



# CS260 Intro to Java & Android

## 01.JDK Intro

Winter 2017

# Java Tutorials

---

- The main sources of Java documentation will be the Java Tutorials
  - <http://download.oracle.com/javase/tutorial/>
    - Read Trails Covering the Basics
      - Getting Started
      - Learning the Java Language
      - Essential Java Classes
      - Collections
  - <http://www.tutorialspoint.com/java/index.htm>
    - Read Java Basics and Java Object Oriented

# Hello World

---

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

# Java Development Environment

---

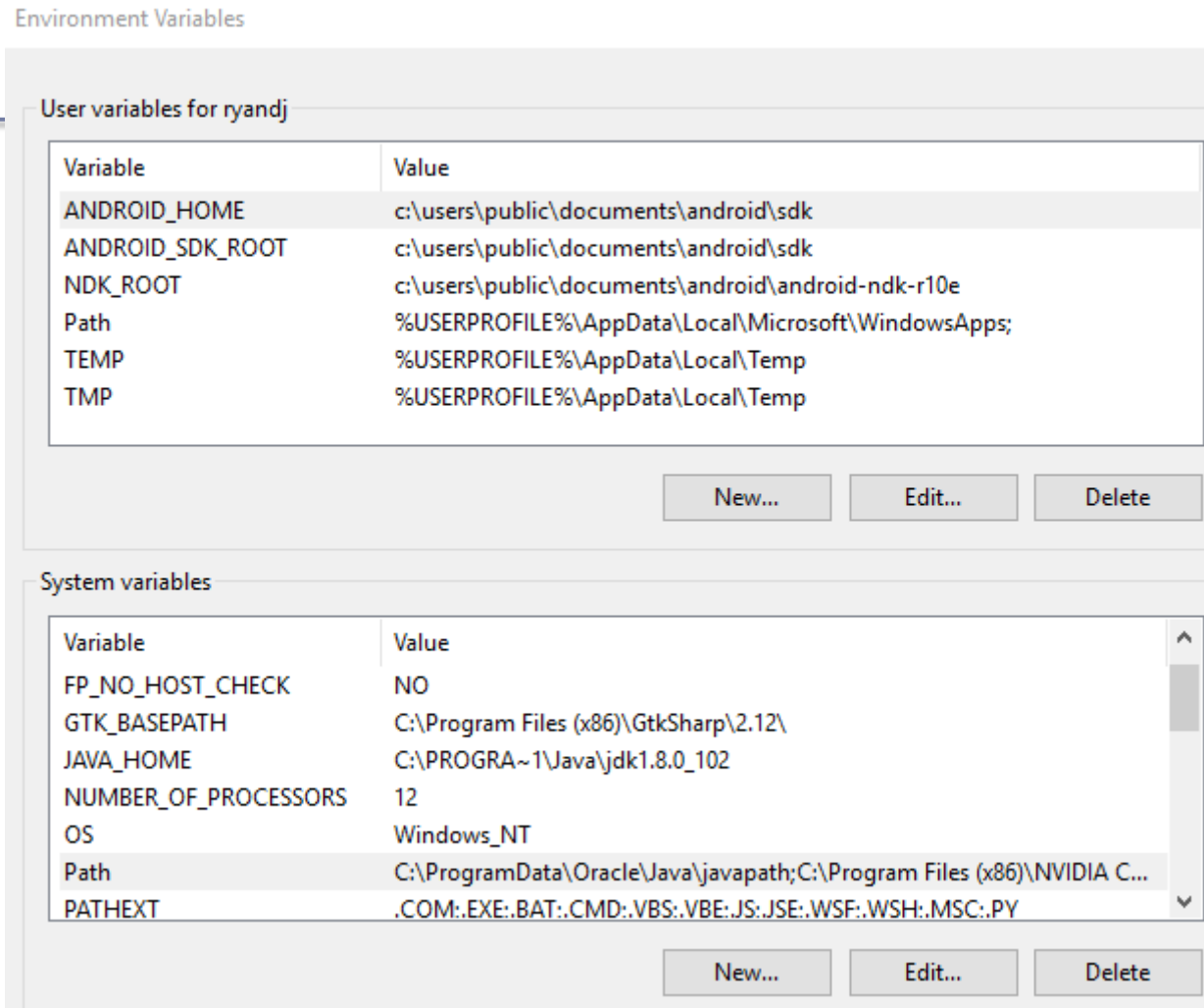
- JRE (Java Runtime Environment)
- JDK (Java Development Kit includes JRE)
- Text Editor (e.g. NotePad or Geany)
- IDE (e.g. IntelliJ IDEA, Eclipse)
  
