

CSE115 / CSE503

Introduction to Computer Science I

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Office hours:

Tuesday 10:00 AM – 12:00 PM*

Wednesday 4:00 PM – 5:00 PM

Friday 11:00 AM – 12:00 PM

OR request appointment via e-mail

**Tuesday adjustments: 11:00 AM – 1:00 PM on 10/11, 11/1 and 12/6*

ROADMAP

Last time

Primitives

Today

Control structures

Coding exercises!

Coming up

Collections

ANNOUNCEMENT



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■ ■ ■ 24-HR CODING COMPETITION ■ ■ ■

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REVIEW

the boolean type has two values, **true** and **false**

boolean operators: && (and), || (or) and ! (not)

P	Q	P && Q	P Q	!Q
true	true	true	true	false
true	false	false	true	true
false	true	false	true	-
false	false	false	false	-

examples:

```

boolean x;           // declaration
x = true;            // assignment
boolean y = false;   // combined
boolean z = x && y;    // using && operator
    
```

the int type includes integral values in a given range (we'll return to this in a later lecture): 0, +1, -1, +2, -2, ...

int operators:

+, integer addition	(operator type is $\text{int} \times \text{int} \rightarrow \text{int}$)
-, integer subtraction	(operator type is $\text{int} \times \text{int} \rightarrow \text{int}$)
*, integer multiplication	(operator type is $\text{int} \times \text{int} \rightarrow \text{int}$)
/, integer division (quotient)	(operator type is $\text{int} \times \text{int} \rightarrow \text{int}$)
%, integer remainder	(operator type is $\text{int} \times \text{int} \rightarrow \text{int}$)

examples:

```
int x = 5;
int y = 3;
int q = x / y;    // q has value 1
int r = x % y;    // r has value 2
// note: x = q * y + r
```

MOVING ON

static members: methods and variables

static methods

a static method is invoked on a class, rather than an object

a static method has no access to instance variables

its invocation record has no 'this'

static variables

a static variable is accessed via a class, rather than an object

a static variable is often declared 'public'

a static variable is often given a name of all upper-case letters,
as in `java.awt.Color.RED`

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

main method is standard entry point for a Java program

main method is invoked by Java runtime system

static

reserved word

indicates member is associated with CLASS not INSTANCE

parameter of main

square brackets are special syntax used with arrays

we will discuss arrays at start of CSE116

the parameter 'args' is initialized with 'command line arguments' – arguments given on the command line when the program is run

The System class is defined in the java.lang package.

The name 'System' can therefore be used in an unqualified way, even without an explicit import directive.

'out' is a public and static variable of the System class, whose type is PrintStream

The 'PrintStream' class defines a static method named 'println'

'println' accepts an argument of any type, and prints a textual representation of the argument on the console (see the output in the console view if running in Eclipse, or the terminal window from which the program was started if running outside of Eclipse).

CONTROL STRUCTURES

requirements for a language to be a programming language

Recall that not every language is a programming language

A programming language must be able to express

sequence

selection

repetition

In Java

sequence can be expressed by the order of statements and the nesting of expressions

selection can be expressed by conditional statements (if statement, if-else statement), as well as by polymorphism

repetition can be expressed by looping statements (while statement, for statement, foreach statement)

There are additional ways in which selection and repetition can be expressed (e.g. pattern matching, unification / recursion)

conditional statements (SELECTION)

- if-else statement

- if statement

loop statements (REPETITION)

- while statement (while loop)

