



CS+Social Good
CS 106S Winter 2018

hi!!!!11!1!

we are so excited to meet you!



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introductions

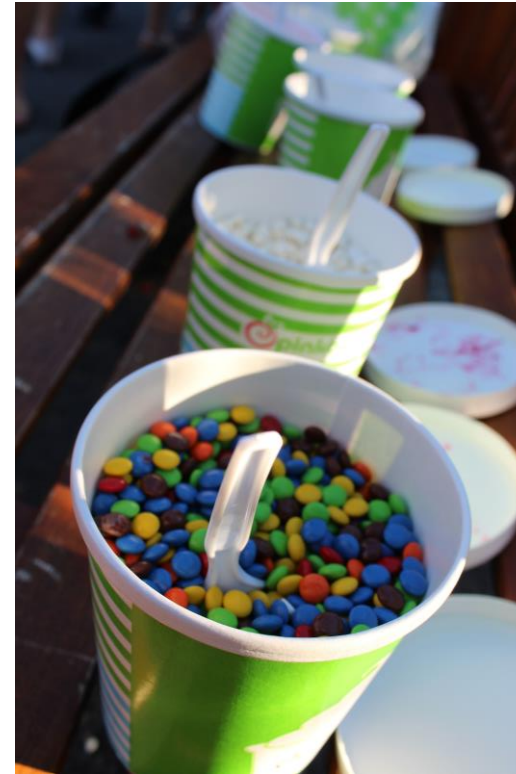
why section?

class info

javascript tutorial

why section?

well why not, HUH????



logistics

TIME

Thursdays, 4:30 – 6:20 PM

LOCATION

Littlefield 107

DURATION

10 weeks

CREDIT/GRADING

1 unit, Pass/Fail

GRADING

Attendance ($\geq 9/10$)

