Object Oriented Programming

Week 5 Part 3
Java Packages in Eclipse

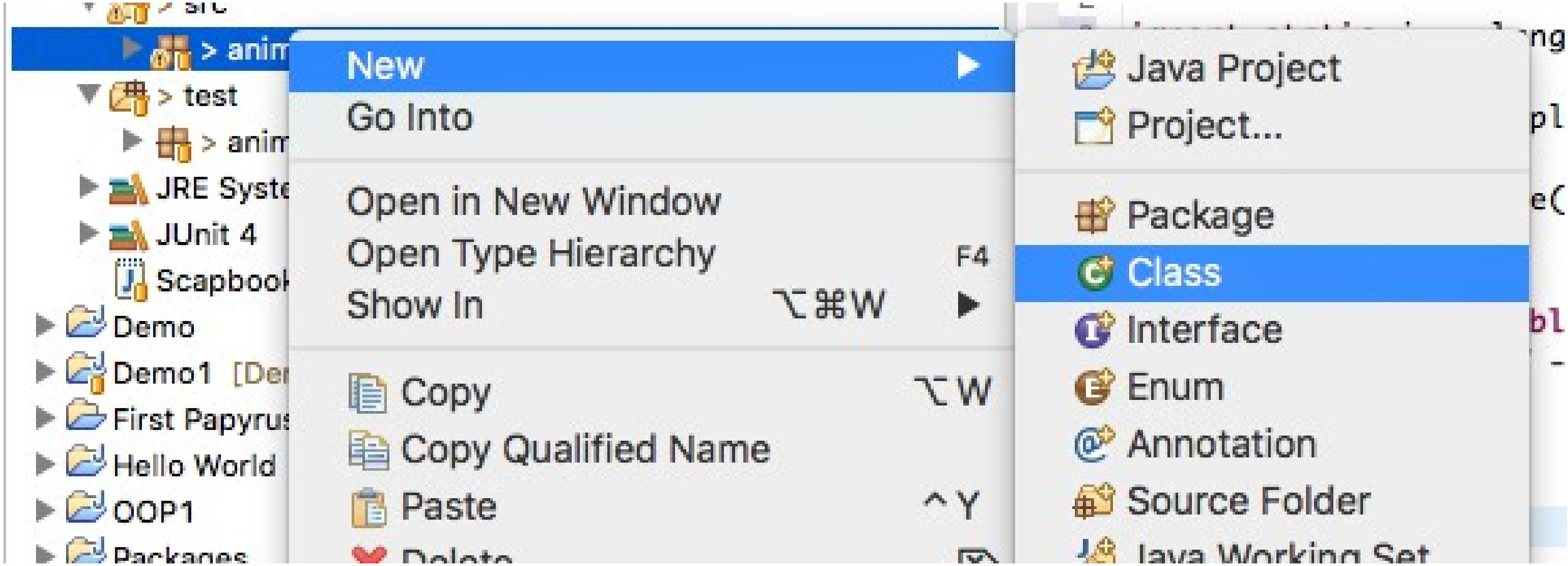
Lecture

- Defining an Package
- Using Packages

Defining Packages with Eclipse

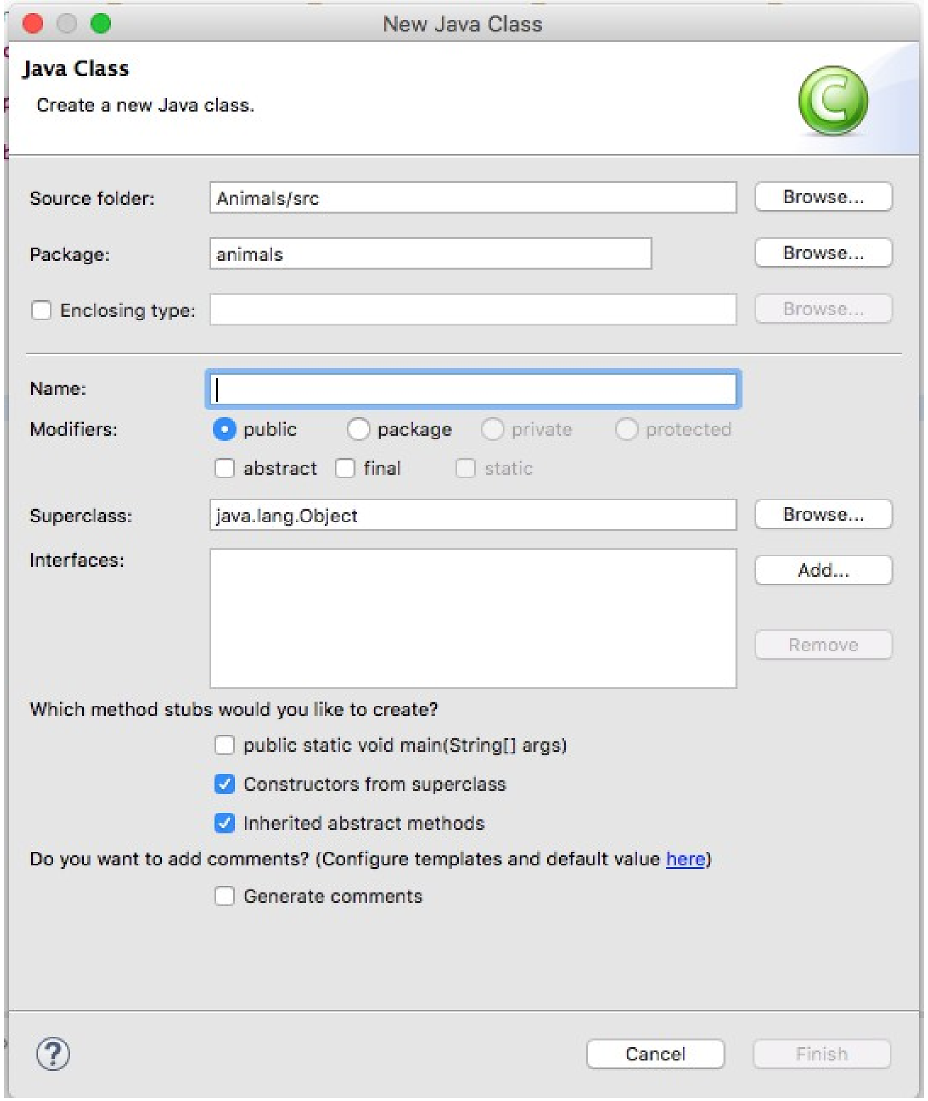
- Use the name of the package when defining the class
  - If the package does not exist a new one will be created
- To add a class to an existing package, click New > Class on the package to which you want to add

Adding a Class to animals (1)



Adding a Class to animals (2)

Package already set to animals



New Java Class

Java Class

Create a new Java class.

Source folder: Animals/src

Package: animals

□ Enclosing type:

Name:

Modifiers: ● public ○ package ○ private ○ protected

□ abstract □ final □ static

Superclass: java.lang.Object

Interfaces:

Which method stubs would you like to create?

□ public static void main(String[] args)

