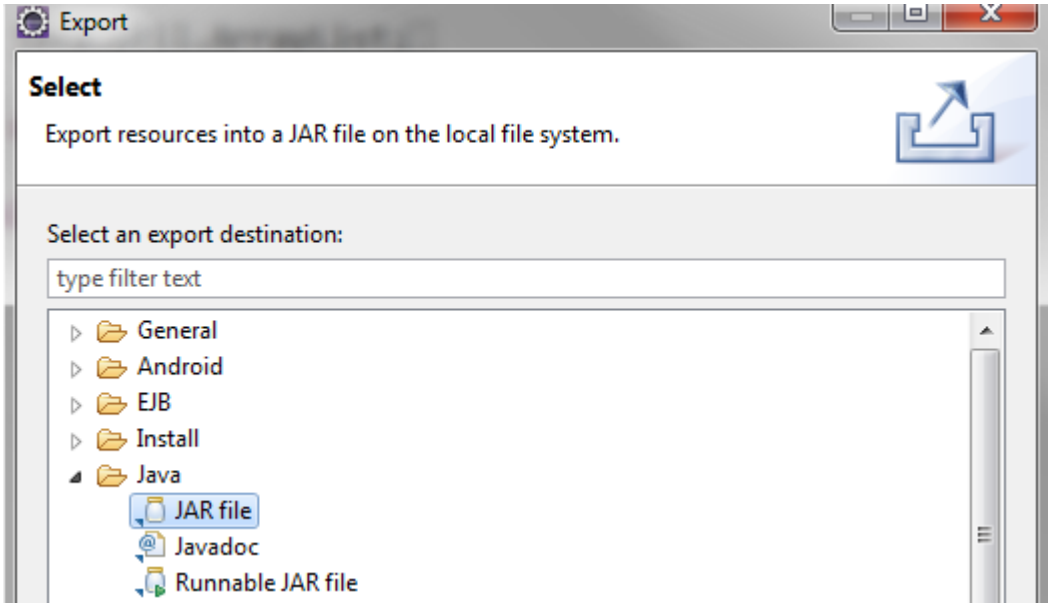
Code:

```
package com.lynda.olivepress.press;

import java.util.Collection;

import com.lynda.olivepress.olives.Olive;

public class OlivePress2 implements Press {

    @Override
    public void getOil(Collection<Olive> olives) {
       // TODO Auto-generated method stub

    }

    @Override
    public int getTotalOil() {
       // TODO Auto-generated method stub
       return 0;
    }

    @Override
    public void setTotalOil(int totalOil) {
       // TODO Auto-generated method stub
    }
```

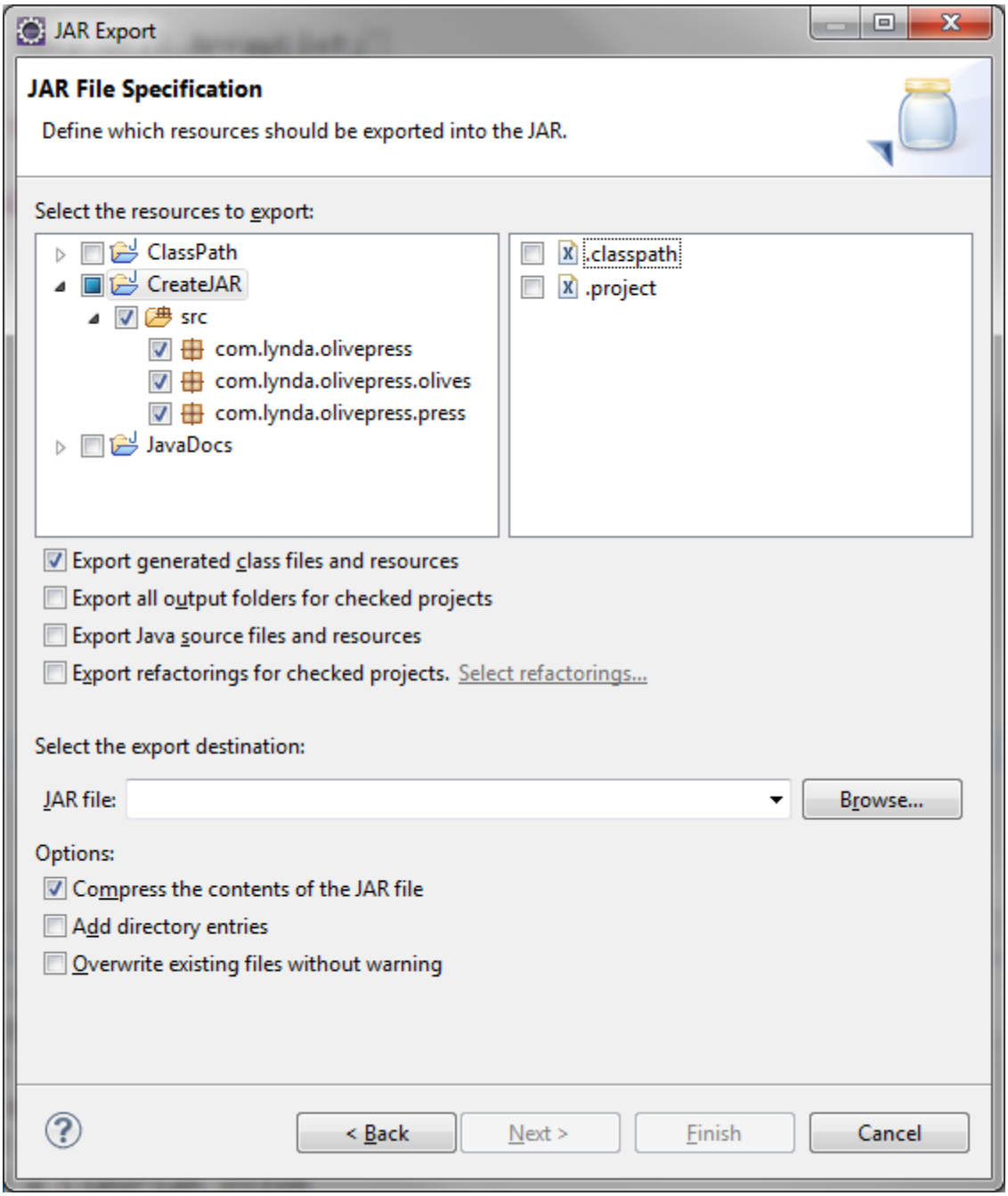
}

CREATING JARS

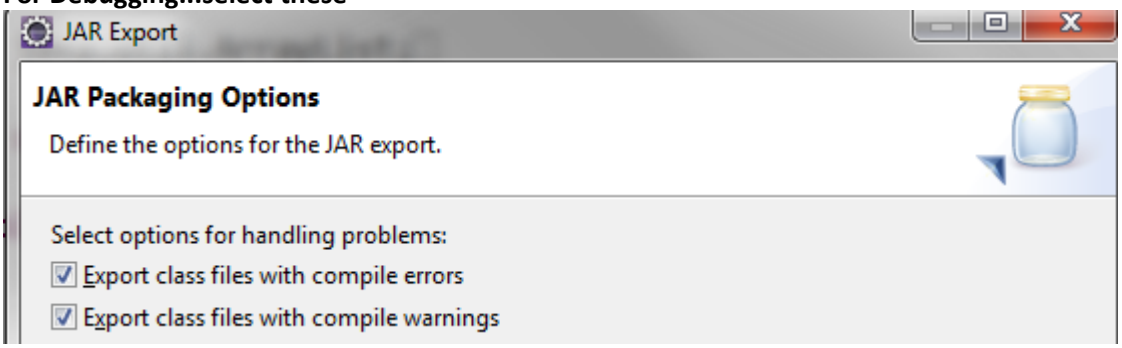
- Build Project
- File > Export



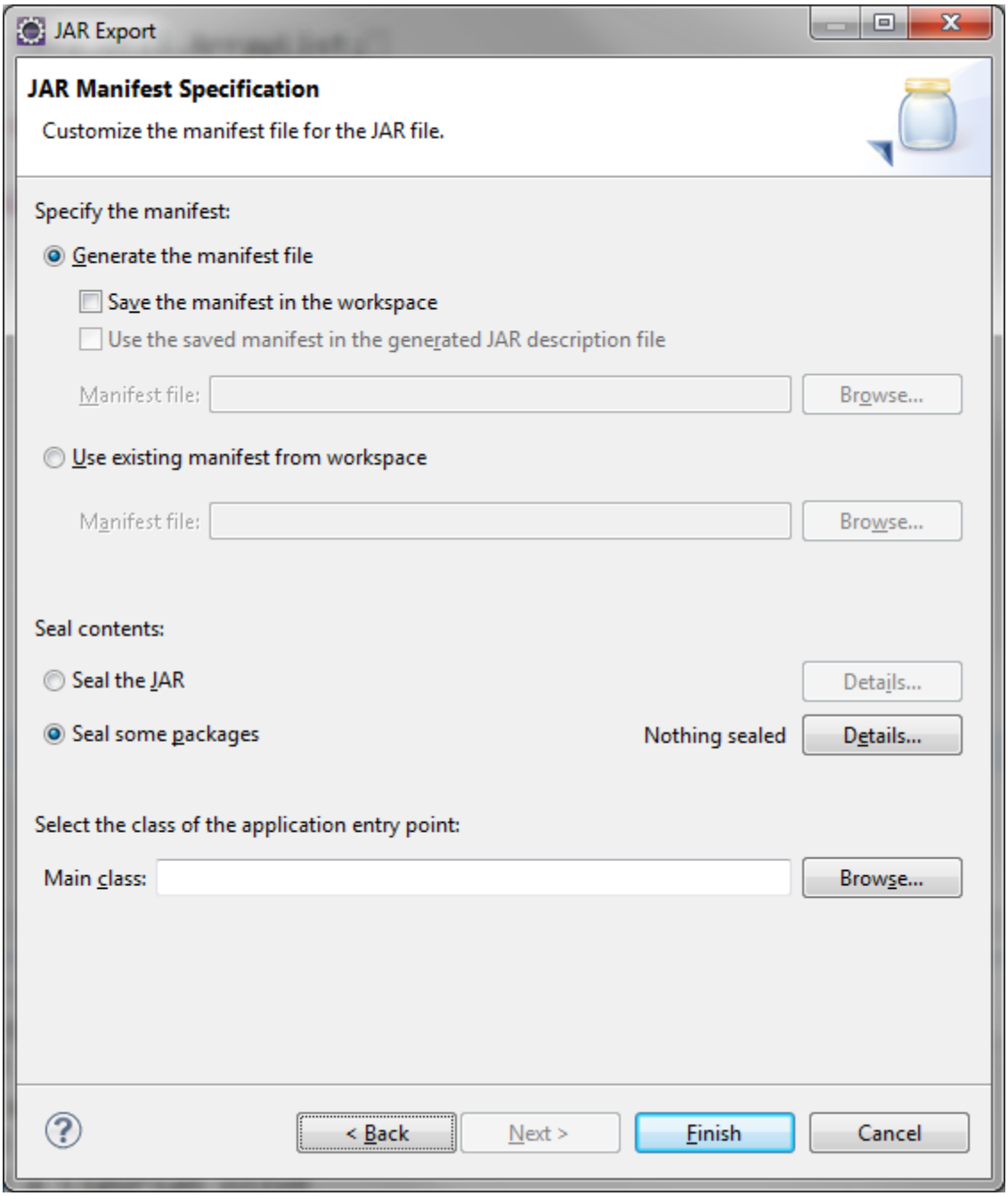
Don't select Eclipse .classpath or .project



For Debugging...select these



Manifest file has project metadata



CLASSPATH

Create a batch file and pass %1

```
set CLASSPATH=.
```

OR

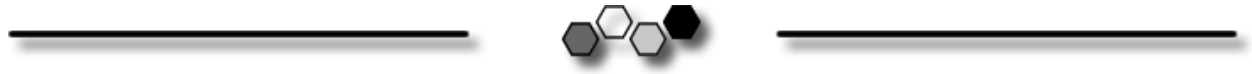
For Linux

```
D:\TEMP\Eclipse>java -classpath .:OlivePressApp.jar com.lynda.olivepress.Main
```

For Windows

```
D:\TEMP\Eclipse>java -classpath .;OlivePressApp.jar com.lynda.olivepress.Main
You crushed a Kalamata olive
```

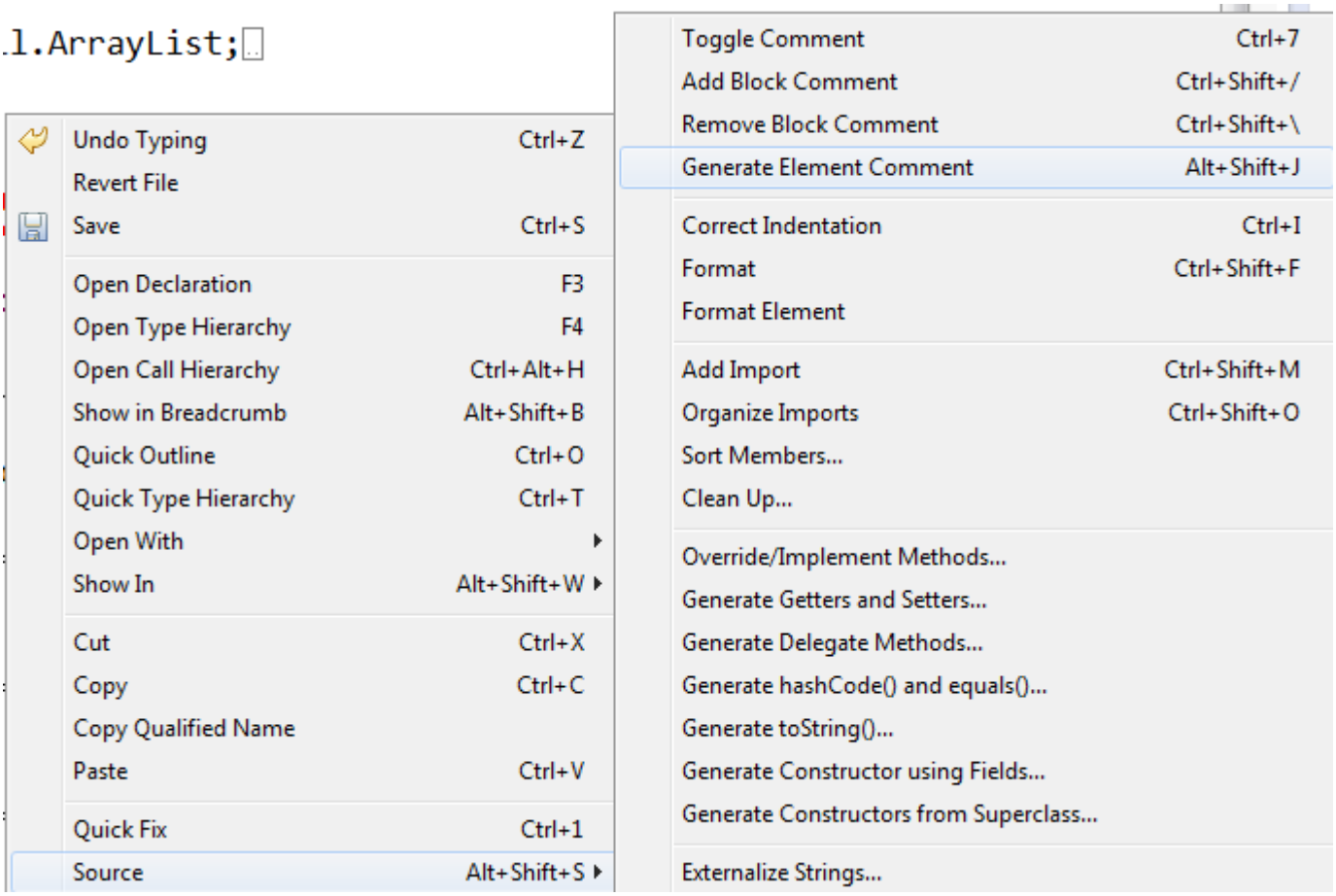
```
You crushed a Ligurian olive
You crushed a Kalamata olive
You have 5 units of oil
You crushed a Kalamata olive
You crushed a Ligurian olive
You crushed a Kalamata olive
Now you have 10 units of oil
Olive 1 is from Greece
```



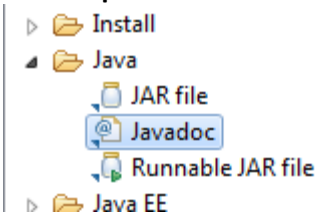
JAVADOCS

Source > Generate Element Comment

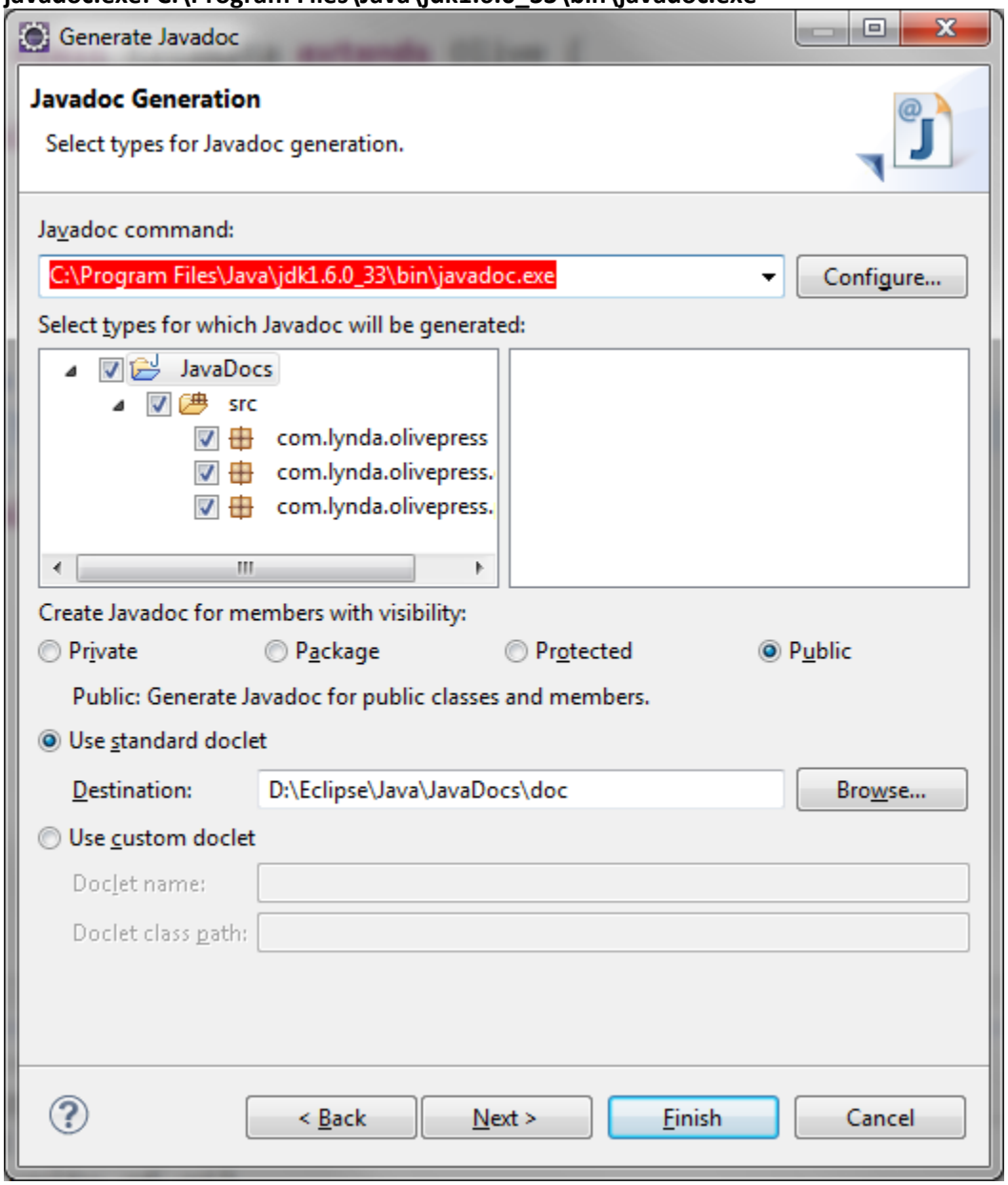
```
/**
 * @author SiloSix
 *
 */
```

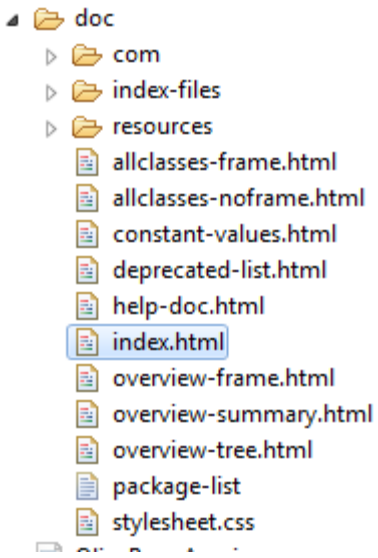


File > Export > Java > JavaDoc



javadoc.exe: C:\Program Files\Java\jdk1.6.0_33\bin\javadoc.exe





RESOURCES

- apache commons

JUNIT CLASS FOR TESTING:

