Front-End Web Development

Conditional Statements

GENERAL ASSEMBLY

Today's Learning Objectives

In this lesson, you will:

- Define conditional statements in JavaScript to create logic-driven programs.
- Use **`switch`** statements to encapsulate complex logical chains.
- Choose the correct logical operators to enhance conditional statements.

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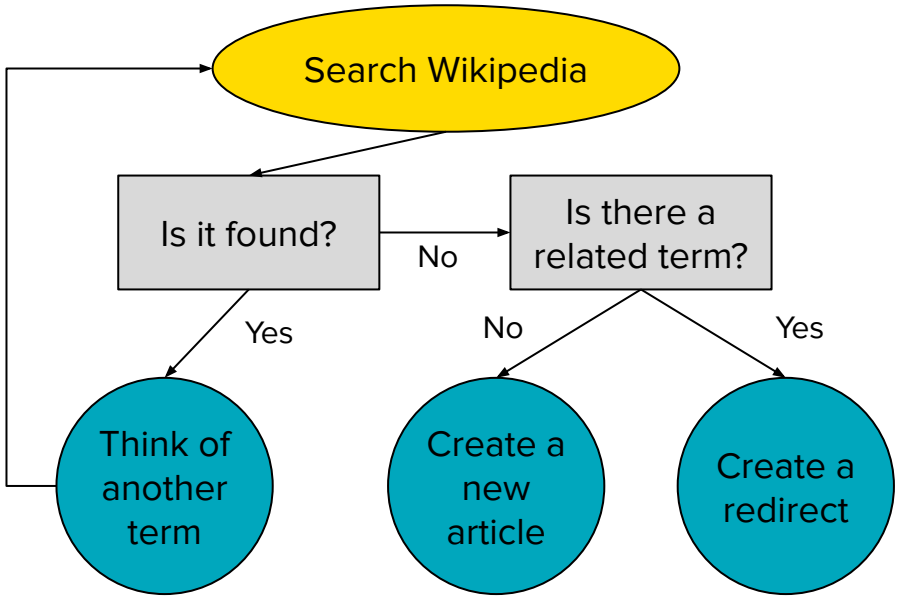
Comparison Operators

Why Use Conditional Statements?

Conditional logic allows you to create **vastly more complex programs**. Think of the decision-making process of giant flowcharts...



Comparison Operators

First, we'll need **comparison operators** — a set of operators that give you the ability to compare values and return a Boolean result (true or false).

Comparison Operator	Meaning
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to
===	Strict equality (value and data types)
!==	Strict inequality

Double vs. Triple Equals

== vs ===

!= vs !==

Double equals doesn't check for type, so it won't care if the data types are the same. This can lead to some unpredictable behavior!

Triple equals — the strict equality operator — will compare both the value and data type, creating much more predictable results. **Just use triple equals!**

Conditional Statements

Conditionals are function-like statements that take Booleans as inputs:

```
if (valueOne === valueTwo) {
  console.log(“Valid”);
}
```

Note the **code block** defined in curly braces (`{ }`). This code block executes if the Boolean provided is **true**.

`else` Statements

You will often want to have an **`else`** statement immediately after the **`if`** statement. This will trigger when the **`if`** comparison turns out to be **`false`**.

```
if (valueOne === valueTwo) {
  console.log(“Valid”);
}
else {
  console.log(“Invalid”);
}
```


Multiple Conditions

```
if (test1 === test2) {
  console.log('test1 and test2 are equal');
}
else if (test1 > test2) {
  console.log('test1 is greater than test2');
}
else {
  console.log('none of the conditions were met');
}
```

Careful! Equals Aren't All Equal...

When you use **=**, that is an **assignment operator**.

If you try to use **=** instead of **===** in a comparison statement, you will get strange results — it will always evaluate as **true**!

```
// This won't work the way you think it will!
let temperature = 0;
if (temperature = 100) {
  console.log("Always going to happen!");
}
```

Guided Walk-Through: Conditionals in Action

For examples of conditionals affecting the page, check out this CodePen:

Reference code:

https://codepen.io/GAmarketing/pen/BayWLgR

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Logic Operators

Logic Operators

Logic operators allow us to combine multiple conditions together. For very complex conditionals, you can put several conditions in parentheses to evaluate them as a single expression.

