Philly Tech Sistas

Intro to JavaScript

Class 4

Bootstrap Recap

It’s just a library of styles Twitter created

https://betterprogramming.pub/stop-overthinking-your-complex-solutions-and-start-building-simple-ones-712400ea8385

What is JavaScript?

A Quick Overview

Programming Language Types

Scripting
JavaScript
ReactJS
Python

```
var x, y, z;
x = 5;
y = 6;
z = x + y;
```

Tagging Language
HTML
XML

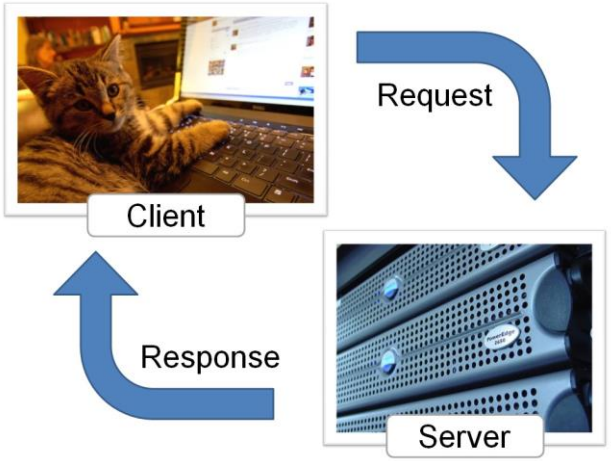
```
<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
```

Object Oriented \ Compiled
Java
C#
C++

```
static void Main(string[] args)
{
  Console.WriteLine("Hello World!");
}
```

What is JavaScript?

- Interfaces with HTML and CSS
- Builds dynamic webpages
- Responds to user input
- Client-side (browser) language.



Javascript can modify your webpage

Multiple ways to print a message

Open a popup box

```
alert('Hello World!');
```

Write to your console

```
console.log('Hello World!');
```

Write to the Web Page

```
document.write('Hello World!');
```

Class Exercise: Your first JS Script

Start a new project, Hello World. Click the JS tab

Type the below in the JavaScript side. Refresh your code.

```
alert('Hello World!');
```

Now comment out the alert line . Refresh your code.

```
//alert('Hello World!');
```

Now add the below line. . Refresh your code. Click the **>** in app.bsd to see the console.

```
console.log('Hello World!');
```

Now comment out the console line.

```
/* alert('Hello World!'); */
```

Now print to the HTML window

```
document.write("Hello World!")
```

What is a Variable?

- Place to store values
- Can change over time
- Can hold strings, numbers, booleans or arrays

```
let kittenAmount= 5;       // Store numbers
let catName= 'Jane';       // Store words
let doesSheHaveCats = true;  //Store bools
let foodList = ['lasagna','eclairs']; //arrays
```

Variable Declarations

Var (old school JS)

```
var greet= "hey";
```

Old school declaration

Pros: Extremely Permissible

Main Problem? Scope issues

Let (ES6, used now)

```
let greet = "hey";
```

New Default

Pro: Respects scope

Con: Updated but can't be re-declared

Const (doesn't change)

```
const greet = "hey";
```

Pro: Respects Scope, best with objects

Cons: Can't be updated/re-declared, but its properties can

Variables and Text

Variable can also manipulate words including strings or groups of characters.

Declare a Variable

```
let kittensName = 'Fluffy';
```

To Combine Variables Use the Plus

```
let kittensName += ' Cottontail'; //+= Appends strings to existing var
console.log("My cat's name is " + kittensName ); //concatenate two strings
```

Insert a variable into a line of text

```
console.log( `The cat is  called ${kittensName}` );  //String interpolation, uses the backtick `
```

Favorite String Functions

- Return String Length: `kittensName.length;`
- Position of a character in a string: `kittensName.search("kitten");`
- Make a string upper-case: `kittensName.toUpperCase();`
- Replace: `kittensName.replace("Fluff","puff");`

Exercise: Play with Variables

In the JS tab.

Create 4 variables with the below names :
city, job, hobby, age, currentYear , isSingle (boolean - a true/false value)
Hint: let job = 'web developer';

Append two variables together in a sentence and write out
Hint: console.log("Your name is " + name + " and your age is " + age);

Now do some math calculate your .
let birthYear = currentYear - age;
Hint: console.log(`You were born in ${birthYear} `);

Note: To embed strings in quotes, you must use the backtick ` not the single quote '

What are Functions?