- JRE & JDK can be found at <http://www.oracle.com/technetwork/java/javase/downloads/index.html>

# Java Development Environment

---

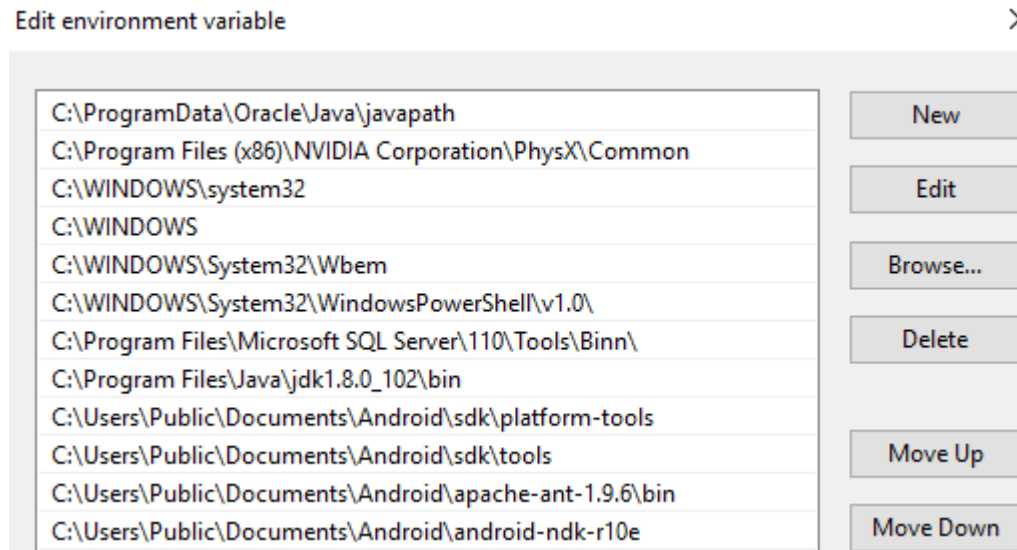
- After installing the JRE & JDK, add the path of the compiler (javac) & interpreter (java) to your PATH
- Control Panel->System & Security->Change Settings->Advanced->Environment Variables
- Also, set JAVA\_HOME to the location of the JDK. In my case it's c:\Program Files\Java\jdk1.8.0\_102

# Environment Variables



# PATH Variable

- 64-bit version is Program Files [PROGRA~1]
- 32-bit version is Program Files (x86) [PROGRA~2]



# PATH Variable

- If your Environment variables are set correctly, you will see the following:

```
Command Prompt

C:\Users\ryandj>java -version
java version "1.8.0_102"
Java(TM) SE Runtime Environment (build 1.8.0_102-b14)
Java HotSpot(TM) 64-Bit Server VM (build 25.102-b14, mixed mode)

C:\Users\ryandj>javac -version
javac 1.8.0_102

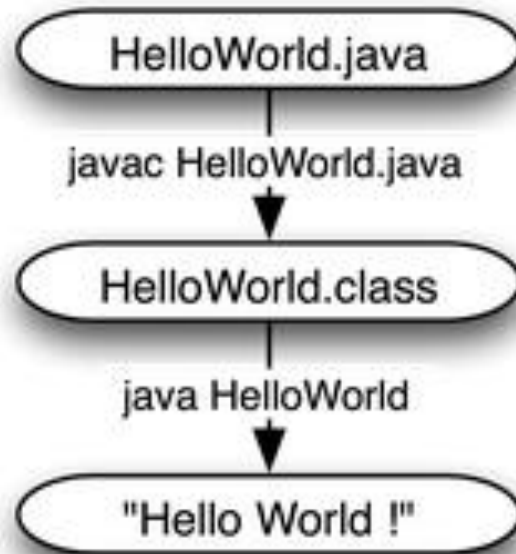
C:\Users\ryandj>adb version
Android Debug Bridge version 1.0.36
Revision 302830efc153-android

C:\Users\ryandj>
```



