Web Advanced: Javascript APIs

"We will learn JavaScript properly. Then, we will learn useful design patterns. Then we will pick up useful tools for making cool things better."

FALL 2018

HELLO.

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https://canvas.newschool.edu/courses/1407281

https://classroom.github.com/classrooms/42809645-parsons-web-advanced-javascript-fall-2018

Why Code?

Design < ●● > Technology

Age of Specialization.

Many available tools to generate code.

Coding is difficult to master.

BUT

Better understanding of the process needed to build.

Better control in defining execution params.

Create better and more efficient designs.

QUIZ-TIME

Why Javascript?

In the Beginning…

Java anyone?

The Browser Wars

The Standards War

The AJAX revolution

Beyond the Browser

Is Programming that hard?

➔ Let’s Compare Code written in different languages...

JAVA

```
public static int factl(int n)
{   int result = 1;
    for(int i = 2; i <= n; i++)
        result *= i;
    return result;
}
```

C++

```
#include <iostream>
using namespace std;

const double pi = 3.14159;

int main()  {
    float length, width, area;
    cout << "Enter The Length: ";
    cin >> length;
    cout << "Enter The Width: ";
    cin >> width;
    area = length*width;
    cout <<"Answer is : "<< area << endl;
    return 0;
}
```

RUBY

```
items = [ 'Mark', 12, 'goobers', 18.45 ]
for stuff in items
    print stuff, " "
end
print "\n"
```

??

```
0011 0000 0000 0000      ; load at x3000
0010 0010 0000 0110      ; LD R1, x006
0110 010 001 000000      ; LDR R2, R1, #0
0000 0100 0000 0101      ; BRz x005
```

BASH

```
#!/bin/bash
echo "Enter The Number"
read n

num=$(expr $n % 2)

if [ $num -eq 0 ]
then
    echo "is a Even Number"
else
    echo "is a Odd Number"
fi
```

PHP

```php
<?php
class Vegetable {
   var $edible;
   var $color;

   function __construct($edible, $color="green") {
       $this->edible = $edible;
       $this->color = $color;
   }

   function is_edible() {
       return $this->edible;
   }

   function what_color() {
       return $this->color;
   }

} // end of class Vegetable
?>
```

JAVASCRIPT

```
let score = 75;      // Score
let msg;             // Message

if (score >= 50) {
  msg = 'Congratulations!';
  msg += ' Proceed to the next round.';
}

let el = document.getElementById('answer');
el.textContent = msg;
```

INTRODUCTIONS

What Can Javascript do?

Generative
http://color-wander.surge.sh/

Practical
https://codepen.io/TheVVaFFle/project/editor/ZRbWaG#0

https://codepen.io/giana/pen/GJMBEv

Informative

http://www.histography.io/

Apps
http://uber.com

Functional
http://kenwheeler.github.io/slick/

3D
http://alteredqualia.com/three/examples/webgl_city.html

Brief Intro

- ➔ Written to enable two-way interaction in web browsers
- ➔ Completely open/scripted: no compilation needed
- ➔ Always backward-compatible
- ➔ Loose type declaration: makes it flexible and confusing at the same time
- ➔ Has functions that can be used as first-class objects
- ➔ Provides OOP features (in its own way)
- ➔ Closures: remembers variables in functions
- ➔ IIFE: create private functions quickly
- ➔ Allows for many approaches to Design Patterns
- ➔ Frameworks: jQuery, Angular, Vue, React

Syllabus

- ➔ Syntax and Constructs
- ➔ Document Object Model
- ➔ Forms and AJAX
- ➔ Object Oriented Programming
- ➔ Functional Programming
- ➔ Frameworks
- ➔ API
- ➔ Workflows
- ➔ DevOps
- ➔ Final Project Development

Tools of the Trade

➔ Text Editors

Sublime Text: https://www.sublimetext.com/

Atom: https://atom.io/

Chrome DevTools: https://developer.chrome.com/devtools

➔ Browsers (latest versions)

Chrome: https://www.google.com/chrome/

Firefox: https://www.mozilla.org/en-US/firefox/

Vivaldi: https://vivaldi.com/

➔ Debugger

Built in browser Developer Console

Jshint: http://jshint.com

➔ Automators

NPM, Bower, Gulp, Jasmine
(will be discussed during devops session)

Creating a Basic HTML Template

https://repl.it/@jaink/webjavascriptf18-1

```
<!doctype html>

<html lang="en">
<head>
  <meta charset="utf-8">

  <title>The Parsons Web Project</title>
  <meta name="description" content="The Dummy
Page">
  <meta name="author" content="Parsons">

  <link rel="stylesheet" href="css/styles.css">

  <!--[if lt IE 9]>
    <script
src="https://cdnjs.cloudflare.com/ajax/libs/html5sh
iv/3.7.3/html5shiv.js"></script>
  <![endif]-->
</head>

<body>
  <header></header>
  <section></section>
  <script src="js/scripts.js"></script>
</body>
</html>
```

Our First Javascript Code

➔ **Hello World!**

```
console.log(‘Hello’);
```

➔ **Using vars with Hello World!**

```
var GreetingContainer;
// assign greeting to variable
GreetingContainer = “Hello”;
console.log(GreetingContainer);
```