☑ Constructors from superclass

☑ Inherited abstract methods

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

□ Generate comments

Eclipse Directories

Animals Project

Source directory for program

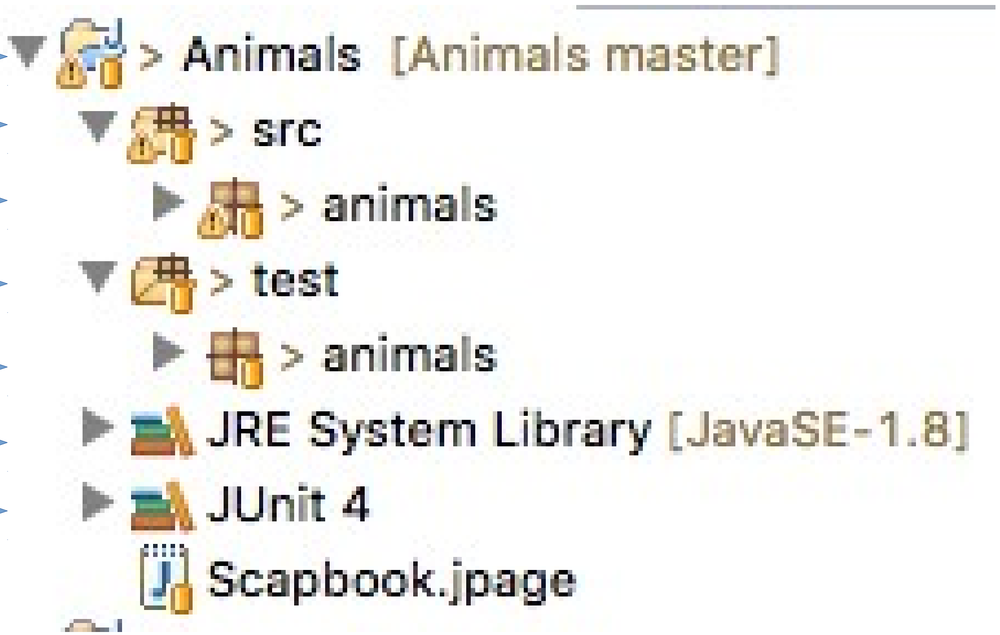
Program files are in package animals

Source directory for tests

Test files also in package animals

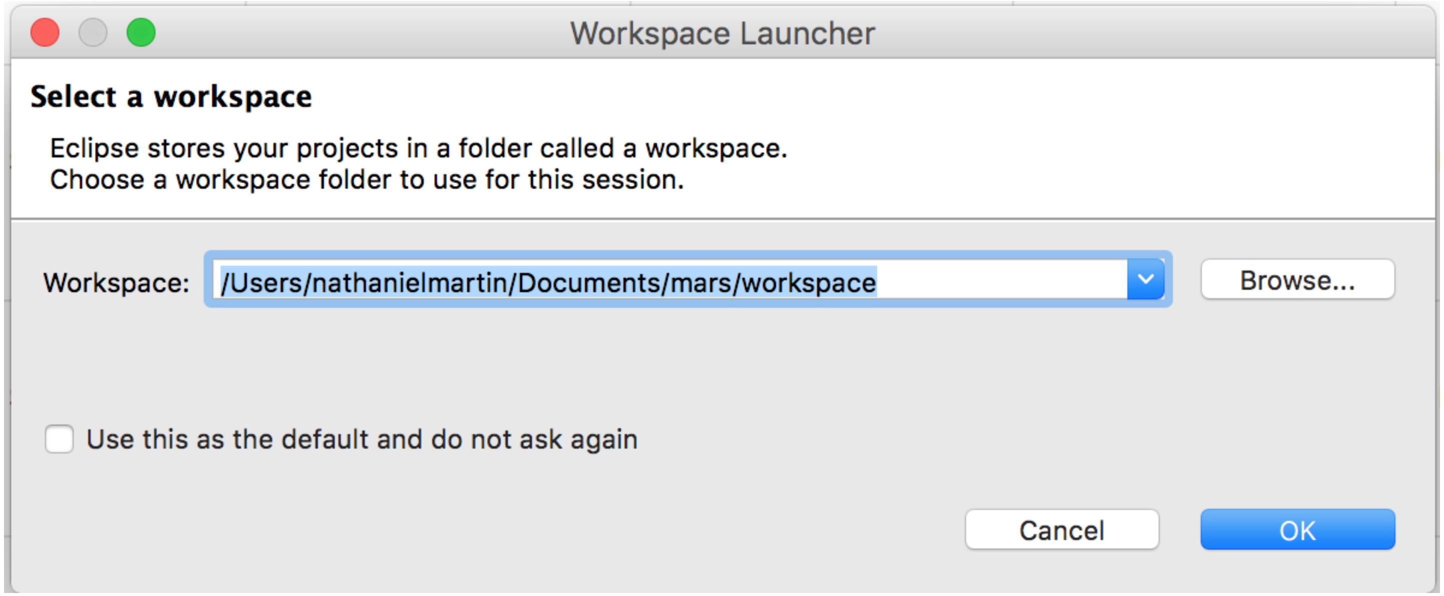
Java packages

JUnit packages



```
▼ > Animals [Animals master]
    ▼ > src
        ▶ > animals
    ▼ > test
        ▶ > animals
    ▶ JRE System Library [JavaSE-1.8]
    ▶ JUnit 4
      Scapbook.jpage
```