# Compile & Execute HelloWorld

---



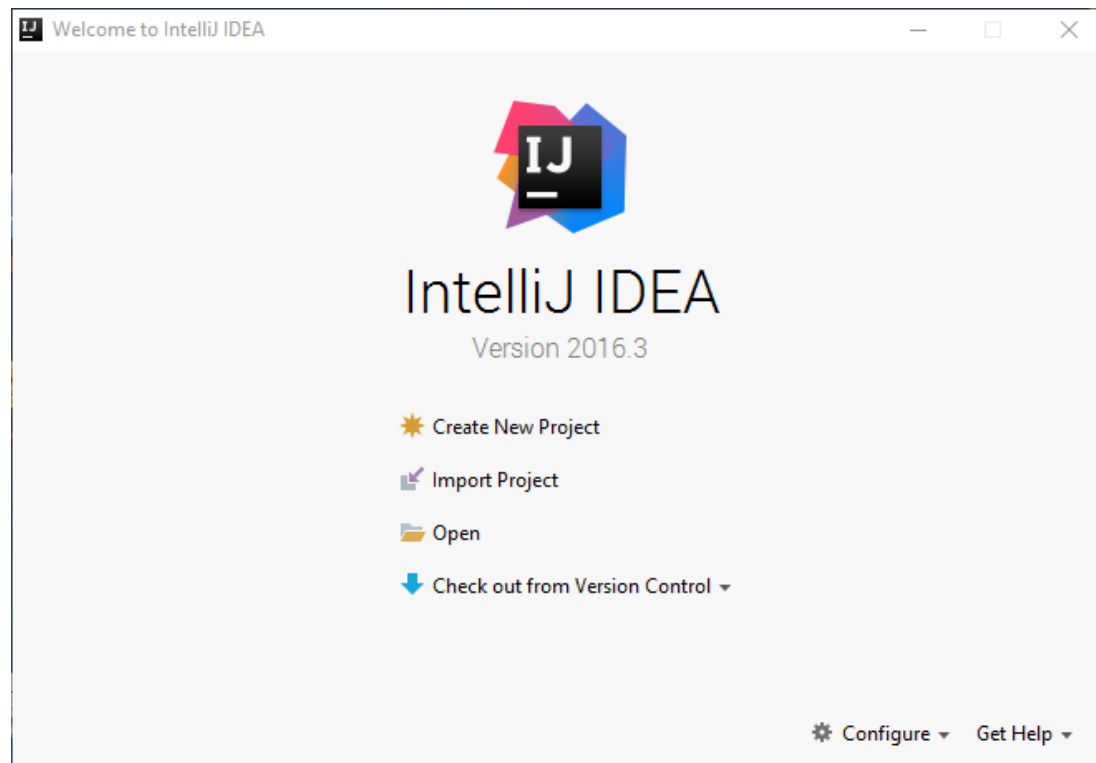
# Simple Java Program

---

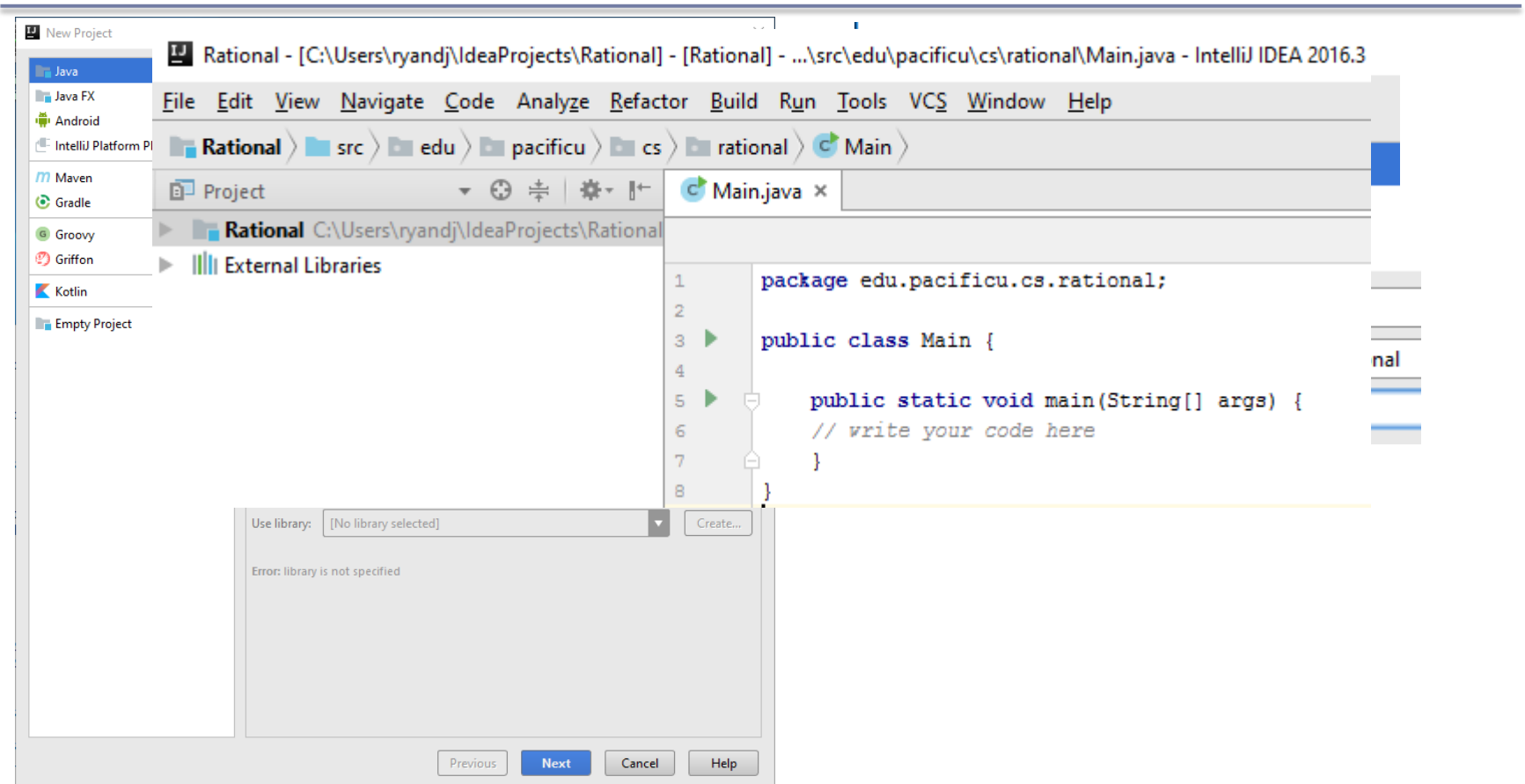
- In CS260Public on Grace is HelloWorld.java
  1. Put on Desktop
  2. Open cmd prompt
  3. Type javac HelloWorld.java
  4. Type java HelloWorld