- Annotations
    - @Test, @Before, @After, @BeforeClass, @AfterClass, @Ignore

Code:

```
import static org.junit.Assert.*;
import org.junit.After;
import org.junit.AfterClass;
import org.junit.Before;
import org.junit.BeforeClass;
import org.junit.Ignore;
import org.junit.Test;


public class myJUnit1 {
   //No main() method, so JUnit will take over

   @BeforeClass
   public static void mBeforeTestClass(){
         System.out.println("--------ClassBegin----------");
   }
   //Annotation: Before EACH @Test
   @Before
   public void mBeforeTest(){
         System.out.println("-------------------------");
   }


   //Gets executed every time we run the JUnit program
   @Test
   public void test1(){
         if (mMultiply(10,30)==300) {
               System.out.println("Multiply Pass");
         } else {
               System.out.println("Multiply Fail");
               fail("Multiply Failed for 10 and 30");
         }
   }

   //Test 2 code
   @Test
   public void test2(){
```

```
	if (mAdd(10,30)==300){
		System.out.println("Add Pass");
	} else {
		System.out.println("Add Fail");
		fail("Add Failed for 10 and 30");
	}
}

//Test 3 code
@Test
public void test3(){
	if(mDivide(10,30)==300) {
		System.out.println("Divide Pass");
	} else {
		System.out.println("Divide Fail");
		fail("Divide Failed for 10 and 30");
	}
}


//Test 4 code won't run due to @Ignore
@Ignore
@Test
public void test4(){
	if(mDivide(10,30)==300) {
		System.out.println("Divide Pass");
	} else {
		System.out.println("Divide Fail");
		fail("Divide Failed for 10 and 30");
	}
}

// Runs after EACH @Test
@After
public void mAfterTest(){
	System.out.println("-------------------------");
}


@AfterClass
public static void mAfterTestClass(){
	System.out.println("---------Class End----------------");
}
//Multiply
public int mMultiply(int x, int y){
	return x*y;
}

//Add
public int mAdd(int x, int y){
	return x+y;
}
```

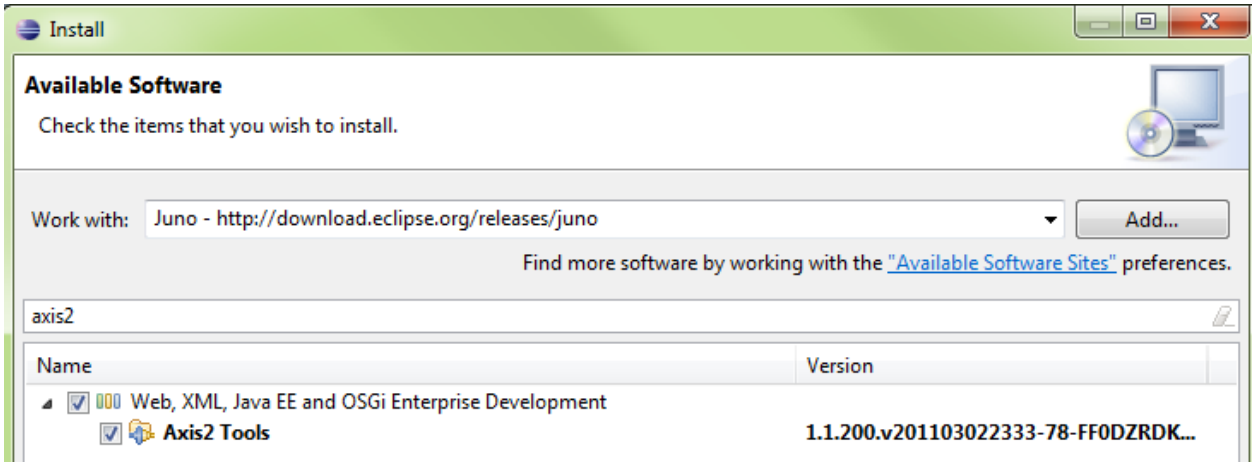
```
   //Divide
   public double mDivide(int x, int y){
          return x/y;
   }
}
```

ECLIPSE WEB SERVICES PROJECT

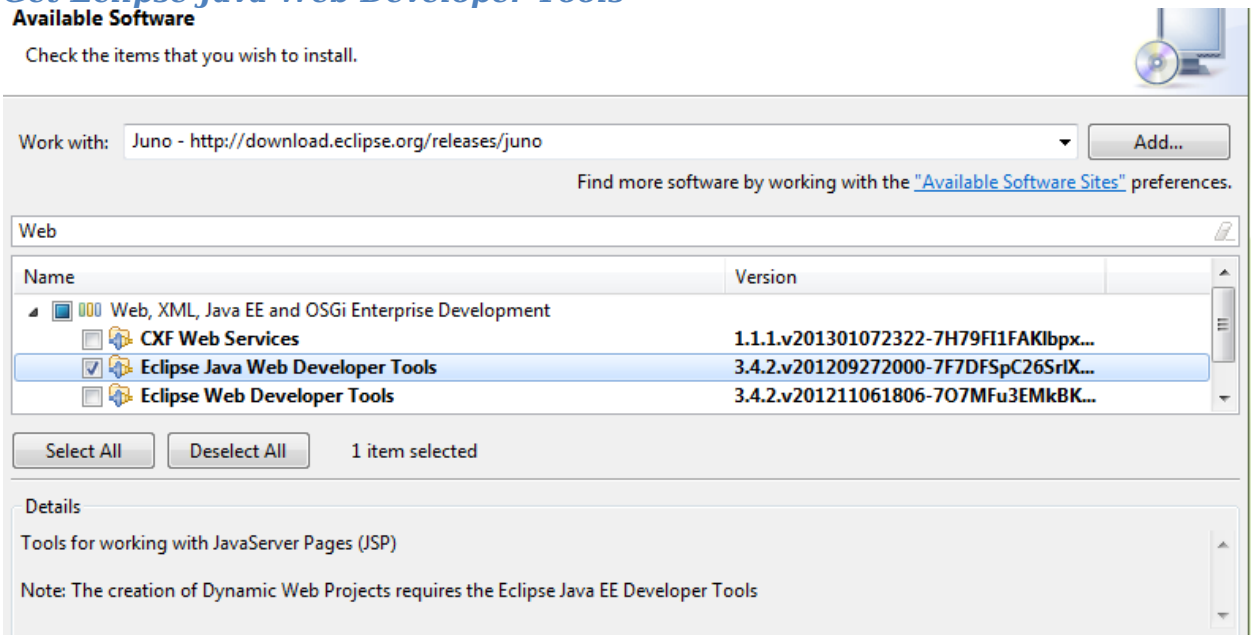
GET DEPENDENCIES:

Axis2 Tools
Eclipse Java Web Developer Tools
Eclipse Web Developer Tools
Eclipse Java EE Developer Tools
JST Server Adapters
JST Server Adapters Extensions

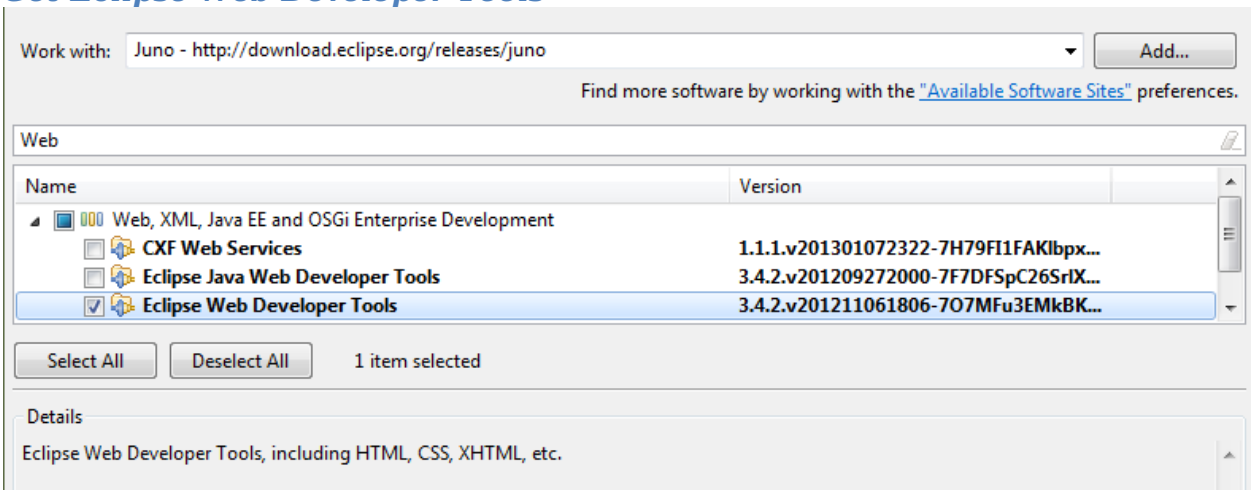
Get Axis2 tools



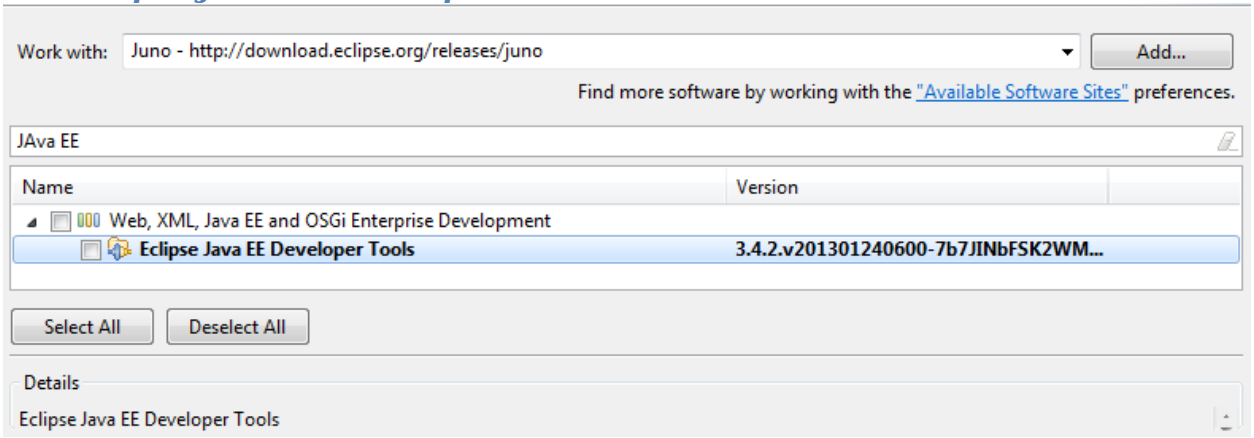
Get Eclipse Java Web Developer Tools



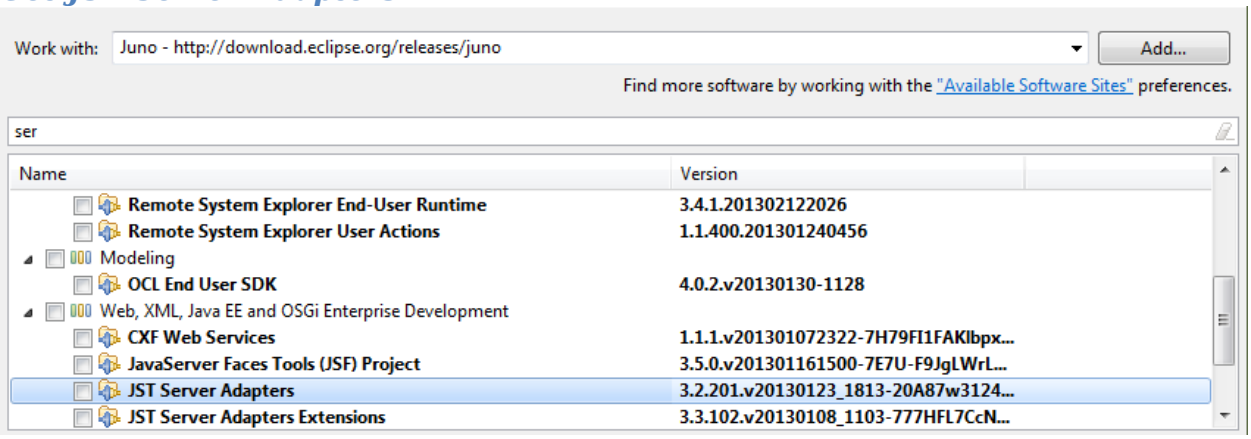
Get Eclipse Web Developer Tools



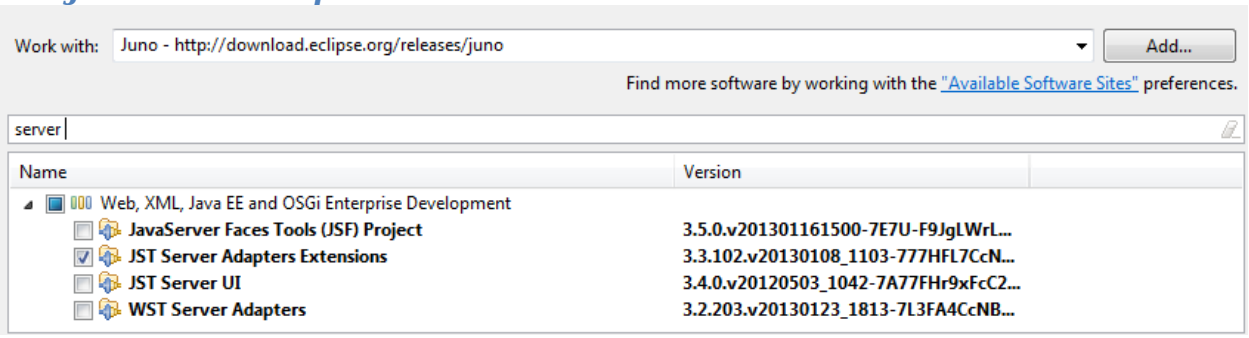
Get Eclipse Java EE Developer Tools



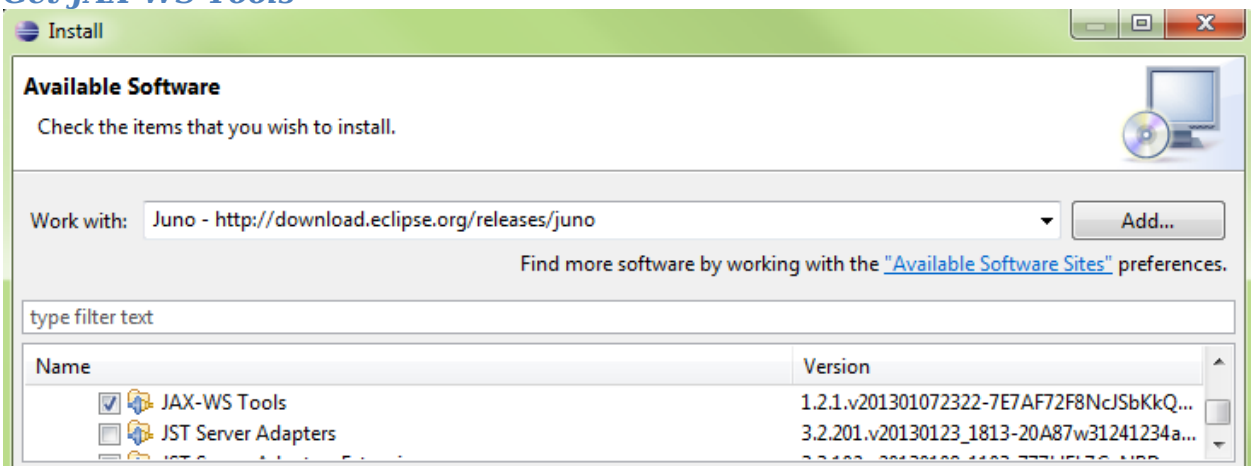
Get JST Server Adapters



Get JST Server Adapters Extensions



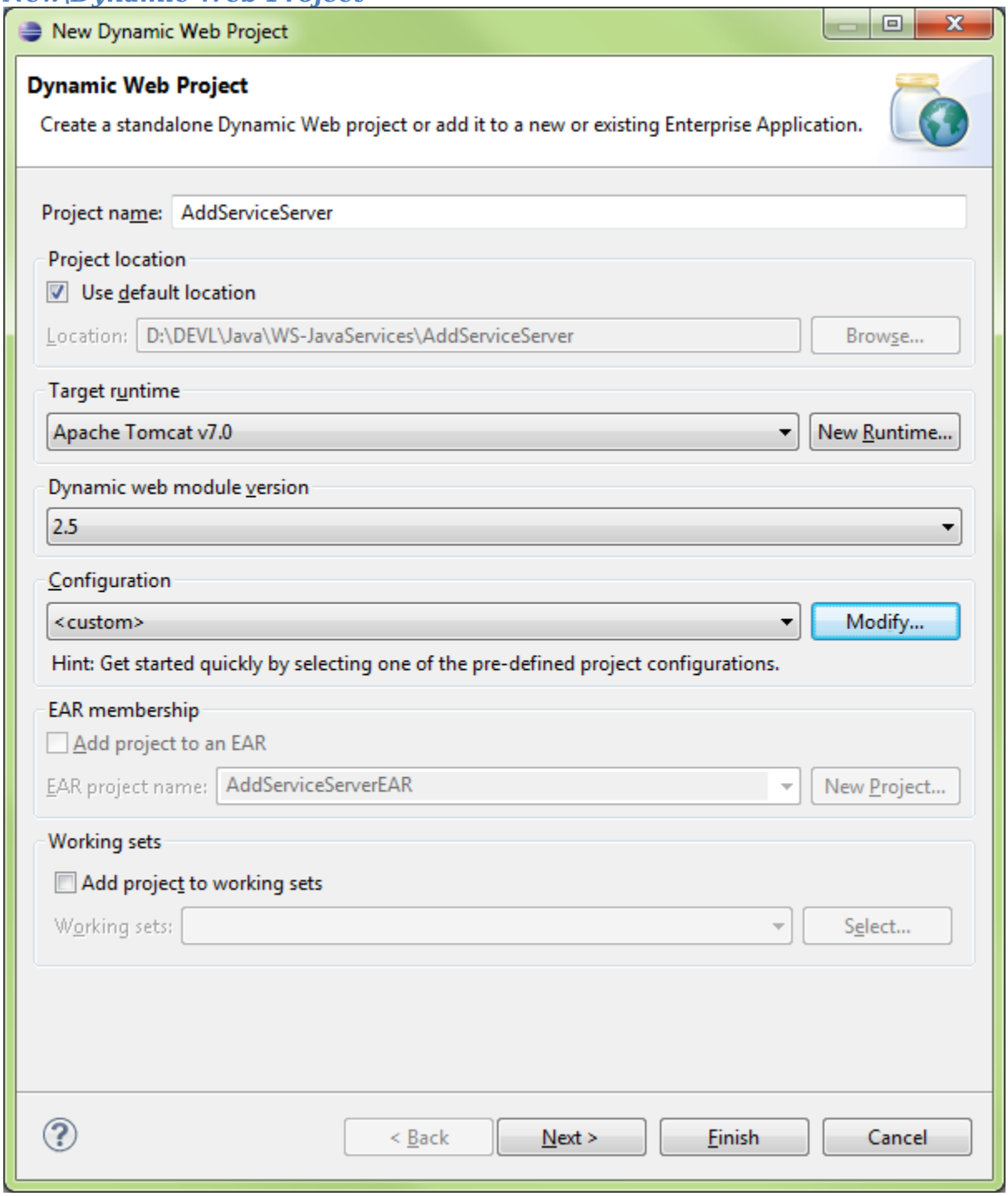
Get JAX-WS Tools



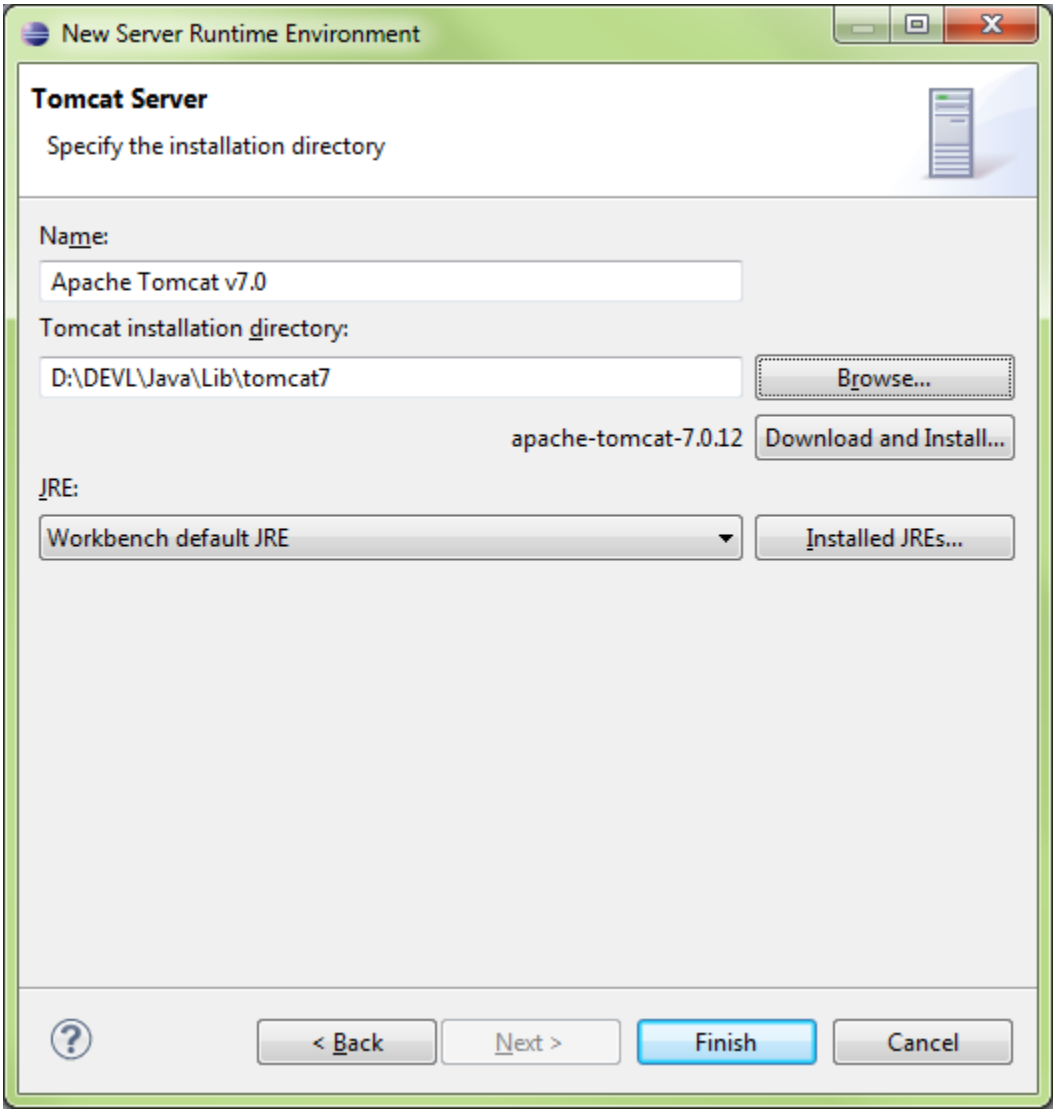
CREATE WEB SERVICE SERVER

Create Project (Server)