➔ **Generate an Alert**

```
alert(‘Greetings ’ + GreetingContainer);
```

➔ **Update the Document**

```
document.write('<p>’ + GreetingContainer +
’</p>');
```

Our Second Javascript Code

➔ Connect with API

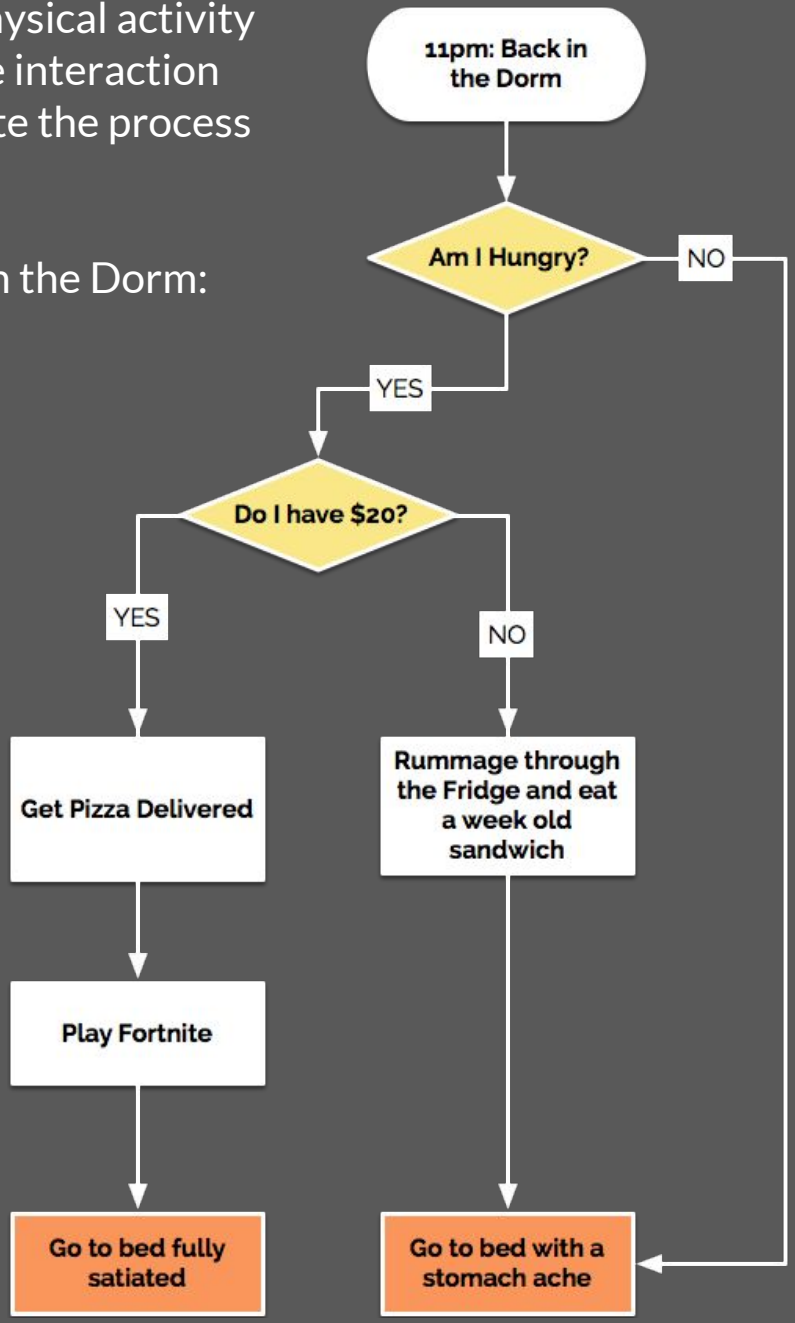
API endpoint: https://randomuser.me

```
var ul = document.createElement('ul');
var url = 'https://randomuser.me/api/?results=10';
var xhr = new XMLHttpRequest();
xhr.onreadystatechange = function() {
    if (xhr.readyState == XMLHttpRequest.DONE) {
        var authors = JSON.parse(xhr.responseText); // Get
results

        for (key in authors.results) { // loop through the
results
          var author = authors.results[key]; //assign current row
to author var
          var li = document.createElement('li'), //  Create the
elements we need
              img = document.createElement('img'),
              span = document.createElement('span');
          img.src = author.picture.medium;  // Add the source of
the image to be the src of the img element
          span.innerHTML = author.name.first + ' ' +
author.name.last; // Make the HTML of our span to be the first
and last name of our author
          li.appendChild(img); // Append img element back to
containing li
          li.appendChild(span); // Append span element back to
containing li
          ul.appendChild(li); // Append li element back to
containing ul
          document.body.append(ul); //Append the new ul to body

        }
    }
}

xhr.open('GET', url, true);
xhr.send(null);
```

Assignment: Decision Trees

Find a regular online or physical activity or task that requires some interaction and decision-making. Write the process flow out in detail.

eg. Dining Options back in the Dorm:



Next Steps

- ➔ Familiarizing with Programming Constructs
- ➔ Introducing Javascript Syntax:

  Data types, strings, numbers, variables, operators, arrays, logic, loops.

References

Free Book:

http://eloquentjavascript.net/

Reference & documentation:

http://devdocs.io/javascript/