# IntelliJ IDEA

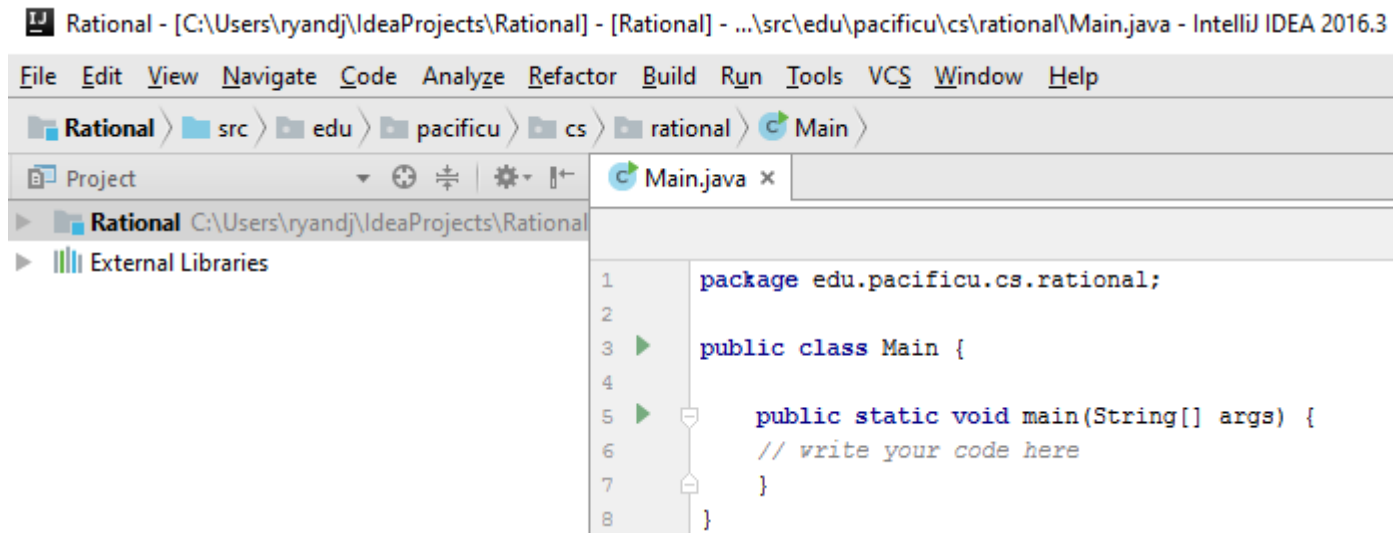
---



# IntelliJ IDEA



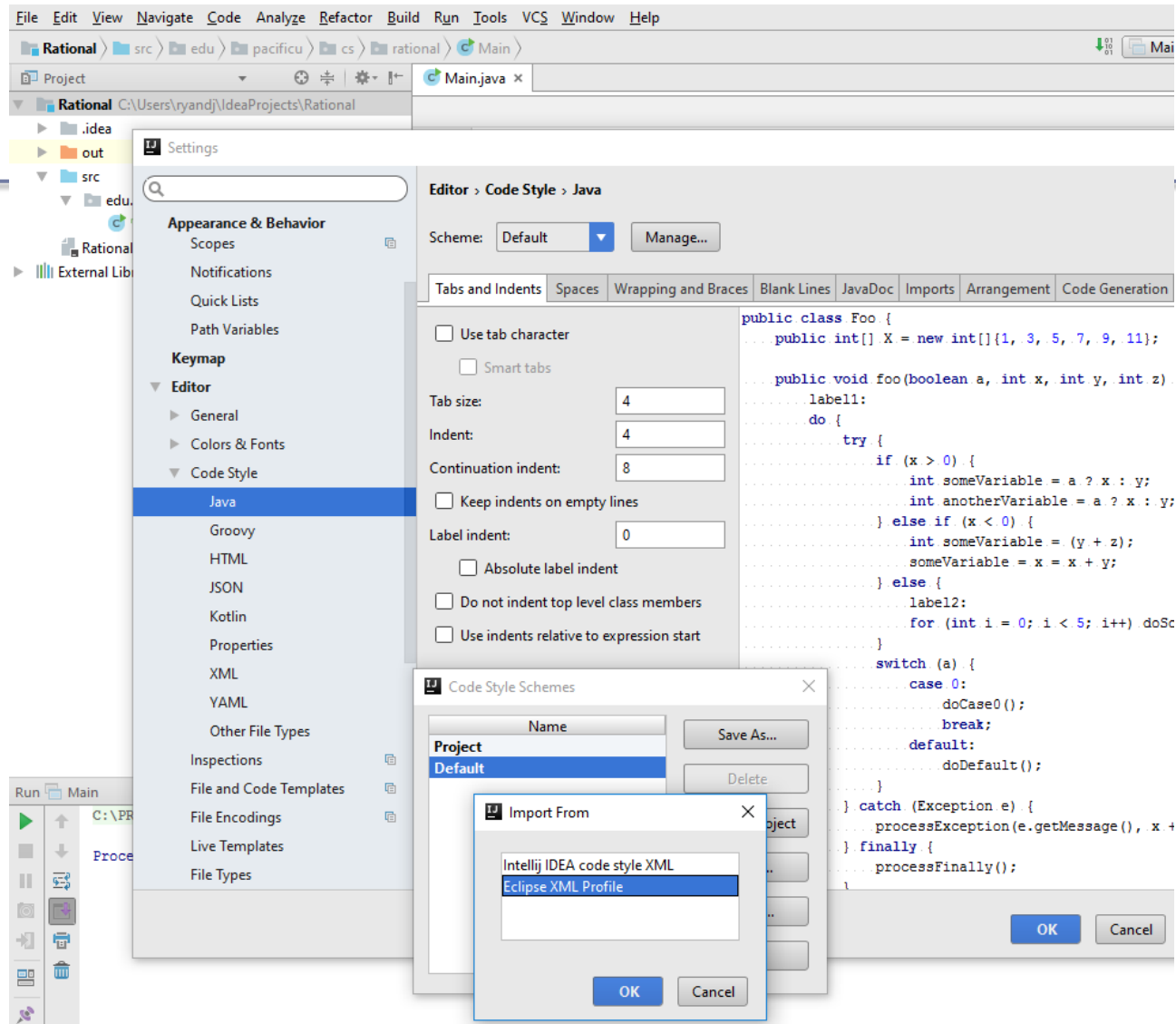
# IntelliJ IDEA



The screenshot displays the IntelliJ IDEA 2016.3 interface. The title bar shows the project name 'Rational' and the file path 'C:\Users\ryandj\IdeaProjects\Rational'. The menu bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, and Help. The breadcrumb navigation shows the path: Rational > src > edu > pacificu > cs > rational > Main. The Project tool window on the left shows the project structure with 'Rational' and 'External Libraries'. The main editor window displays the following Java code:

```
1 package edu.pacificu.cs.rational;
2
3 public class Main {
4
5     public static void main(String[] args) {
6         // write your code here
7     }
8 }
```