Checkoff forms

Final reflections

TEAM

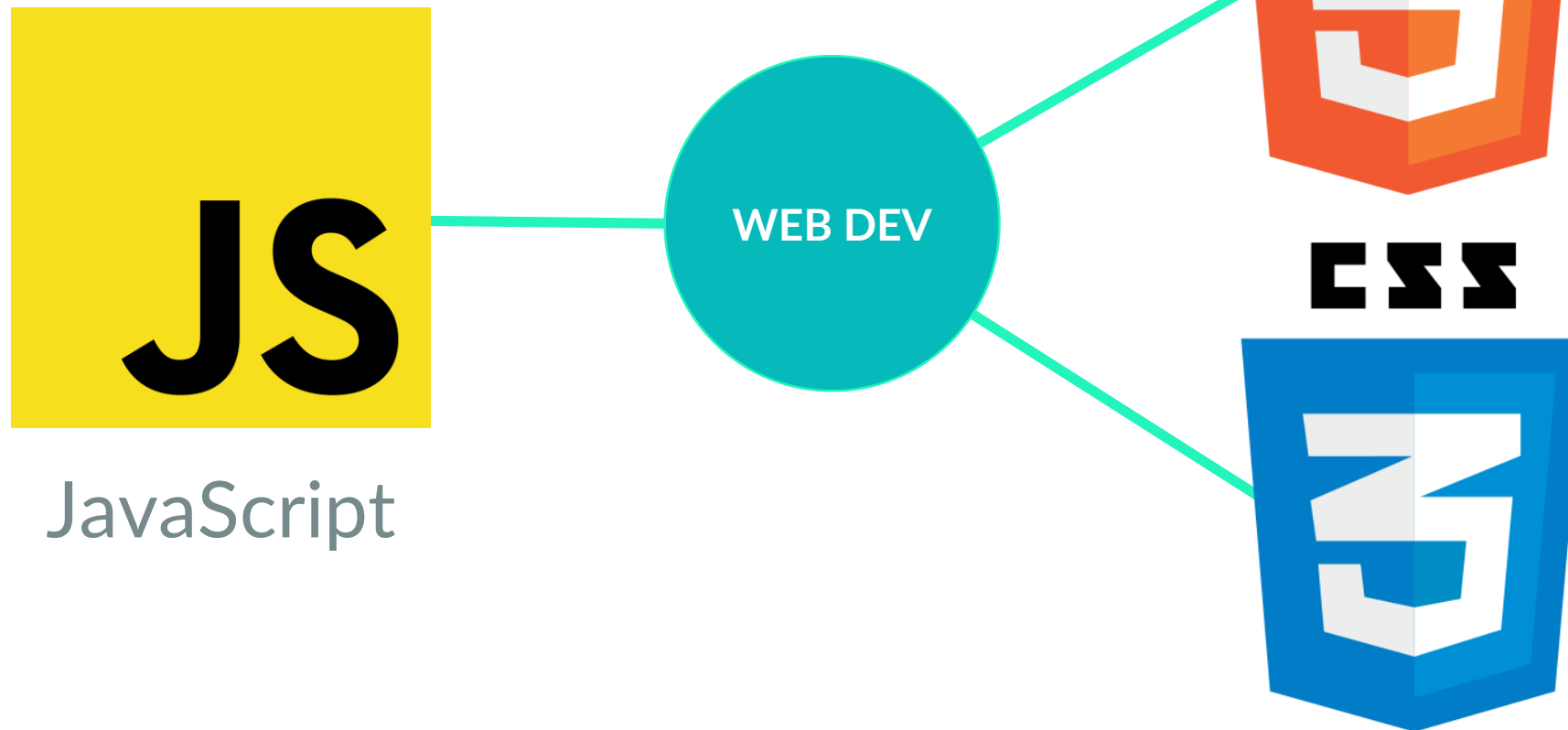
Ashi Agrawal, Ryan Cohen

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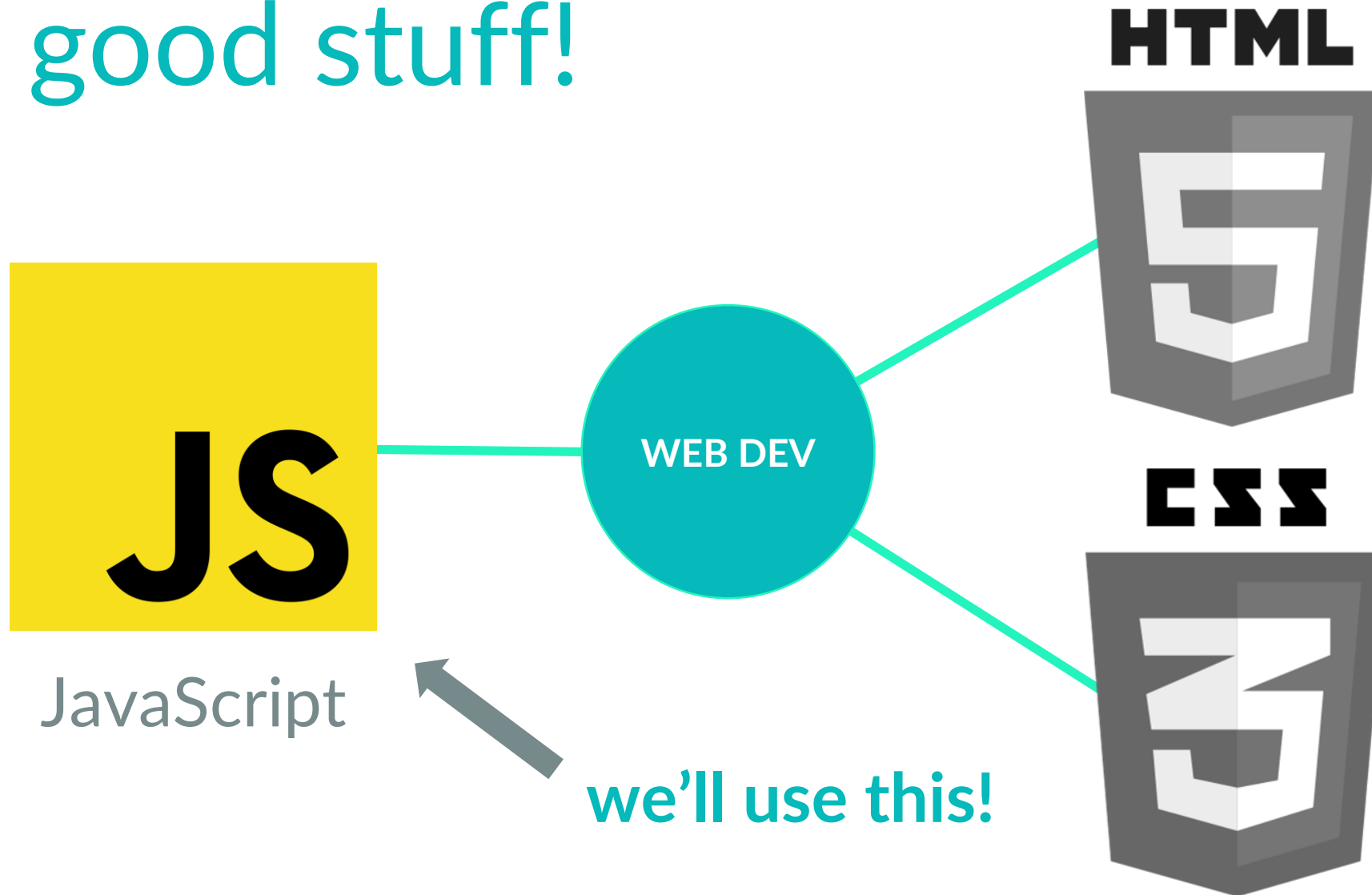
Bring your laptops to every class!



