FEWD

Week 5 · Class 9

Computer Science

Quick Review

- What does the $ mean in jQuery?
- Which tag do we use to add Javascript?
- Where do I put the Javascript on the page?
- Can someone give me an example of an event in Javascript?
- What special method is used to wrap all of our code so that it doesn't run until the page is fully rendered?

What We'll Cover

- Variables, Data Types & Operators
- Logic and Conditionals

Variables

Objectives: Variables

- Understand what variables are
- Define and name variables
- Assign values to variables

What is a Variable?

Variables in programming are like containers used for storing pieces of data. Variables have names so that we can ***access*** them in order to add data to and retrieve data from them.

Creating Variables

- Variables are ***declared*** with the `var` keyword.
- Variables names can contain: letters, numbers, the underscore (_) and the dollar sign ($), but **cannot** begin with a number.
- By convention, variables are named with lower camelCase.

```
var homeTeamScore;

var firstName;
```

Assigning a Value

The action of storing a piece of data in a variable is referred to as ***assigning a value*** or simply ***assignment.*** Assignment is done with an equals sign (=) in Javascript.

```
var lastName; /* Declaration */

lastName = 'Meade'; /* Assignment */

var age = 21; /* Declaration and assignment together */
```

Re-assigning Variables

The values stored in variables declared with `var` can be reassigned.

```
var age = 21; /* Declaration and assignment */

age = 'not 21'; /* Reassigned */

console.log('My age is ' + age); /* outputs: My age is not 21. */
```

Javascript Data Types

What can go in Variables?

```
age = 21;              /* Number (integers and floating point) */
height = 65.25;        /* Number */
balance = -20.66;      /* Number */

name = 'Jen';          /* String (any combination of characters) */
dogs = '2';            /* String */

tired = true;          /* Boolean (true or false) */

var book;              /* undefined (declared but not assigned)*/

tickets = null;        /* null (empty but not undefined) */
```

Creating Variables

jQuery .text() Method

The text method lets us replace the ***text*** inside of a tag.

```
var name = 'John Doe';

$('#output').text(name);
```

Score Keeper

Operators

Objectives: Operators

- Understand how data type affects how operators behave
- Be able to recognize and use various assignment, arithmetic, string and comparison operators

What are Operators?

Operators are special symbols that tell Javascript to perform specific operations.

=	*"Yo, Javascript, assign this value to this variable."*
*	*"Hey, Javascript, multiply these things!"*
>	*"Ummmm, Javascript, compare these and tell me if this one is larger than the other."*

Assignment Operators

You've already seen the most often used assignment operator (=), but there are others.

Progress: [ ] %

```
progress /= 100;
/* progress = progress / 100 */
```

```
progress *= .01;
/* progress = progress * .01 */
```

```

```

Arithmetic Operators

With numbers, the **+**, **-**, *, and / operators act as expected.

```
var width = 20;
var height = 30;
var area = width * height; /* 600 */
```

HEADS UP: Area is **not a function**. It is assigned the number 600. If width or height is reassigned, area doesn't change!

Remainder Operator

The **%** does **not** mean percent. It's called the ***remainder*** operator. It gives us the remainder (as an integer) after dividing the first number by the second.

```
2 % 2;      /* 0 */
3 % 2;      /* 1 */
4 % 2;      /* 0 */
5 % 2;      /* 1 */

19 % 4;     /* 3 */
```

How could this be useful?

HEADS UP: Beware of negative numbers and cases where the first value is smaller than the second.

String Operator

When working with strings, the **+** concatenates.

```
var firstName = 'Jennifer';

var lastName = 'Meade';

var fullName = firstName + ' ' + lastName; /* "Jennifer Meade" */
```

Numbers + Strings

- If one value is a string and the other a number, the + operator concatenates them:

```
var age = 21;
var yearsOld = age + ' years old'; /* output: "21 years old" */

var a = 2;     /* number */
var b = '5';   /* string */

var c = a + b; /* "25" */
```

FYI: The term for this is coercion. Javascript is ***coercing*** the number value data type into a string.

