If Statements

– Most common way to control program flow

– Used to execute specific programming code if the evaluation of a conditional expression returns a value of true

– The syntax for a simple if statement is:

```javascript
if (conditional expression) statement;
```
If Statements (Cont.)

- The if statement contains three parts:
  - Keyword `if`
  - Conditional expression enclosed within parentheses
  - Executable statements

In-Class Exercise 1

- Declare a variable and set it equal to some numerical value
- Test whether the variable equals five
- If the variable equals five, print out an alert statement
- Then ALWAYS output another, second alert statement
Solution Example

```javascript
var exampleVar = 5;
if (exampleVar == 5) // CONDITION EVALUATES TO 'TRUE'
    alert("The variable is equal to '5'.");
alert("This dialog box is generated after the if statement.");
```

Figure 4-2: An if statement that evaluates to true

```javascript
var exampleVar = 4;
if (exampleVar == 5) // CONDITION EVALUATES TO 'FALSE'
    alert("This dialog box will not appear.");
alert("This is the only dialog box that appears.");
```

Figure 4-3: An if statement that evaluates to false
Nested if and if...else Statements

- Nested if Statement:
  - An if statement contained within an if statement or within an if...else statement

- Nested if...else statement:
  - An if...else statement contained within an if or if...else statement

- Nested if and if...else statements used to
  - Perform conditional evaluations that must be executed after the original conditional evaluation

Associating “if” with “else” in a simple statement

```javascript
if (grade < 60) {
  alert("You failed! Time to hit the books.");
} else {
  alert("Congratulations, you passed.");
}
```

```javascript
if (grade < 60) {
  diff = 60 - grade;
  alert("You failed! If only you could have " + "earned " + diff + " more points.");
}
```

```javascript
if (grade < 60) {
  diff = 60 - grade;
  alert("You failed! If only you could have " + "earned " + diff + " more points.");
}
else {
  alert("Congratulations, you passed.");
}
```
Association in nested statements

How do we associate an "else" with a particular "if"?

• the topmost level is evaluated first
• if the test succeeds, then the corresponding statements are executed and control moves to the next statement following the cascading if
• if the test fails, then control cascades down to "else" or, if there is no "else," whatever is next
• in general, control cascades down the statement from one test to another until one succeeds or the end of the statement is reached

```javascript
if (grade < 60) {
    alert("You failed! Time to hit the books.");
} else {
    if (grade < 90) {
        alert("You passed, but could do better.");
    } else {
        alert("Congratulations! You got an A.");
    }
    executed if grade < 60
    executed if grade < 90
    executed if grade >= 60
```

Nested Statements

• Syntax (variable)

```javascript
if (conditional_expression) {
    statement(s);
    if (conditional_expression) {
        statement(s);
    }
} else {
    statement(s);
}
```

Nested if statement. Does not have an associated else, but it could.
In-Class Exercise 2

Problem stated in English: we want to output greetings in one of the four languages of Spanish, French, Italian or German depending on a user’s country. If they are not in any of these countries then output an error message.

What greetings can we use?
Buenos Dias, Bonjour, Buongiorno, Guten Tag

Get User’s Language

• We somehow must prompt for inputs to get their country
• Assuming that is finished, we now have a variable called “country”
Pseudocode

If country is Spain, write out “Buenos Dias”
Otherwise…
If country is Germany, write out “Guten Tag”
Otherwise…
If country is Italy, write out “Buongiorno”
Otherwise…
If country is France, write out “Boujour”
Otherwise…
Some error message!

How can we output data?

• Use document.writeln() function
• Also could use document.write()
• Only difference is a newline at the end
How can we compare strings?

• Use == operator

Solution Example

```java
var country = "France";
if (country == "Spain")
    document.writeln("Buenos Dias");
else
    if (country == "Germany")
        document.writeln("Guten Tag");
    else
        if (country == "Italy")
            document.writeln("Buon Giorno");
        else
            if (country == "France")
                document.writeln("Bonjour");
            else
                document.writeln("I don't speak your language!");
```

Figure 4-8: Greeting program with nested if statements