

#### UNIVERSITÀ DI PISA

# Laboratorio di reti B

## **Introduction to Eclipse IDE**

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eclipse

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#### Overview

- Background
- Obtaining and installing Eclipse
- Creating a workspace / project
- Creating class
- Compiling and Running code
- Debugging

### Background: Eclipse IDE

• What is Eclipse?

An Integrated Development Environment: A program that falicitates and supports the development of software. Created by OTI and IBM and written in java

- Providing tools for: Coding, building, debugging
- Language-neutral: Java, C, HTML, XML, PHP,..
- Open Source
- Rich community of Eclipse plug-in development







eclipse

# **Obtaining and Installing Eclipse**

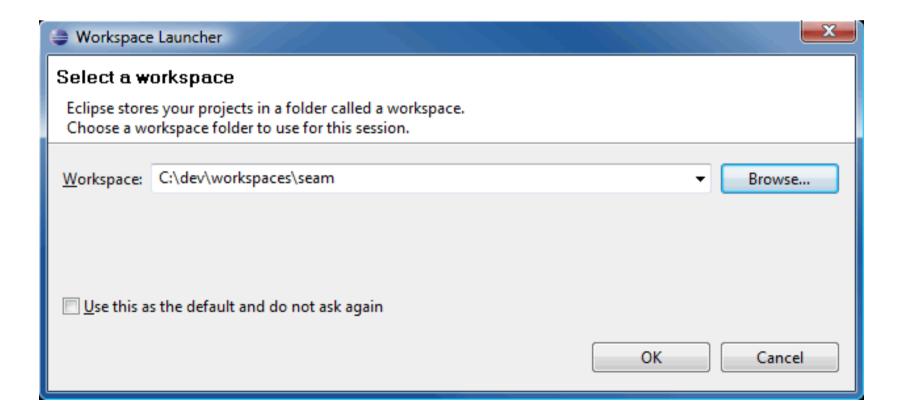
- Download and Install Eclipse IDE for you platform: <u>https://eclipse.org/ide/</u>
- Requirements: either
  - the Java JRE (Java runtime engine)



- Java JDK (Java development kit): recommended for java development because it allows you to see documentation and source code for the standard Java classes)
- Once you have the installed it, launch Eclipse
- Lab M,H
  - Linux (Java 1.6 and Eclipse 4.3) Windows (Java 1.8 and Eclipse Mars)

### **Creating/Selecting a Workspace**

- Select the top-level directory (workspace) where you want to store and organize the files of your projects
- It can hold multiple projects



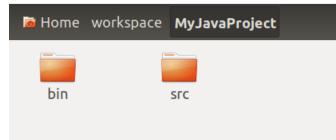
#### **Creating a Project**

• Navitates: File  $\rightarrow$  New  $\rightarrow$  Java Project

😂 Java - Eclipse Platf	orm		8
File Edit Source Refact	tor Navigate Se	arch Project Run Window Help	
New	Alt+Shift+N	🖄 🏄 Java Project	1 2 - 2 - 4 - 4 - 4 -
Open File		🈭 Project	
Close	Ctrl+W	🖶 Package	
Close All	Ctrl+Shift+W	G Class	
🕌 Save	Ctrl+S	🗊 Interface	
I Save As		🕼 Enum	
ि Save All	Ctrl+Shift+S	@ Annotation	
Revert		😰 Source Folder	
Move		b Java Working Set	
Rename	F2	😂 Folder	
🔊 Refresh	F5	📑 File	
Convert Line Delimiters	To 🕨	Untitled Text File	
🖻 Print	Ctrl+P	📑 🔡 JUnit Test Case	
Switch Workspace Restart	•		
🔤 Import		😭 Other Ctrl+N	

### **Properties of a Project**

- Project Settings:
  - Project name
  - Location
  - JRE
- The new empty Project should appear under the Packege Explorer



#### 💿 New Java Project

#### Create a Java Project

Create a Java project in the workspace or in an external location.