Location of Eclipse Directories



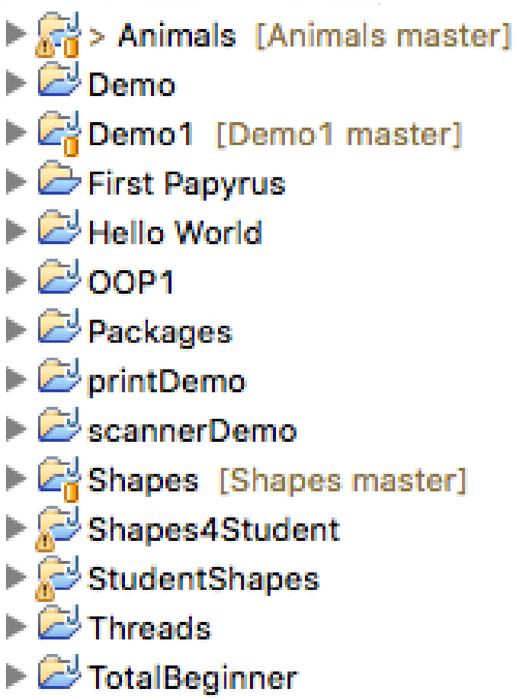
Workspace Launcher

Select a workspace

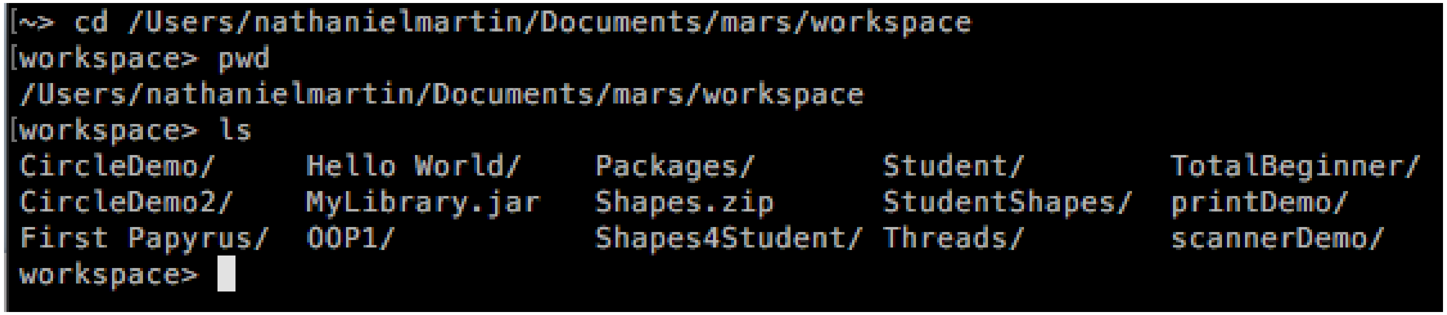
Eclipse stores your projects in a folder called a workspace.
Choose a workspace folder to use for this session.