- Reusable pieces of code
- Typically called by function name
- Can accept input values

Javascript has its own functions

```
alert("My popup box!");
console.log('My secret warning message to developers');
```

But you can create your own functions!

```
function turtleFact() {
console.log('A turtle  is called a plastron.');
}
```

Exercise: Create 3 functions

Create the following functions in the JS tab, then click refresh.

```
function myCat() {
  document.write ("My cat is mean");
}
myCat();

function myMath() {
document.write("<p>");
  document.write (2+2);
document.write("<p>");
 document.write (5-3);
document.write("<p>");
 document.write (5*3);
}
myMath();
```

```
function myAge() {
    let myAgeIsBeautiful = true;
   document.write("<p>");
   document.write("Is my age beautiful? Y/N: " +
myAgeIsBeautiful);
}
myAge();
```

Exercise: Functions with Parameters

Create the following functions with parameters

```
function myCat(catName) {
  document.write ("My cat is called " + catName);
}
myCat("Juniper");

function myMath(num1, num2) {
document.write("<p>");
  document.write (num1+num2);
}
myMath(5,6);
myMath(6,9);
```

```
function myAge(myAgeIsBeautiful) {
  document.write("<p>");
  document.write("Is my age beautiful? Y/N: " +
myAgeIsBeautiful);
}
myAge(true);
```

Break!

10 min!

Ways to Declare Functions

Standard Function Declaration

```
function square(num)
 {
return num * num;
}
```

Function Expression (ES5)

Set function to variable

```
let square = function (num )
{
return num * num;
 }
```

Arrow Functions (ES6)

Function shorthand

```
let isArray = (val) =>
{
  return Array.isArray(val);
}
```

Exercise: Declare as ES6

Rewrite the previous functions as ES6 functions

```
let myCat = (catName)  => {
  document.write ("My cat is called " + catName);
}
myCat("Juniper");

let myMath = (num1, num2) => {
document.write("<p>");
  document.write ("Add " + num1+num2);
document.write("<p>");
  document.write ("Multiply: " + num1*num2);

}
myMath(5,6);
myMath(6,9);
```

```
let myAge = (myAgeIsBeautiful)  => {
  document.write("<p>");
  document.write("Is my age beautiful? Y/N: " +
myAgeIsBeautiful);
}
myAge(true);
```

Comparison Values

"Falsy" values

- The number 0
- "" (empty string)
- undefined
- null
- !(variablename)

"Truthy" values

- The variable has a value

```
var hasData = "myValue"
if (hasData)
console.log("This has data");
```

==
(loose)
(compares values, not type)
If (5 == “5”)

===
(strict)
If (5===5)

a == b	Equal (LOOSE)
a === b	Identical (STRICT)
a != b	Not equal
a < b	Less than
a > b	Greater than
a <= b	Less than or equal to
a >= b	Greater than or equal to

Conditionals: The If Statement

Use if to decide which lines of code to execute, based on a condition.

if (condition) { // statements to execute }

If Statement

```
let  catsAreGood = true;

if (catsAreGood === true )
{
console.log("Cats are good");
}
```

If/else statement

Provides an alternate set of instructions

```
let age = 28;
if (age >= 16)
{
    console.log('Yay, you can drive!');
}
else
{
    console.log('Sorry, but you have to wait';
}
```

Exercise: checkTemperature

- Create a new function called checkTemperature that will receive a parameter, temperature

```
let checkTemperature = (temperature) => {
}
```

- If it is below 50 degrees, print to console "Coat Day!"
- Else, print to console "Warm Day!"

```
if (temperature < 50) { console.log("Coat Day!"); }
else { console.log("Warm Day!"); }
```

What Happens when you run with the below values?

```
checkTemperature(40);
checkTemperature(50);
checkTemperature(60);
```

Multiple Conditionals

If you have multiple conditions, you can use else if.

