Web Engineering LAB

Lab # 06
JavaScript: Decision Making

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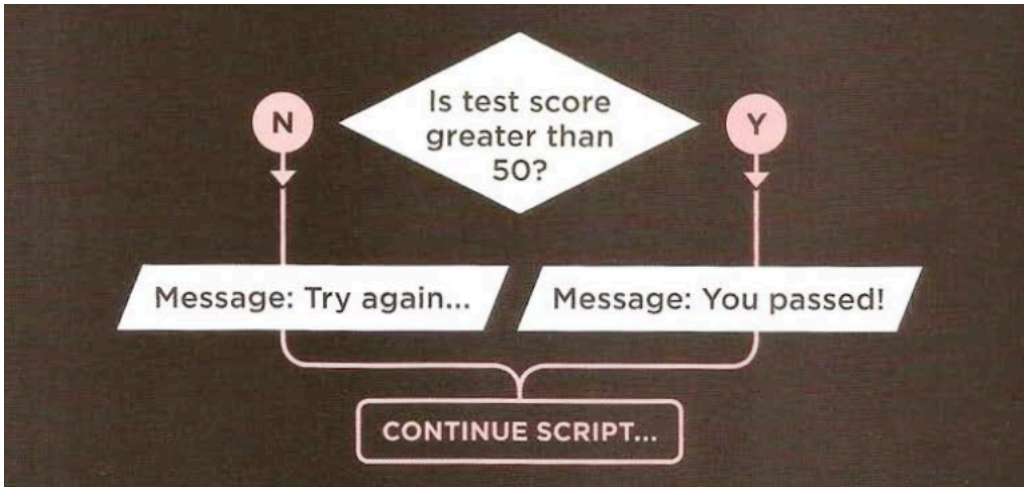
Content

JavaScript: Decision Making

There are often several places in a script where decisions are made that determine which line of code should be run next.

Flow Chart

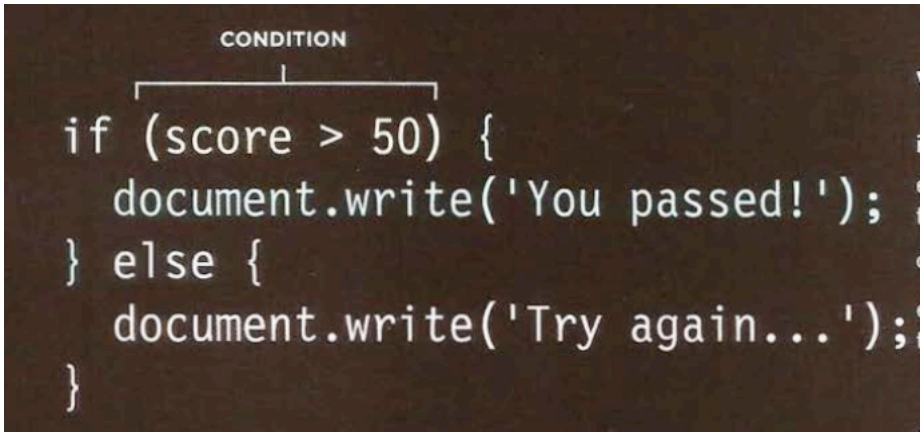
In a flowchart, the diamond shape represents a point where a decision must be made and the code can take one of the two different paths. In order to determine which path to take, you set a condition. If the condition returns true, you have to take one path; if it is false, you take another path. You have to write different set of codes for each situation/path.



Evaluating Conditions & Conditional Statements

There are two components to a decision:

1. A expression is evaluated, which returns a value
2. A conditional statement says what to do in a given situation



If the condition returns true, execute the statements between the first set of curly brackets
Otherwise
Execute the statements between the second set of curly brackets.

Comparison Operators

The following comparison operators are used :

- Is equal to : ==

  This operator compares two values (numbers, strings, or Boolean) to see if they are the same.

- Is not equal to : !=

  This operator compares two values (numbers, strings, or Boolean) to see if they are not the same.

- Strict equal to: ===

  This operator compares two values to check that both the data type and value are the same.

