



CS260 Intro to Java & Android

01.JDK Intro

Winter 2018

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)

- JDK 1.8.0_151 can be found at <http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.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_151

Environment Variables

User variables for ryandj

Variable	Value
ANDROID_HOME	C:\Android
ANDROID_SDK_ROOT	C:\Android
JAVA_HOME	C:\Program Files\Java\jdk1.8.0_151
NDK_ROOT	c:\users\public\documents\android\android-ndk-r10e
OneDrive	C:\Users\ryandj\OneDrive
Path	C:\Users\ryandj\AppData\Local\Microsoft\WindowsApps;
TEMP	C:\Users\ryandj\AppData\Local\Temp
TMP	C:\Users\rvandi\AppData\Local\Temp

PATH Variable

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

```
C:\Program Files\Java\jdk1.8.0_151\bin
C:\Android\platform-tools
C:\Android\tools
```

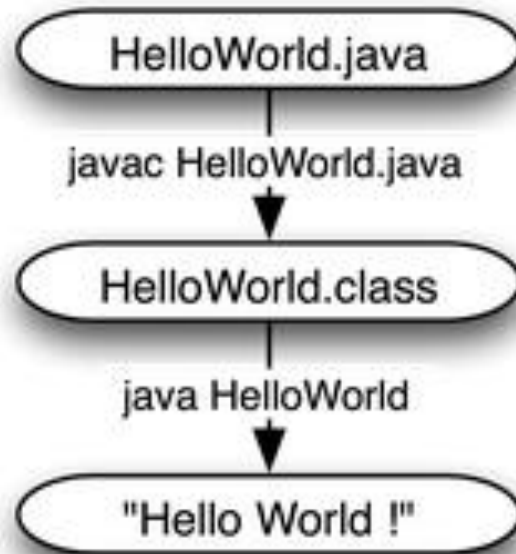
PATH Variable

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

```
C:\Users\ryandj>java -version
java version "1.8.0_151"
Java(TM) SE Runtime Environment (build 1.8.0_151-b12)
Java HotSpot(TM) 64-Bit Server VM (build 25.151-b12, mixed mode)
```

```
C:\Users\ryandj>javac -version
javac 1.8.0_151
```


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

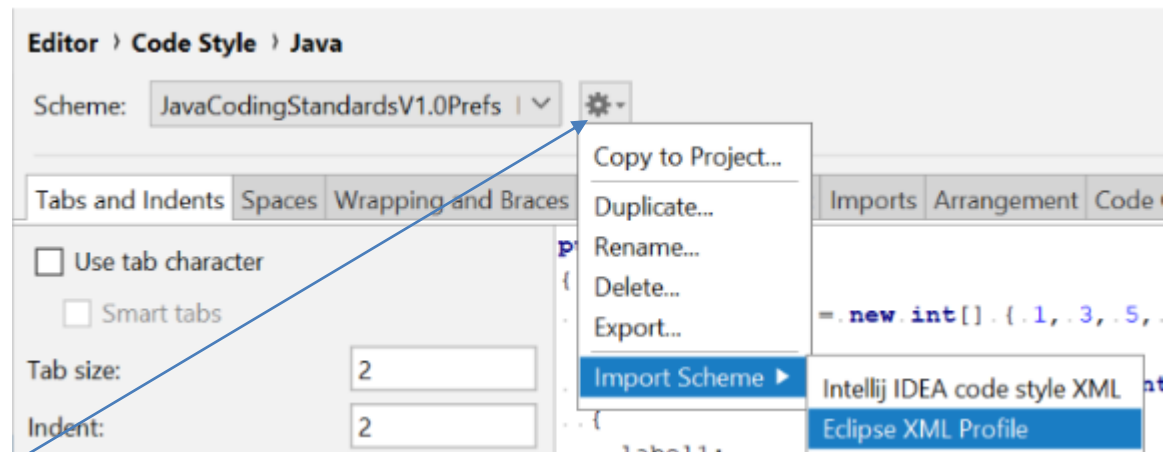
IntelliJ IDEA

- Launch IntelliJ IDEA Community 2017.3
- Put all course projects in `c:\users\PUNetID\CS260\`

The screenshot shows the IntelliJ IDEA interface. The title bar reads "Yippee [C:\Users\ryandj\CS260\Yippee] - ...\src\edu\pacificu\cs\yippee\Main.java [Yippee] - IntelliJ IDEA". The menu bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, and Help. The breadcrumb navigation shows the path: Yippee > src > edu > pacificu > cs > yippee > Main. The Project tool window on the left shows the project structure: Yippee C:\Users\ryandj\CS260\Y and External Libraries. The editor window shows the code for Main.java:

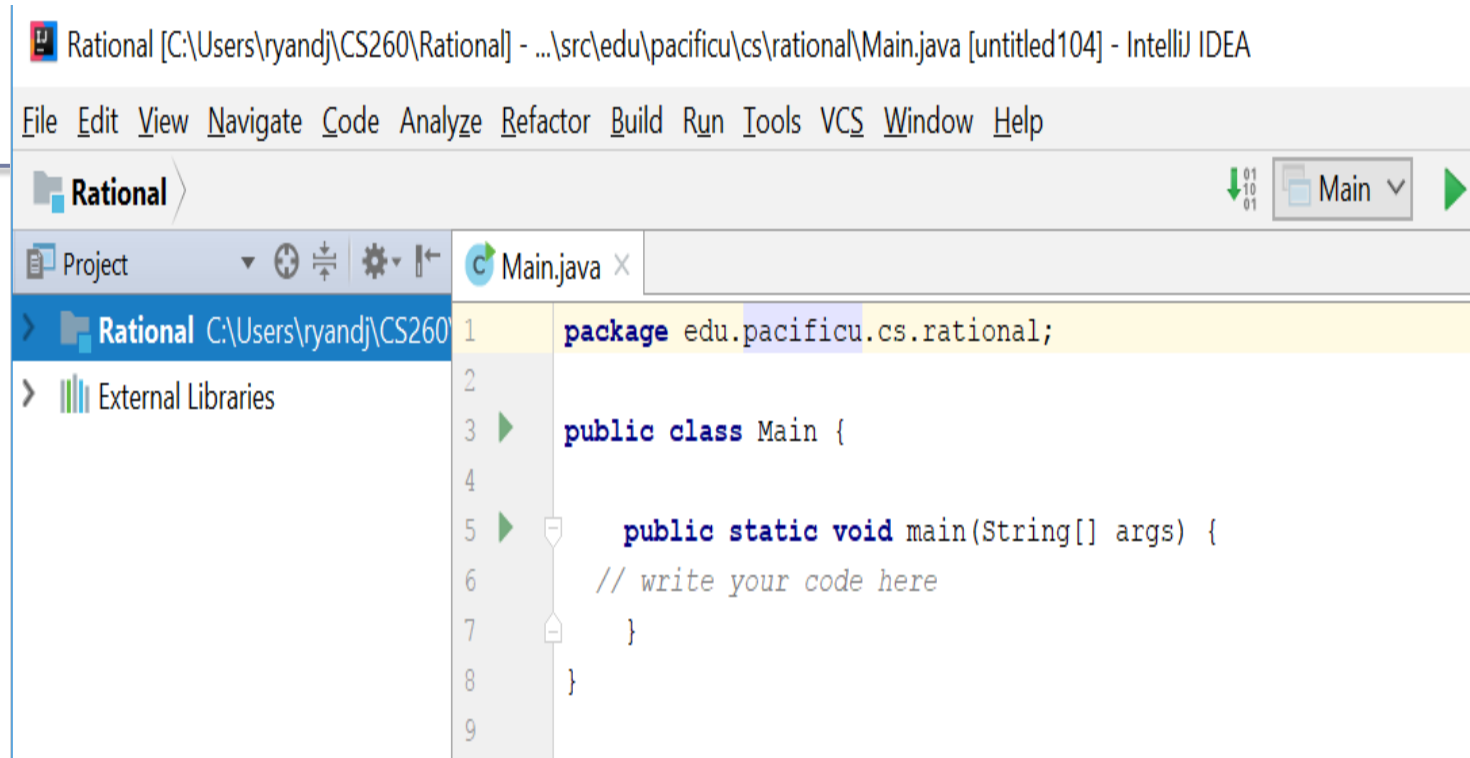
```
1 package edu.pacificu.cs.yippee;
2
3 public class Main {
4
5     public static void main(String[] args) {
6         System.out.println ("Yippee");
7     }
8 }
9
```

IntelliJ IDEA



File ->
Settings->
Editor->
Code Style ->
Java->
Scheme->
Import Scheme->
Eclipse xml Profile->
JavaCodingStandardsV1.3Prefs.xml