New\Dynamic Web Project



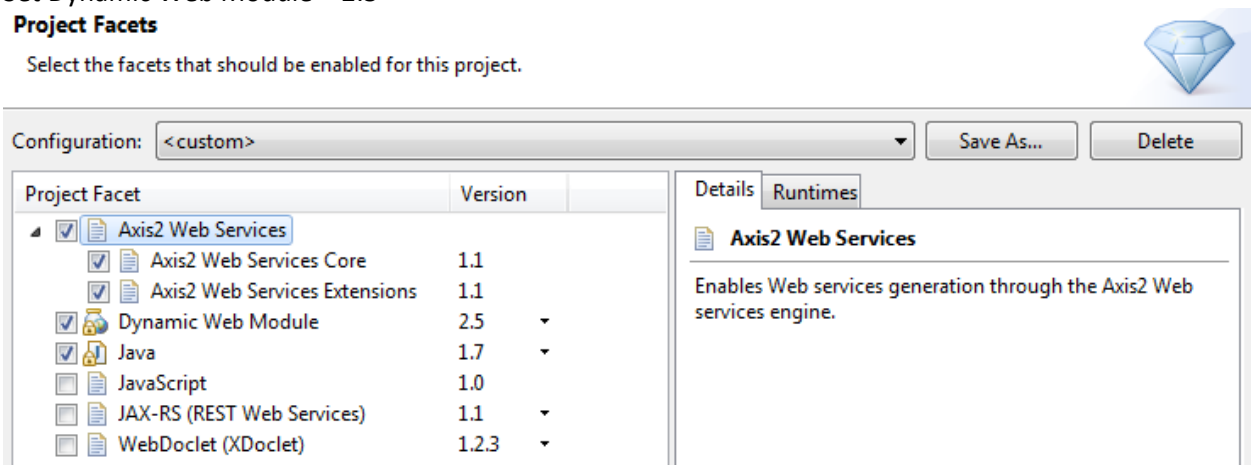
New Runtime…



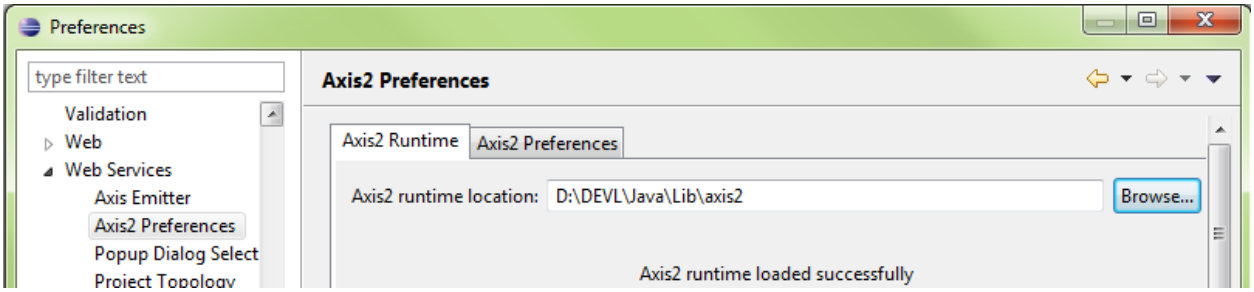
Configuration\Modify

Select Axis2 Web Services

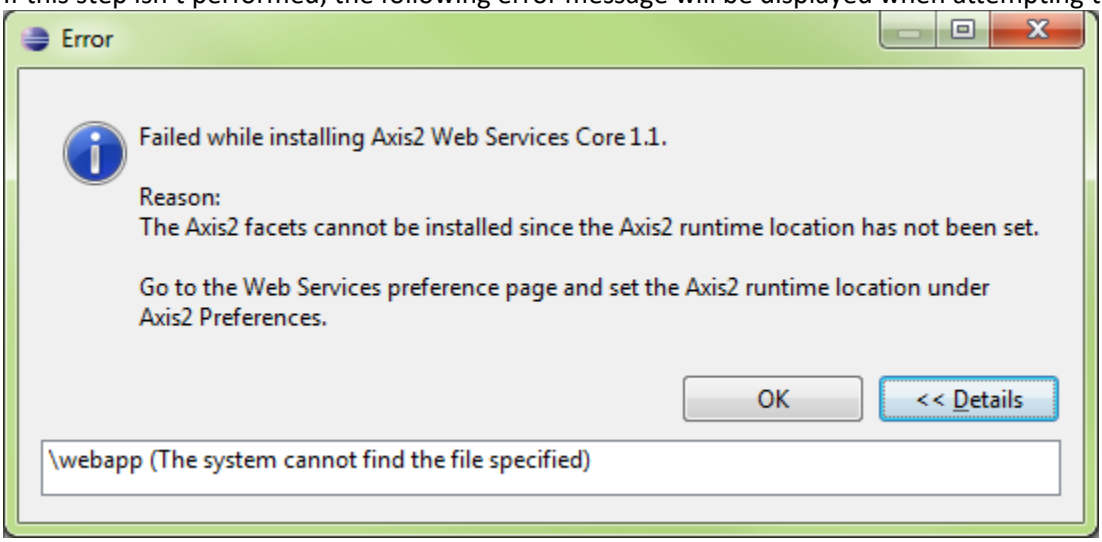
Set Dynamic Web Module = 2.5



Configure Axis2 Web Services Core 1.1

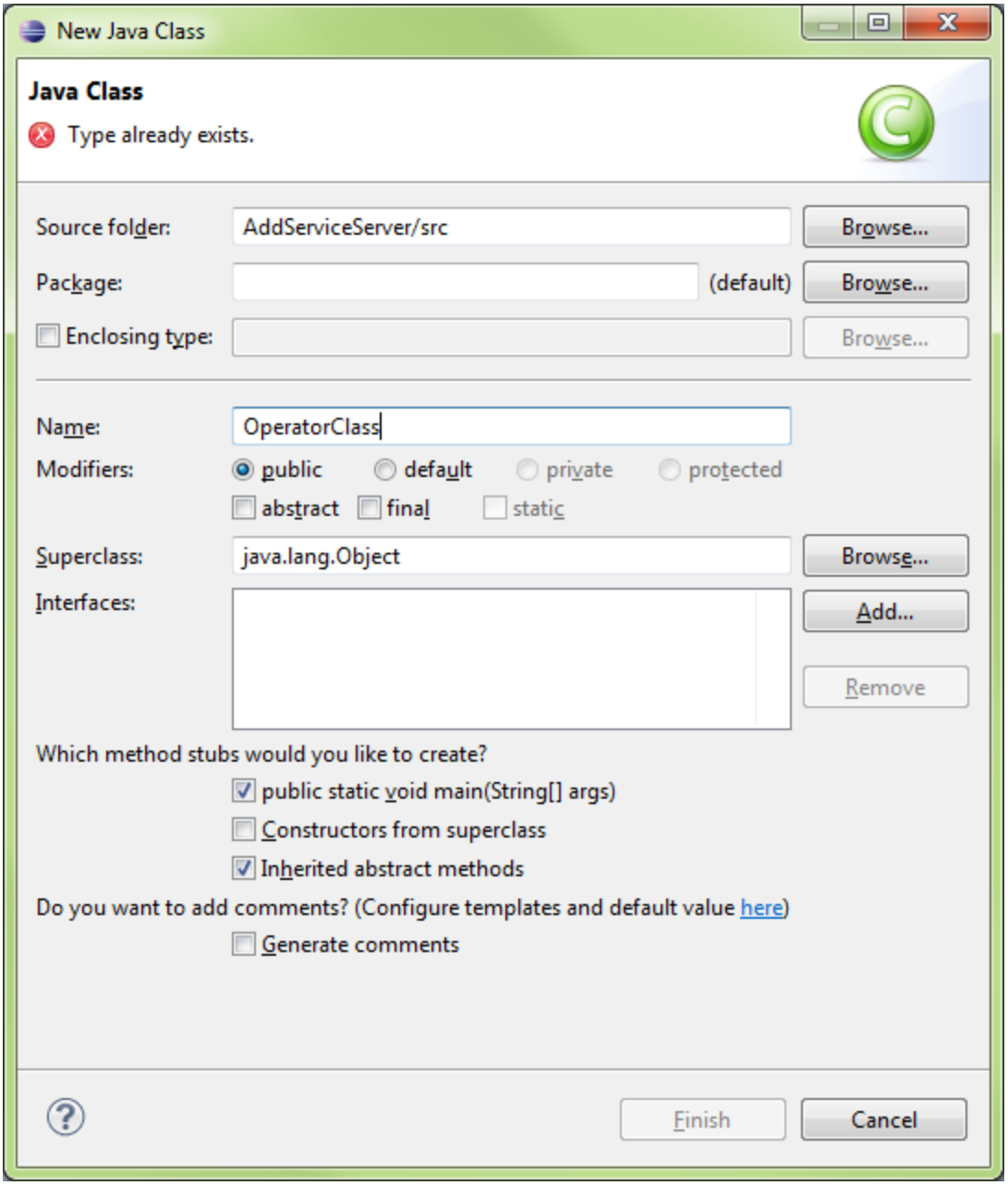


If this step isn't performed, the following error message will be displayed when attempting to use the Axis2 Project Facet



Create Class (Server)

Add Class\OperatorClass

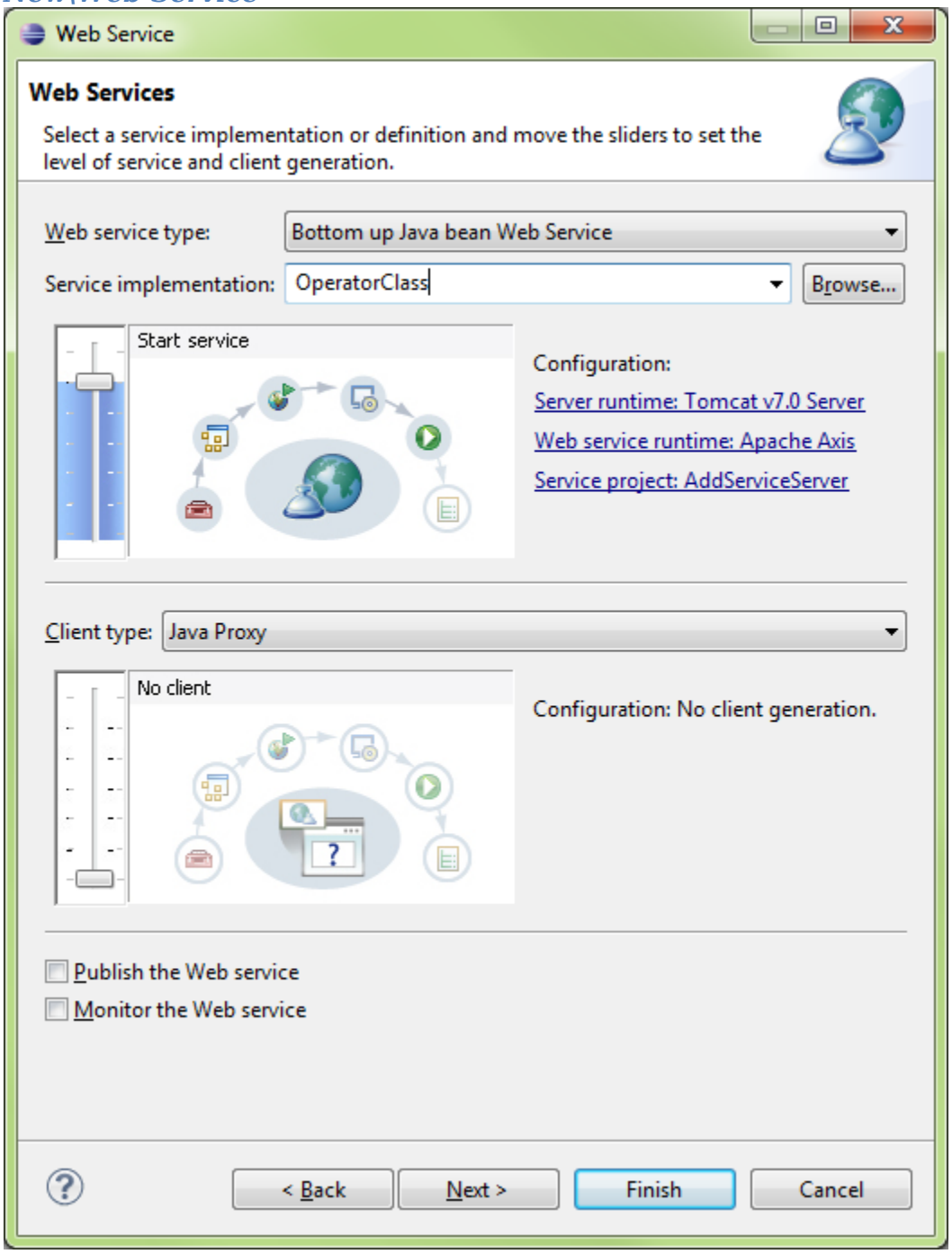


OperatorClass Code

```
public class OperatorClass {

	public int Add(int a, int b){

		return a+b;

	}
}
```

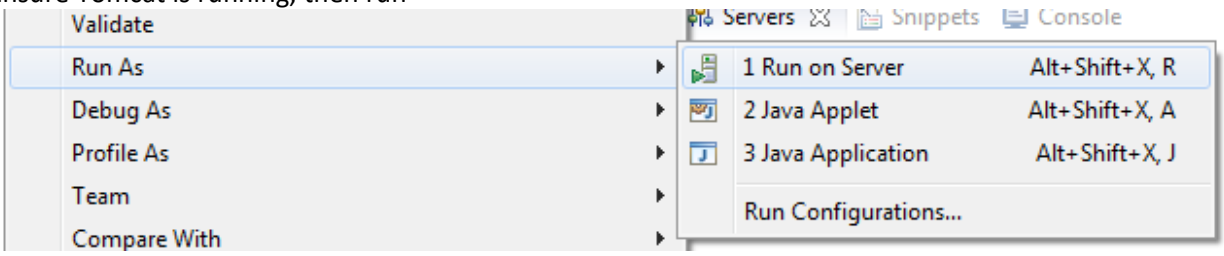
Create Service (Server)

New\Web Service

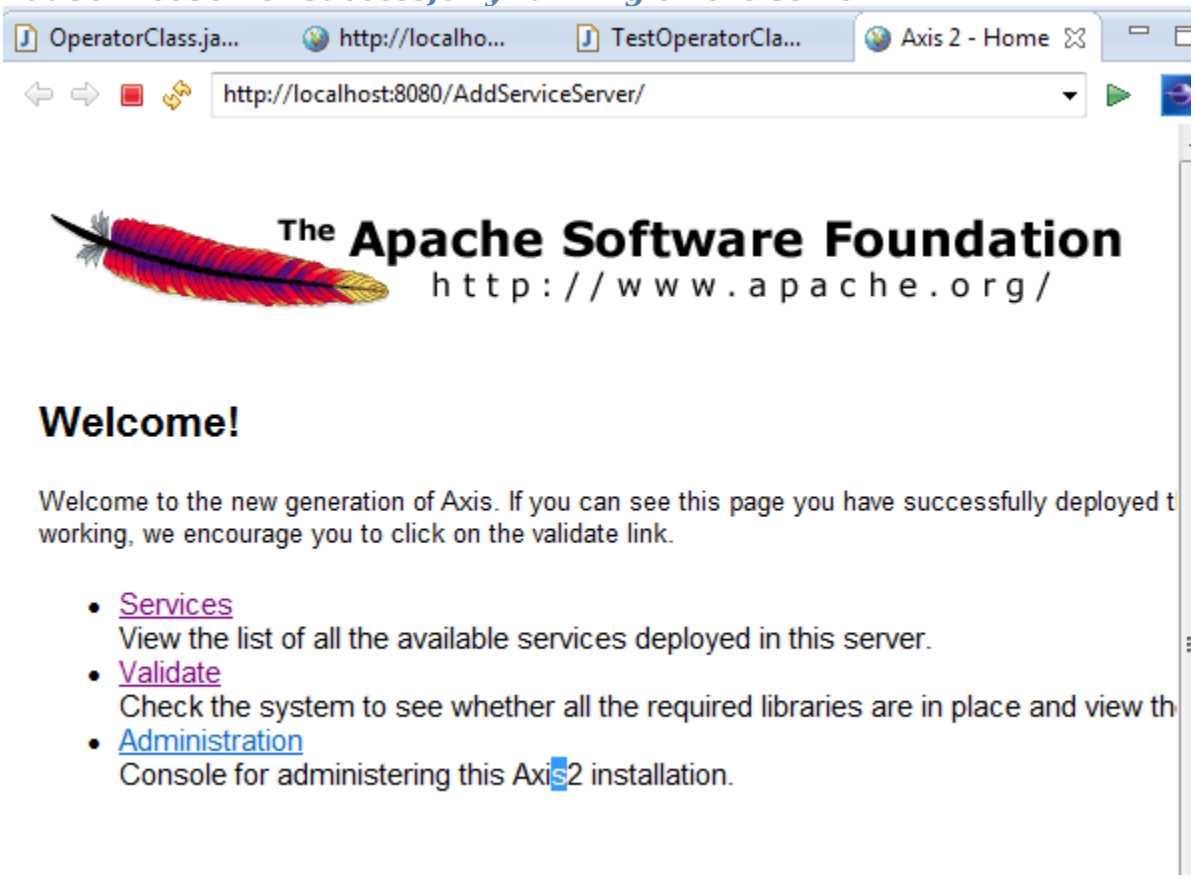


Run On Server\AddServiceServer (whole project)

Ensure Tomcat is running, then run



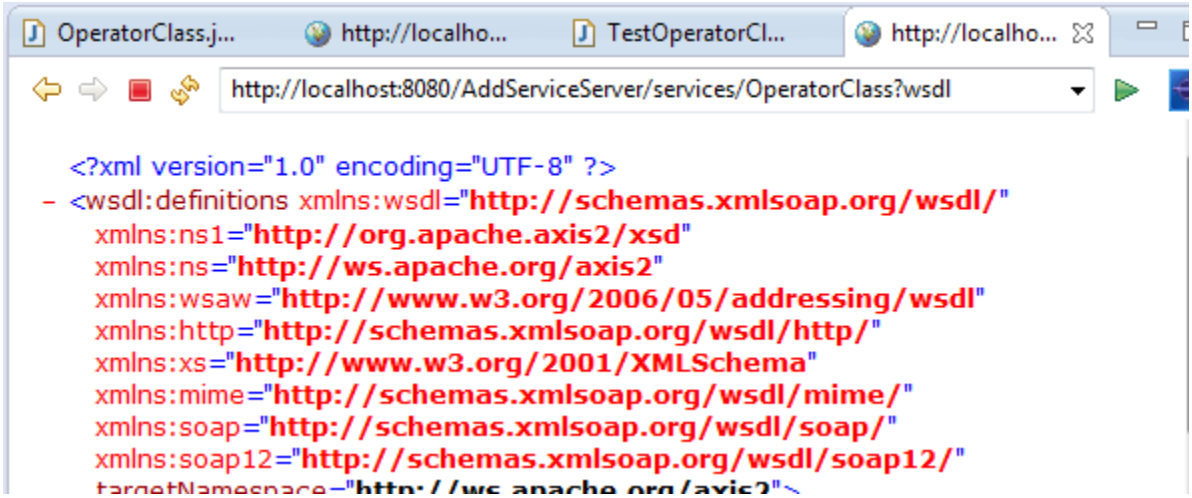
AddServiceServer successfully running on the server