- Strict not equal to: !==

  This operator compares two values to check that both the data type and value are not the same.

- Greater than: >

  This operator checks if the number on the left is greater than the number on the right.

- Less than:

  This operator checks if the number on the left is less than the number on the right.

- Greater than or equal to: >=

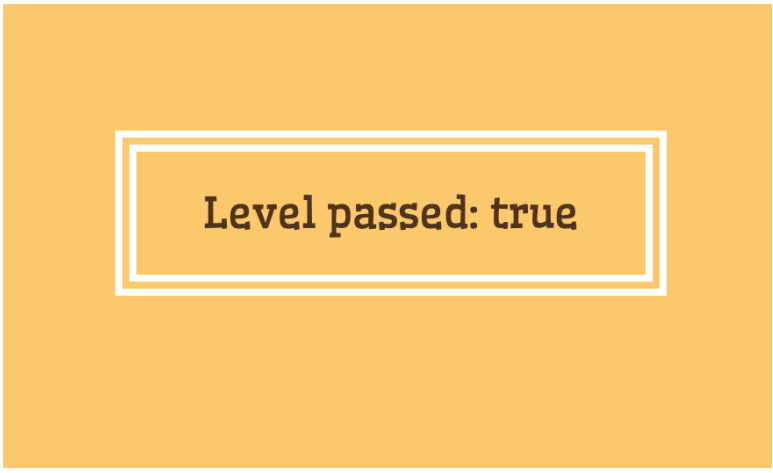
  This operator checks if the number on the left is greater or equal than the number on the right.

- Less than or equal to:

  This operator checks if the number on the left is less than or equal to the number on the right.

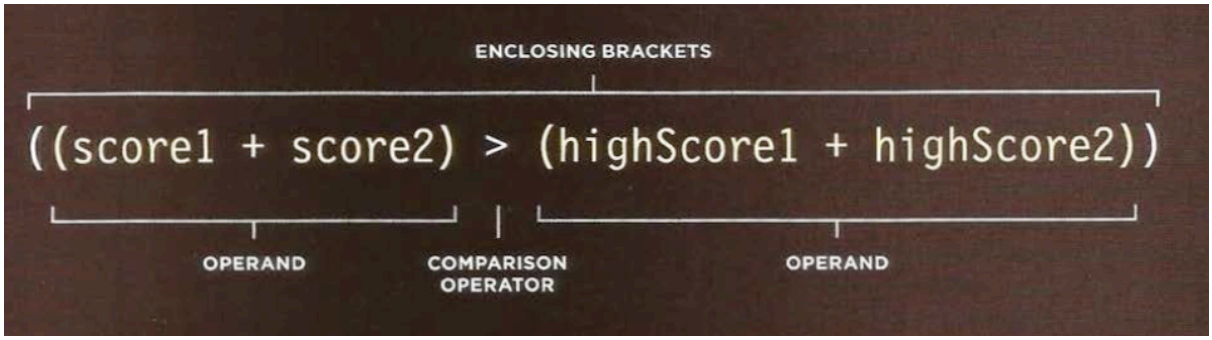
Using Comparison Operators

```
1   var pass = 50;   // Pass mark
2   var score = 90;  // Score
3
4   // Check if the user has passed
5   var hasPassed = score >= pass;
6
7   // Write the message into the page
8   var el = document.getElementById('answer');
9   el.innerHTML = 'Level passed: ' + hasPassed;
10
```