IntelliJ IDEA



New Project

Project name: Rational

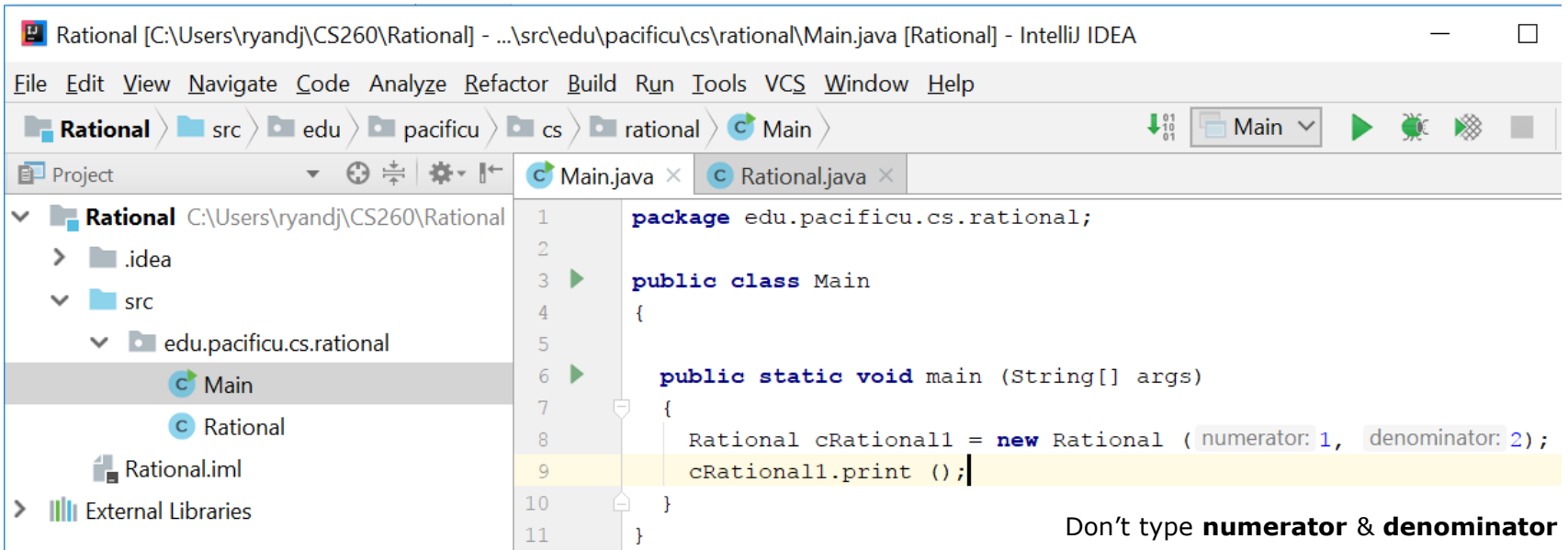
Project location: C:\Users\ryandj\CS260\Rational

Base package: edu.pacificu.cs.rational

Ctrl+Shift+Alt+L Reformat Code13

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



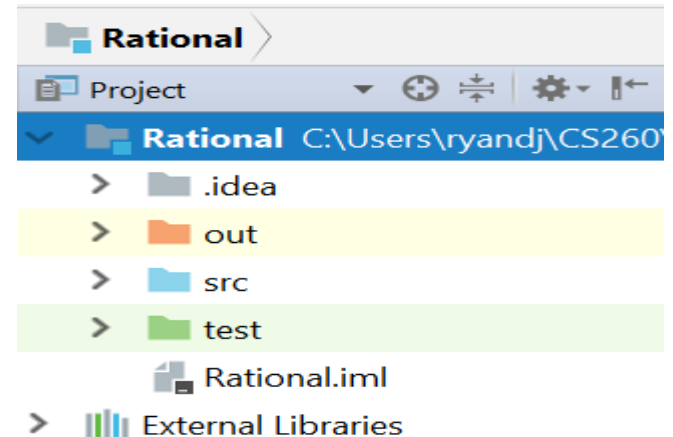
The screenshot shows the IntelliJ IDEA IDE interface. The title bar reads "Rational [C:\Users\ryandj\CS260\Rational] - ...\src\edu\pacificu\cs\rational\Main.java [Rational] - IntelliJ IDEA". The menu bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, and 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: Rational (C:\Users\ryandj\CS260\Rational) with subfolders .idea, src, and edu.pacificu.cs.rational. Under src, there is a Main class and a Rational class. The Main class is selected, and its code is displayed in the editor. The code is as follows:

```
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    }
11 }
```

Line 9 is highlighted in yellow. Below the code, the text "Don't type **numerator** & **denominator**" is displayed.