# IntelliJ IDEA



# IntelliJ IDEA

Rational - [C:\Users\ryandj\IdeaProjects\Rational] - [Rational] - ...src\edu\pacificu\cs\rational\Main.java - IntelliJ IDEA 2016.3

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

Rational > src > edu > pacificu > cs > rational > Main

Project

Main.java x

Rational C:\Users\ryandj\IdeaProjects\Rational

- ▶ .idea
- ▶ out
- ▶ src
  - ▶ edu.pacificu.cs.rational
    - ▶ Main
- ▶ Rational.iml
- ▶ External Libraries

```
1 package edu.pacificu.cs.rational;
2
3 public class Main
4 {
5
6     public static void main (String[] args)
7     {
8         // write your code here
9     }
10 }
```

Select Path

C:\Users\ryandj\Desktop\JavaCodin

- ▶ SDL2Window
- ▶ SDL\_Boomshir
- ▶ SDLTutorial
- ▶ Sheilainvoices
- ▶ smit7928Soluti
- ▶ VideoBook
- ▶ yoon2725
- ▶ yoon2725Assig

JavaCodingStandardsV1.1Prefs.xml

- ▶ Documents
- ▶ Downloads
- ▶ Favorites
- ▶ IdeaProjects
- ▶ Links
- ▶ Local Settings
- ▶ Music