If ElseIf\ElseIf\Else

```
let age = 20;

if (age >= 35)
{
    console.log('You can vote AND hold office');
}
else if (age <  35)
{
    console.log('You can vote!');
}
else
{
    console.log('Sorry, no voting for you');
}
```

Exercise: Update checkTemperature

- **Part 1: Update the first If statement to >=**
- if (temperature < = 50)
- Re-run the the code with checkTemperature(50);

- **Part 2: Add an Extra Else Statement, if > 50**
- if (temperature <= 50) { console.log("Coat Day!"); }
  else if (temperature > 50) { console.log("Warm Day!"); }
  else console.log("The Weather is fine at " + temperature);

Expanded Comparisons

You can also chain comparison statements to handle ranges.

If ElseIf\ElseIf\Else

```
let age = 20;

if (age >= 35)
{
   console.log('You can vote AND hold office');
}
else if (age < 35 && age >= 18)
{
   console.log('You can vote!');
}
else
{
   console.log('Sorry, no voting for you');
}
```

&& (and)

```
If (age >= 0 && age < =5)
console.log(“baby”);
```

|| or

```
If (age === 55 || age === 40)
console.log(“middle aged”);

If (age != 100)
  console.log("You are young!");
```

Exercise: Update checkTemperature

Update Check Tempature to test temperature ranges.

```
if (temperature >= 60 && temperature < =70)
{
   console.log("Summer Day");
}
else if (temperature >=50 && < 60)
   console.log("Spring Day");  //if there's one if line you don't need {}
else if ( temperature >= 100 || temperature <= 0)
{
 console.log("These are dangerous temperatures!");
}
else { console.log("Enjoy the temperature of " + temperature);
```

```
checkTemperature(40);
checkTemperature(50);
checkTemperature(101);
checkTemperature(0);
checkTemperature(-5);
checkTemperature(65);
```

Switch\Case

Use switch case, if you don't have ranges, as it's easier to handle

If ElseIf\ElseIf\Else

```
var age = 20;
if (age >= 35)
{
    console.log('You can vote AND hold
office');
}
else if (age >= 18)
{
    console.log('You can vote!');
}
else
{
    console.log('Sorry, no voting for you');
}
```

Switch\Case

```
var age = 20;
switch(age)
{
case 35:
    console.log('At 35, You can vote & hold office!)';
    break;
case 18:
    console.log('You can vote!');
   break;
default:
     console.log('Sorry, no voting for you');
    break;
}
```

Exercise: Coding Niceties

- **Functions use variables (internal & external)**
- **Functions are typically used to return data**
- **Update the update checkTemperature to use internal variables**

- **Part 1: Update check temperature to use an internal variable**
- Declare the variable at the start of the function
  let message = "";
- Instead of writing to console.log, set the responses to the variable message
  message = "Coat Day";
- Return the variable at the end of the function
  return message;

- **Part 2: Create an external variable called temp. Call checkTemperature passing it in.**

```
let temp = 90;
console.log(checkTemperature(temp));
```

Exercise: Code Hint

```
let checkTemperature = (temperature) => {
  let message="";
if (temperature >= 60 && temperature < =70)
{
   message = "Summer Day";
}
else if (temperature >=50 & < 60)
   message = "Spring Day";
else if ( temperature >= 100 || temperature <= 0)
{
 message = "These are dangerous temperatures!";
}
else
  message = "Enjoy the temperature of " +
temperature;
return message;
}
```

```
let temp = 90;
console.log(checkTemperature(temp));
```

Introducing Arrays

Arrays are just lists of data.

```
let rainbowColors = ['Red', 'Orange', 'Yellow', 'Green'];
```

Accessing Items

You can access items by using using bracket notation, starting at zero.

```
rainbowColors[0] = 'pink';
```

Exercise: Play with your food!

1. Create a new project called arrays
2. Click on the JS tab
3. Create a food array & initialize to your favorite foods
   let foods=['lasagne','popcorn'];
4. Change the value of at least one position (also called index)
   foods[1]='caramel popcorn';
5. Print out the array to the console
   console.log(foods);

Can You Do It? Entry Level Salaries

entry level programmer Careers

Average salaries for "entry level programmer" jobs in United States

Showing 13 salaries for "entry level programmer" in United States

Programmer	$58,821 per year	Entry Level Programmer Analyst	$44,906 per year	Programmer Analyst	$81,979 per year
Entry Level Software Engineer	$86,435 per year	Software Developer	$108,676 per year	Entry Level Developer	$71,182 per year
Web Developer	$76,052 per year	Software Engineer	$111,600 per year	Computer Programmer	$48,055 per year

https://www.indeed.com/career/salaries/entry%20level%20programmer?from=acme-keyword-salaries&rawkeyword=Entry+Level+Programmer&keyword=entry+level+programmer&reason=indexedserp_url