Click on Services\OperatorClass

The WSDL will be shown, copy link

http://localhost:8080/AddServiceServer/services/OperatorClass?wsdl



WSDL

```
<?xml version="1.0" encoding="UTF-8" ?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
 xmlns:ns1="http://org.apache.axis2/xsd" xmlns:ns="http://ws.apache.org/axis2"
 xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
 xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
```

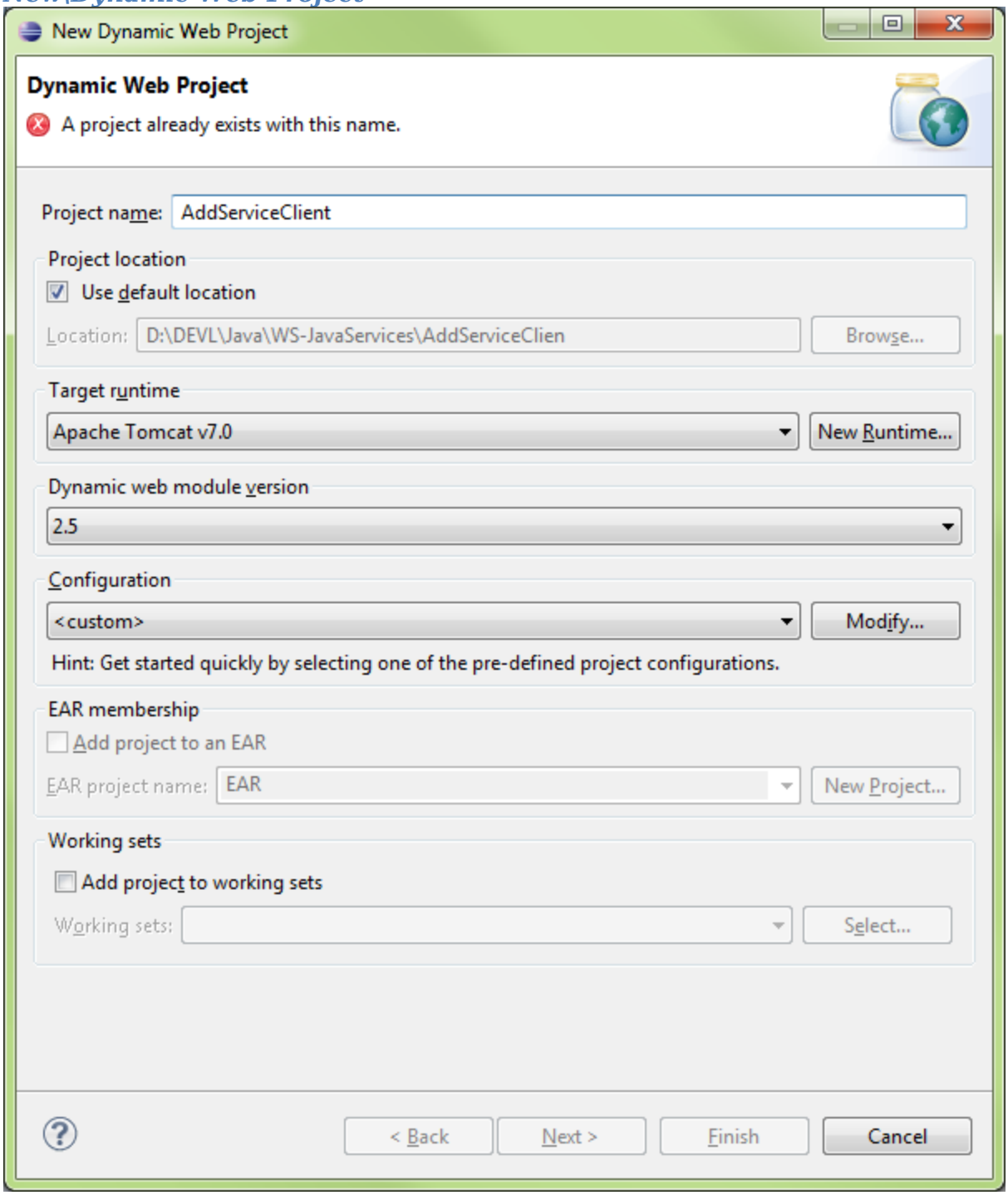
```
 xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:mime="http://schemas.xmlsoap.org/wsdl/
 mime/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
 xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/" targetNamespace="http://ws.apache.org/
 axis2">
<wsdl:documentation>Please Type your service description here</wsdl:documentation>
<wsdl:types>
<xs:schema attributeFormDefault="qualified" elementFormDefault="qualified"
 targetNamespace="http://ws.apache.org/axis2">
<xs:element name="Add">
<xs:complexType>
<xs:sequence>
<xs:element minOccurs="0" name="a" type="xs:int" />
<xs:element minOccurs="0" name="b" type="xs:int" />
 </xs:sequence>
 </xs:complexType>
 </xs:element>
<xs:element name="AddResponse">
<xs:complexType>
<xs:sequence>
<xs:element minOccurs="0" name="return" type="xs:int" />
 </xs:sequence>
 </xs:complexType>
 </xs:element>
 </xs:schema>
 </wsdl:types>
<wsdl:message name="AddRequest">
<wsdl:part name="parameters" element="ns:Add" />
 </wsdl:message>
<wsdl:message name="AddResponse">
<wsdl:part name="parameters" element="ns:AddResponse" />
 </wsdl:message>
<wsdl:portType name="OperatorClassPortType">
<wsdl:operation name="Add">
<wsdl:input message="ns:AddRequest" wsaw:Action="urn:Add" />
<wsdl:output message="ns:AddResponse" wsaw:Action="urn:AddResponse" />
 </wsdl:operation>
 </wsdl:portType>
<wsdl:binding name="OperatorClassSoap11Binding" type="ns:OperatorClassPortType">
<soap:binding transport="http://schemas.xmlsoap.org/soap/http" style="document" />
<wsdl:operation name="Add">
<soap:operation soapAction="urn:Add" style="document" />
<wsdl:input>
<soap:body use="literal" />
 </wsdl:input>
<wsdl:output>
<soap:body use="literal" />
 </wsdl:output>
 </wsdl:operation>
 </wsdl:binding>
<wsdl:binding name="OperatorClassSoap12Binding" type="ns:OperatorClassPortType">
<soap12:binding transport="http://schemas.xmlsoap.org/soap/http" style="document" />
<wsdl:operation name="Add">
<soap12:operation soapAction="urn:Add" style="document" />
<wsdl:input>
```

```
<soap12:body use="literal" />
  </wsdl:input>
<wsdl:output>
<soap12:body use="literal" />
  </wsdl:output>
  </wsdl:operation>
  </wsdl:binding>
<wsdl:binding name="OperatorClassHttpBinding" type="ns:OperatorClassPortType">
<http:binding verb="POST" />
<wsdl:operation name="Add">
<http:operation location="Add" />
<wsdl:input>
<mime:content type="application/xml" part="parameters" />
  </wsdl:input>
<wsdl:output>
<mime:content type="application/xml" part="parameters" />
  </wsdl:output>
  </wsdl:operation>
  </wsdl:binding>
<wsdl:service name="OperatorClass">
<wsdl:port name="OperatorClassHttpSoap11Endpoint" binding="ns:OperatorClassSoap11Binding">
<soap:address
   location="http://localhost:8080/AddServiceServer/services/OperatorClass.OperatorClassHttpSoap11
   Endpoint/" />
  </wsdl:port>
<wsdl:port name="OperatorClassHttpSoap12Endpoint" binding="ns:OperatorClassSoap12Binding">
<soap12:address
   location="http://localhost:8080/AddServiceServer/services/OperatorClass.OperatorClassHttpSoap12
   Endpoint/" />
  </wsdl:port>
<wsdl:port name="OperatorClassHttpEndpoint" binding="ns:OperatorClassHttpBinding">
<http:address
   location="http://localhost:8080/AddServiceServer/services/OperatorClass.OperatorClassHttpEndpoin
   t/" />
  </wsdl:port>
  </wsdl:service>
  </wsdl:definitions>
```

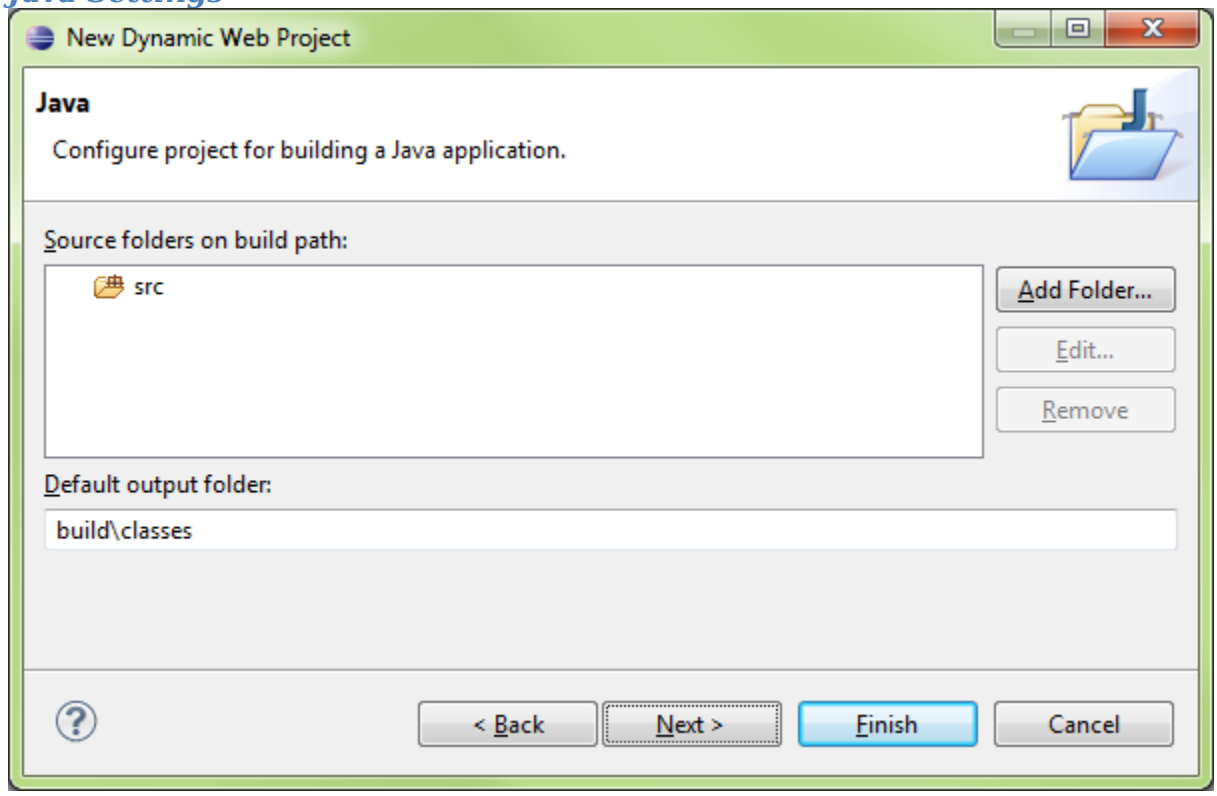
CREATE WEB SERVICE CLIENT

Create Project (Client)

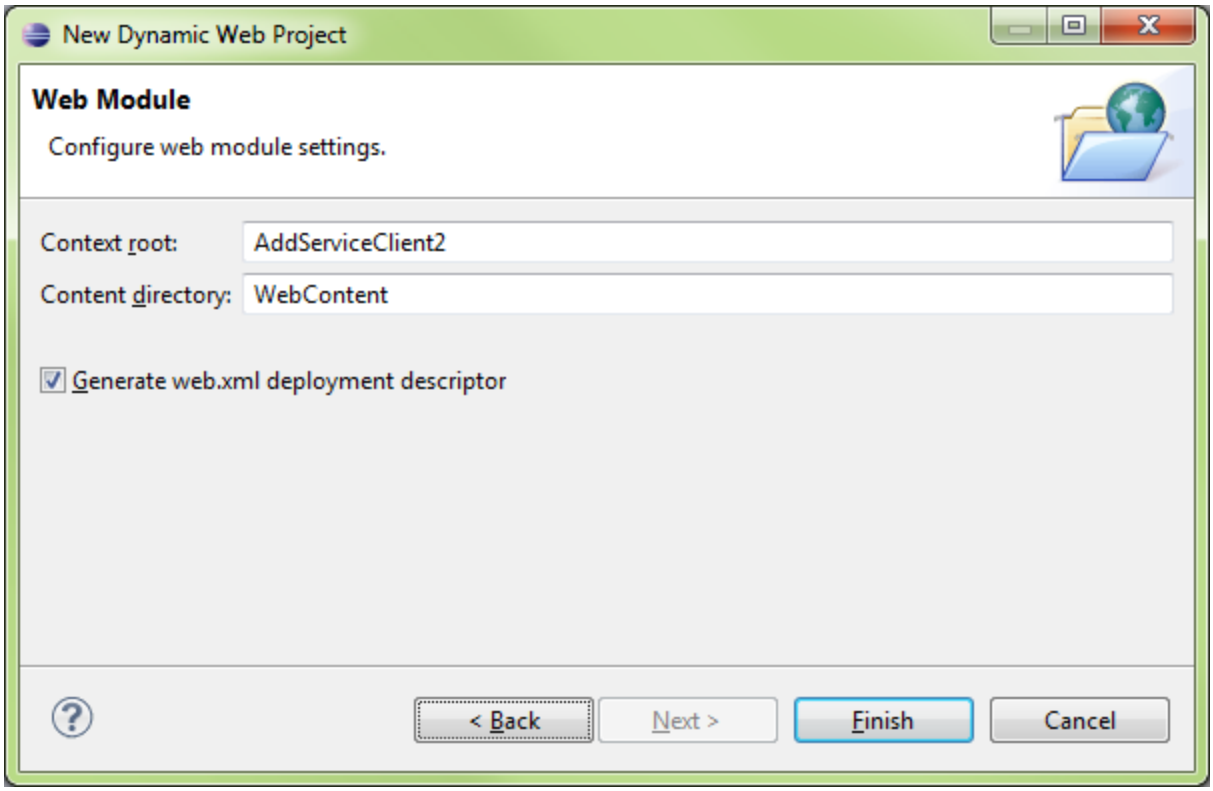
New\Dynamic Web Project



Java Settings

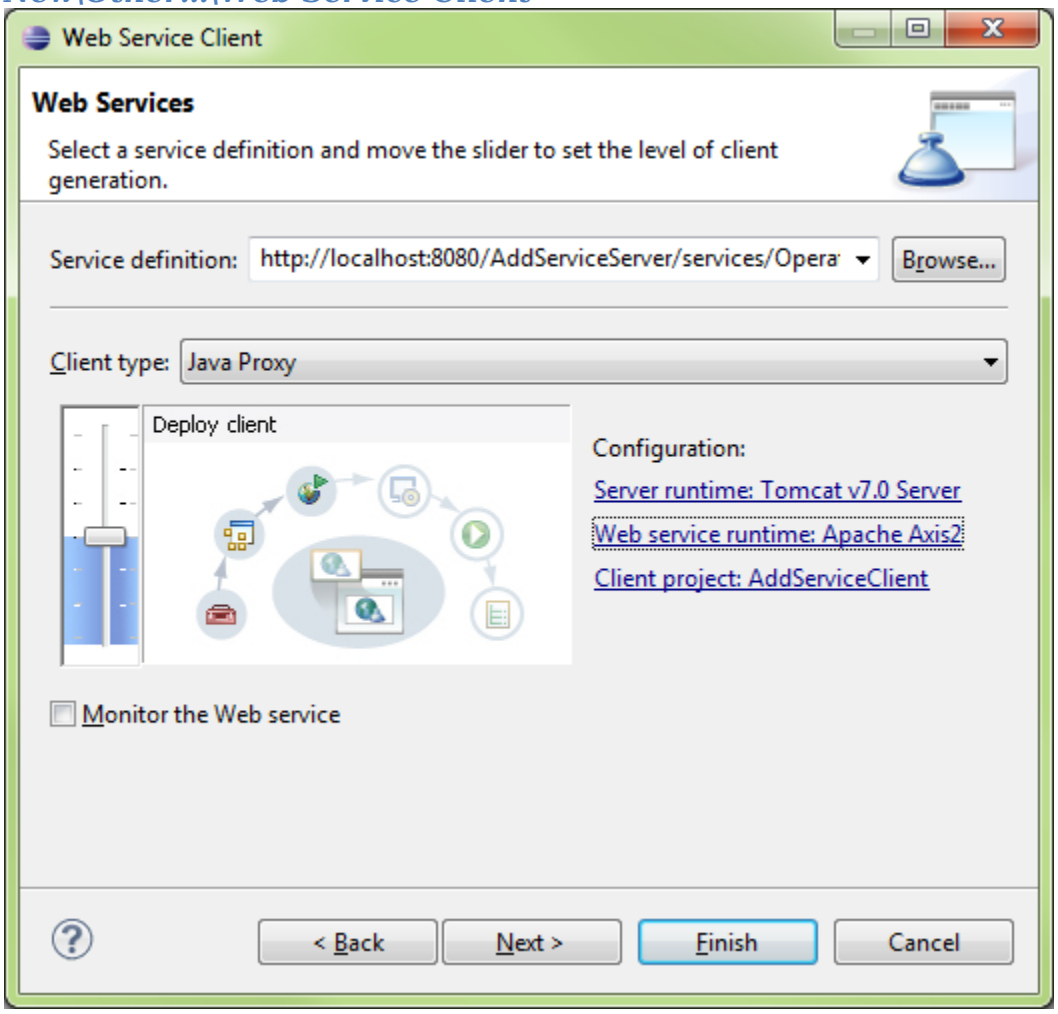


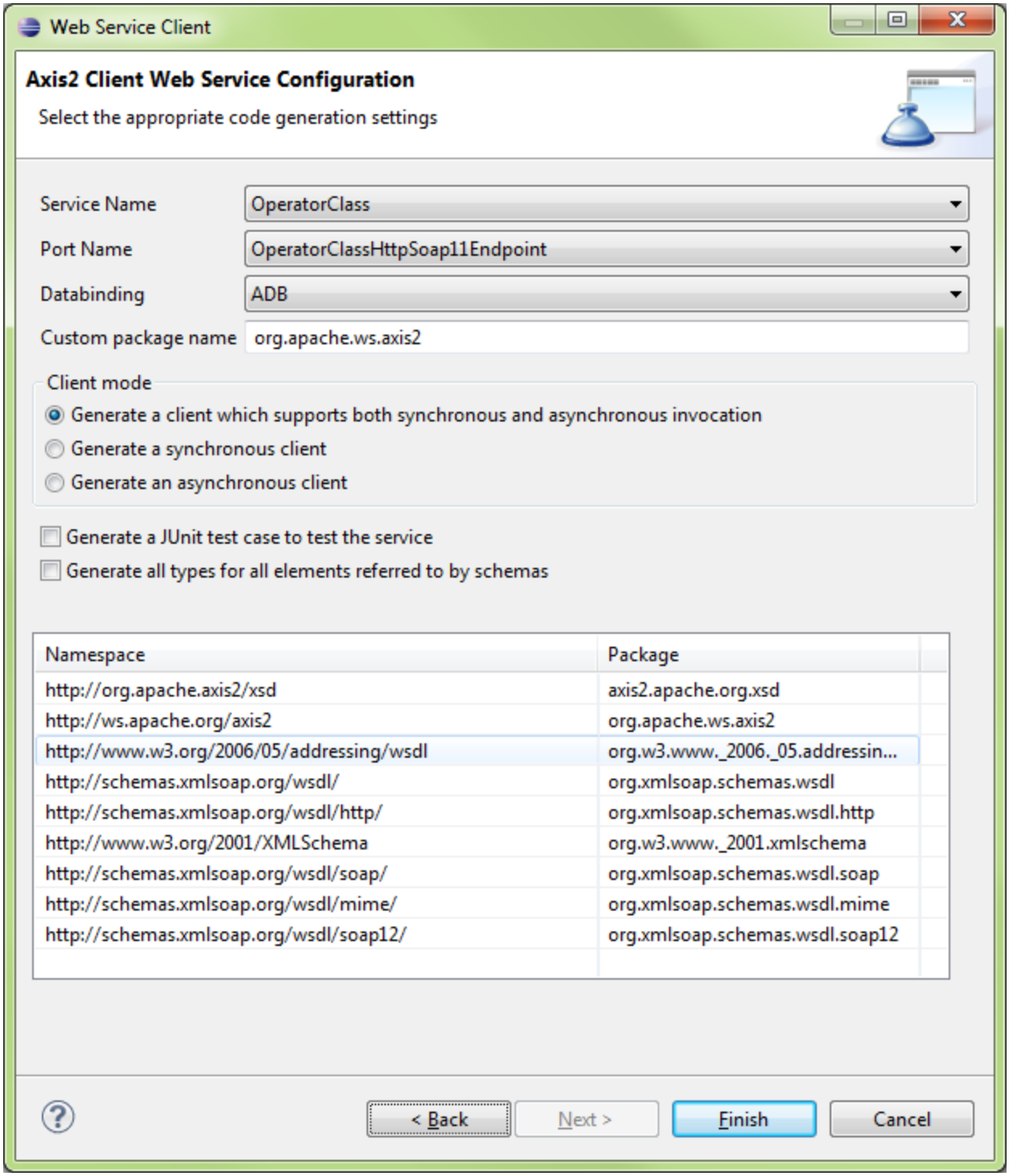
Web Module



Create Service (Client)