Drag and drop a file into the space above to quickly locate it in the tree

OK

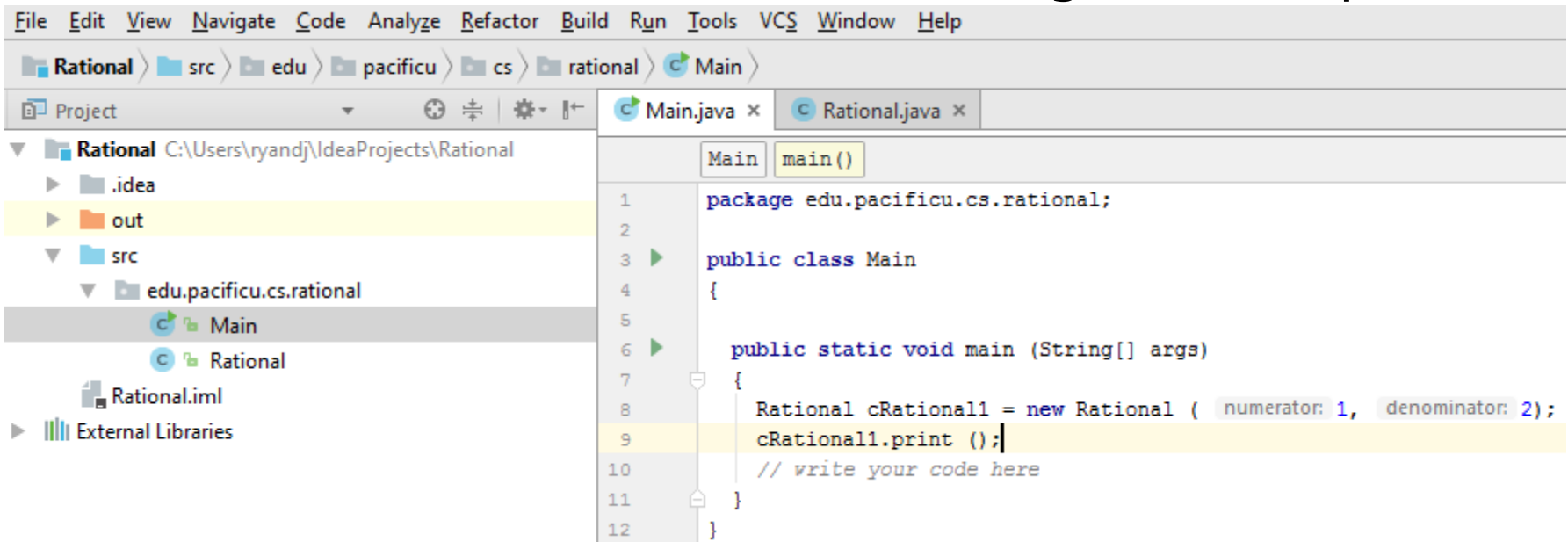
Cancel

Help

Ctrl+Shift+Alt+L Reformat Code15

# IntelliJ IDEA

- Add a Rational.java class to the rational package
- Copy in Rational.java code from CS260-01Public
- Create a Rational object in main that represents  $\frac{1}{2}$
- Print out the rational number using method print