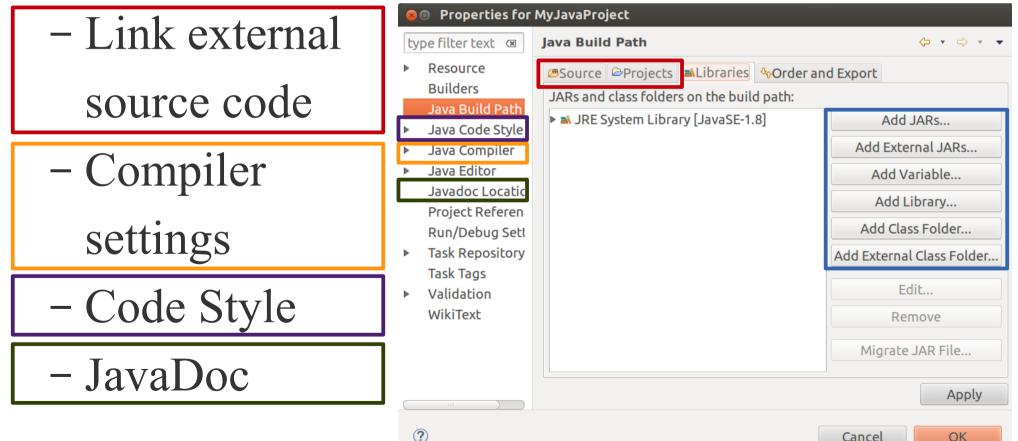
Project name: MyJavaProject		
🗹 Use default location		
Location: /home/andreads/workspace/MyJav	/aProject	Browse
JRE		
• Use an execution environment JRE:	JavaSE-1.8	•
○ Use a project specific JRE:	java-8-oracle	▼
○ Use default JRE (currently 'java-8-oracle')	Cor	nfigure JREs
Project layout		
○ Use project folder as root for sources and	class files	
Oreate separate folders for sources and classified of the separate folders for sources and classified of the separate	ass files Confi	gure default
Working sets		
□ Add project to working sets		
Working sets:	▼	Select

< Back

Cancel

#### **Properties of a Project**

- Advanced Project Settings (Project → properties):
  - Adds external libraries



#### **Creating a Class**

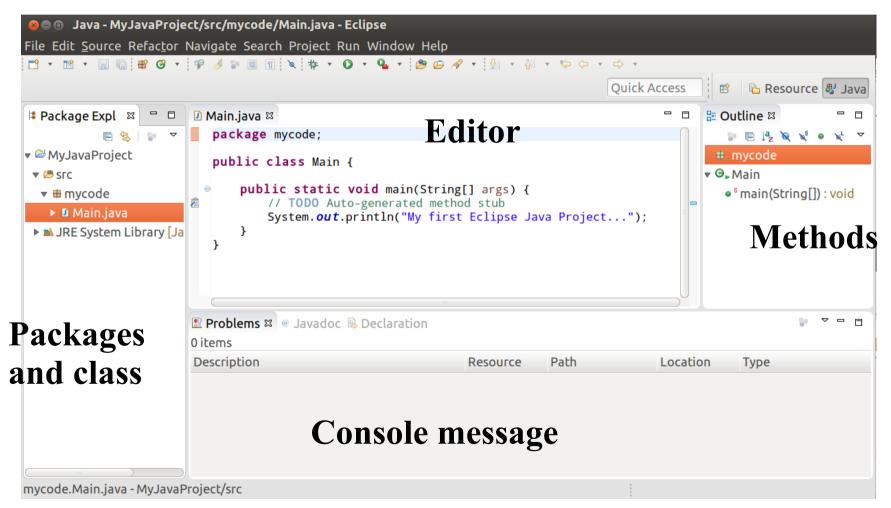
- Class Settings:
  - Class name \_\_\_\_
  - Package
  - Auto-generated methods

Java Class		C
Create a new J	ava class.	
Source folder:	MyJavaProject/src	Browse.
Package:	mycode	Browse.
Enclosing ty	pe:	Browse.
Name:	Main	
Modifiers:	public Opackage Oprivate Oprivate	otected
Modifiers.	□ abstract □ final □ static	
Superclass:	java.lang.Object	Browse.
Interfaces:		Add
		Remove
Which method	stubs would you like to create?	
which hereiou	✓ public static void main(String[] args)	
	Constructors from superclass	
	🐱 Inherited abstract methods	
Do you want to	add comments? (Configure templates and defaul	lt value <u>here</u> )
	Generate comments	

