

Lesson 13: The *if* Statement

Now that we understand *boolean* quantities, let's put them to use in an *if* statement, one of Java's most useful "decision-making" commands. Consider the following code:

Example 1:

```
//Get a grade from the keyboard
Scanner kbReader = new Scanner(System.in);
System.out.print("What is your grade? ");
int myGrade = kbReader.nextInt( );

//Make a decision based on the value of the grade you entered
if (myGrade >= 70)
{
    //Execute code here if the test above is true
    System.out.println("Congratulations, you passed.");
}
else
{
    //Execute code here if the test above is false
    System.out.println("Better luck next time.");
}
```

Leave off the *else*:

We do not necessarily always need the *else* part. Consider the following code without an *else*.

Example 2:

```
Scanner kbReader = new Scanner(System.in);
System.out.print("What state do you live in? ");
String state = kbReader.nextLine( ); //get state from keyboard

System.out.print("What is the price? ");
double purchasePrice = kbReader.nextDouble( ); //get price from keyboard

double tax = 0;
if ( (state == "Texas") || (state == "Tx") )
{
    //Execute code here if test above is true
    tax = purchasePrice *.08; //8% tax
}
double totalPrice = purchasePrice + tax;
System.out.println("The total price is " + totalPrice + ".");
```

It won't work!

There is just one difficulty with the above code in Example 2. It won't work! The

problem is with how we are trying to compare two *Strings*. It **cannot** be as follows:

```
state == "Texas"
```

Rather, we must do it this way:

```
state.equals("Texas")
```

A good way to cover all the bases in the event someone mixes upper and lower case on the input is as follows:

```
( state.equalsIgnoreCase("Texas") || state.equalsIgnoreCase("Tx") )
```

What? No braces?

Braces are not needed if only **one line of code** is in the *if* or *else* parts. Likewise, the absence of braces implies only one line of code in *if* or *else* parts.

Example 3:

```
int groovyDude = 37;
if (groovyDude == 37)
    groovyDude++; //this line is executed if test is true
System.out.println(groovyDude); //38
```

Example 4:

```
int groovyDude = 105;
if (groovyDude == 37)
    groovyDude++; //this line is not executed if test is false
System.out.println(groovyDude); //105
```

The *else if*:

Multiple *ifs* can be used in the same structure using *else if*.

Example 5:

```
//Get a grade from the keyboard
Scanner kbReader = new Scanner(System.in);
System.out.println("What is your grade? ");
int theGrade = kbReader.nextInt( );

if (theGrade >= 90)
{
    System.out.println("You made an A.");
}
else if (theGrade >= 80)
{
    System.out.println("You made a B.");
}
else if (theGrade >= 70)
{
    System.out.println("You made a C.");
}
```

```
}  
else if (theGrade>=60)  
{  
    System.out.println("You made a D.");  
}  
else  
{  
    System.out.println("Sorry, you failed.");  
}
```