Fall 2017 — ar589.github.io

Week 9 Interactive Design

Intro to JavaScript

What is JavaScript?

- A scripting language: JS runs programs made up of individual steps.
- The most widely used programming language in the world.
- Gives us the ability to dynamically interact with the browser and the user.
- Built into all of the major browsers.

Things JS can do:

- Listen to events like a mouse click and do something.
- Modify the HTML and CSS of your page after it has been loaded.
- Communicate data between a server and the browser.
- Interact with your webcam, microphone, etc.
- So much more.

Using JavaScript

- We author files with an extension of “.js” and include them in our HTML.
- Inside the JS document, we give the browser instructions about what we want it to do and when.

The Script Tag

Included in your HTML document,
just before the closing body tag.

```
// Code in the HTML document
<script type="text/javascript">
  alert('Hello world!')
</script>

// Include an external file
<script src="site.js"></script>
```

An Example

Data Types

Strings

Any sequence of text that is wrapped in quotes.

```
'Hello. I am a string!'
```

Numbers

Whole numbers are called “integers.”
Numbers with decimal points are “floating point” numbers.

```
1
1000
12.345
```

Boolean

Boolean values can only be true or false

```
true
false
```

Arrays

A data structure that can hold multiple values and data types. Values are accessed by numerical index, which starts at 0.

```
['JS is cool.', 9, false]
```

Objects

A data structure that can hold multiple values and data types. Values are stored in key/value pairs.

```
{
  name: 'Margo',
  species: 'dog',
  age: 7,
  legs: 4,
  cute: true
  favoriteToys: ['rawhide', 'tennis ball']
}
```

Variables

Storing Data in Variables

The var key word is what you'll see most often.
"const" and "let" are recent additions to the language.

```
var myString = 'Hello. I am a string'
var myArray = ['JS is cool.', 9, false]
var myObject = {
  name: 'Margo',
  age: 7
}
```

Retrieving a Variable

```
myString // 'Hello. I am a string'
myArray[0] // 'JS is cool.'
myObject.name // 'Margo'
```

Events

What's an Event?

- When someone is on your site, the browser is constantly telling you what they're doing.
- You can "listen" for different events.
- When the browser tells you about an event, you can "handle" it.

Mouse Events

```
click
dblclick
mousedown
mouseup
mousemove
mouseover
mouseout
```

Keyboard Events

```
keydown
keyup
keypress
```

CSS Animation Events

```
animationstart
animationend
animationiteration
transitionend
```

How to Handle Events

```
// Step 1: Select an Element
var myEl = document.querySelector('.myClass')

// Step 2: Tell the browser what event to listen for
// and how to handle it
myEl.addEventListener('click', myFunction)

// Step 3: Handle the event with a function
function myFunction (event) {
  // Do something here.
}
```

Functions

What does a Function do?

- A function groups a series of statements.
- A function can be reused over and over.
- Can have “parameters” which are variables specific to the function as “arguments.”

Define and Call a Function

```
// Define
function sayHello () {
  alert('Hello World!')
}

// Call
sayHello() // 'Hello World!'
```

Define and Call a Function with Parameters

```
// Define
function sayHello (name) {
  alert('Hello ' + name)
}

// Call
sayHello('Dan')
```

Making Decisions

Conditional Statements

- In JavaScript, we can run code only when certain conditions are met.