Homework

Exercise: The Calculator

1. Write a function called squareNumber that will take one argument (a number), square that number, and return the result.
   Hint: https://github.com/philly-tech-sistas/intro-to-javascript/blob/gh-pages/solutions/calculator-squareNumber.js
2. Write a function called halfNumber that will take one argument (a number), divide it by 2, and return the result.
   Hint: https://github.com/philly-tech-sistas/intro-to-javascript/blob/gh-pages/solutions/calculator-halfNumber.js
3. Write a function called percentOf that will take two numbers, figure out what percent the first number represents of the second number, and return the result. It should also log a string like "2 is 50% of 4."
   Hint: https://github.com/philly-tech-sistas/intro-to-javascript/blob/gh-pages/solutions/calculator-percentOf.js
4. Write a function called areaOfCircle that will take one argument (the radius), calculate the area based on that, and return the result. It should also log a string like "The area for a circle with radius 2 is 12.566370614359172." (Use Math.floor to round down to two decimal places)
   Hint: https://github.com/philly-tech-sistas/intro-to-javascript/blob/gh-pages/solutions/calculator-areaOfCircle.js

Exercise: String Functions

- Create a function, wordLength, that receives a parameter and returns its length. Then, print out the results.

```
let wordParam = "Supercali";
let wordLength = (word) => { return word.length ; }
console.log("The word " + wordParam + " has " + wordLength + " letters ");
```

- Create a function, findWord, that searches for a word in a phrase. If the word does not exist let users know. Check https://www.w3schools.com/jsref/jsref_search.asp for more.

```
let searchParam = "Flakes";
let phraseParam = "Corn Flakes are Great!";
let findWord= (word, phrase) => {
  let wordExists = false;
  if (phrase.search(word) > 0)
    wordExists = true;
  return wordExists;
}
console.log("Does " + searchParam + " exist in phraseParam ? " + findWord(searchParam, phraseParam) );
```

Exercise: Pluralize

- Create a function that accepts a word, it checks to see if the word is not empty (i.e. that it is truthy)
- If the word is not empty, then it appends the letter S to the end and prints the word to the console

Bonus Exercises

Which is bigger?

Write a function that compares two numbers and returns the larger one. Be sure to try it our with some different numbers. Bonus: add error messages if the numbers are equal or cannot be compared.

Hint: https://philly-tech-sistas.github.io/intro-to-javascript/puzzles.html#bigger

Calculate Tip

Create a function that accepts a number and returns the 15% tip

Replace a word in a phrase

Build a function that replaces a word in a phrase, using the replace function

kittensName.replace("Fluff","puff");

https://www.w3schools.com/jsref/jsref_replace.asp

Bonus Exercise: Play with your food!

Arrays are just lists of data.

```
let rainbowColors = ['Red', 'Orange', 'Yellow', 'Green'];
```

Accessing Items
You can access items by using using bracket notation, starting at zero.

```
rainbowColors[0] = 'pink';
```

1. Create a new project called arrays
2. Click on the JS tab
3. Create a food array & initialize to your favorite foods
   ```
   let foods=['lasagne','popcorn'];
   ```
4. Change the value of at least one position (also called index)
   ```
   foods[1]='caramel popcorn';
   ```
5. Print out the array to the console
   ```
   console.log(foods);
   ```

Learn More

Learn More

Using Strings: https://www.w3schools.com/js/js_string_methods.asp

Philly Tech Sisters Intro to JavaScript Resources: https://github.com/philly-tech-sistas/intro-to-javascript

ECMA Script: https://tc39.es/ecma262/ (Outlines rules JavaScript should adhere to)

Mozilla JavaScript Guide: https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide

JavaScript Weekly: https://javascriptweekly.com/ (Email round-up of JavaScript news)

Free Resources to Continue Learning

Codecademy: https://www.codecademy.com/

- Offers a variety of courses for front end, back end, and more
- Has a free version, pro subscription, and paid 8-10 week specialized courses

Freecodecamp: https://www.freecodecamp.org/

- Offers curriculums for a variety of paths with certificates upon completion
- Completely free