Lesson 2: Data Types and Arrays

Learning Objectives

- Describe the concepts of “data types” and variables
- Declare, assign to, and manipulate data stored in a variable
- Iterate over and manipulate values in an array
- Learn the basics of version control using git

Last time on JavaScript Development…

- We learned about the Client-server model, the Internet and the WWW

- We learned basic file and folder creation and navigation using the command line

- We ran JavaScript using the Node.js interpreter, and started working with variables

Fixing ‘subl’

- Mac:

```
ln -s "/Applications/Sublime Text.app/
Contents/SharedSupport/bin/subl" /usr/
local/bin/subl
```

- Windows:

https://coderwall.com/p/bn2inq/launch-sublime-text-from-the-command-line-in-windows

Aliases (Mac)

1. type

   `subl ~/.bash_profile`

2. add the following line to the file:

   `alias ll='ls -laF'`

3. Save.

4. Close the terminal and open a new terminal.

Aliases (Windows)

https://gist.github.com/vladikoff/38307908088d58af206b

(Or whatever else you can find on this topic…)

A Word About Core JavaScript vs. the DOM

- JavaScript contains a standard library of objects, such as Array, Date, and Math, and a core set of language elements such as data types, operators, control structures, and statements.

- Client-side JavaScript extends the core language by supplying functions to control a browser and its Document Object Model (DOM). For example, client-side extensions allow an application to place elements on an HTML form and respond to user events such as mouse clicks, form input, and page navigation.

What are data types?

- When we build an app, we need to pass data around. This all starts with data types!

- What are data types?

- In programming, a data type is a classification identifying one of various types of data. Using data types, we can determine

    - the possible values for that type

    - the operations that can be done on values of that type

    - the meaning of the data; and the way values of that type can be stored

Some basic data types common to many languages

Data Type	Description	Example
Strings	Single words or sentences, surrounded by double or single quotes	`"lots of kittens"`, `'lots of kittens'`
Integers	Whole numbers, with no delimiter	`42`, `1024`
Floats	Decimals, with no delimiter	`3.14`, `3.0`
Booleans	Represents either true or false	`true`, `false`
Arrays	Ordered lists of data	`[ superman, batman, spiderman ]`
Objects	Collections of structured data	`{ fruit: "orange", vegetable: "asparagus" }`

Codealong: data types

- Open your command line terminal program and type **node**.

Variables and Keywords

- Variables are used to store data types into the memory of the computer so that they can be referenced later.

- Keywords (like **typeof** and **var**) are special words with some specialized meaning in JavaScript cannot be used as variable names.

Declare variables with var

- New variables in JavaScript are declared using the **var** keyword.

- Note: JavaScript will let you declare variables without using **var**, but you should never do this — bad things might happen. We'll discuss this in Lesson 4.

- If you declare a variable without assigning any value to it, its type is **undefined**.

Codealong: variables

Intro to Arrays

- Strings and numbers not enough
- We need collections of data that we can use efficiently, like arrays
- Arrays are great for:
  - Storing data
  - Enumerating data, i.e. using a numerical index to find an item in the array
  - Quickly reordering data
  - LOTS off other stuff

Arrays are ordered lists

- Arrays are basically lists of things, in order
- Each item in an array is called an element

- In JavaScript, the collection can contain data of the same or different types, and it can grow and shrink in size dynamically (meaning, while the program is running).

Arrays start at zero

var friends = ['Moe', 'Larry', 'Curly'];

- Items in an array are stored in sequential order, and indexed starting at 0 and ending at the length of the array - 1.

- So Moe is #0, Larry is #1, and Curly is #2

```
var friends = ['Moe', 'Larry', 'Curly'];

friends[0];

=> 'Moe'

friends[2];

=> 'Curly'
```

Two ways to make a new array (but really only one good one)

- Using the JavaScript Keyword **new**, is one way of creating arrays:

  new Array(“dog”, “goat”, “aardvark”);

  => ["dog", "goat", "aardvark"]

- Using an array literal is a much better one:

  [“dog”, “goat”, “aardvark”];

  => ["dog", "cat", "aardvark"]

Codealong: working with arrays

Codealong: Accessing values in arrays

Codealong: Array helper methods

Codealong: Iterating through an array

Arrays: independent practice

- Download starter code and instructions for this exercise from:

  bit.ly/ga-js2-lesson2-arrays

- You have 25 minutes

- Let us know if you have any questions!

Arrays: optional tutorial

http://www.w3schools.com/js/js_arrays.asp