the good stuff!



the good stuff!



the good stuff!



JavaScript

FROM WIKIPEDIA:

**high-level, dynamic,
untyped, and interpreted
programming language**

**prototype-based with first-
class functions**

**supports object-oriented
programming**



let's program some stuff!

...but first, open
repl.it/languages/javascript



JavaScript variables

```
var x; // dynamic typing
typeof x; // should print out 'undefined'
x = 42; // typeof x == 'number'
x = "CS106S rocks" // typeof x == 'string'
x = true; // typeof x == 'boolean'
```



Variable Scoping

// **Two scopes:** global and function local

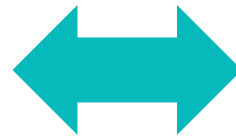
```
var globalVar;  
function() {  
    var localVar;  
    if(globalVar > 0) {  
        var localVar2 = 2;  
    }  
}
```



Variable Scoping (cont.)

// All var statements **hoisted** to top of scope

```
function foo() {  
  var x;  
  x = 2;  
}
```



```
function foo() {  
  x = 2;  
  var x;  
}
```



number

- no distinction between int and double
- stored in floating point
 - Watch out! `(0.1 + 0.2) == 0.3` is `false`
- interesting: `NaN`, `Infinity` are numbers
 - `1/0 == Infinity`
 - `Math.sqrt(-1) == NaN`



string

```
var valleyQuote = 'Our startup is like Uber for  
blockchain and it's going to revolutionize the  
way we deliver pizza. #investpls'
```

```
valleyQuote.length // 108
```

- variable length
- + is string concat operator // 'CS' + 'SG' == 'CSSG'
- useful methods: indexOf(), charAt(), search(), replace(), toUpperCase(), substr(), etc.



boolean

```
var cs = true;  
var socialGood = true;  
var cssg = cs && socialGood; // true
```

- Either true or false
- Values are classified as **truthy** or **falsy**:
 - Used when values are converted to a boolean
- Falsy: false, 0, "", null, undefined, NaN
- Truthy: anything that isn't falsy



object

```
var berkeley = {intelligence: 0, tears: Infinity};  
var stanford = {intelligence: 0, smiles: Infinity};
```

- Unordered collection of name-value pairs called **properties**
- Name can be any string: `var x = { "": "empty", "---": "dashes" }`
- Referenced either like a structure or like a hash table with string keys:
 - `stanford.smiles` or `stanford["smiles"]`



object

- Properties can be added or deleted

```
var queen = {};  
queen.name = "Beyonce"; // queen.name returns "Beyonce"
```

- To remove use delete:

```
delete queen.name; // queen is now an empty object
```

- To enumerate use Object.keys():

```
Object.keys({name: "Alice", age: 23}) = ["name", "age"]
```



Arrays

```
var youIs = ['smart', 'kind', 'important',];
```

- Special objects: `typeof youIs == 'object'`
- Zero-indexed
- Can be **sparse** and **polymorphic**
 - `youIs[5] = 100; // ['smart', 'kind', 'important',,, 100]`
- Like strings, have many methods: `youIs.length == 3`
 - `push`, `pop`, `shift`, `unshift`, `sort`, `reverse`, `splice`