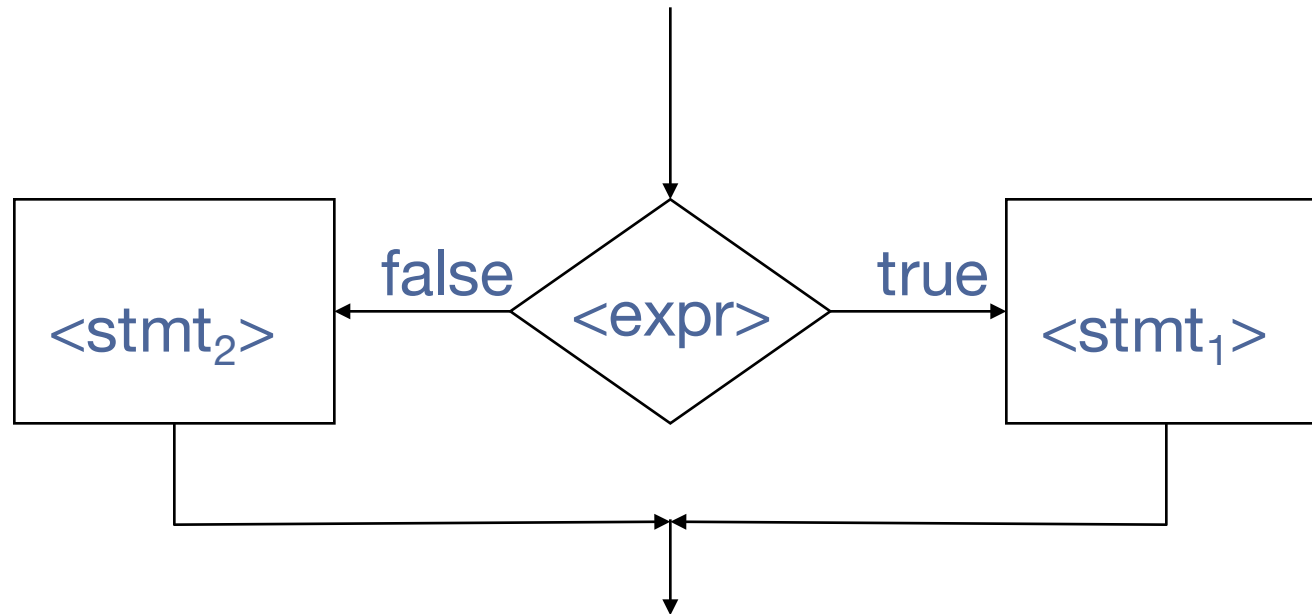
- for statement (for loop)

Control Structures

→ selection

→ if-else statement

if (<expr>) <stmt₁> else <stmt₂>



if-else statement

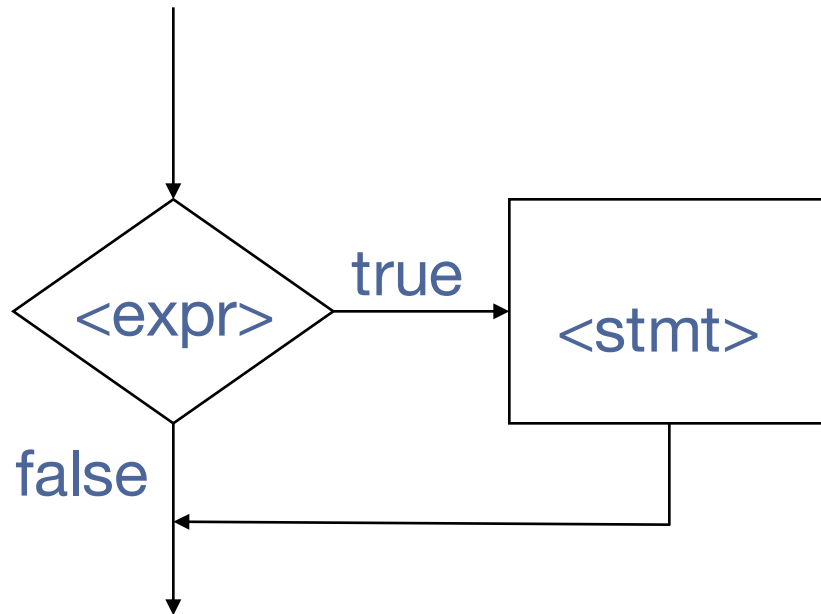

```
public void message(int x) {
    if (x == 4) {
        System.out.println(" leaf clover!");
    }
    else {
        System.out.println("Sorry :-(");
    }
    System.out.println("Play again!");
}
```