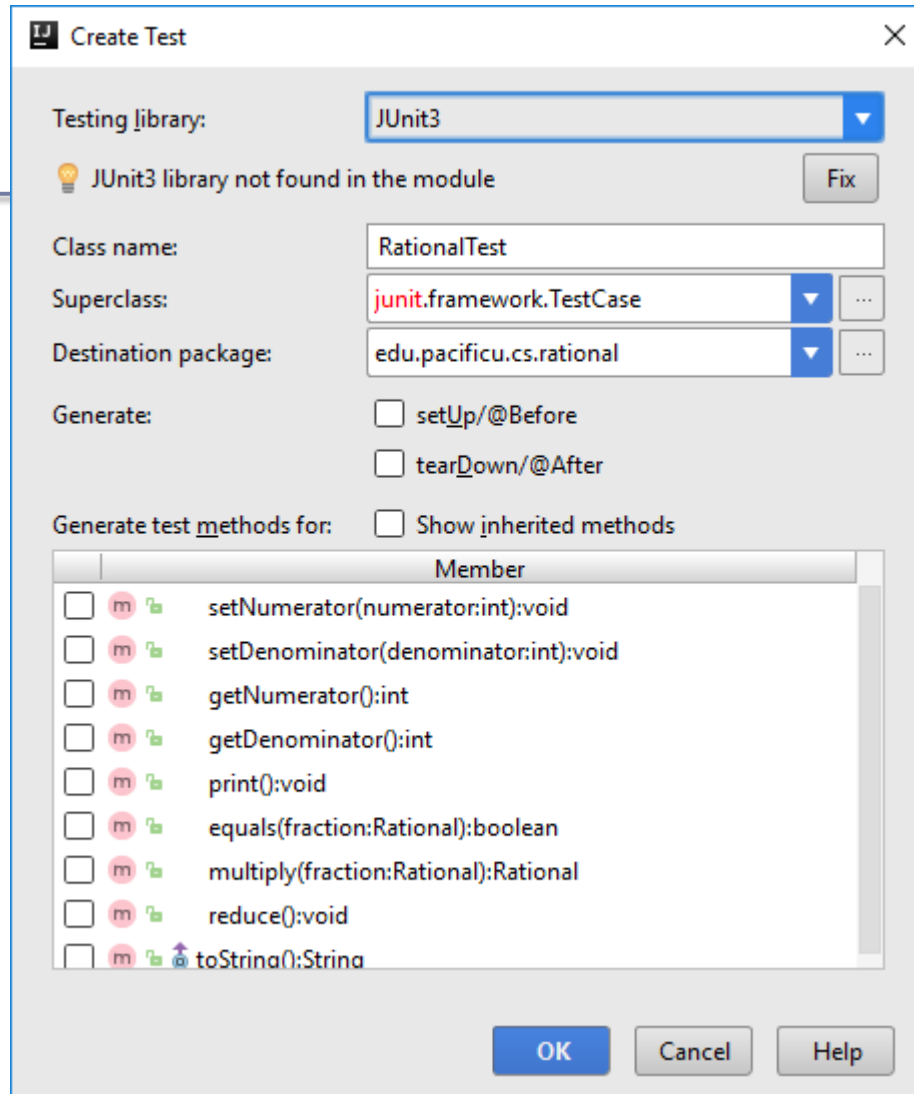


The screenshot shows the IntelliJ IDEA IDE interface. The top menu bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, and Help. The breadcrumb navigation shows the path: Rational > src > edu > pacificu > cs > rational > Main. The Project tool window on the left displays the project structure: Rational (C:\Users\ryandj\IdeaProjects\Rational) with subfolders .idea, out, and src. Under src, there is a package edu.pacificu.cs.rational containing Main.java and Rational.java. The Main.java file is open in the editor, showing the following code:

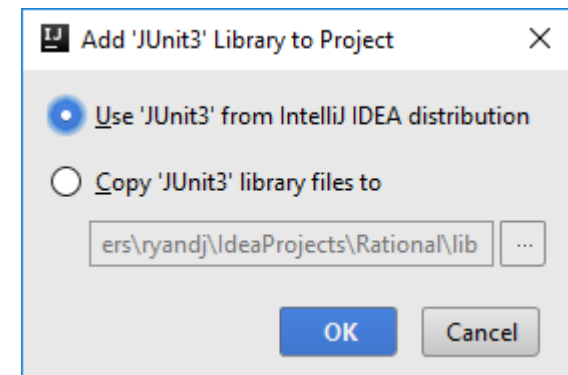
```
1 package edu.pacificu.cs.rational;
2
3 public class Main
4 {
5
6     public static void main (String[] args)
7     {
8         Rational cRational1 = new Rational ( numerator: 1, denominator: 2);
9         cRational1.print ();
10        // write your code here
11    }
12 }
```



# Unit Testing



Click Fix



# Unit Testing

- Need to add Junit to your path

```
1 package edu.pacificu.cs.rational;
2
3 import junit.framework.TestCase;
4 import static org.junit.Assert.*;
5
6 /**
7  * Created by ryandj on 12/8/2016.
8  */
9 public class RationalTest extends TestCase
10 {
11     public void testIsEqual ()
12     {
13         Rational cR1 = new Rational ( numerator: 3, denominator: 5);
14         assertTrue ( message: "3/5 = 3/5", cR1.equals (new Rational ( numerator: 3, denominator: 5)));
15         assertFalse ( message: "3/5 = 3/4", cR1.equals (new Rational ( numerator: 3, denominator: 4)));
16         assertFalse ( message: "3/5 = 4/5", cR1.equals (new Rational ( numerator: 4, denominator: 5)));
17     }
18 }
```

- <http://junit.sourceforge.net/javadoc/org/junit/Assert.html>