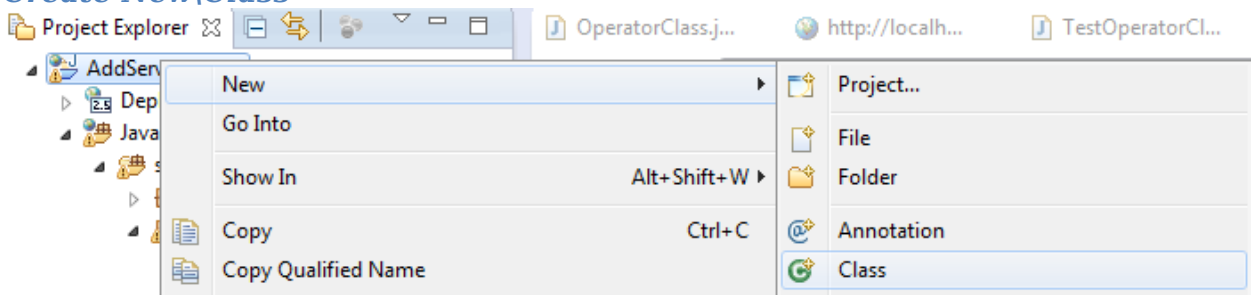
New\Other...\Web Service Client

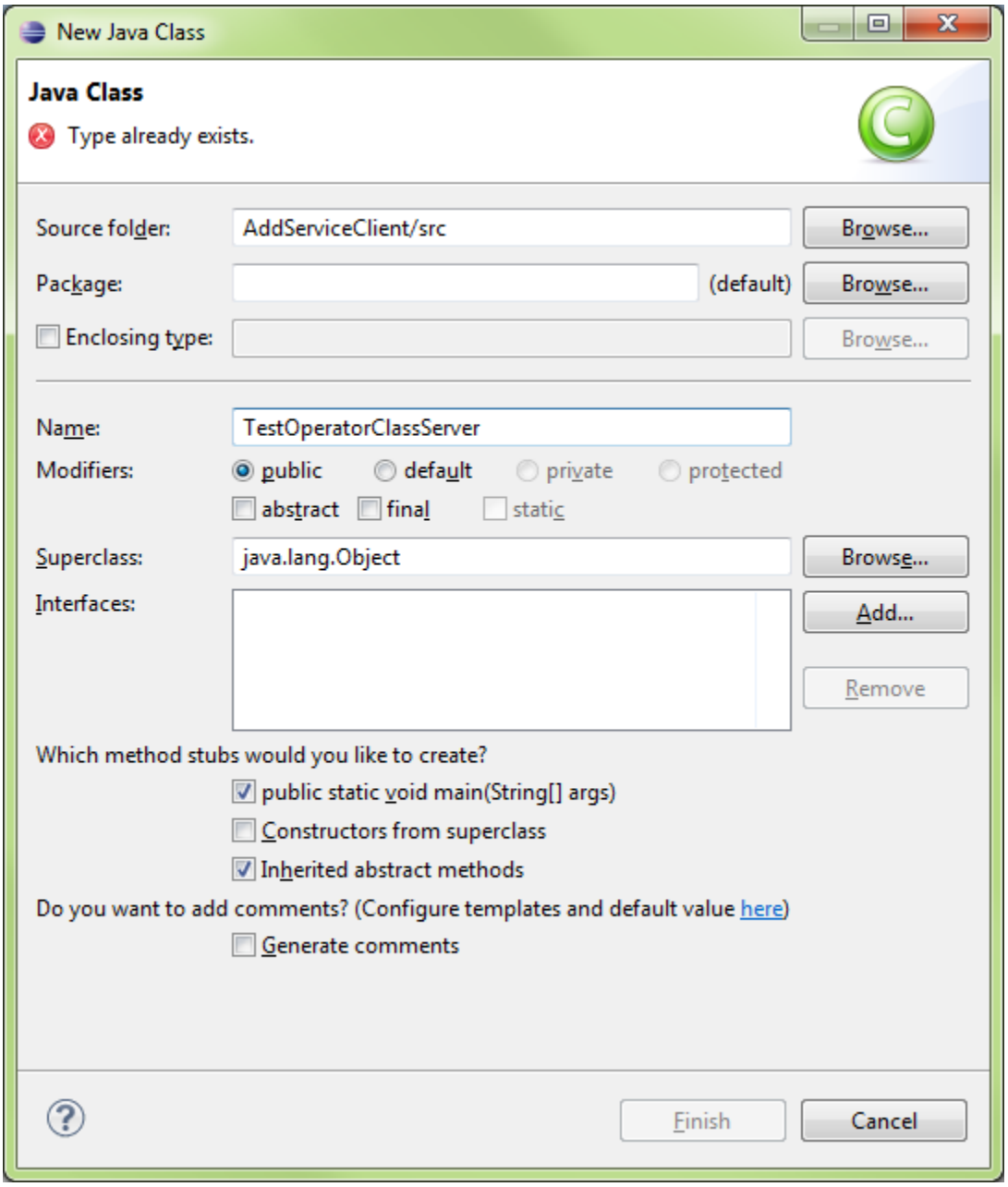



Web Service Client
Axis2 Client Web Service Configuration
Select the appropriate code generation settings
Service Name
OperatorClass
Port Name
OperatorClassHttpSoap11Endpoint
Databinding
ADB
Custom package name
org.apache.ws.axis2
Client mode
Generate a client which supports both synchronous and asynchronous invocation
Generate a synchronous client
Generate an asynchronous client
Generate a JUnit test case to test the service
Generate all types for all elements referred to by schemas
Namespace
Package
http://org.apache.axis2/xsd
axis2.apache.org.xsd
http://ws.apache.org/axis2
org.apache.ws.axis2
http://www.w3.org/2006/05/addressing/wsdl
org.w3.www._2006._05.addressin...
http://schemas.xmlsoap.org/wsdl/
org.xmlsoap.schemas.wsdl
http://schemas.xmlsoap.org/wsdl/http/
org.xmlsoap.schemas.wsdl.http
http://www.w3.org/2001/XMLSchema
org.w3.www._2001.xmlschema
http://schemas.xmlsoap.org/wsdl/soap/
org.xmlsoap.schemas.wsdl.soap
http://schemas.xmlsoap.org/wsdl/mime/
org.xmlsoap.schemas.wsdl.mime
http://schemas.xmlsoap.org/wsdl/soap12/
org.xmlsoap.schemas.wsdl.soap12
< Back
Next >
Finish
Cancel

Create Class (Client)

Create New\Class

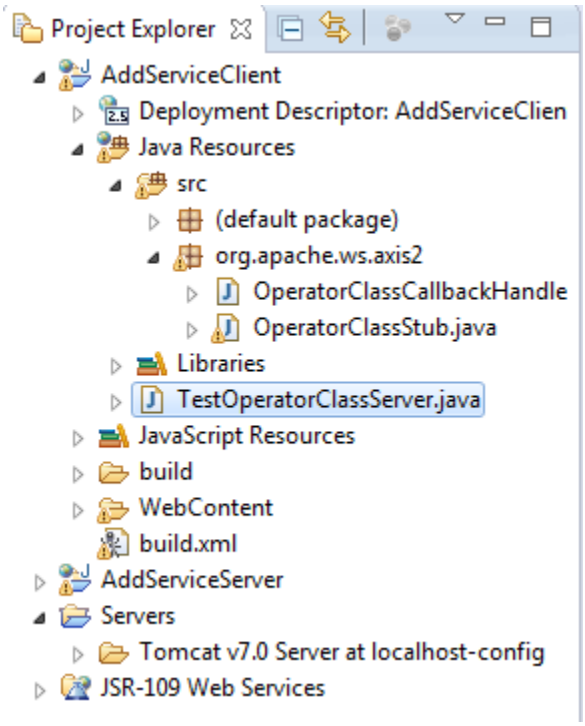


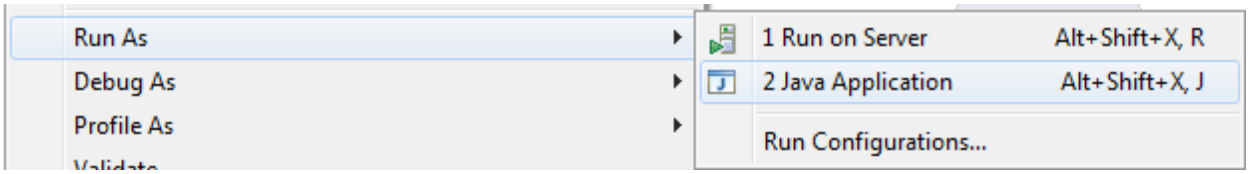



```
import java.rmi.RemoteException;

import org.apache.ws.axis2.OperatorClassStub;
import org.apache.ws.axis2.OperatorClassStub.Add;
```

```java
public class TestOperatorClassServer {

	/**
	 * @param args
	 * @throws RemoteException
	 */
	public static void main(String[] args) throws RemoteException {
		// TODO Auto-generated method stub

		OperatorClassStub classStub = new OperatorClassStub();

		Add add0 = new Add();

		add0.setA(8);
		add0.setB(9);
		int finalvalue = classStub.add(add0).get_return();

		System.out.println(finalvalue);
	}

}
```

Run the class





INSTALLING JAVA AND ECLIPSE ON UBUNTU LINUX: 2013 UPDATES

Do you have a JDK installed? You likely want to put $JDK_HOME/bin on your PATH, not the /bin of a JRE, as jar comes with JDK, not JRE.

Do this:

1. Delete all installations of Java.
2. Install the Java SDK (self-extracting) into **/opt/jdk1.6.0_16** (for example)
3. Create a symbolic link: ln -s /opt/jdk1.6.0_16 /opt/jdk
4. Edit $HOME/.bashrc:

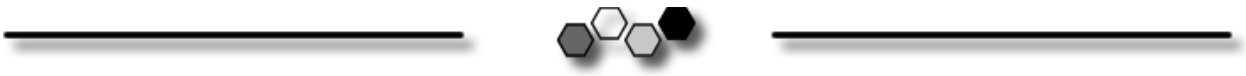
   JAVA_HOME=/opt/jdk
   PATH=$PATH:$HOME/bin:$JAVA_HOME/bin
5. Logout and log back in.

This offers many advantages:

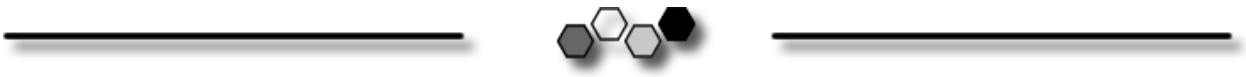
- You can install multiple versions of the SDK and need only switch a symbolic link.
- You know where all the files are located.
- You know exactly which version of Java is being used.
- No other versions are installed, so there cannot be any conflicts.

I have done this for years and have never had any problems with Java on Linux, except for packages that do not detect that Java is installed and attempt to install the OpenJDK.

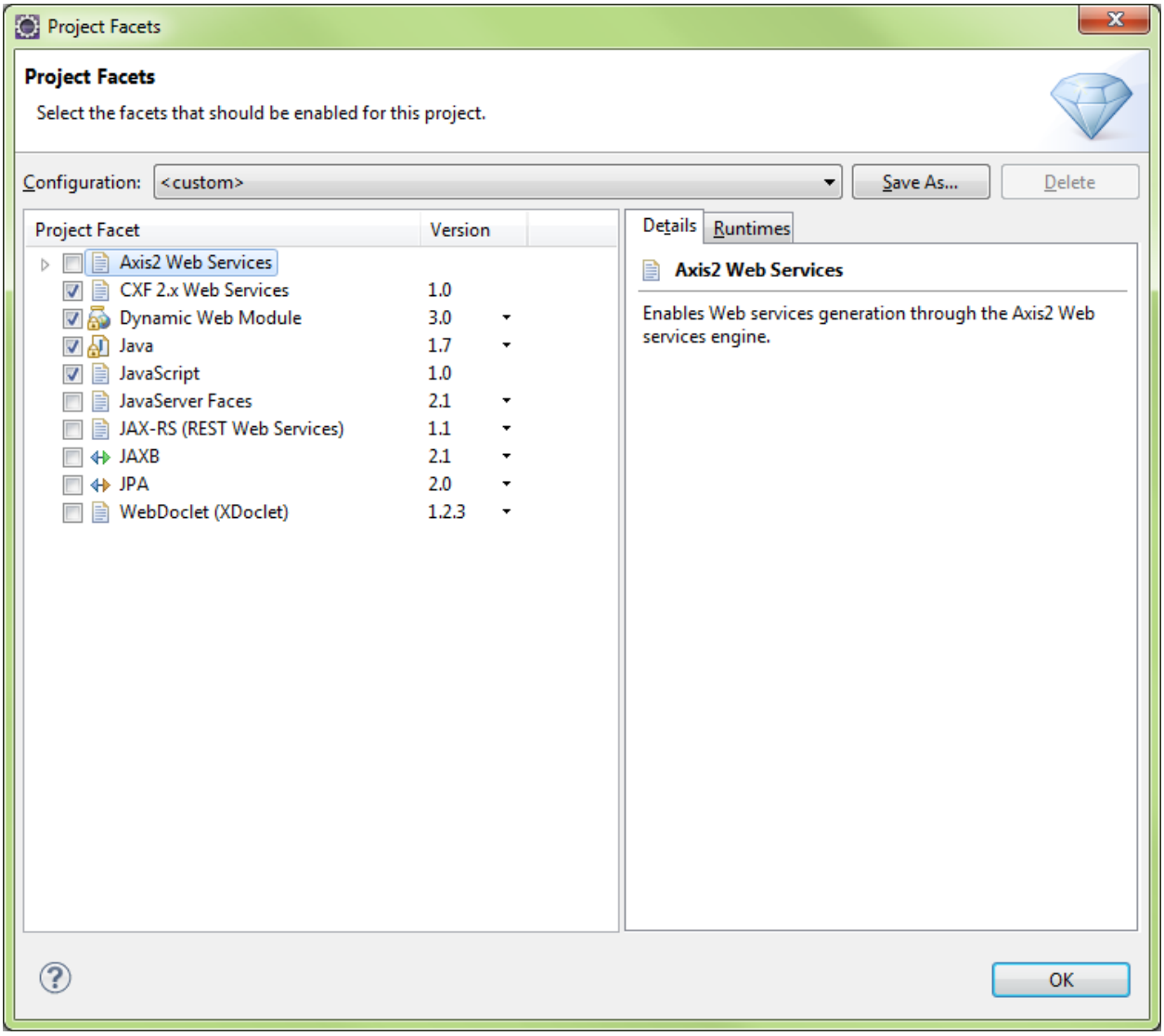
Also, stay away from the OpenJDK as its fonts are terrible to behold.



EXTRAS



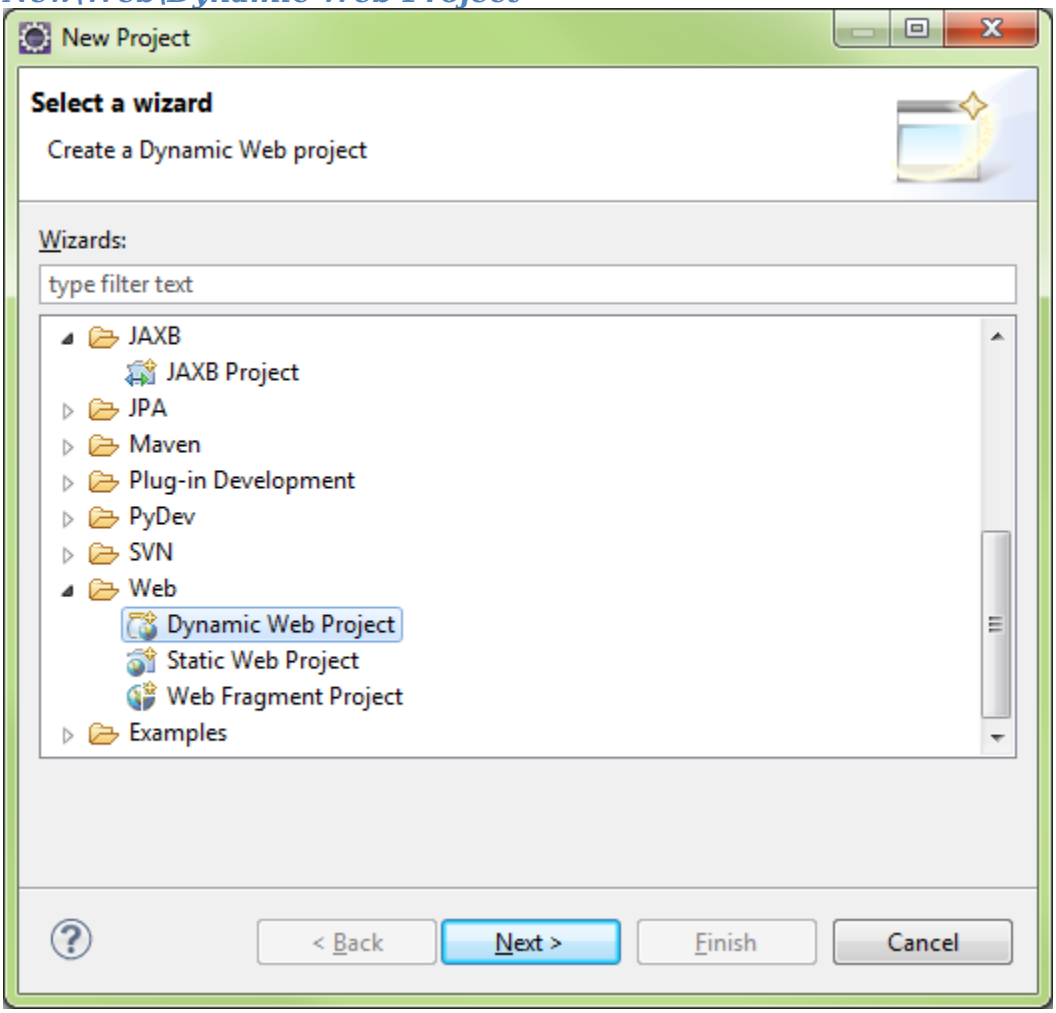
EXTRAS


Project Facets
Project Facets
Select the facets that should be enabled for this project.
Configuration:
<custom>
Save As...
Delete
Project Facet
Version
Axis2 Web Services
CXF 2.x Web Services 1.0
Dynamic Web Module 3.0
Java 1.7
JavaScript 1.0
JavaServer Faces 2.1
JAX-RS (REST Web Services) 1.1
JAXB 2.1
JPA 2.0
WebDoclet (XDoclet) 1.2.3
Details
Runtimes
Axis2 Web Services
Enables Web services generation through the Axis2 Web services engine.
OK

