Variables, Datatypes and Conditionals

Objectives

- Introduce variables and identify best cases to use them
- Differentiate most used javascript datatypes strings, integers and floats.
- Introduce javascript comparison operators, conditionals and loops

Agenda

- Code Along: jQuery Dom Selector Practice
- Variables
- DataTypes
- Comparison operations
- Conditionals & Loops
- Code Alongs: Score Keeper, Compare That & Blackout

Agenda (continued)

- Discuss Comparison and Logical Operators
- Discuss Conditionals and Loops
- Lab: Weather Application - Part 1

What are variables?

- Similar to algebra
- Helps you represent data or values
- Used to help your program “remember” values
- Can be thought of as a “box” that we put values in
- In programming, you store values in variables if you plan on referencing that value at a later time

Examples of variables

	Example
Declaring a Variable	**var firstName;**
Assigning a Variable	**firstName = “Cletus”;**
Declare and Assign a variable	**var firstName = “Cletus”;**
Reassign a variable	**firstName = “Roger”**

Variable Naming Rules

Do	Don't
Use variable names that with letter, $, or _	Start with a number
Use variables names that include letters, numbers, $ or _	Create variable names that include a "-" , "." or a space
Use camel case when creating variable names made up of more than one word: **var firstName;**	Create variable names that use javascript keywords such as **var**
Name variable that describes the kind of information your variable stores	

Data Types

Data Type	Example
String	**var color = “green”;**
Numeric	**var age = 28;**
Boolean	**var isHappy = true;**
Arrays	**var numbers = [1, 3, 5];**
Objects	**var car = {doors: 4, carType: “Sedan”};**

Strings

	Example
Declare a string	**var color = “green”;**
Concantenation	**color + ‘ eggs’; // green eggs**
Methods	**color.length; // 5** **color.toUpperCase(); // GREEN**

Numbers

	Example
Declare a number	**var age = 28;** **var points = 52;** **var cm = 2.4;**

Operations	**age + 4; // 32**
	cm - 0.5; // 1.9
	age / 2; // 14
	points % 5; // modulo (remainder)
	points * 2; // 104

Converting Strings to Numbers

- Sometimes you will find yourself in a position where you need to convert a string to a number
- This happens when you attempt to read numeric values from html (html displays everything as a string)
- Use the

```
var string_number = "17"; // note this is a string

var number = parseInt("17");

number // number now equals 17 as an integer
```

Booleans

	Example
Declare a boolean	**var isWarm = false;** **var adult = true;**

Arrays

	Example
Declare an Array	**var names = [“Ron”, “Jane”, “Sarah”];** **var numbers = [1, 2, 8, 10];**
Accessing a value in an array (pass the index number)	**names[0]; // “Ron”** **numbers[2]; // 8**

Change values in an array	**names[1]; // Jane**
	names[1] = “Janet”; // Jane to Janet
	names; // [“Ron, “Janet”, “Sarah”]

Arrays (continued)

	Example
Add values to an array	**var names = [“Ron”, “Jane”, “Sarah”];** **names.push(“Jake”);** **names; //[“Ron”, “Jane”, “Sarah”, “Jake”];**

- We will cover arrays (and objects) in-depth in a later class

Objects

- Used to respresent real world objects in programming
- Objects have properties (or attributes) and values

Objects (cont'd)

- Properties and values can be assigned and read using **Dot notation**

```
var myFirstCar = {}; // declare an empty object

// Assign values to properties using Dot notation
myFirstCar.make = "Nissan"; // assign a value of "Ford" to the "make" property
myFirstCar.model = "Stanza";
myFirstCar.year = 1992;


//Reading values

var statement = "My first car was a " + myFirstCar.year + " " + myFirstCar.make + " " + myFirstCar.model;
```

Objects (cont'd)

- Properties and values can also be assigned and read using **Bracket notation**

```
var myFirstCar = {}; // declare an empty object

// Assign values to properties using Dot notation
myFirstCar["make"] = "Nissan"; // assign a value of "Ford" to the "make" property
myFirstCar["model"] = "Stanza";
myFirstCar["year"] = 1992;


//Reading values

var statement = "My first car was a " + myFirstCar["year"] + " " + myFirstCar["make"] + " " + myFirstCar["model"];
```

Aritmetic Operators

Operator	Symbol	Example
Addition	+	7 + 3; // 10
Subtraction	-	8 - 4; // 4
Division	/	10 / 2; // 5
Multiplicaton	*	10 * 2; // 20
Increment	++	var i = 10; i++; // 11
Decrement	- -	var i = 10; i- - ; //9
Modulus	%	10 % 3; // 1 (divides the values and returns the remainder)

Code Along: Score Keeper

Comparison Operators

Operator	Symbol	Example

Identity
*returns boolean (true or false)
	===	**var name = “Karim”;
		name === “Kareem”; //will return false
		
		7 === (3 + 4); // will return true**

Negation (no equals)
*returns boolean (true or false)
	!, !==	**8 !== 7; // will return true
		“hello” !== “hello”; // false
		
		var name = “Karim”;
		!name === “Kareem”; //true**

Comparison Operators (continued)

Operator	Symbol	Example

greater than / less than
*returns boolean (true or false)
	>, <, >=, <=	**8 > 4; // true**
		9 < 3; // false
		
		var number = 17;
		number <= 18; // true

Logical Operators

Operator	Symbol	Example
And	&&	var num = 10; (num / 2 == 5) && num < 15; // true

Or	||	num < 12 || num % 2 == 0; //true
		num > 10 || num * 2 > 25; //false

Conditionals - If Statements

```
var brushedTeeth = false

if(brushedTeeth){

  alert('Great job, you brushed your teeth!');

} else {

  alert('Go your brush teeth man, your breath is hot right now!');
}
```

Conditionals - If Statements (continued)

```
var yourGrade = 84;

if (yourGrade >= 90) {

  alert("Congrats your score is 90 or above, that's an A!");

} else if (yourGrade >= 80){

  alert("Congrats your score is 80 or above, you earned a B");

} else {

  alert("Your score is less than 80, no bueno");
}
```

Loops

```
// Example of a while loop

var names = ["Alvin", "Simon", "Theodore"];

var i = 0;

while(i < names.length){
  alert(names[i] + " is a member of the Chipmunks");
  i++;
}
```

Loops (continued)

```
var names = ["Alvin", "Simon", "Theodore"];

for(i=0; i < names.length; i++){
  alert(names[i] + " is a member of the Chipmunks");
}
```

Code Along: Compare That & Black Out

Lab: Weather Appliction

- You will build a Weather Application takes a Celsius temperature input and converts it to Fahrenheit and changes the background image according to the weather.

Lab: Weather Appliction - Part 1

Part 1
- As a class, write feature requirements / user stories necessary to create a fully functional application that does the following:
  - Takes Celsius temperature and converts it to Fahrenheit
  - Changes the background image to match new temperature

- In groups of four write pseudo code for the application
- In pairs **write the code** to convert Celsius into Fahrenheit and **display the result in the browser**