Control Structures

→ selection

→ if statement

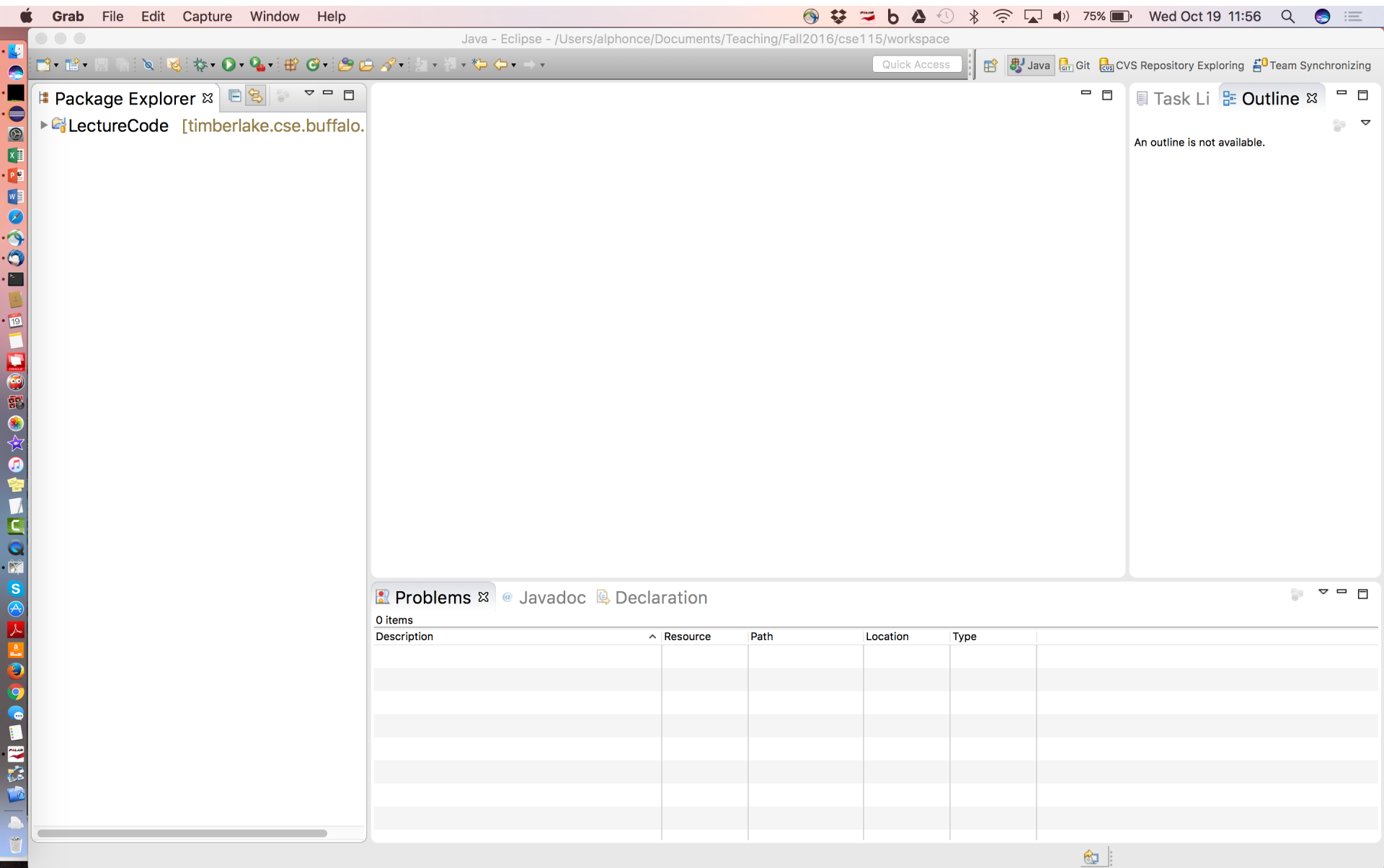