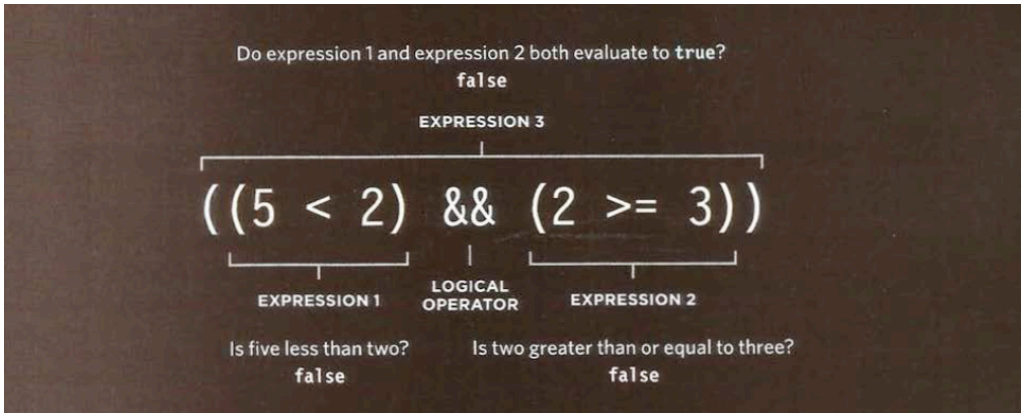
Using Expressions with Comparison Operators

The operands doesn't have to be a single value or variable name. An operand can be an expression.



Using Logical operators

Logical Operators allow you to compare the results of more than one comparison operator.



The following logical operators are used :

- Logical AND : &&

  This operator tests more than one conditions. If all expressions returns true then the expression returns true.

- Logical OR : ||

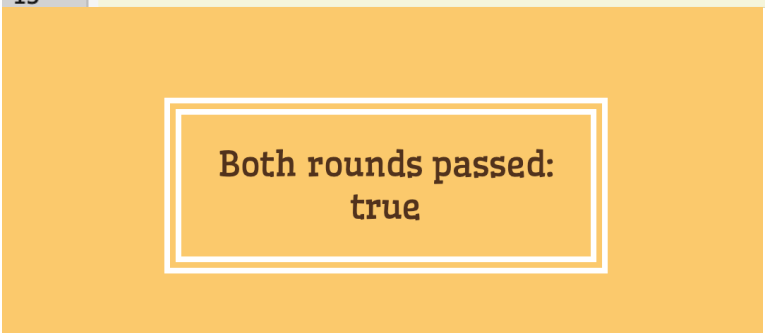
  This operator tests at least one condition. If either expression evaluates to true, then the expression returns true.

- Logical Not : !

  This operator takes a single Boolean value and inverts it. This reverses the state of an expression.

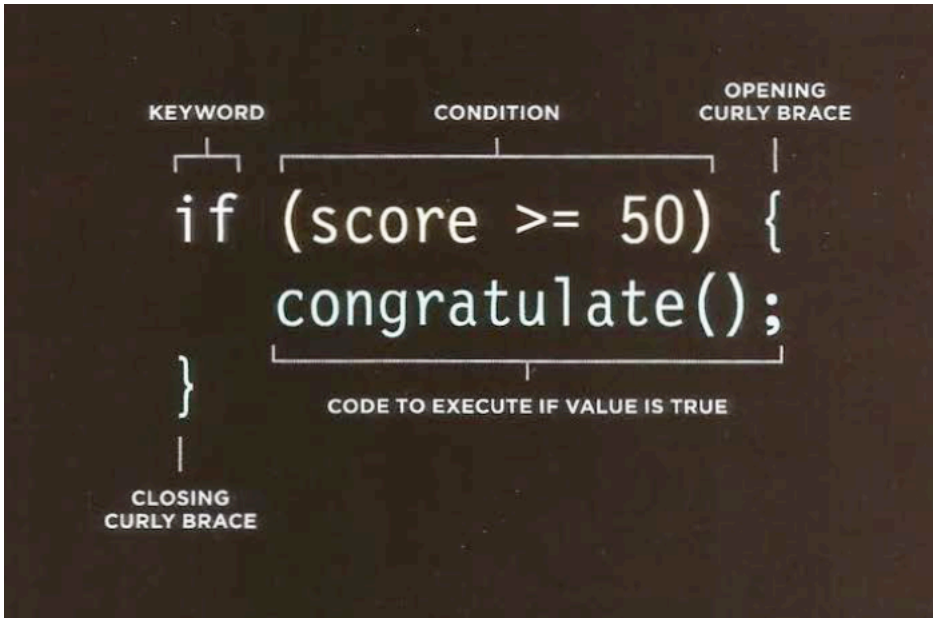
Example:

```
1   var score1 = 8;    // Round 1 score
2   var score2 = 8;    // Round 2 score
3   var pass1 = 6;     // Round 1 pass mark
4   var pass2 = 6;     // Round 2 pass mark
5
6   // Check whether user passed both rounds, store result in variable
7   var passBoth = (score1 >= pass1) && (score2 >= pass2);
8
9   // Create message
10  var msg = 'Both rounds passed: ' + passBoth;
11
12  // Write the message into the page
13  var el = document.getElementById('answer');
14  el.innerHTML = msg;
15
```