Cancel

Finish

#### **The Java Perspective**



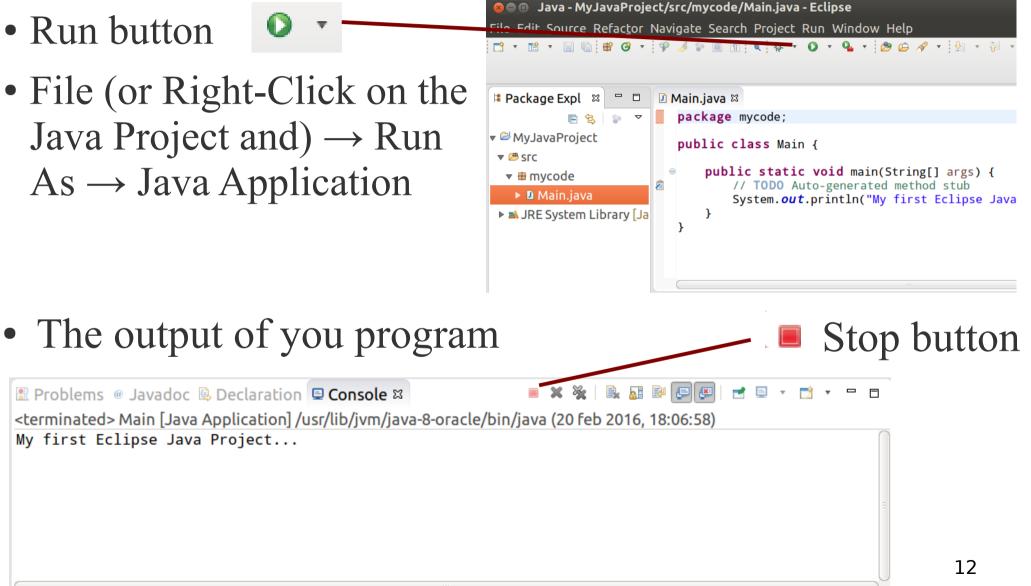
### **Compiling the code**

• Eclipse automatically compile the source

😣 🗖 🗊 Java - MyJavaProje	ct/src/mycode/Main.java - Eclipse	
File Edit <u>S</u> ource Refac <u>t</u> or	Navigate Search Project Run Window Help	
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		Quick Access 🔹 🖻 Resource 🖉 Java
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Ē 😫 🐌 ▼	package mycode;	P □ ↓ <sup>a</sup> <sub>Z</sub> ≥ × <sup>b</sup> = × <sup>b</sup> <sub>L</sub>
🔻 🖾 MyJavaProject	<pre>public class Main {</pre>	mycode
▼ 🕮 SFC		▼ O <sub>▶</sub> Main
🔻 🖶 mycode	<pre>     public static void main(String[] args) {         ((TOP)) Auto around article article         ((TOP)) Auto around article article         ((TOP)) Auto around around around article         ((TOP)) Auto around arou</pre>	• <sup>s</sup> main(String[]) : void
Main.java	<pre>// TODO Auto-generated method stub System.out.println("My first Eclipse Java Proj</pre>	ect"):
🕨 🛋 JRE System Library [Ja	}	
	}	
	Problems      ∞ Javadoc      Q Declaration	
	0 items	
	Description Resource Path	Location Type
	<b>Eventually, errors are s</b>	hown here
mycode Main java - My JavaP	Project/src	1

### **Running the code**

- Run button
- File (or Right-Click on the Java Project and)  $\rightarrow$  Run  $As \rightarrow Java Application$



#### **Run configuration**

- Run  $\rightarrow$  Run Configurations:
  - Manages the execution of your Java Project
  - Select the class that contains the main()

😣 Run Configuratio	ns
<b>Create, manage, an</b> Run a Java applicatio	d run configurations
Image: Second system       Image: Second system         Image: Secon	Name:       Main              Main           Arguments          JRE           Classpath          Source          2         Project:             MyJavaProject           Browse          Main class:           Browse             MyJavaProject           Browse          Main class:           Browse             Include system libraries when searching for a main class           Include inherited mains when searching for a main class             Stop in main           Stop in main
Filter matched 7 of 7 i	Revert Apply
(?)	Close Run

### **Run configuration: Arguments**

• Run  $\rightarrow$  Run Configurations:

# Setting the input paramets:

Input parameters of the main()

Input parameters of the Virtual Machine

Es: -Xmx3G Set the Heap size to 3GB

#### Run Configurations

Create, manage, and run configurations

Run a Java application

1 🗎 🗶 🖻 🏃 🔹	Name: Main				
type filter text	⊖ Main ⋈= Argu	ments 🛋 JRE 🍫	Classpath	🦻 Source	» <sub>2</sub>
G Gradle Project	Program argun	nents:			
😇 Java Applet	Val1 Val2 Val 3				=
🔻 团 Java Application					
🗖 Main					Variables
Ju JUnit	VM arguments:				
m² Maven Build	-Xmx3G				
Ju Task Context Test					Ū
					Variables
	Working directory:				
	Default:	\${workspace_lo	c:MyJaval	Project}	
Filter matched 7 of 7 i				Revert	Apply
?				Close	Run