```
if ( <expr> ) <stmt>
```

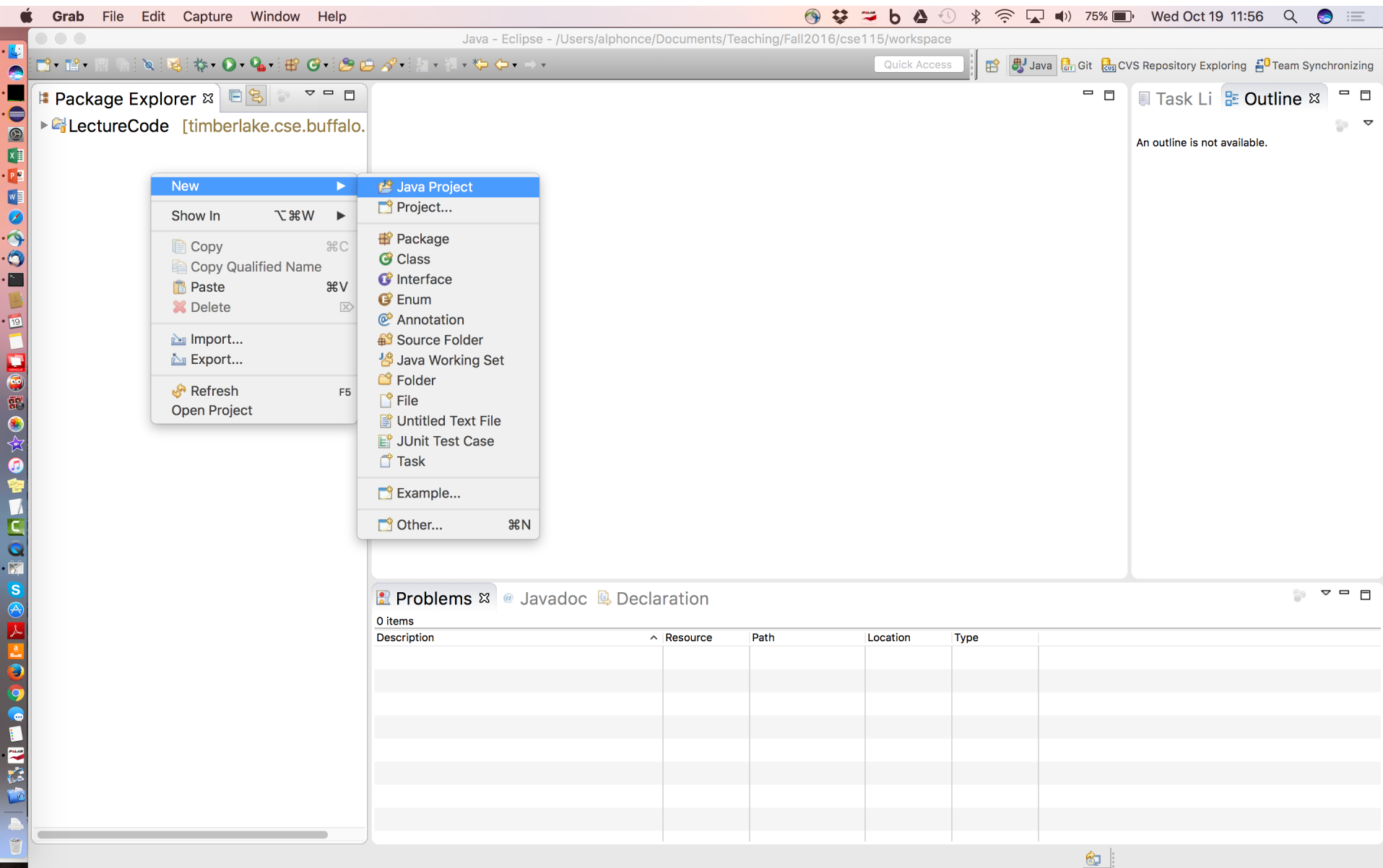