Arithmetic on Strings

- If a string value could be a number, Javascript will coerce it into a number when performing other arithmetic operations:

```
var a = 2;     /* number */
var b = '5';   /* string */

var c = a * b; /* 10 */
```

FYI: If Javascript cannot coerce the string to a number, it returns a special value of `NaN` which stands for Not a Number.

Unary Operators

Unary operators have only one operand. The increment (++) and decrement (--) operators are unary operators you'll see a lot.

```
var a = 2;
++a;          /* the same as a = a + 1 */
              /* (2 + 1) output is: 3 */
--a;          /* the same as a = a - 1 */
              /* (3 - 1) output is: 2 */
a++ * 4;      /* run this operation with a and also increment a */
++a + 1;      /* increment a and then run this operation */
```

Converting Data Types

You can convert a string that looks like a number to a number and numbers to strings.

```
var temp = '65.67777';     /* "65.67777" */
temp = parseFloat(temp);   /* 65.67777 */
temp = parseInt(temp);     /* 65 */

var month = parseInt('12-2018'); /* 12 */

var name = 'Jen';    /* NaN */

var number = 4;
number.toString();  /* "4" */
```

Variables & Operators Takeaways

Takeaways

1. Declare variables with `var`
2. Assign variables with `=`
3. Strings must be surrounded in straight quotes
4. Arithmetic operators act normally with numbers
5. The `+` concatenates values that include a string
6. Javascript will do what it can to obey you, but coercion can lead to unexpected results

jQuery .val() Method

The val method gets the ***value*** from an input field.

```
var name;

$('button').click(function(){

  name = $('#name').val();

  $('#output').text(name);

});
```

Temperature Converter

Logic & Conditionals

Objectives: Logic & Conditionals

- Understand how to test for equality
- Understand what logical operators are and how they work
- Assign values to variables

Comparison Operators

We need to understand comparison operators to write conditional statements. Some you already know.

```
6 > 5      /* true */
5 < 11     /* false */
11 >= 20   /* true */
11 <= 18   /* true */
```

Equality

We know that `=` is the assignment operator. To check for equality, we need to use `==` or `===`.

```
5 == 5            /* true */
'Jen' == 'jen'    /* false */
'jen' === 'jen'   /* true */
5 == '5'          /* true */
5 === '5'         /* false */
```

HEADS UP: In order for two things to be strictly equal (===), they must be ***exactly*** the same, including the data type.

Negation (NOT)

The exclamation symbol, known as bang, means ***NOT***.

```
6 !== 5             /* true */
'Jen' !== 'Jen'     /* false */
6 != '6'            /* false */
6 !== '6'           /* true */
```

Falsy and Truthy

Certain values ***always*** return false. These are called ***falsy***. If the statement does not evaluate to false and is not falsy, it is considered truthy!

```
false       /* falsy */
0           /* falsy */
null        /* falsy */
undefined   /* falsy */
Nan         /* falsy */
''          /* (empty string) falsy */
5           /* truthy */
'jen'       /* truthy */
!0          /* guess what this one is? */
```

Logical OR and AND

Logical AND is written as `&&` and logical OR is written as `||` in Javascript.

```
(6 > 5) || (6 == 7)   /* true */
(6 > 5) && (6 == 7)   /* false */
```

Short-circuit Evaluation

- false && (*anything*) is always false
- true || (*anything*) is always true

If Statement Syntax

```
if(condition is true) {
  /* Do cool stuff */
}
```

If Then Syntax

```
if(condition is true) {
  /* Do cool stuff when true */
} else {
  /* Do other stuff when false */
}
```

If Else If Syntax

```
if(condition is true) {
  /* Do cool stuff when true
     DOESN'T CHECK ELSE IF */
} else if (condition is true) {
  /* Do cool stuff if first if condition was false
     but second if condition is true */
} else {
  /* Stuff to do if both statements are false */
}
```

Using Multiple Conditions

```
if ((wifiname === 'GA-Guest') && (password === 'yellowpencil')) {
  //Give 'em access to the wifi
}
```

Working with Conditionals

NO CLASS 4/16

Complete any outstanding assignments:

- Profile
- Relaxr Landing and Blog pages
- Matchmaker Starter
- Proposal & Wireframes

Also:

- Draft HTML are due week 7, so get on it!
- Schedule office hours check in with me.

Go Build Awesome Things!