### **Run configuration: Arguments**

• Run  $\rightarrow$  Run Configurations:

**Others settings:** 

The JRE version

The classpath which contains all the code needed for the esecution

#### Run Configurations

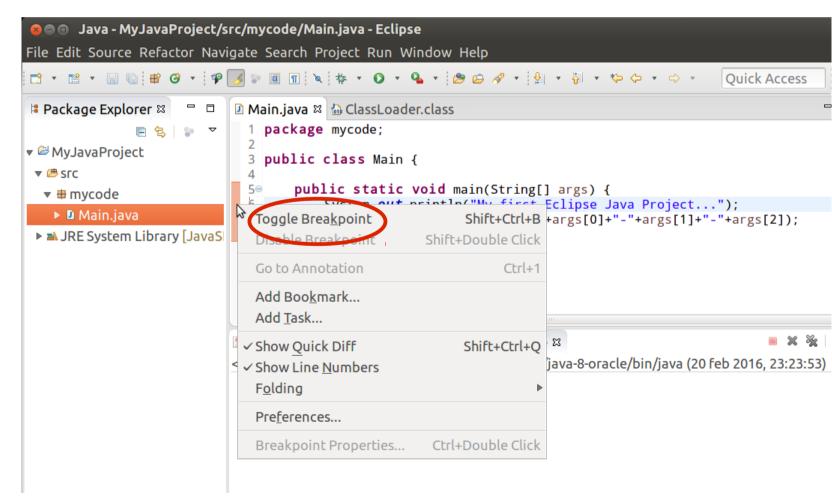
Create, manage, and run configurations

Run a Java application

	Name: Main	
type filter text	O Main ⋈= Arguments ➡ JRE ♦ Classpath ☞ Source	»2
G Gradle Project I Java Applet I Java Application	Program arguments: Val1 Val2 Val 3	Variables
፱ Main Jʊ JUnit ㎡ Maven Build	VM arguments: -Xmx3G	
J <u>⊍</u> Task Context Test		Variables
	Working directory:	
	Default: \${workspace_loc:MyJavaProject}	
Filter matched 7 of 7 i	Revert	Apply
?	Close	Run

#### **Debugging the code**

• Toggle Breakpoint: a snapshot that shows the status of your program in this point



### **Debugging the code**

Run in Debug perspective

Source Refactor Navigate Search

#### Variables

Skip all breakpoints

📀 Step Into 🥣

. Step Over

🕸 Debug 🛛 🐘 👻 🗖 🗖	»⊧ Variables ¤ 🔍	• Breakpoints 🖾 📲 🖻 🎽	-
🗉 Main [Java Application]	Name	Value	
🔻 🤀 mycode.Main at localhost:48568	r © args	String[3] (id=15)	
🔻 🔗 Thread [main] (Suspended)	▶ ▲ [0]	"Val1" (id=18)	
≡ Main.main(String[]) line: 8	▶ ▲ [1]	"Val2" (id=22)	
🔎 /usr/lib/jvm/java-8-oracle/bin/java (20 feb 2016, 23:33:20)	▶ ▲ [2]	"Val3" (id=23)	
		···· )	
		🗖 🗖 🖶 Outline 🛛	-
Main.java 🛱 🗄 ClassLoader.class			
1 package mycode;			ť
3 public class Main {		# mycode	
4 5⊖ public static void main(String[] args) {		▼	
50 public static void main(String[] args) { 6 System.out.println("My first Eclipse Jay	va Proiect"):	₌ • <sup>®</sup> main(String[]) : void	
<pre>7 System.out.println("Input"+args[0]+"-</pre>		rgs[2]);	
8 }			
8 <b>}</b> 9 <b>}</b>			
8 <b>}</b> 9 <b>}</b>		× ¾   🖳 🖬 🕬 🕞 🚱 🖃 🐨 🖘 🔹	-
8 } 9 } 10 2 Console 🛱 🖉 Tasks	eb 2016. 23:33:20)	× ¾   🖳 🔐 🔛 💭 🗹 💷 🔻 🖻 🔹	-
8 } 9 } 10	<b>e</b> b 2016, 23:33:20)	× ¾   B. A: R' E E I - C - C - C	-

Project Run Window Help

#### More Info

- Eclipse Web Site: http://www.eclipse.org
- Dexter, Mark. "Eclipse And Java For Total Beginners Companion Tutorial Document." Mark Dexter. Licensed under the Educational Community License (2007).
- Eclipse Wiki:

http://wiki.eclipse.org/Eclipse\_Articles,\_Tutorials ,\_Demos,\_Books,\_and\_More