

CSC309: Programming on the Web

Lab 1

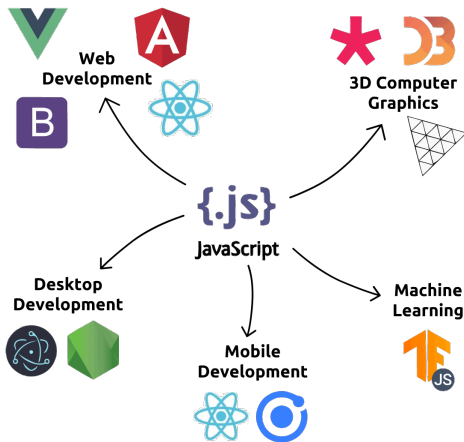
Carlos Marciano (TA)

University of Toronto, Department of Computer Science

Fall 2021

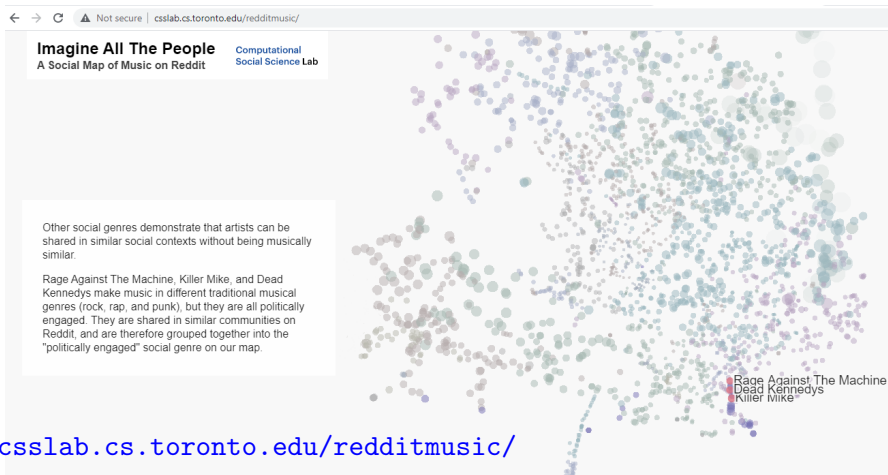
`carlos.marciano@mail.utoronto.ca`

Why learn Javascript, HTML, CSS...?



- “I don’t want to develop for the Web. Why learn this?”
- Web is just the beginning! The true power of the JS/HTML/CSS triad lies in their **numerous frameworks**.
- These technologies are perfect for:
 - building an **MVP**;
 - creating interactive **animations**;
 - **mobile** app development;
 - **desktop** app development;
 - whatever you think of, JS probably does it.

“Imagine All The People: A Social Map of Music” by Veselovsky, Waller, and Anderson



<http://csslab.cs.toronto.edu/redditmusic/>

Roadmap

1 Motivation

2 Lab 1 – Closures and Hoisting

3 Lab 1 – Objects

What is the output of these two programs?

C Language `int` – Block-Level Scope

```
#include <stdio.h>
int main() {
    int x = 1;
    printf("%d", x);
    if (1) {
        int x = 2;
        printf("%d", x);
    }
    printf("%d \n", x);
}
```

Answer:

Javascript `var` – Function-Level Scope

```
var x = 1;
console.log(x);
if (true) {
    var x = 2;
    console.log(x);
}
console.log(x);
```

Answer:

What is the output of these two programs?

C Language `int` – Block-Level Scope

```
#include <stdio.h>
int main() {
    int x = 1;
    printf("%d", x); // 1
    if (1) {
        int x = 2;
        printf("%d", x); // 2
    }
    printf("%d \n", x); // 1
}
```

Answer: 1, 2, 1

Javascript `var` – Function-Level Scope

```
var x = 1;
console.log(x); // 1
if (true) {
    var x = 2;
    console.log(x); // 2
}
console.log(x); // 2
```

Answer: 1, 2, 2

Strategy: rewrite program and make hoisting obvious

```
function foo() {  
  if (false) {  
    var x = 1;  
  }  
  return;  
  var y = 1;  
}
```



```
function foo() {  
  var x, y;  
  if (false) {  
    x = 1;  
  }  
  return;  
  y = 1;  
}
```

Really good references for hoisting

- 1 Hoisting in Modern JavaScript — let, const, and var (Sep 2018, after ES6)
 - <https://blog.bitsrc.io/hoisting-in-modern-javascript-let-const-and-var-b290405adfda>
- 2 Adequately Good – Decent Programming Advice (Aug 2010, before ES6)
 - <http://www.adequatelygood.com/JavaScript-Scoping-and-Hoisting.html>

Intermission

Code snippets

Roadmap

1 Motivation

2 Lab 1 – Closures and Hoisting

3 Lab 1 – Objects

Keys and Values

```
let person = {  
  name: 'John',  
  age: 20  
};
```

Keys --- { --- Values

“This” Keyword

```
const person = {  
  firstName: "John",  
  lastName : "Doe",  
  id        : 5566,  
  fullName : function() {  
    return this.firstName + " " + this.lastName;  
  }  
};
```

Intermission

Code snippets