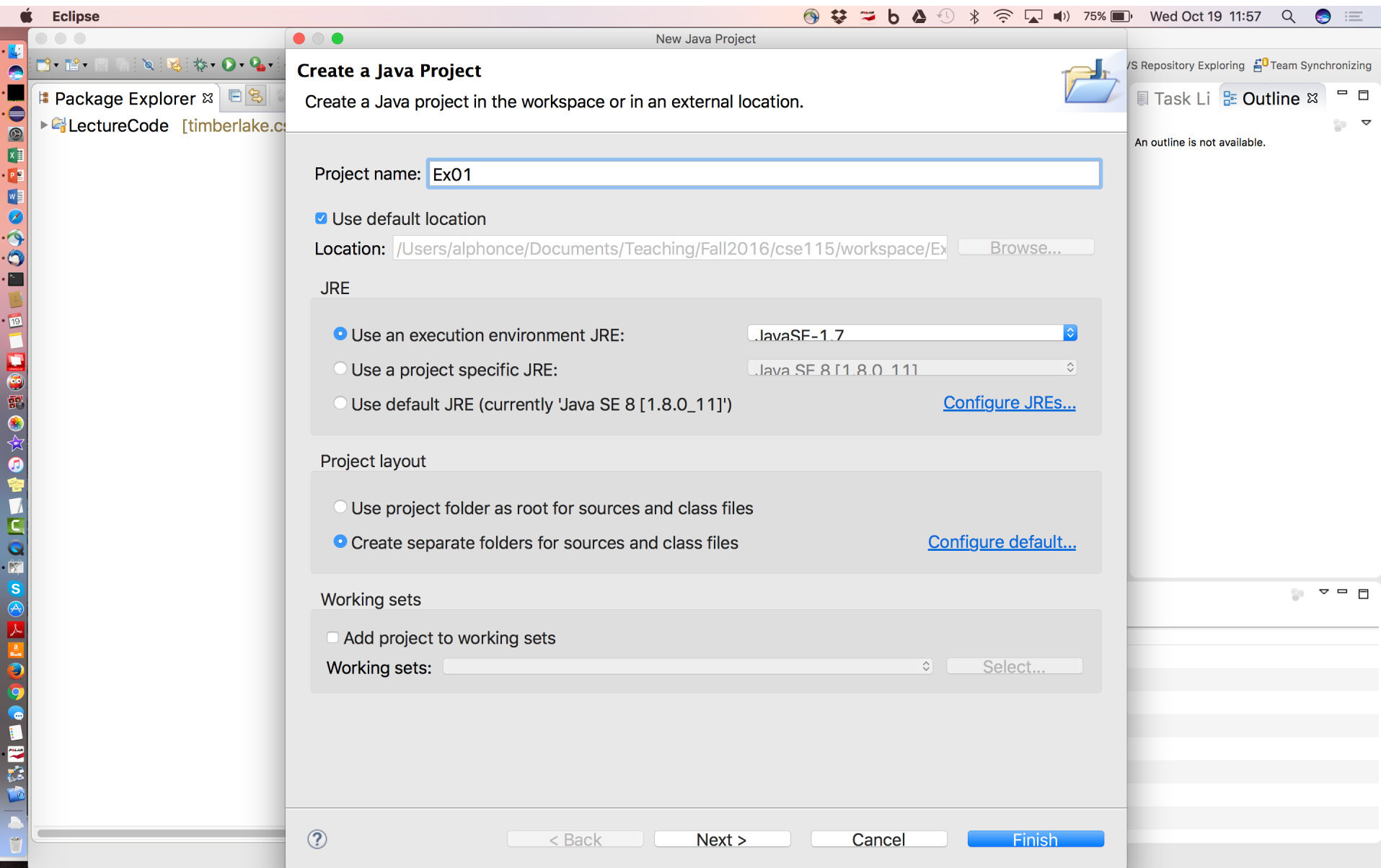
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