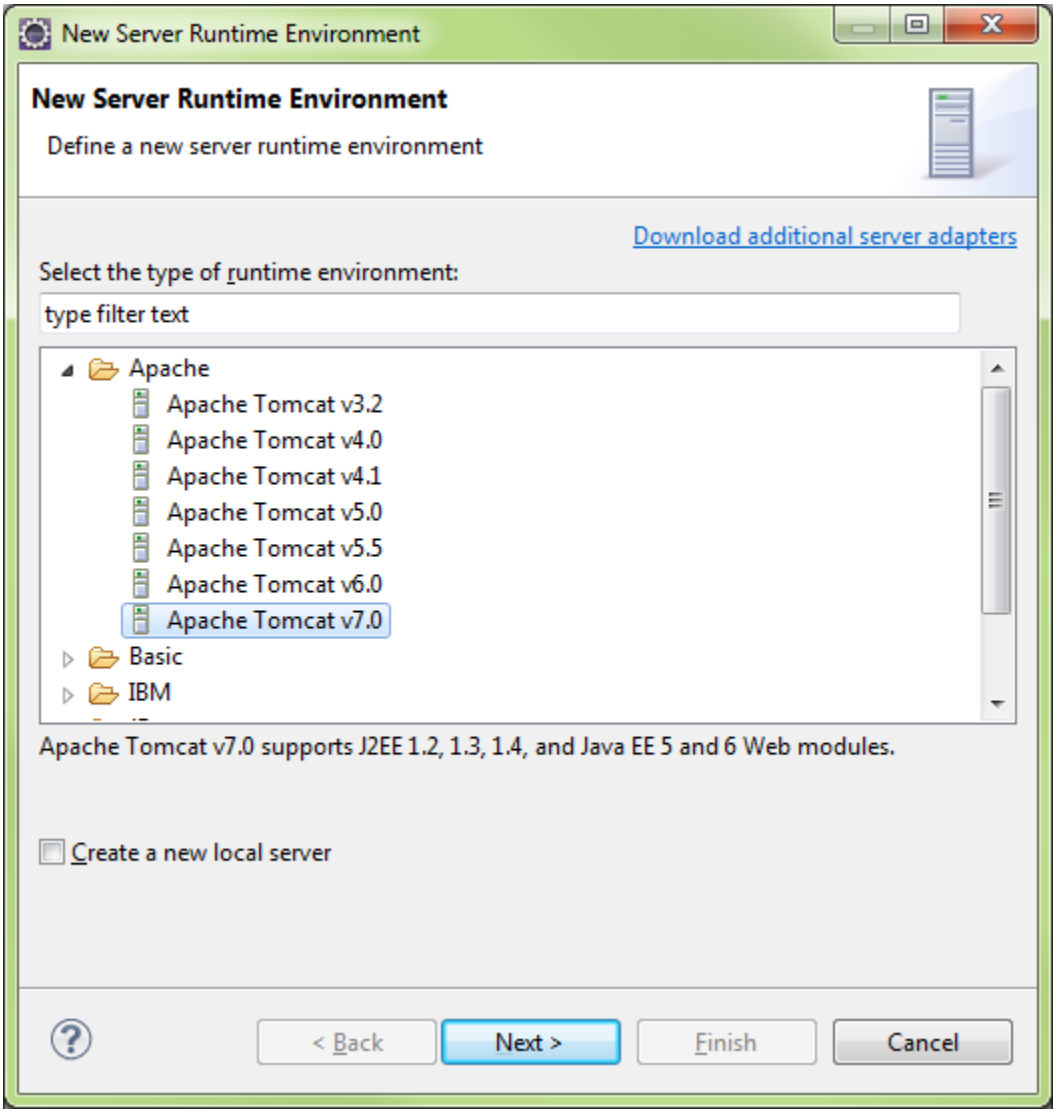
XXX

WEB SERVICES - ATTEMPT1

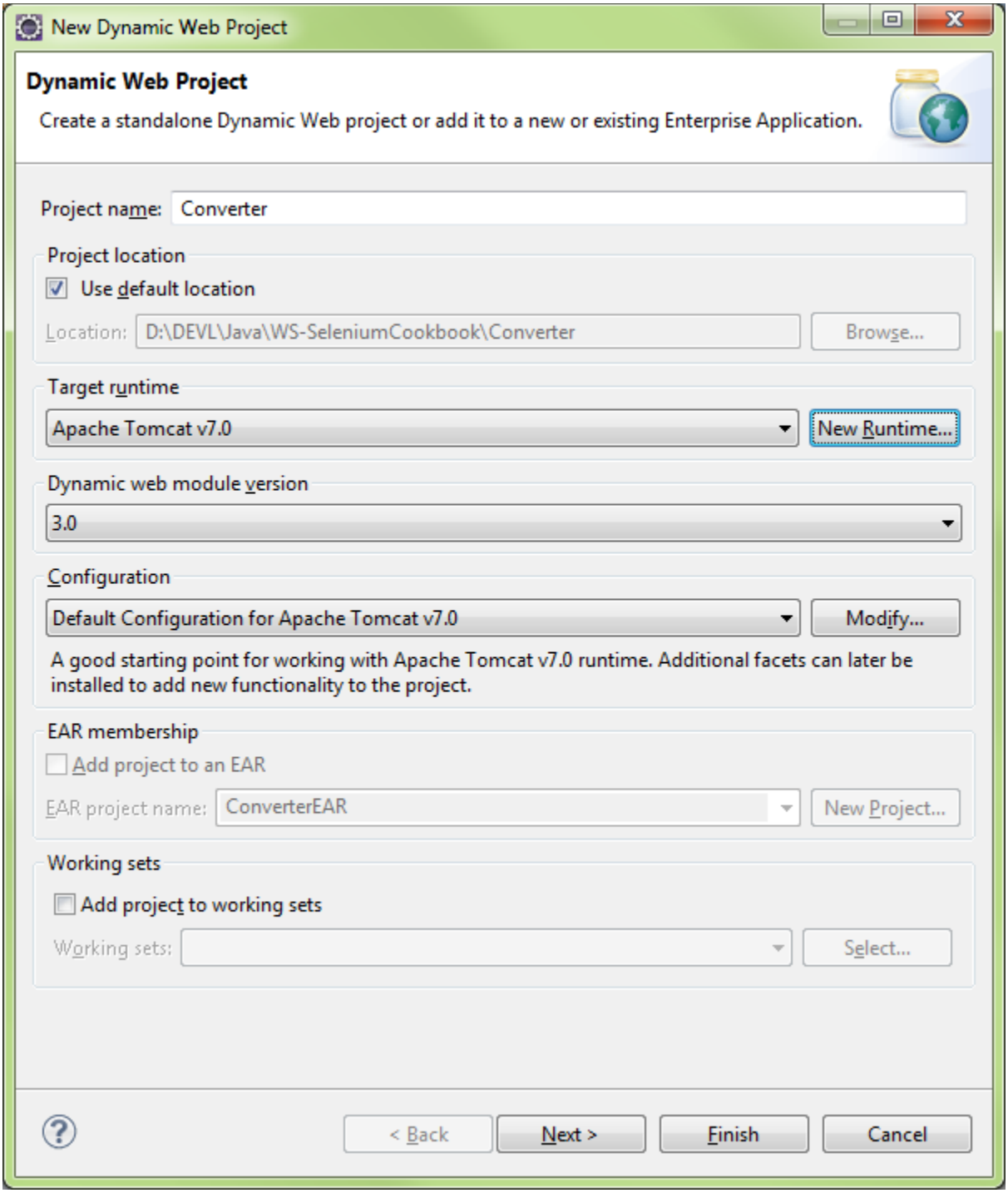
New\Web\Dynamic Web Project



Select Tomcat v7

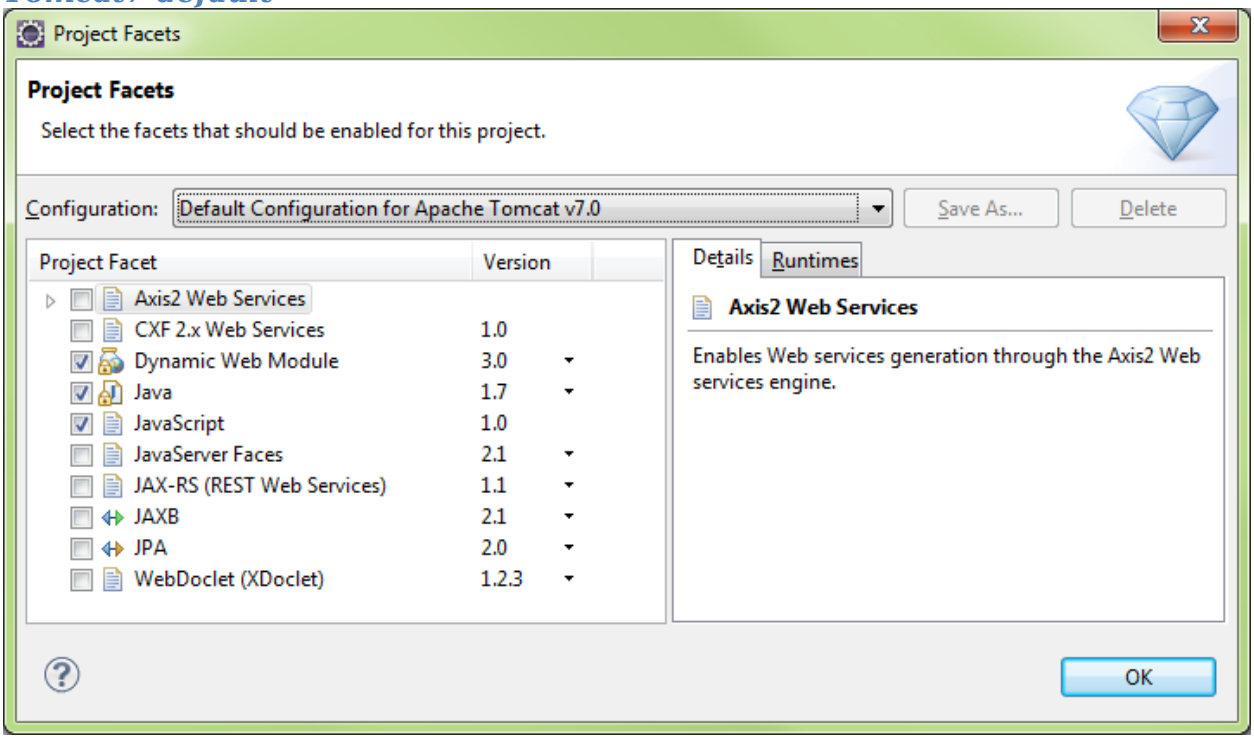


Browse for the Tomcat 7 Runtime on the Tomcat server, it needed Eclipse will download and install the runtime

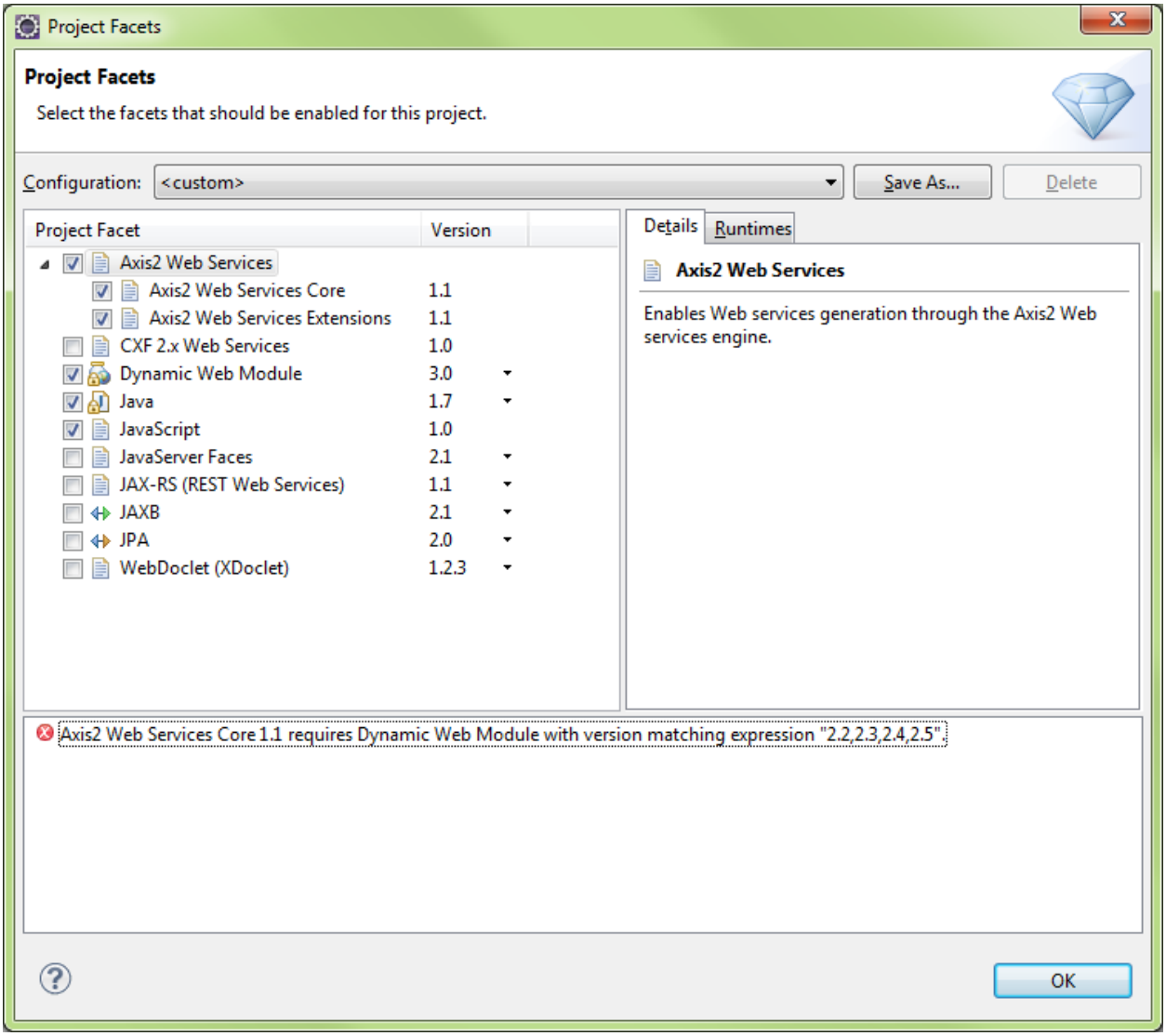


Modify Configuration

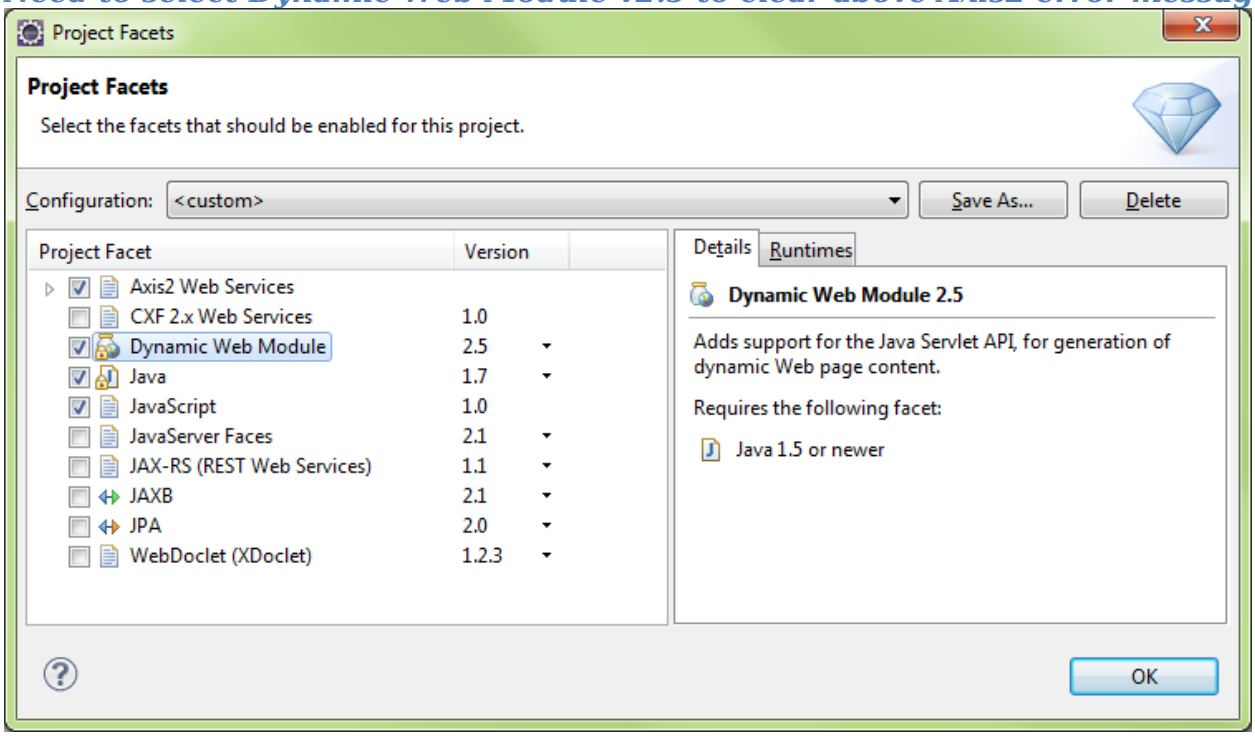
Tomcat7 default



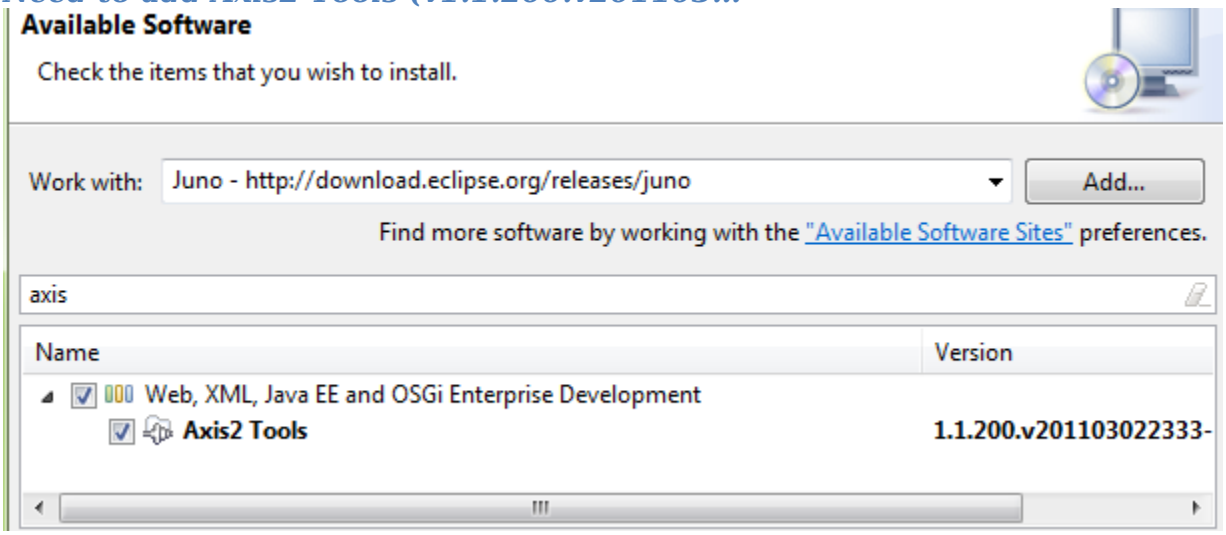
Add Axis2 Web Services

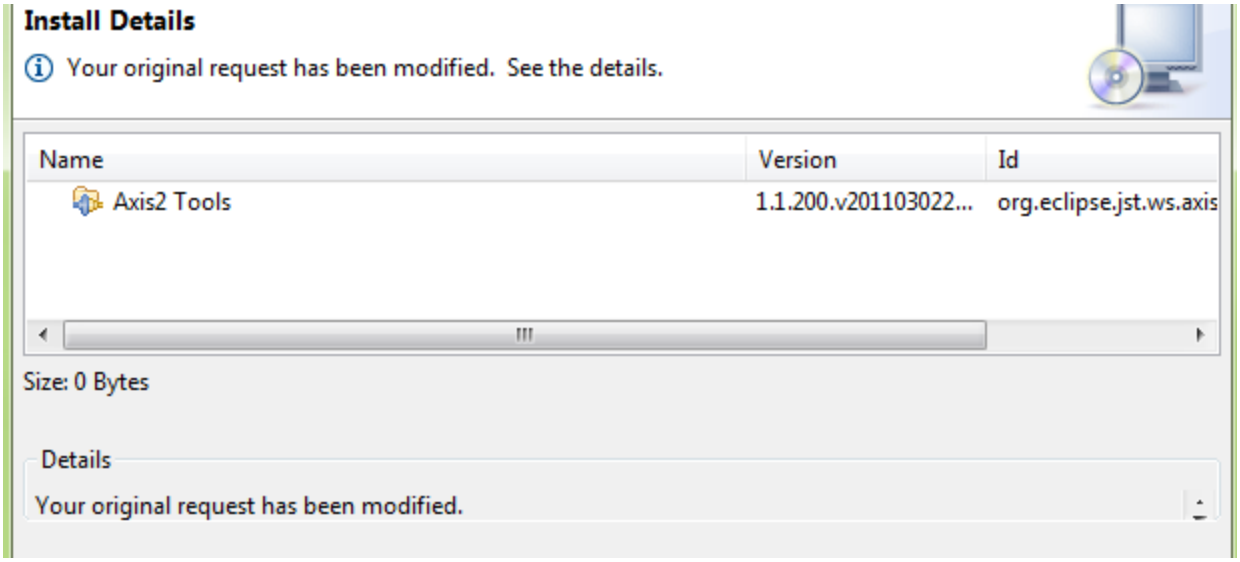


Need to select Dynamic Web Module v2.5 to clear above Axis2 error message

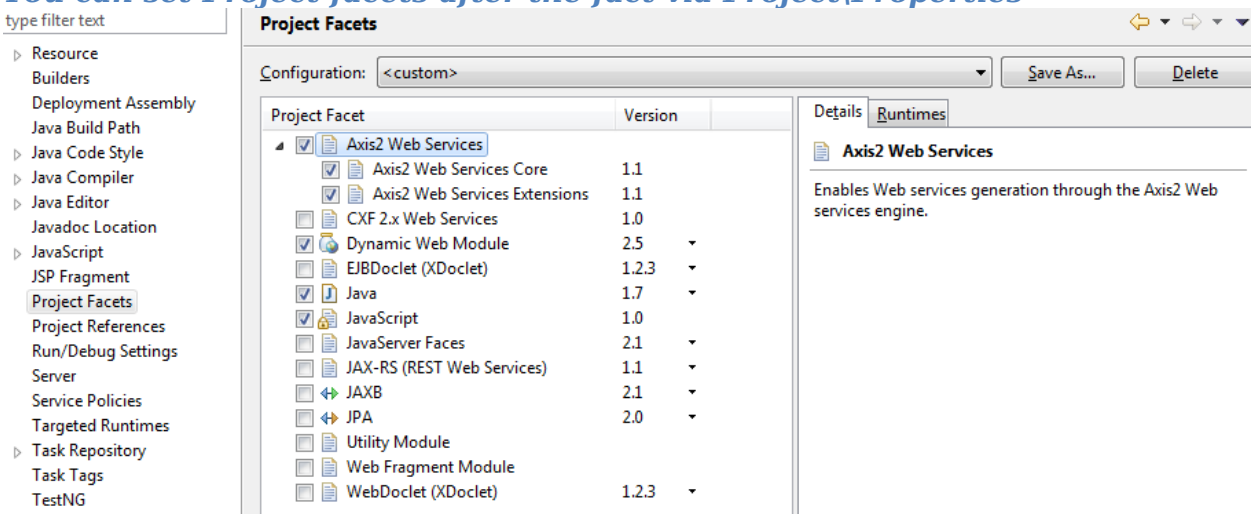


Need to add Axis2 Tools (v1.1.200.v201103…





You can set Project facets after the fact via Project\Properties



Download Apache Axis2 Binaries/Docs/War

http://axis.apache.org/axis2/java/core/download.cgi

APACHE AXIS2 RELEASES

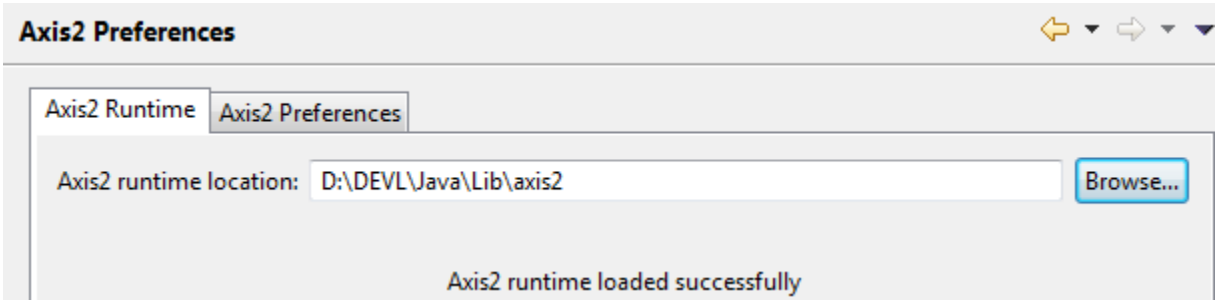
This page provides links to the release versions of Axis2 Java. For more information, please see Apache Release FAQ. Different types of distributions are available for each released version:

Distribution Name	Description
Binary Distribution	This is the complete version of Axis2 and will contain samples as well. Since WS-Addressing implementation and SOAP Monitor utility modules are engaged in to Axis2, by default, this distribution will contain addressing.mar and soapmonitor.mar. But the other modules that are being developed within Axis2 will not be included here, and need to be downloaded separately.
Source Distribution	This will contain the sources of Axis2 standard distribution. One can generate a binary distribution from this by typing $maven dist-bin (Set up Axis2 environment before running this command). Useful for advanced users.
WAR (Web Archive) Distribution	This will be the web application of Axis2 which can be deployed in most of the servlet containers.
Documents Distribution	This will contain all the documentation in one package.