Operator	Description
&& (AND)	Evaluates to **`true`** only if all combined values are true.
|| (OR)	Evaluates to **`true`** if any of the combined values are true.
! (NOT)	Reverses the Boolean result of whatever follows it.

Multiple Conditions, One Statement

You can check to see if two conditions are met in one statement with a logic operator:

```
let clickDetected = true;
let clickTwoDetected = false;

if (clickDetected === true && clickTwoDetected === false){
  // do something
}
```

Using !

The **not** operator, `!`, is a great way to check if something exists in the JS memory system.:

```
let whatever; // would be undefined, no memory assignment

if( !whatever ) {
  console.log(“Turns out whatever doesn’t exist!”);
}
```

If there isn’t a comparison inside a conditional statement, JS will interpret the argument as a Boolean. The only values that would equate to false are `0`, `-0`, `null`, `NaN`, `undefined`, or `“”`, so nearly anything that exists will pass the test.

Pro Tip: Condensing Conditionals

Like we saw in the previous slide, not all conditionals need a comparison statement — especially if the values being tested are already Booleans!

Thus, you will rarely see a comparison with `=== true` or `!== false`.

Instead, developers will use the following pattern:

```
if (clickDetected && !clickTwoDetected) {
  // do something
}
```

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`switch` Statements

`switch` Statements

`switch` is an implicit equality comparison (`===`). It's comparing the argument of **`switch`** with each **`case`**. The **`switch`** looks for every matching **`case`**, then performs instructions until it hits **`break`**, which exits the chain.

container → `switch (transportOption) {`
condition → `case 'car':`
instruction → `document.querySelector('#dest').classList.add('car');`
stop → `break;`

```
let transportOption = 'car';

// Add class to <div id="dest"> depending on variable
switch (transportOption) {
  case 'car':
    document.querySelector('#dest').classList.add('car');
    break;
  case 'bus':
    document.querySelector('#dest').classList.add('bus');
    break;
  case 'metro':
    document.querySelector('#dest').classList.add('metro');
    break;
}
```


Multi-Case `switch`

`switch` can be used to funnel multiple cases to the same instruction. Just list cases together before the instruction/break combo, and you can cleanly handle similar cases:

```
switch(seasonCheck) {
  case 'autumn':
  case 'fall':
    console.log("It's fall now!");
    break;

  case 'spring':
  case 'getting warmer':
    console.log("Spring time is near");
    break;
}
```

Making Conditionals Easier

Conditionals make programs harder to debug because more operations can take place in any given program.

- Use functions to encapsulate code as necessary.
    - If the code inside a conditional takes up five lines or more, it will become hard to keep track of which layer of conditional we're in. Make it a function!
- **`console.log()`** is your friend.
    - Leave yourself messages to figure out what path a conditional took.
    - If a conditional gives you mysterious results, log the values and data types.
- Use **`switch`** statements for situations with four or more cases.
    - The setup for a **`switch`** only pays off in lengthier situations.

Partner Exercise:

Channel Changer

60 minutes

This challenge will involve using event listeners, functions, and conditionals to create an interactive TV with channels the user can change.

Remember: Write small pieces at a time and test them early and often!

Starter code:

https://codepen.io/GAmarketing/pen/eYmvBMq

Solution code:

https://codepen.io/GAmarketing/full/dyPvOjN

Key Takeaways

Conditionals Allow Decisions

- Use conditionals to allow JavaScript to make logic-based decisions.
- Conditionals are one tool in the **control flow** toolbox.
- Use logical operators and conditional chains for more complex reasoning.

For Next Time

JavaScript Loops and Arrays

- Loops will allow you to repeat a code block until a condition is met.
- Loops are another example of **control flow** determining how and when code should execute.
- Arrays are collections of data that allow us to store multiple things together.


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