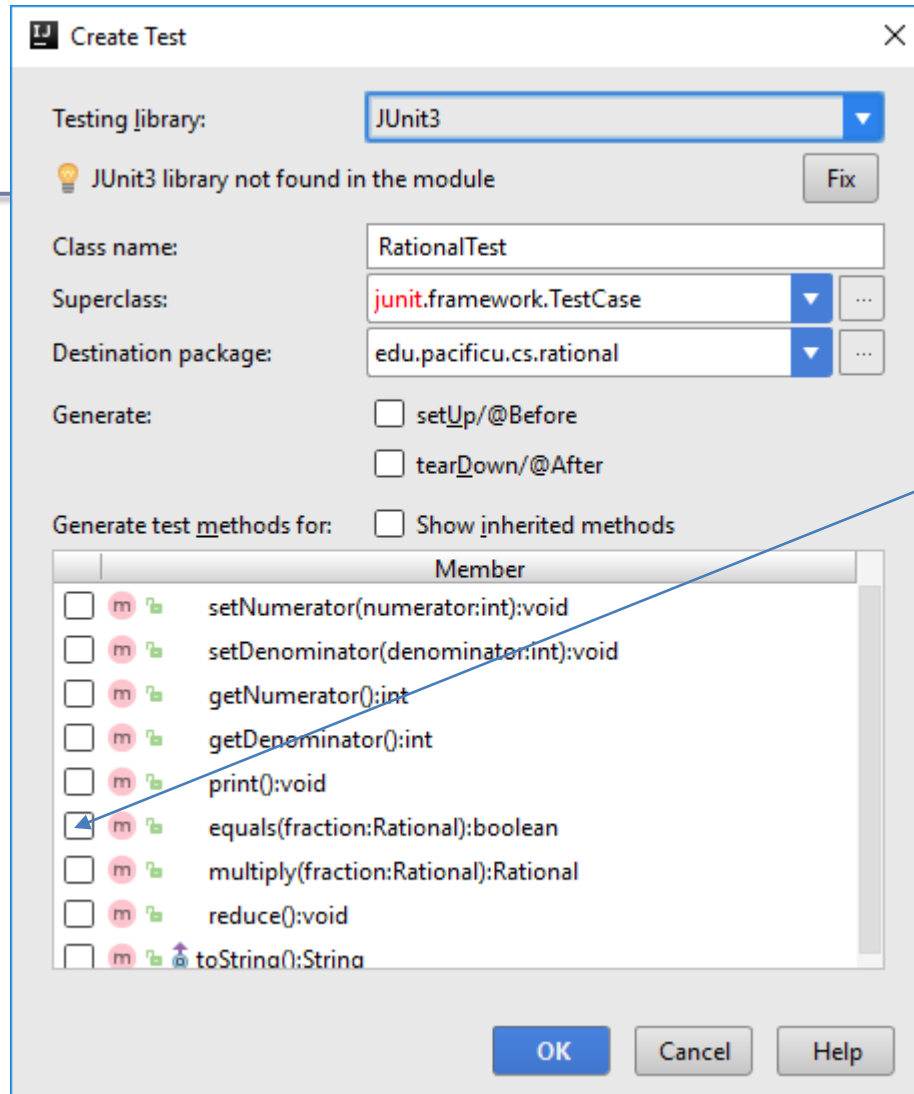
Unit Testing

- Create a folder called **test** at the level of src
- File -> Project Structure -> Modules
- Select **test** folder
- Select Tests tab
- Apply
- OK
- Notice: The src folder is blue, the test folder is green



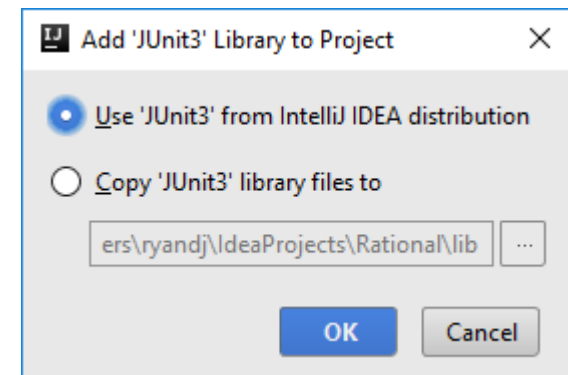
Unit Testing

(place cursor here) public class Rational (then hit alt-enter)



Click Fix

check equals



Unit Testing

- Might need to add Junit to your path once again, alt-enter is your friend

```
public void testEquals ()
{
    Rational cR1 = new Rational ( numerator: 3, denominator: 5);
    assertTrue ( message: "3/5 = 3/5", cR1.equals (new Rational ( numerator: 3, denominator: 5)));
    assertFalse ( message: "3/5 = 3/4", cR1.equals (new Rational ( numerator: 3, denominator: 4)));
    assertFalse ( message: "3/5 = 4/5", cR1.equals (new Rational ( numerator: 3, denominator: 4)));
}
```

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