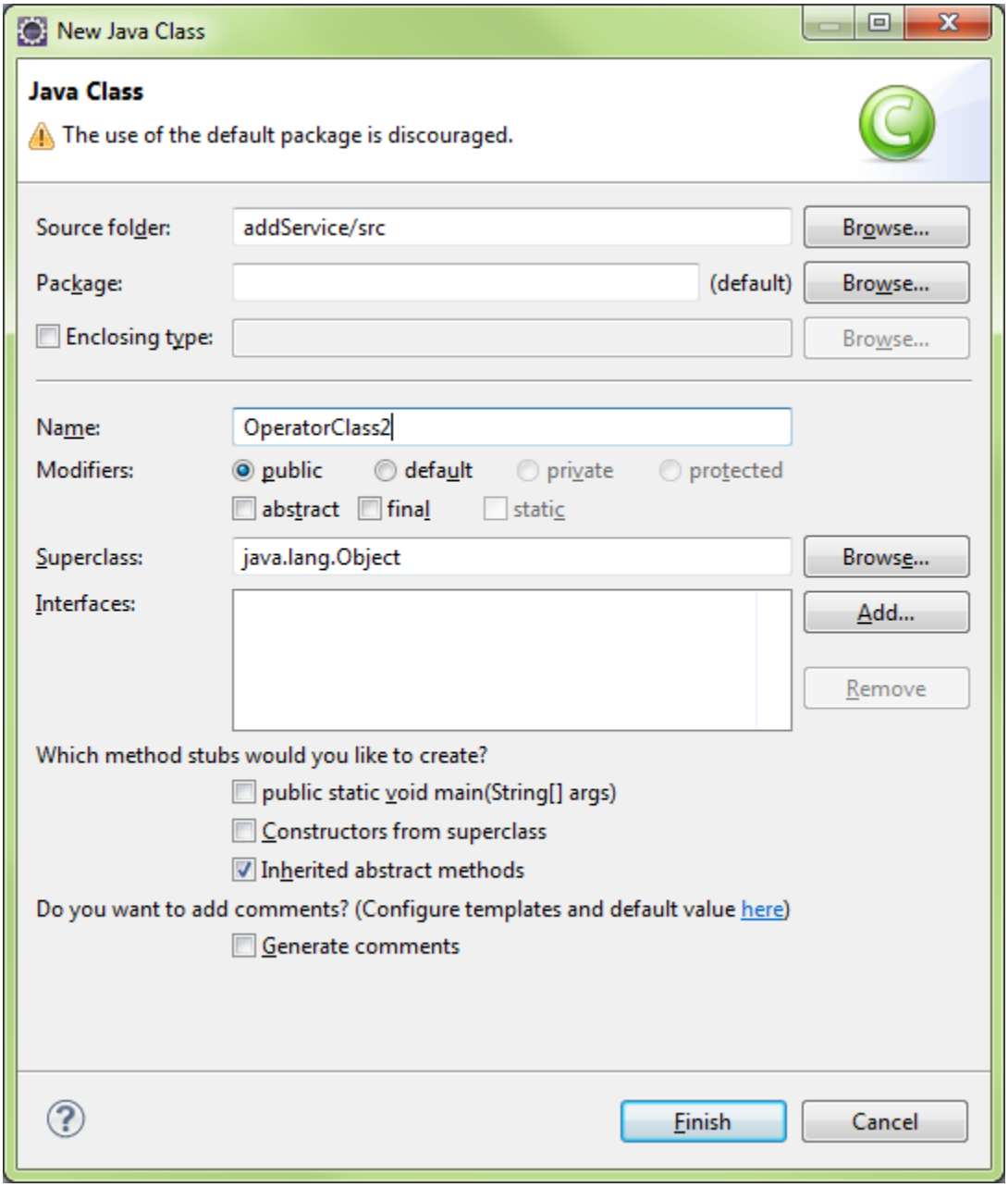
1.6.x releases

The following versions are available:

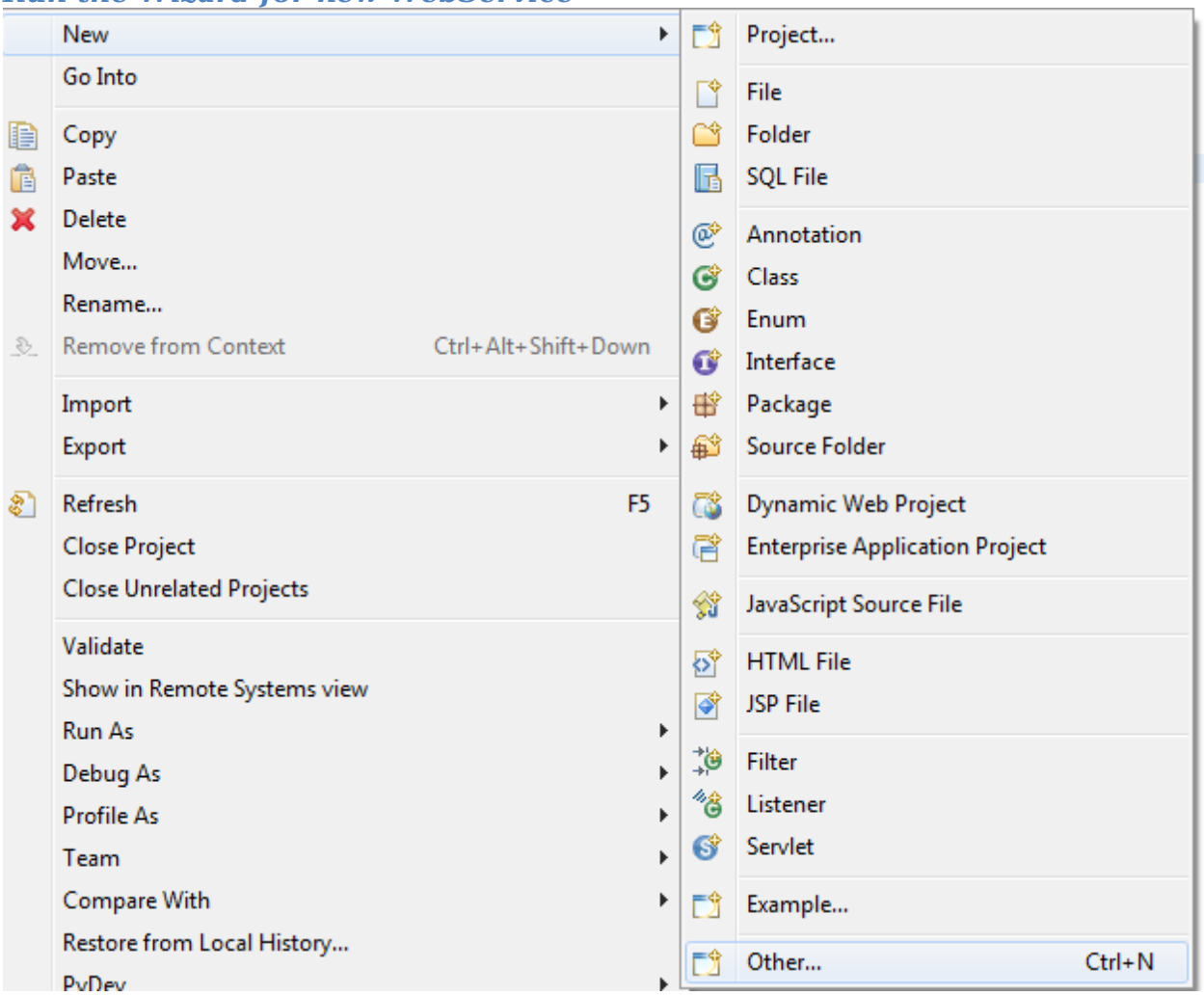
Version	Date	Description	Distribution
1.6.2	17 - Apr - 2012	1.6.2 Release (Mirrored)	Binary Distribution zip | MD5 | PGP Source Distribution zip | MD5 | PGP WAR Distribution zip | MD5 | PGP Documents Distribution zip | MD5 | PGP



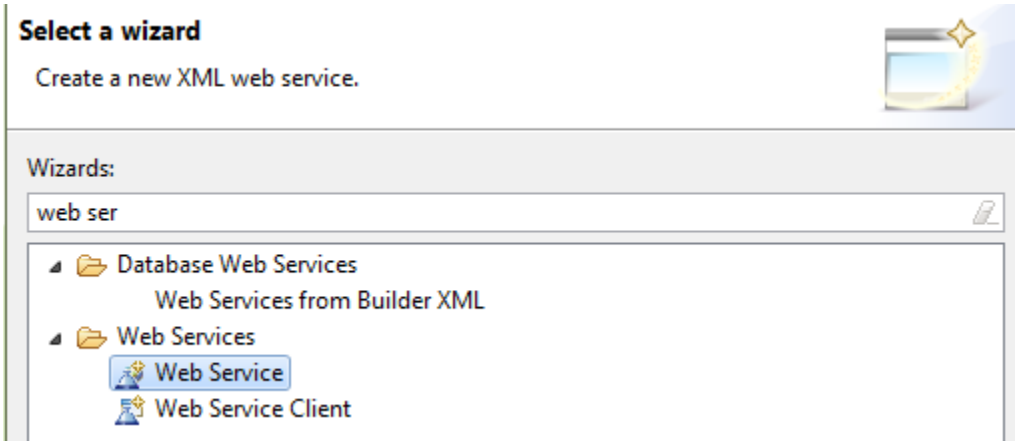
Create a Class



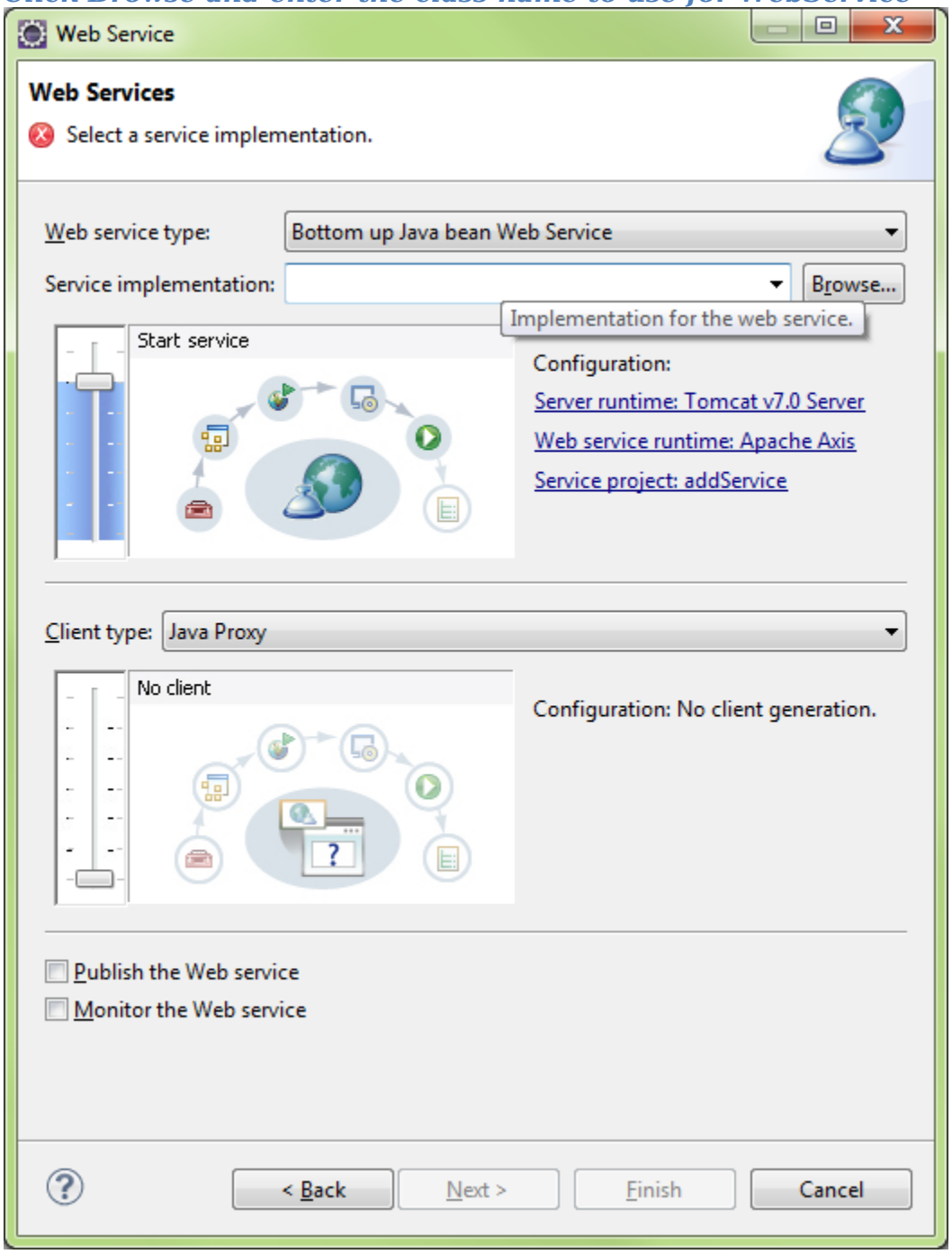
Run the Wizard for new WebService



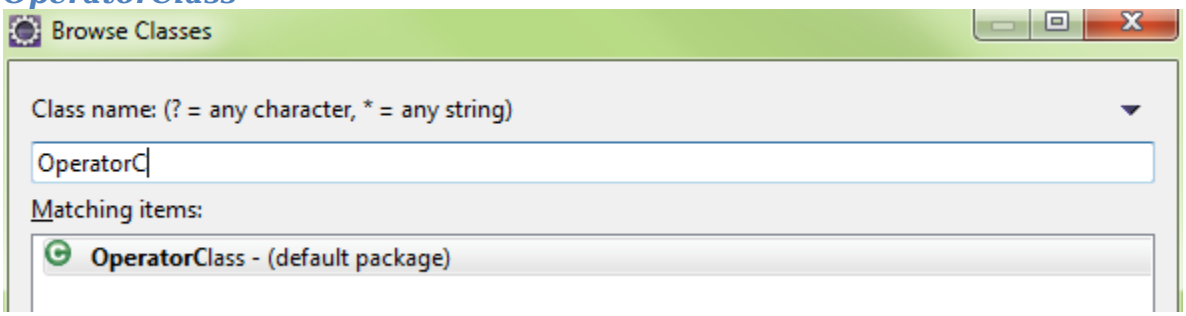
Select Web Service Wizard



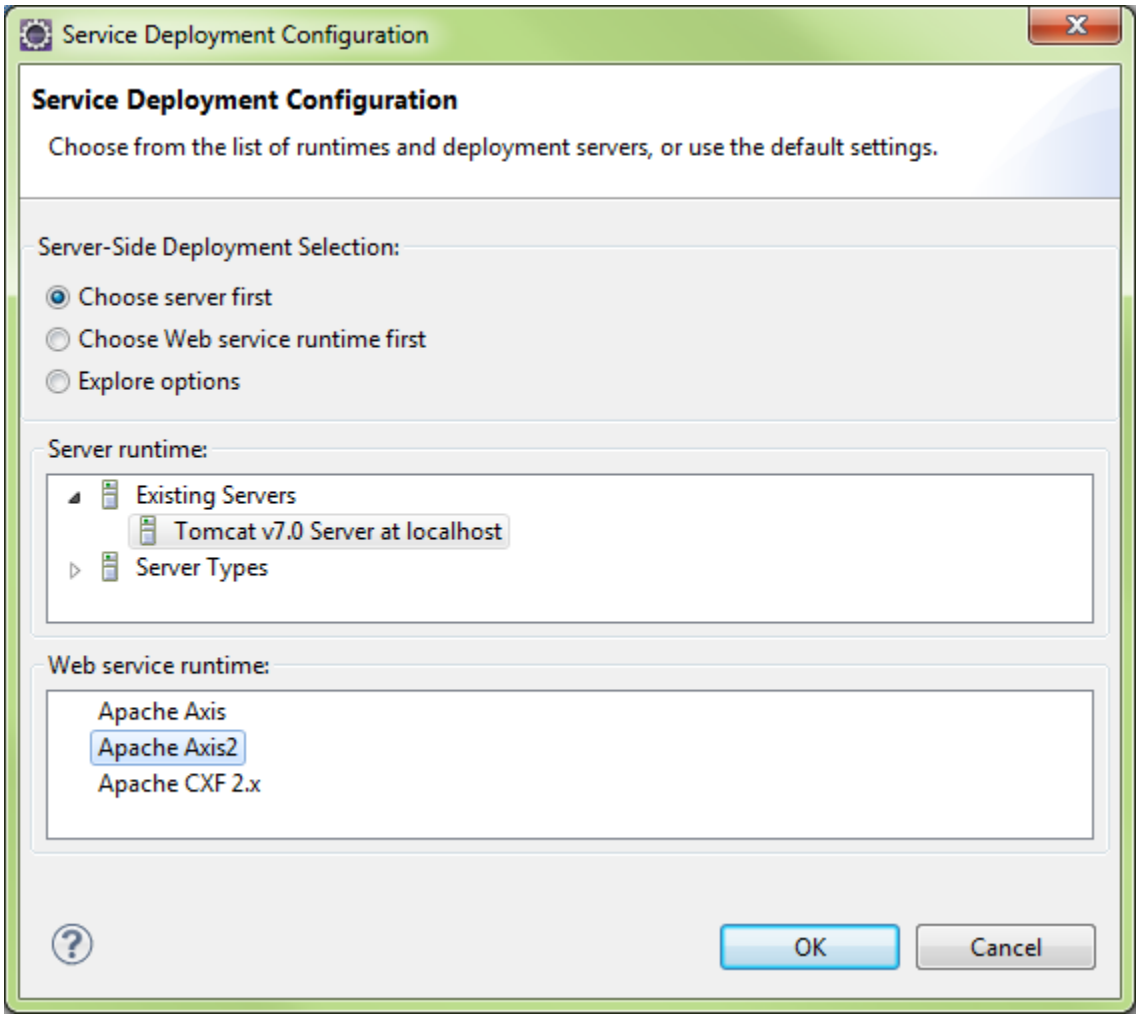
Click Browse and enter the class name to use for WebService