Workspace: /Users/nathanielmartin/Documents/mars/workspace

□ Use this as the default and do not ask again

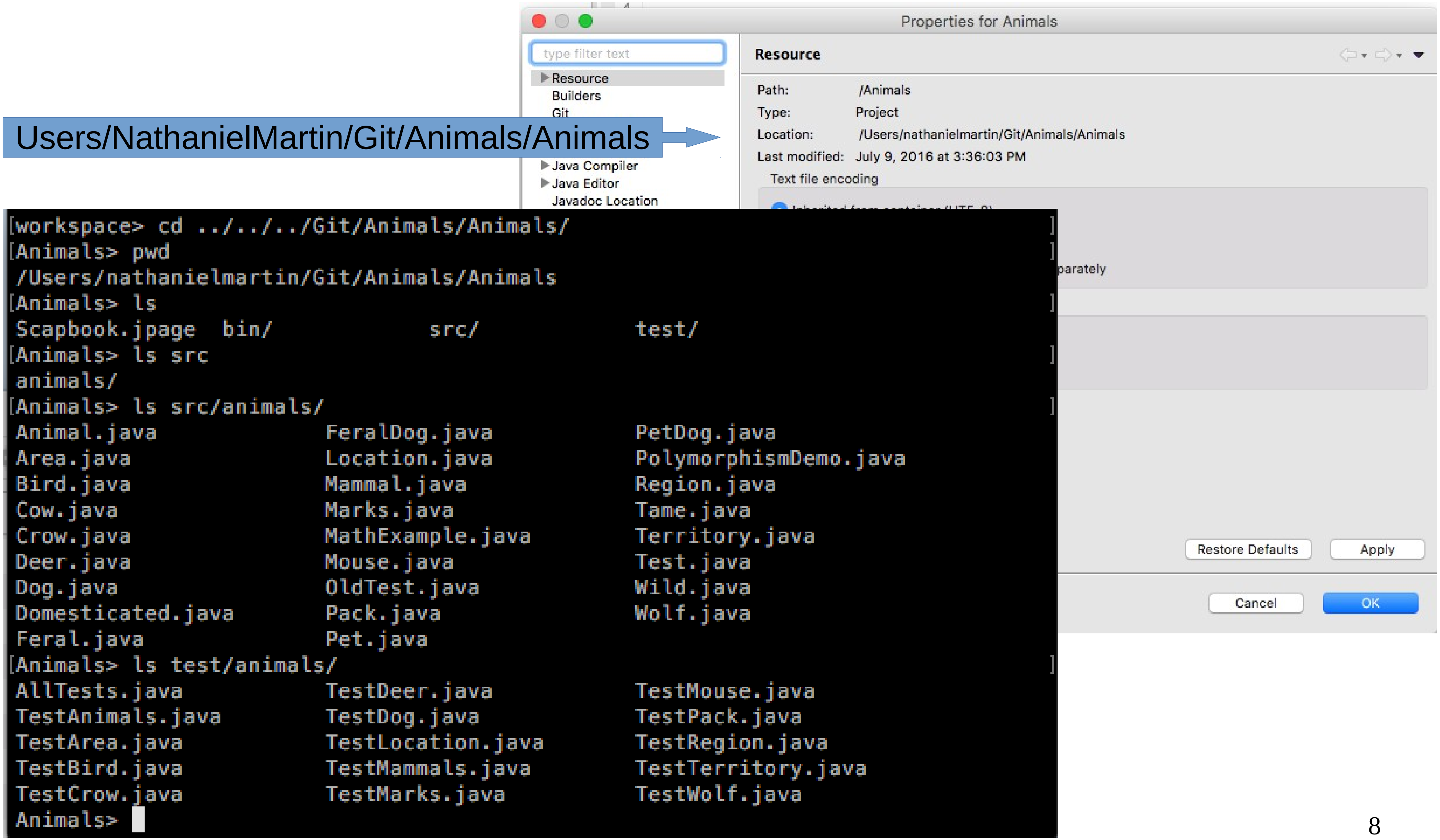


- > Animals [Animals master]
- Demo
- Demo1 [Demo1 master]
- First Papyrus
- Hello World
- OOP1
- Packages
- printDemo
- scannerDemo
- Shapes [Shapes master]
- Shapes4Student
- StudentShapes
- Threads
- TotalBeginner



```
[~> cd /Users/nathanielmartin/Documents/mars/workspace
[workspace> pwd
 /Users/nathanielmartin/Documents/mars/workspace
[workspace> ls
 CircleDemo/      Hello World/    Packages/        Student/         TotalBeginner/
 CircleDemo2/     MyLibrary.jar   Shapes.zip       StudentShapes/   printDemo/
 First Papyrus/   OOP1/           Shapes4Student/  Threads/         scannerDemo/
 workspace> 
```