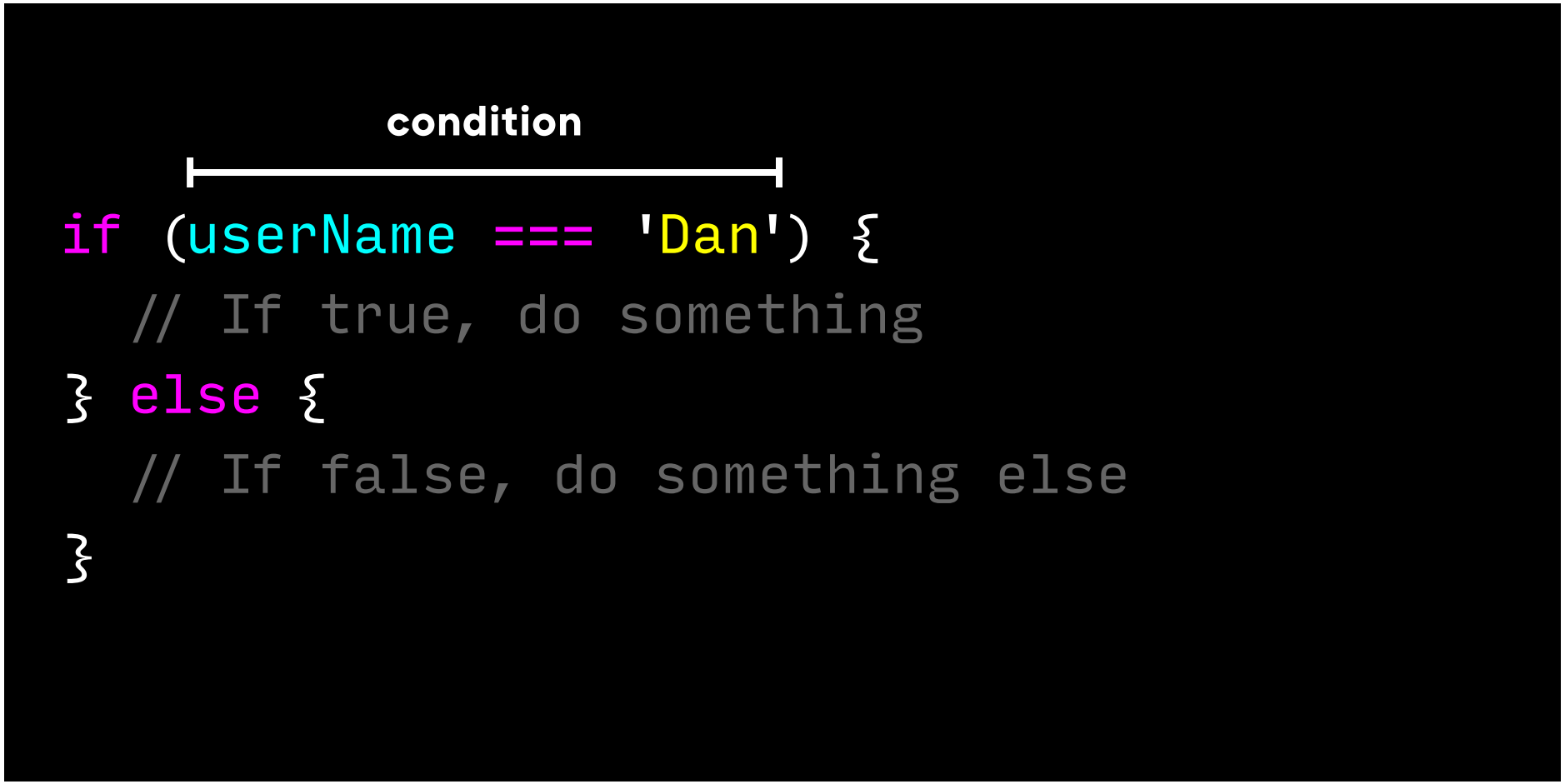
If the user's name is "Dan", say "Hello Dan", otherwise say "Hello there."

- If the user's name is "Dan"
- say "Hello Dan"
- otherwise
- say "Hello there."

- If the user's name is "Dan"
- say "Hello Dan"
- otherwise
- say "Hello there."

if ... else

If the condition evaluates to true, the 1st code block will run.
If the condition evaluates to false, the 2nd code block will run.



Equality Operators

Test if one value is equal to another.

```
=== // Equal to
!== // Not equal to
```

Comparison Operators

```
>  // Greater Than
>= // Greater Than or Equal To
<  // Less Than
<= // Less Than or Equal To
```

Example Comparisons

```
1 + 1 === 2

'A' < 'B'

((5 * 2) + 10) < ((5 * 3) + 5)

myVar1 !== myVar2
```

What is true or false anyway?

Falsy Values

```
false    // Boolean false
0        // The number zero
''       // An empty string
var x    // An undefined or null variable
```

Truthy Values

Basically, anything that isn’t "falsy."

```
true          // Boolean true
42, -123      // Numbers other than 0
'Hello'       // Any string
```

Add linting!

Resources

- JavaScript for Absolute Beginners
- MDN: JavaScript