Checking Equality

Who would win: `==` or `===`

`==` (loose equality)

- Compares two values for equality, *after* converting both values to a common type
 - `3 == '3' // true`

`===` (strict equality)

- Neither value is implicitly converted before comparison
- Different types → unequal
 - `3 === '3' // false`



undefined and null

- `undefined` – does not have a value assigned

```
var x; // x has a value of undefined
```

```
x = undefined; // can be explicitly stored
```

```
typeof x == 'undefined'
```

- `null` – a value that represents whatever the user wants it to (sentinel)

```
typeof null = 'object'
```

- Both are falsy but not equal (`null == undefined`,
`null !== undefined`)



Conditionals & Loops (you know the drill...)

```
if (condition) {  
    // do something  
}
```

```
for (var i = 0; i < 10; i++) {  
    // do something 10 times  
}
```

```
while (condition) {  
    // do something  
    // while condition  
    // is truthy  
}
```



function type

```
// untyped parameters
function isGoodPerson(isIn106S) {
    if(isIn106S) {
        return 'Definitely. No question.';
    } else {
        return 'Maybe? Like, it's possible.';
    }
}

// all functions return a value; default is undefined
```



First-class function example

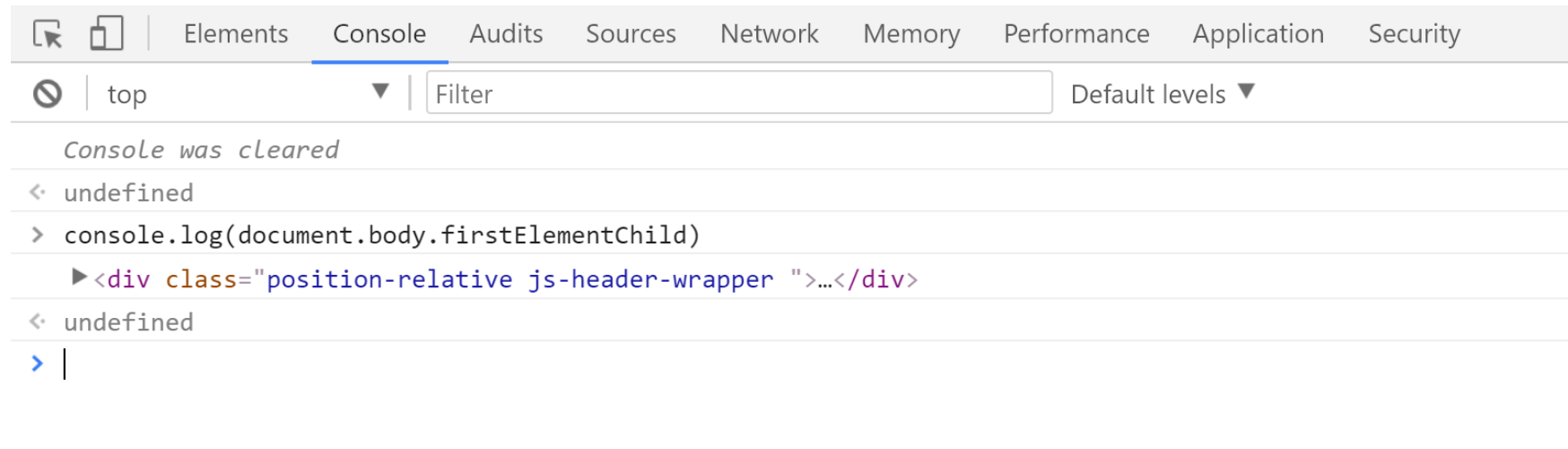
```
function myFunc(routine) {  
    console.log('Called with', routine.toString());  
    var retVal = routine(10);  
    console.log('retVal', retVal);  
}  
myFunc(function (x) {  
    console.log('Called with', x);  
    return x+1;  
})  
);
```



Console

Chrome:

Right click → Inspect Element *or*
command + alt + i (Mac) or ctrl + shift + i (Windows)



funzo assignment time

Let's put your knowledge to the test by making a program that helps your friends feel better!

Copy the code at into bit.ly/cs106js into a repl.it and fill in the code for saySomethingNice, upliftingQuote, inspiringQuote, and soothingQuote.





See you next time, friends!