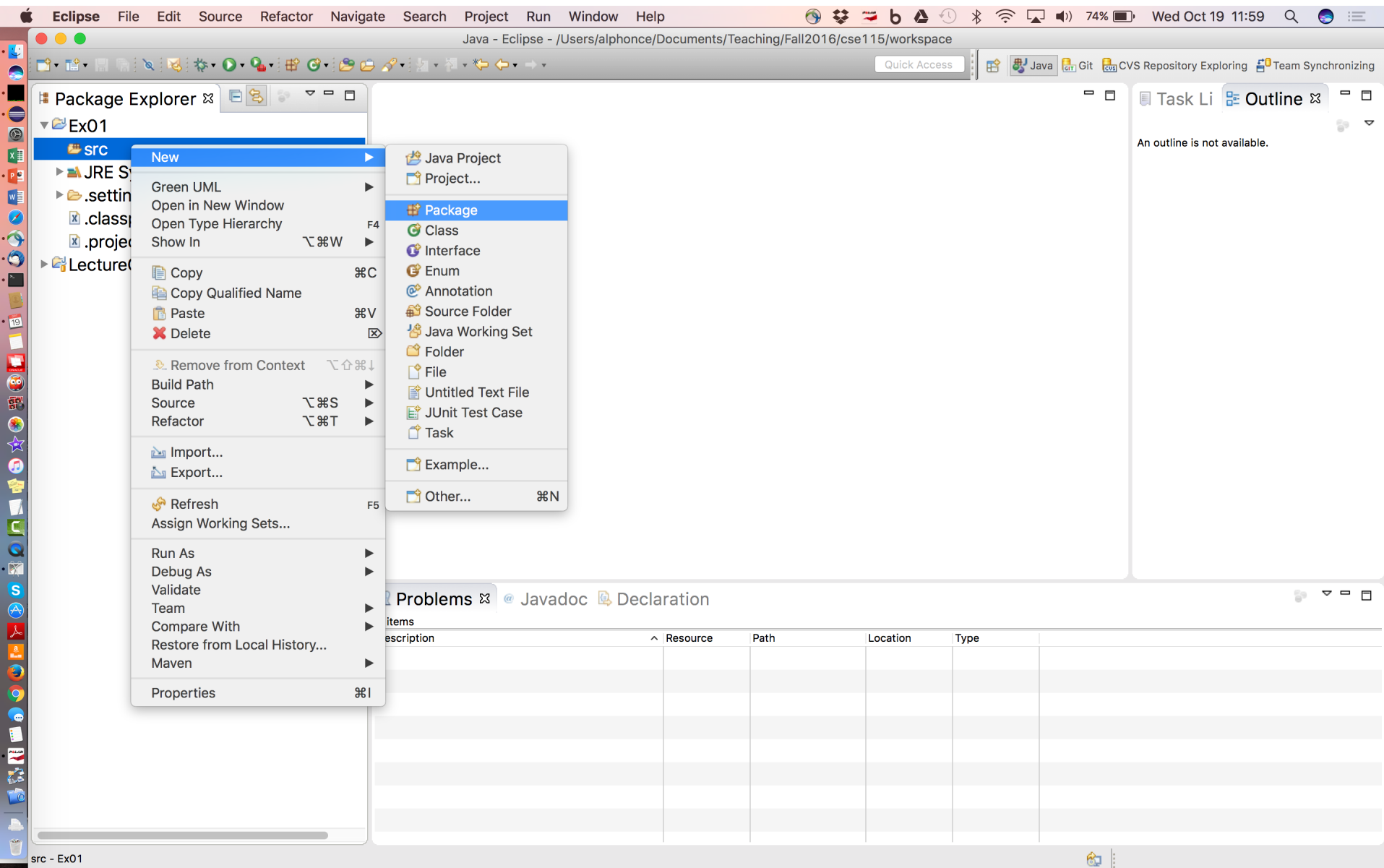
PAIR CODING EXERCISE

