

Javascript: Boolean Expressions

Boolean Logic

- Write conditional logic using boolean operators
- List all of the falsey values in JavaScript
- Use if/else and switch statements to include conditional logic in your JavaScript code
- Explain the difference between `==` and `===` in JavaScript
- Convert between data types explicitly in JavaScript

Conditional Logic

- An essential part of writing programs is being able to execute code that depends on certain conditions. For example:
 - You want the navigation bar on your website to look different based on whether or not someone is logged in
 - If someone enters their password incorrectly, you want to let them know; otherwise, you want to log them in
 - You're building a tic-tac-toe game, and want to know whether it's X's turn or O's turn
 - You're building a social network and want to keep person A from seeing person B's profile unless the two of them are friends

```
var instructor = 'Brenda';
```

```
// we begin with an "if" statement
```

```
// followed by a condition in ()
```

```
// and a block of code inside of {}
```

```
if (instructor === 'Brenda') {
```

```
  console.log('Yes!');
```

```
} else {
```

```
  console.log('No');
```

```
}
```



- Notice that we used a === instead of =.
- Anytime that we use more than one equals operator (we can either use == or ===) we are doing a comparison (comparing values).
- When we use a single equals operator =, we are doing an assignment (setting a variable equal to some value).

```
var favoriteFood = prompt('What\'s your favorite food?');  
  
if (favoriteFood === 'pizza') {  
  console.log('Woah! My favorite food is pizza too!');  
} else {  
  console.log('That\'s cool. My favorite food is pizza.');
```

- In this version, the boolean expression will be true/false depending on the value entered in 'prompt'

Difference between “==” and “===”

- Two different operators for comparison: the double and triple equals.
- Both operators check whether the two things being compared have the same value, but there's one important difference.
 - == allows for ***type coercion*** of the values,
 - === does not.
- To understand the difference between these operators, we first need to understand what is meant by ***type coercion***.

Type Coercion 1

- Add a number and a string.
- In a lot of programming languages, this would throw an error, but JavaScript is more accommodating
- It evaluates the expression `5 + "hi"` by first coercing 5 into a string, and then interpreting the "+" operator as string concatenation.
- So it combines the string "5" with the string "hi" into the string "5hi"

```
5 + 'hi'; // '5hi'
```

Type Coercion 2

- JavaScript expects the values inside of parentheses that come after the keyword **if** to be booleans.
- If you pass in a value which is not a boolean, JavaScript will coerce the value to a boolean according to the rules for ***truthy/falsey*** values (more on this later)

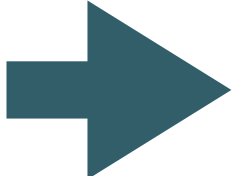
```
if ('foo') {  
  console.log('this will show up!');  
}  
  
if (null) {  
  console.log('this won\'t show up!');  
}
```


Type Coercion 3

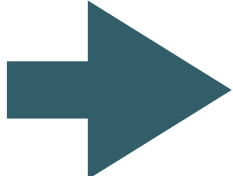
- A very common way to coerce a stringified number back into a number.
- By prefacing the string with the plus sign, JavaScript will perform a coercion on the value and convert it from a string value to a number value.

```
+'304'; // 304
```

“==” Vs “===” again

==  loose

```
5 == '5'; // true  
'true' == true; // false  
true == 1; // true  
undefined == null; // true
```

===  strict

```
5 === '5'; // false  
'true' === true; // false  
true === 1; // false  
undefined === null; // false
```

- == allows for coercion while === doesn't.
- *If you don't want to have to think about coercion in your comparisons, stick to ===.*

```

var x = 4;
if (x <= 5) {
  console.log('x is less than or equal to five!');
} else {
  console.log('x is not less than or equal to five!');
}

```

Comparison Operators

Operator	Description
==	equal to
===	equal value and equal type
!=	not equal
!==	not equal value or not equal type
>	greater than
<	less than
>=	greater than or equal to
<=	less than or equal to
?	ternary operator

Falsey Values

- Some values (aside from false) are actually false as well, when they're used in a context where JavaScript expects a boolean value
- Even if they do not have a "value" of false, these values will be translated (or "coerced") to false when evaluated in a boolean expression.

6 Falsey Values in Javascript

```
0  
""  
null  
undefined  
false  
NaN // (short for not a number)
```

Logical Operators

Operator	Meaning	Example
<code>&</code>	AND	<code>(a < 10 & b > 5) is true</code>
<code> </code>	OR	<code>(a == 5 b == 5) is true</code>
<code>!</code>	NOT	<code>!(a == 5) is true</code>

If-Else

- Sometimes you may have more than two conditions to check.
- In this case, you can chain together multiple conditions using else

```
if (number >= 1000) {  
  console.log('Woah, thats a big number!');  
} else if (number >= 0) {  
  console.log('Thats a cool number.');
```

```
} else {  
  console.log('Negative numbers?! Thats just bananas.');
```

```
}
```

Switch

- Another way to write conditional logic is to use a switch statement.
- While these are used less frequently, they can be quite useful when there are multiple conditions that can be met.
- Notice that each case clause needs to end with a break so that we exit the switch statement.

```
switch (feeling) {  
  case 'happy':  
    console.log("Awesome, Im feeling happy too!");  
    break;  
  case 'sa':  
    console.log("Thats too bad, I hope you feel better soon.");  
    break;  
  case 'hungry':  
    console.log("Me too, lets go eat some pizza!");  
    break;  
  default:  
    console.log("I see. Thanks for sharing!");  
}
```

Modulus Operator

`5 % 3 === 2` // true (the remainder when five is divided by 3 is 2)

```
var num = prompt('Please enter a whole number');
if ( num % 2 === 0 ) {
  console.log('the num variable is even!')
} else if ( num % 2 === 1 ) {
  console.log('the num variable is odd!')
} else {
  console.log('Hey! I asked for a whole number!');
}
```