Location of Animals



Users/NathanielMartin/Git/Animals/Animals

Properties for Animals

Resource

Path: /Animals

Type: Project

Location: /Users/nathanielmartin/Git/Animals/Animals

Last modified: July 9, 2016 at 3:36:03 PM

Text file encoding

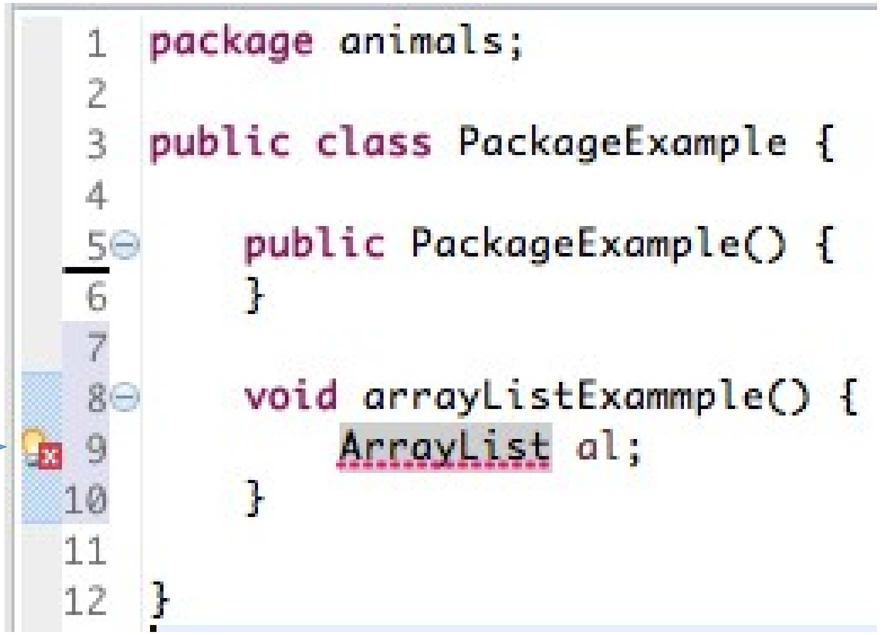
```
[workspace> cd ../../../Git/Animals/Animals/
[Animals> pwd
 /Users/nathanielmartin/Git/Animals/Animals
[Animals> ls
 Scapbook.jpage  bin/           src/           test/
[Animals> ls src
 animals/
[Animals> ls src/animals/
 Animal.java            FeralDog.java          PetDog.java
 Area.java              Location.java          PolymorphismDemo.java
 Bird.java              Mammal.java            Region.java
 Cow.java               Marks.java             Tame.java
 Crow.java              MathExample.java       Territory.java
 Deer.java              Mouse.java             Test.java
 Dog.java               OldTest.java           Wild.java
 Domesticated.java      Pack.java              Wolf.java
 Feral.java             Pet.java
[Animals> ls test/animals/
 AllTests.java          TestDeer.java          TestMouse.java
 TestAnimals.java       TestDog.java           TestPack.java
 TestArea.java          TestLocation.java      TestRegion.java
 TestBird.java          TestMammals.java       TestTerritory.java
 TestCrow.java          TestMarks.java         TestWolf.java
 Animals> 
```

Using Packages with Eclipse

- Eclipse will help you find the packages and classes you need
- It will also help you import the minimum number of packages
  - Importing packages you don't need needlessly increases the size of the compiled code

