

CONDITIONAL EXECUTION IN JAVA - II

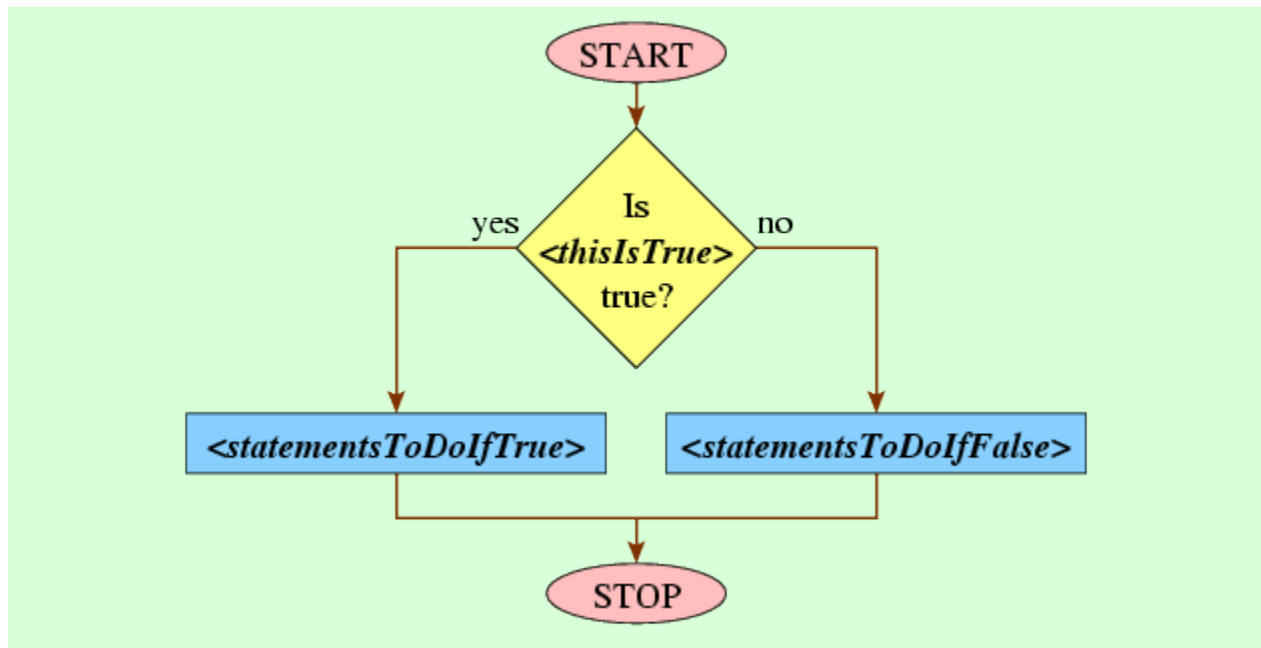
The `else` clause

Sometimes we want a program to do one thing if the condition is true and another thing if the condition is false. In this case the `else` keyword comes in handy.

```
if(<thisIsTrue>) {  
    <statementsToDoIfTrue>  
} else {  
    <statementsToDoIfFalse>  
}
```

[Figure 7.3](#) contains a flowchart diagramming this type of statement.

Figure 7.3: A flowchart for the `else` clause.



For example, if we wanted to compute the larger of two values typed by the user, then we might use the following code fragment.

```
double first = readDouble();  
double second = readDouble();  
double max;
```

```
if(first > second) {
    max = first;
} else {
    max = second;
}
print(max);
```

This fragment will first read the two numbers `first` and `second` from the user. It then creates a variable `max` that will end up holding the larger of the two. This function says assign the value of `first` to `max` if `first` holds a larger value than `second`; otherwise — it says — assign `max` the value of `second`.

Sometimes it's useful to string several possibilities together. This is possible by inserting `else if` clauses into the code.

```
double score = readDouble();
double gpa;
if(score >= 90.0) {
    gpa = 4.0;
} else if(score >= 80.0) {
    gpa = 3.0;
} else if(score >= 70.0) {
    gpa = 2.0;
} else if(score >= 60.0) {
    gpa = 1.0;
} else {
    gpa = 0.0;
}
```

You can string together as many `else if` clauses as you want. Having an `else` clause at the end is not required.

Note that, if the user types 95 as the computer executes the above fragment, the computer would set `gpa` to refer to 4.0. It would *not* also set `gpa` to refer to 3.0, even though it's true that `score >= 80.0`. This is because the computer checks an `else if` clause only if the preceding conditions all turn out to be `false`.

As an example using graphics, suppose we want our hot-air balloon animation to include a moment when the hot-air balloon is firing its burner, so it briefly goes up before it resumes its descent. To do this, we'll modify the loop in [Figure 6.4](#) to track which frame is currently being drawn, and we'll use

an **if** statement with **else** clauses to select in which direction the balloon should move for the current frame.

```
int frame = 0; // tracks which frame we are on
while(balloon.getY() + 70 < getHeight()) {
    pause(40);
    if(frame < 100) {           // the balloon is in free-fall
        balloon.move(1, 2);
    } else if(frame < 200) { // it fires its burner
        balloon.move(1, -1);
    } else {                  // it no longer fires its burner
        balloon.move(1, 1);
    }
    frame++;
}
```

7.4. Braces

When the body of a **while** or **if** statement holds only a single statement, the braces are optional. Thus, we could write our `max` code fragment from earlier as follows, since both the **if** and the **else** clauses contain a single statement. (We could also include braces on just one of the two bodies.)

```
double max;
if(first > second)
    max = first;
else
    max = second;
```

I recommend that you include the braces anyway. This saves you trouble later, should you decide to add additional statements into the body of the statement. And it makes it easier to keep track of braces, since each indentation level requires a closing right brace.

In fact, Java technically doesn't have an **else if** clause. In our earlier `gpa` examples, Java would actually interpret the **if** statements as follows.

```
if(score >= 90.0) {
    gpa = 4.0;
} else
    if(score >= 80.0) {
        gpa = 3.0;
```

```
} else
    if(score >= 70.0) {
        gpa = 2.0;
    } else
        if(score >= 60.0) {
            gpa = 1.0;
        } else {
            gpa = 0.0;
        }
}
```

Each **else** clause includes exactly one statement — which happens to be an **if** statement with an accompanying **else** clause in each case. Thus, when we were talking about **else if** clauses, we were really just talking about a more convenient way of inserting white space for the special case where an **else** clause contains a single **if** statement.

Source : <http://www.toves.org/books/java/ch07-if/index.html>