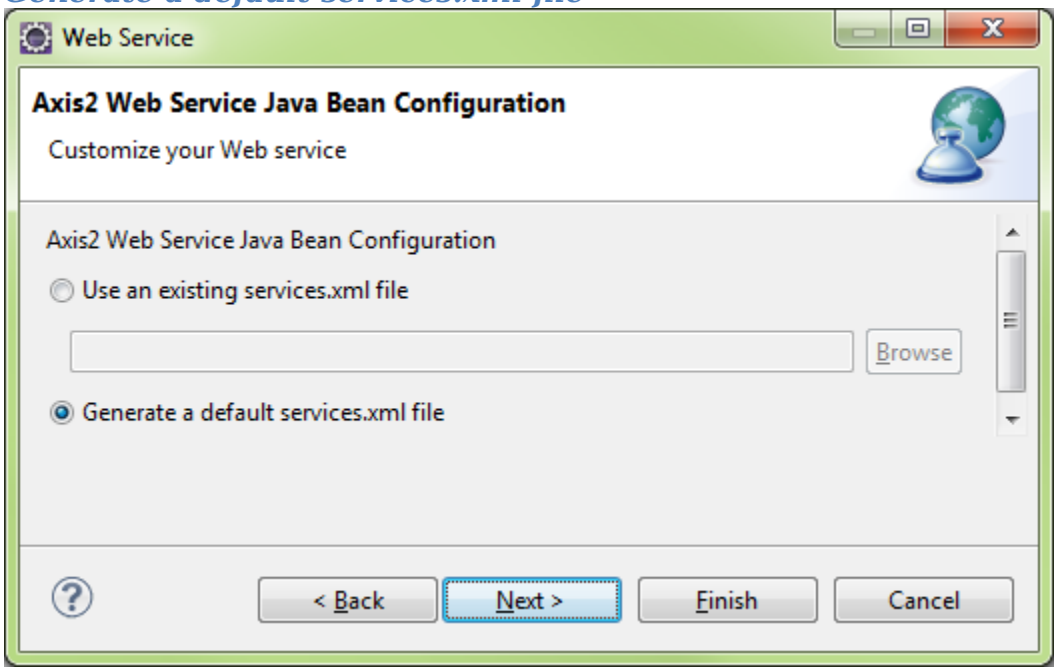
OperatorClass

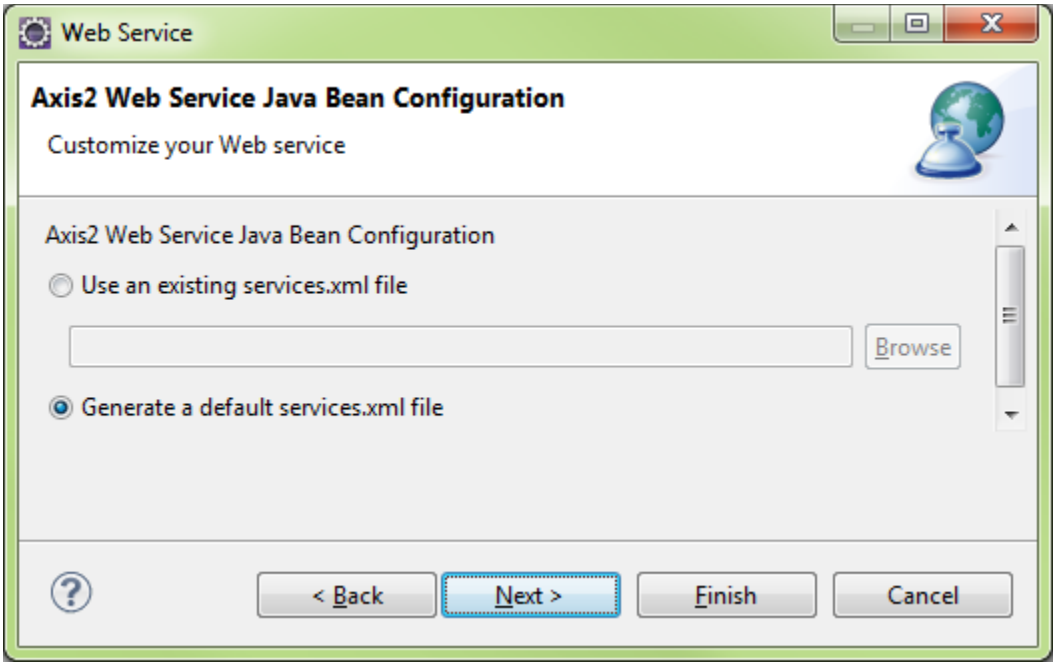


Server Selection

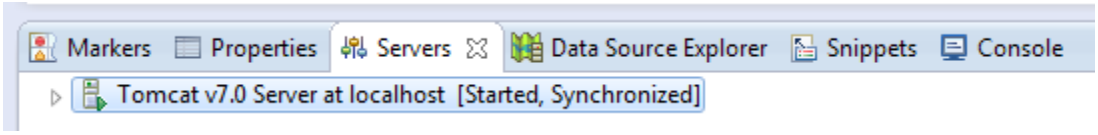


Generate a default services.xml file

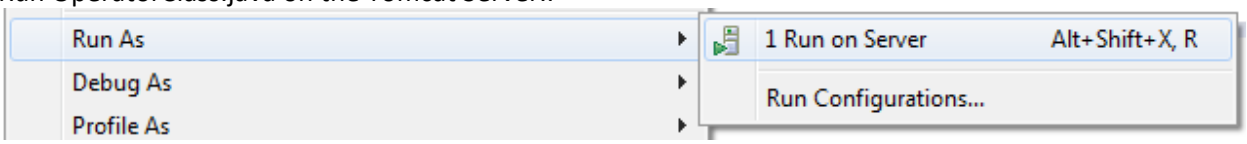


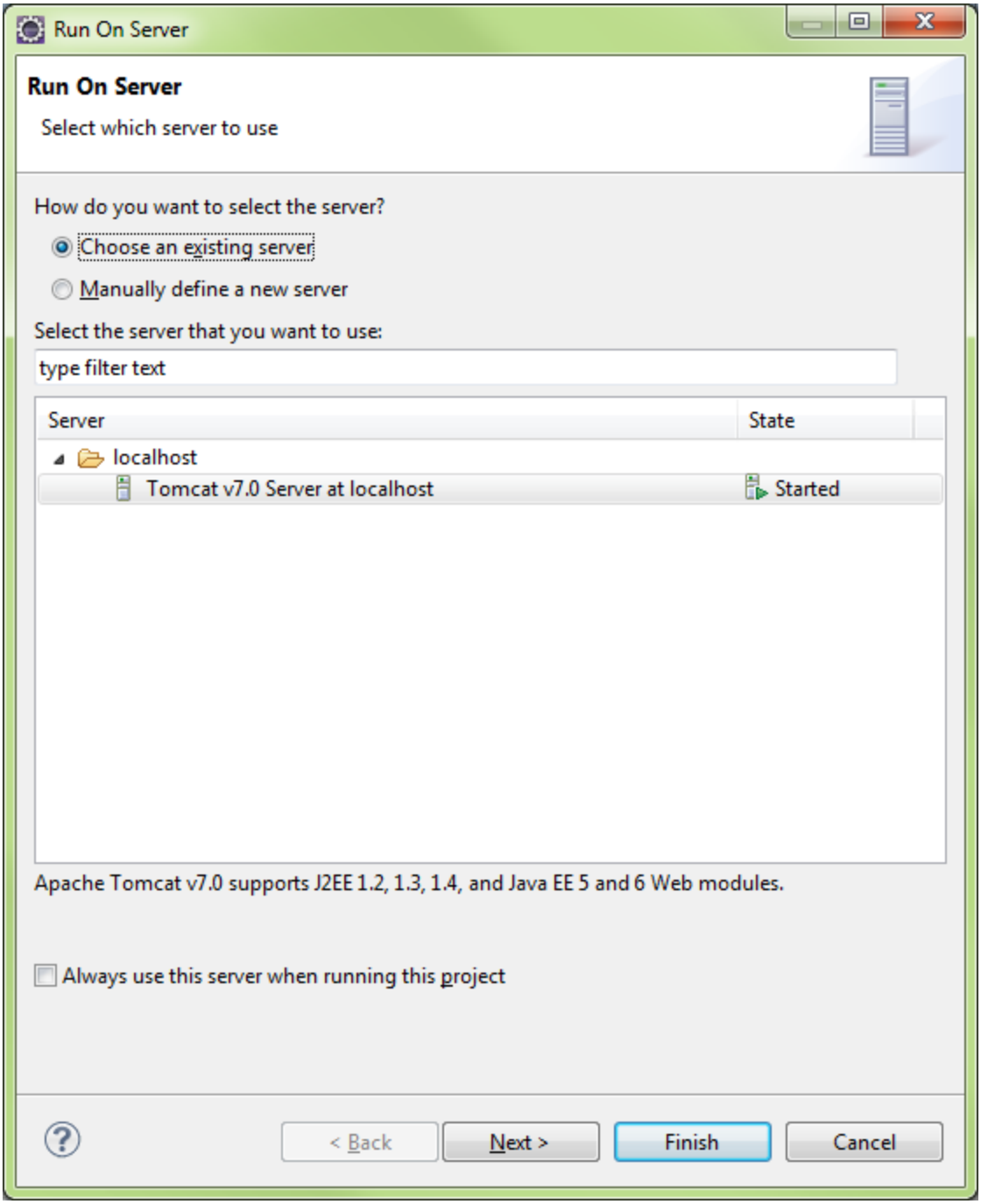


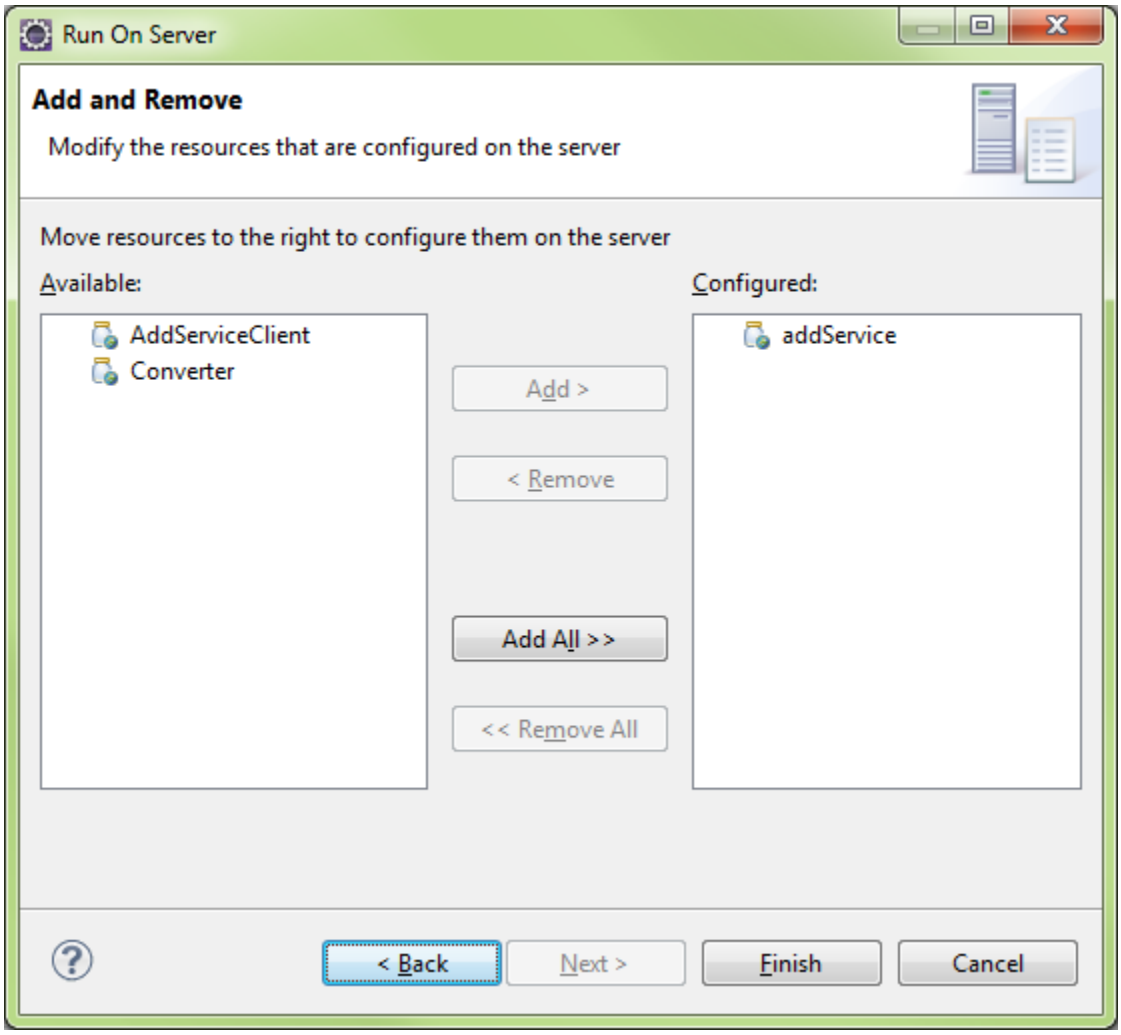
Tomcat will start..



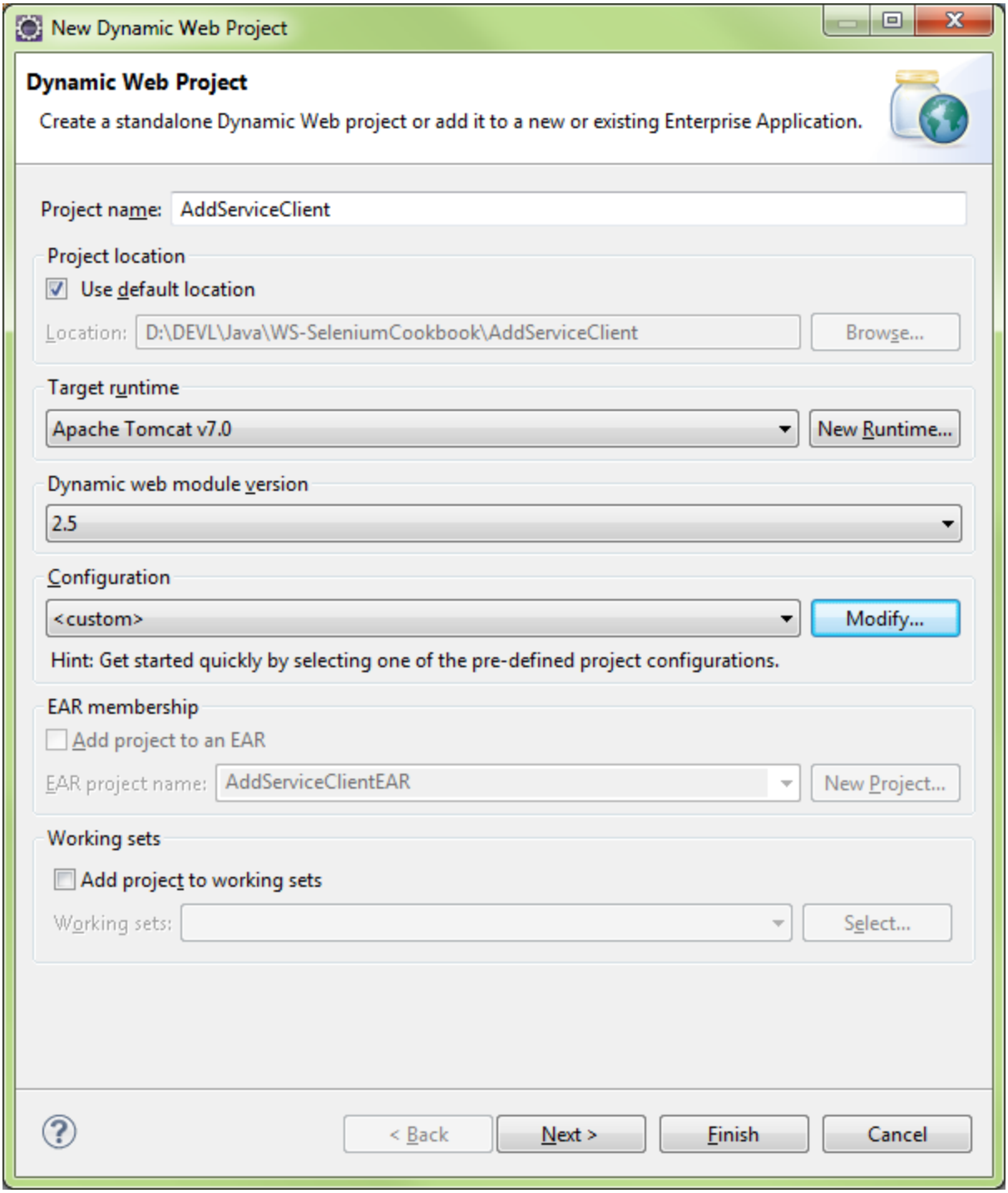
Run OperatorClass.java on the Tomcat Server..



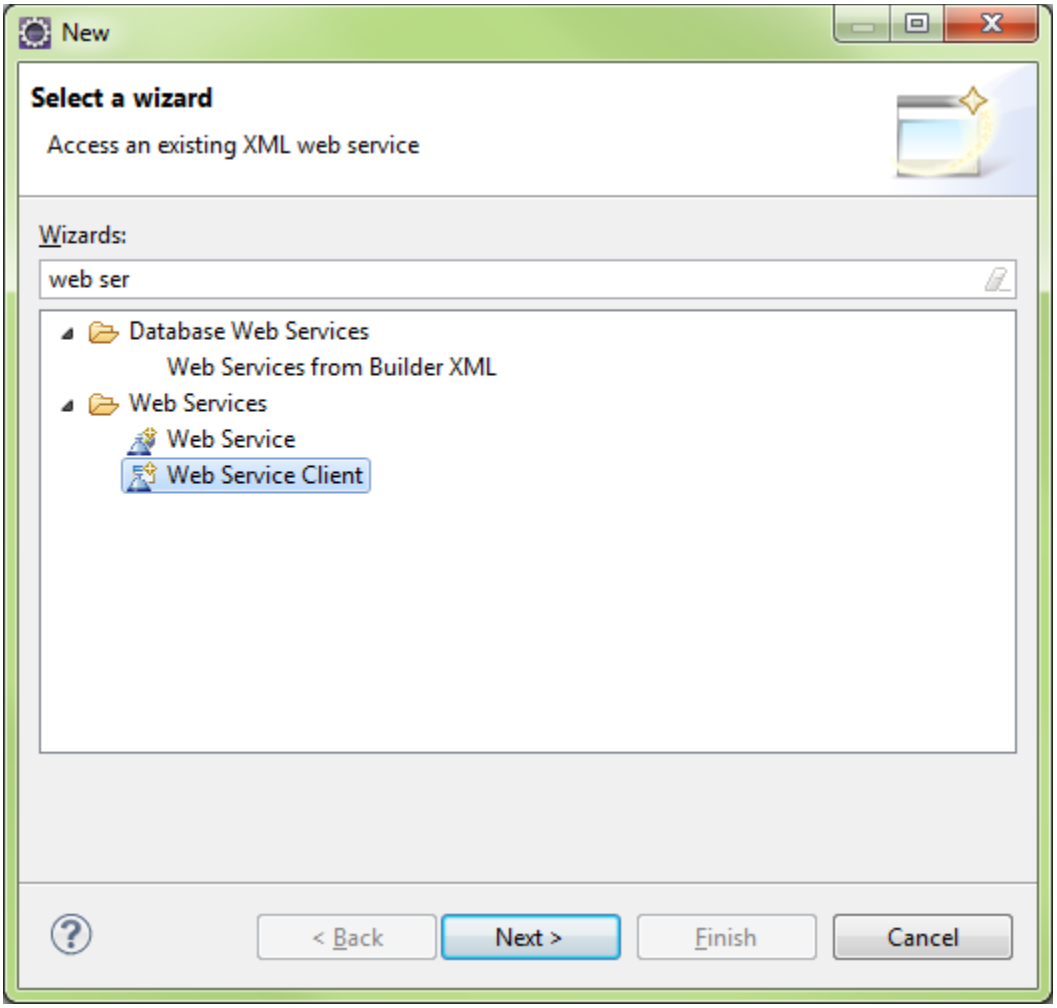

Run On Server
Run On Server
Select which server to use
How do you want to select the server?
Choose an existing server
Manually define a new server
Select the server that you want to use:
type filter text
Server
State
localhost
Tomcat v7.0 Server at localhost
Started
Apache Tomcat v7.0 supports J2EE 1.2, 1.3, 1.4, and Java EE 5 and 6 Web modules.
Always use this server when running this project
< Back
Next >
Finish
Cancel


Run On Server
Add and Remove
Modify the resources that are configured on the server
Move resources to the right to configure them on the server
Available:
AddServiceClient
Converter
Add >
< Remove
Add All >>
<< Remove All
Configured:
addService
< Back
Next >
Finish
Cancel

Create Web Service Client



Create Web Services Client


New
Select a wizard
Access an existing XML web service
Wizards:
web ser
Database Web Services
Web Services from Builder XML
Web Services
Web Service
Web Service Client
< Back
Next >
Finish
Cancel