Eclipse warns when class undefined

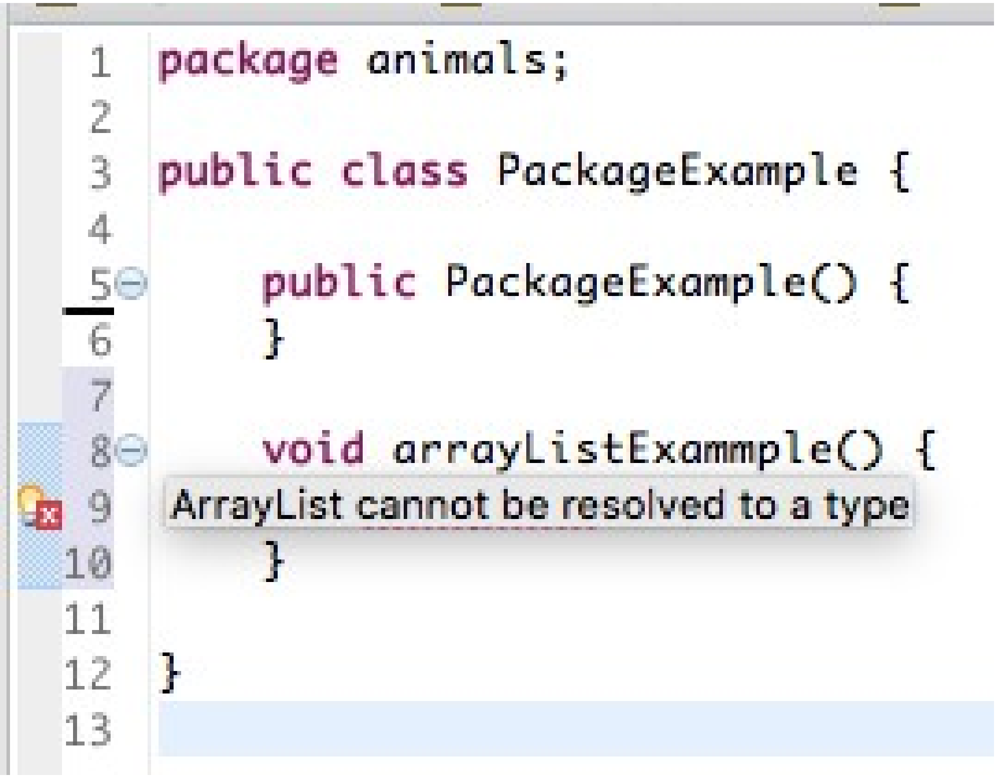
Something is wrong



```
package animals;

public class PackageExample {

    public PackageExample() {
    }

    void arrayListExammple() {
        ArrayList al;
    }

}
```

Give suggestion on hover

ArrayList class missing



```java
package animals;

public class PackageExample {

    public PackageExample() {
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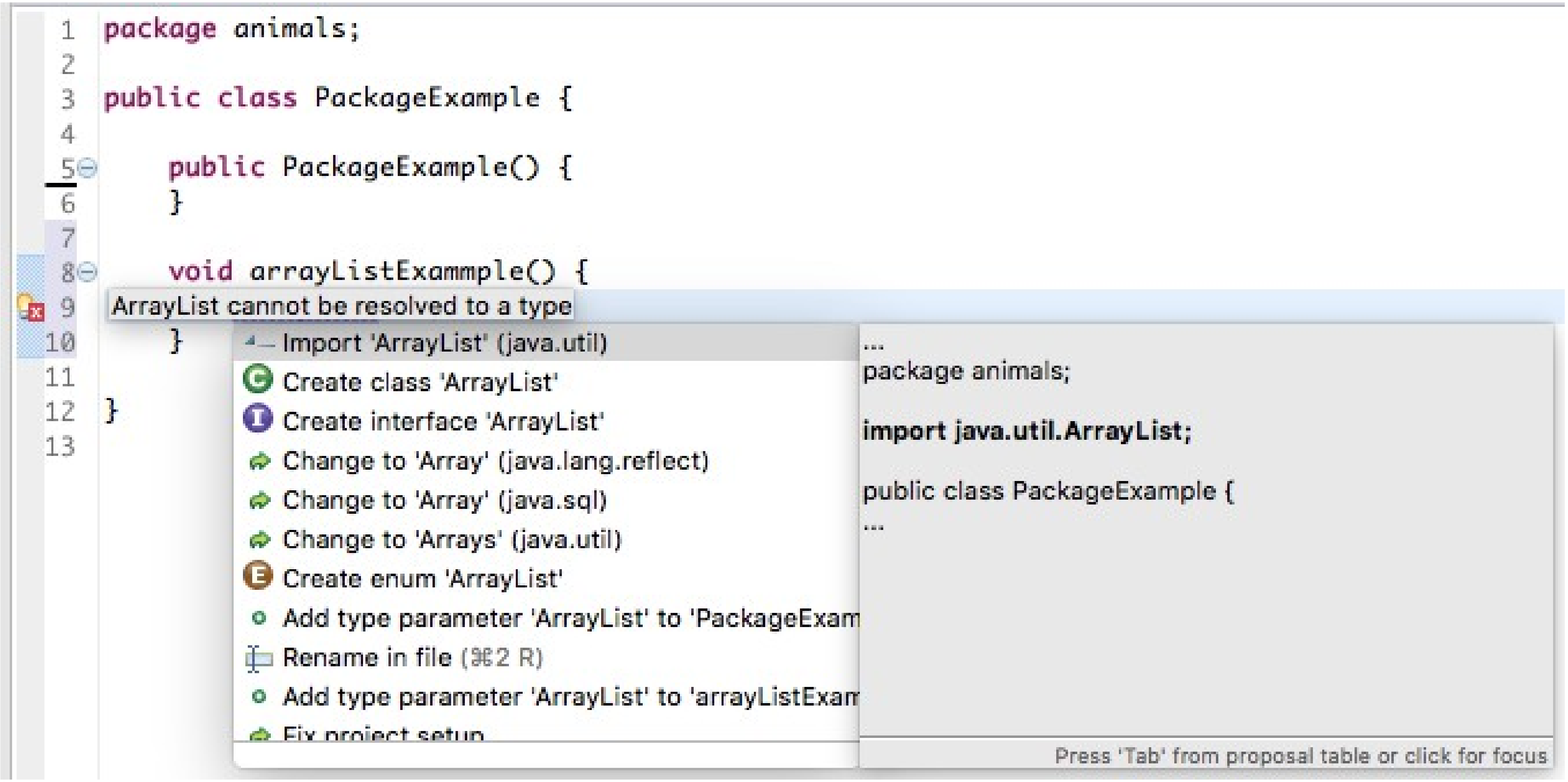
    }

}
```