IF Statements

The if statement evaluates (or checks) a condition. If the condition evaluates to true, any statements in the subsequent code block are executed.



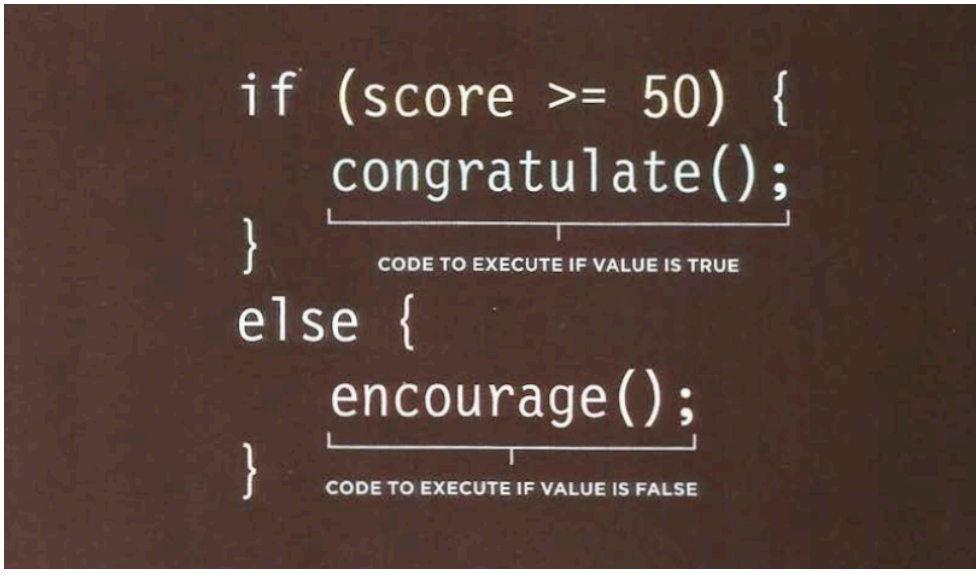
Using if Statements

```
1   var score = 75;      // Score
2   var msg;             // Message
3
4   if (score >= 50) {  // If score is 50 or higher
5     msg = 'Congratulations!';
6     msg += ' Proceed to the next round.';
7   }
8
9   var el = document.getElementById('answer');
10  el.textContent = msg;
11
```

Congratulations! Proceed to the next round.

IF .. ELSE Statements

The if ..else statement evaluates (or checks) a condition. If it resolves to true the first code block is executed. If the condition resolves to false the second code block is run instead.



Using if else Statements

```
1   var pass = 50;       // Pass mark
2   var score = 75;     // Current score
3   var msg;             // Message
4
5   // Select message to write based on score
6   if (score > pass) {
7     msg = 'Congratulations, you passed!';
8   } else {
9     msg = 'Have another go!';
10  }
11
12  var el = document.getElementById('answer');
13  el.textContent = msg;
14
```

Congratulations, you passed!

References

1. Duckett J. JavaScript & jQuery. Wiley VCH; 2015.

Lab Tasks:

1. Create an HTML webpage, add the following two tables, then write a JavaScript program which compute, the average marks of the following students . Use this average to determine the corresponding grade. Display the average marks and grade on the web page.

Student Name	Marks
David	80
Vinoth	77
Divya	88
Ishitha	95
Thomas	68

Range	Grade
<60	F
<70	D
<80	C
<90	B
<100	A