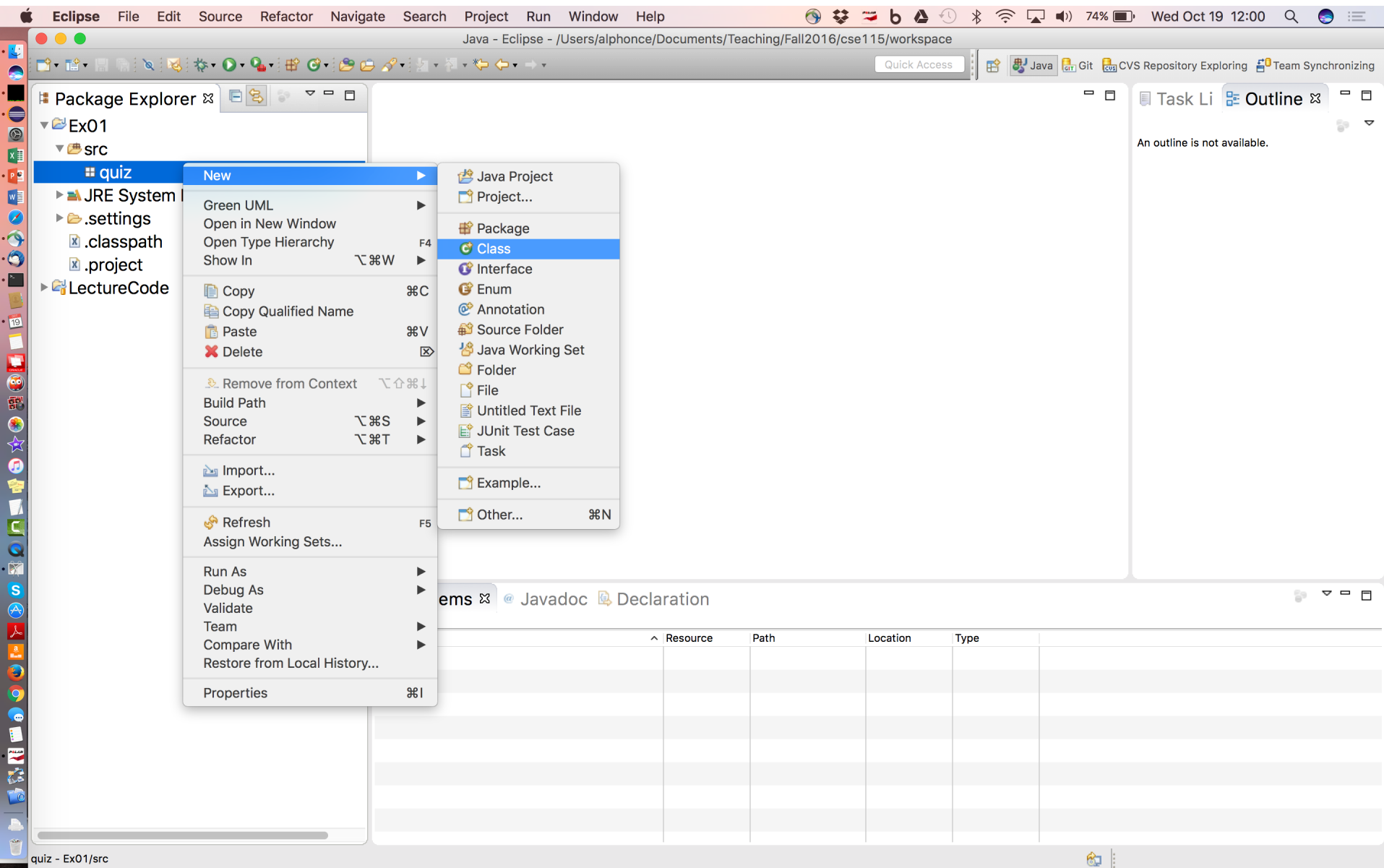
PREP

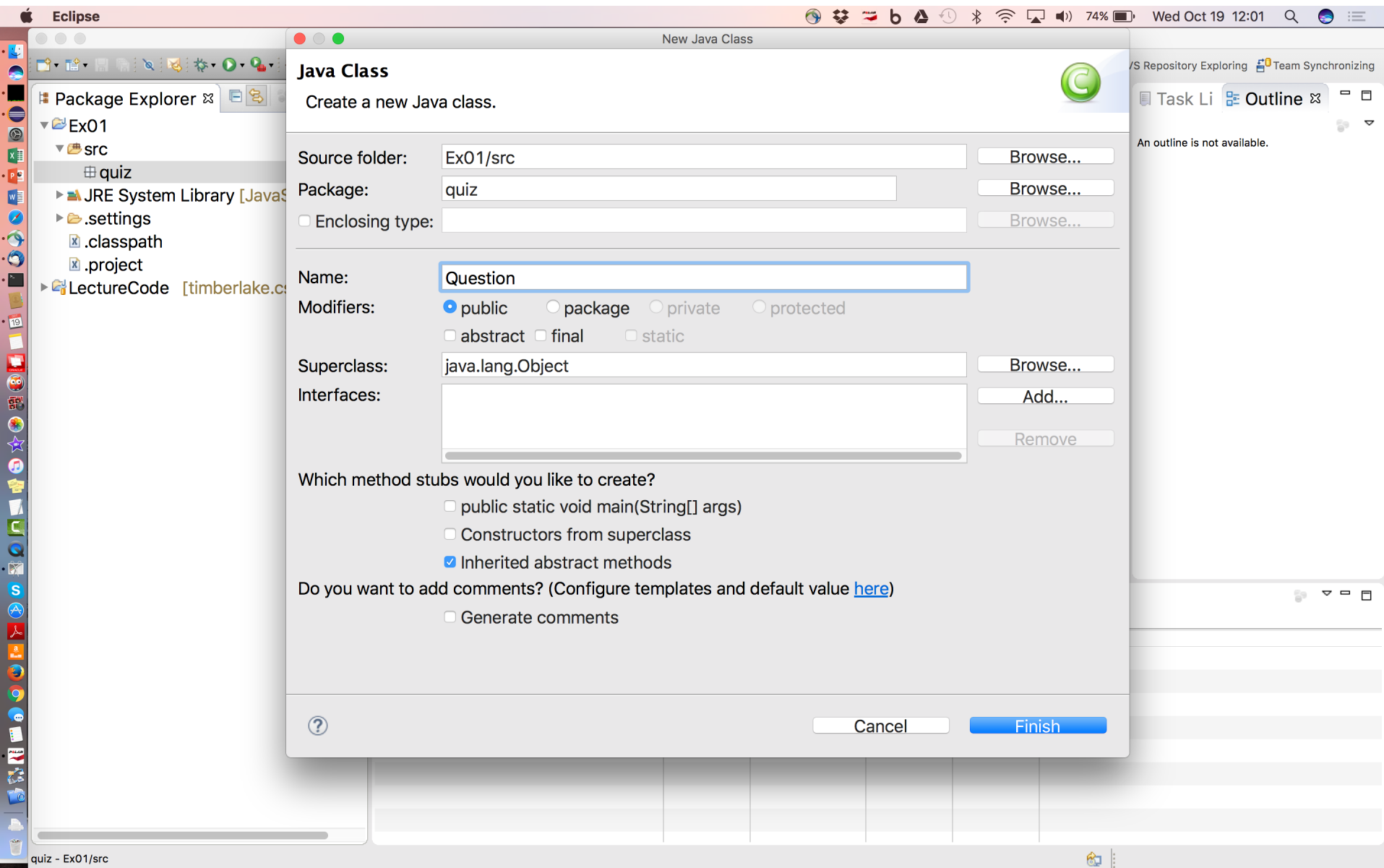












Grab File Edit Capture Window Help

Java - Ex01/src/quiz/Question.java - Eclipse - /Users/alphonse/Documents/Teaching/Fall2016/cse115/workspace

Quick Access Java Git CVS Repository Exploring Team Synchronizing

Package Explorer

- Ex01
 - src
 - quiz
 - Question.java
 - JRE System Library [JavaSE-1.7]
 - .settings
 - .classpath
 - .project
 - LectureCode [timberlake.cse.buffalo.]

Question.java

```
1 package quiz;
2
3 public class Question {
4
5 }
6
```

Task Li Outline

- quiz
 - Question

Problems Javadoc Declaration

0 items

Description	Resource	Path	Location	Type

Writable Smart Insert 1 : 1

PAIR CODING EXERCISE

Define a class quiz.Question. In this class define a method named answer.

Define this method so that it returns true if its int argument is negative, and false otherwise.

Submit to Exercise-01 in Web-CAT – enter the usernames of everyone in your group!

Enter the usernames of any partners who are working with you on this assignment, separated by commas or whitespace. If you are working individually, leave this field blank.

Partners:

You have 8 minutes to complete this exercise.

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