ArrayList cannot be resolved to a type

Click on lightbulb for suggestions



```
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    public PackageExample() {
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    void arrayListExammple() {
ArrayList cannot be resolved to a type
    }

}
```

Import 'ArrayList' (java.util)
Create class 'ArrayList'
Create interface 'ArrayList'
Change to 'Array' (java.lang.reflect)
Change to 'Array' (java.sql)
Change to 'Arrays' (java.util)
Create enum 'ArrayList'
Add type parameter 'ArrayList' to 'PackageExam
Rename in file (⌘2 R)
Add type parameter 'ArrayList' to 'arrayListExam
Fix project setup

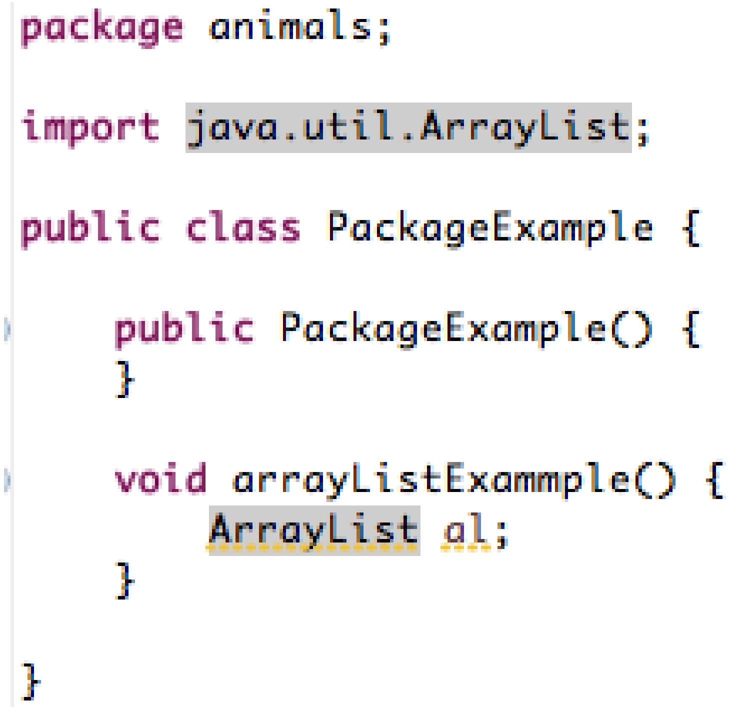
```
...
package animals;

import java.util.ArrayList;

public class PackageExample {
...
```

Press 'Tab' from proposal table or click for focus

First solution imports ArrayList



```
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