



CS+Social Good
CS 106S Spring 2018

logistics

CREDIT/GRADING

1 unit, Pass/Fail

GRADING

Attendance ($\geq 9/10$)

Checkoff forms

Final reflections

OH

Monday Night (time TBD)

TEACHING STAFF

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Bring your laptops to every class!



class info

why section?

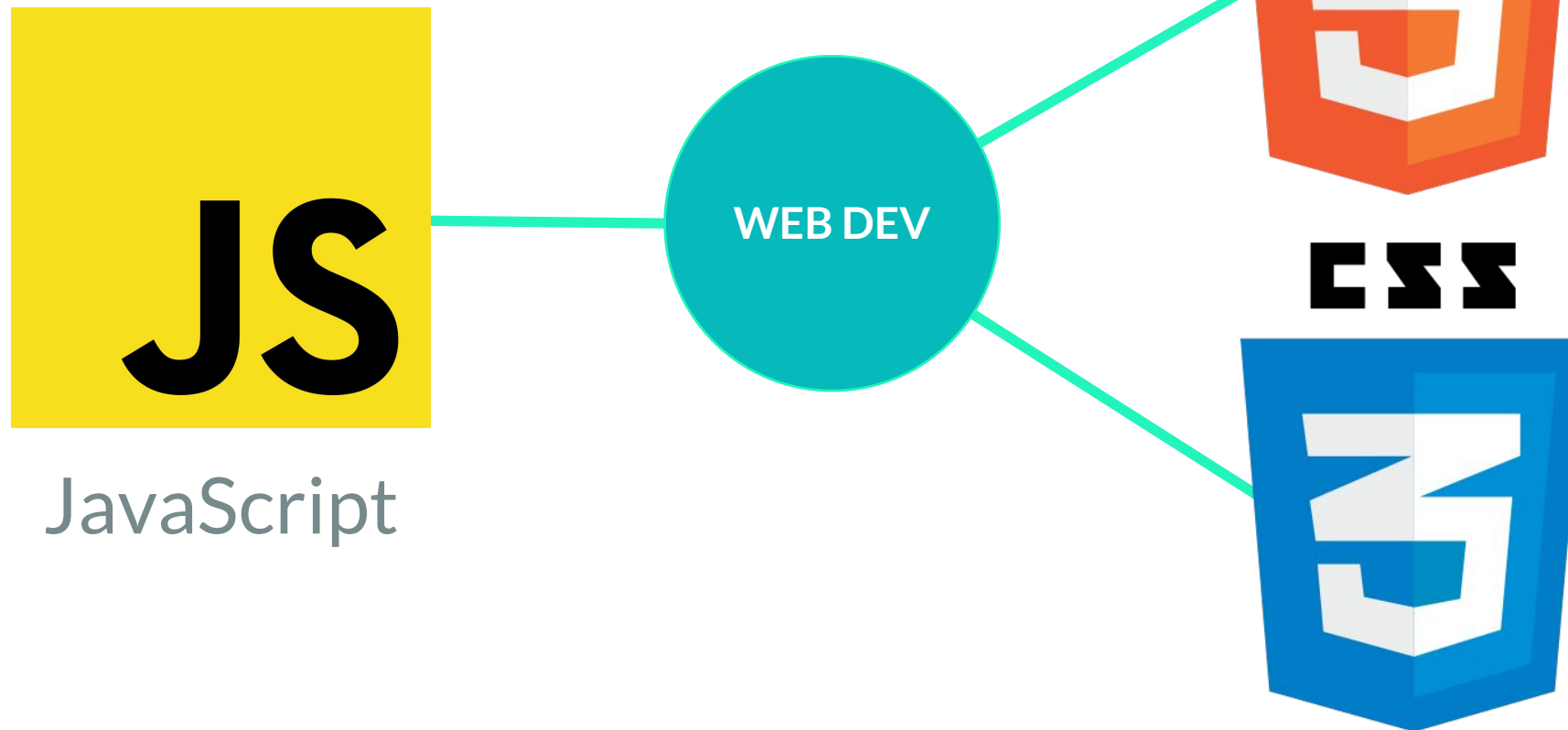
tutorial

assignment

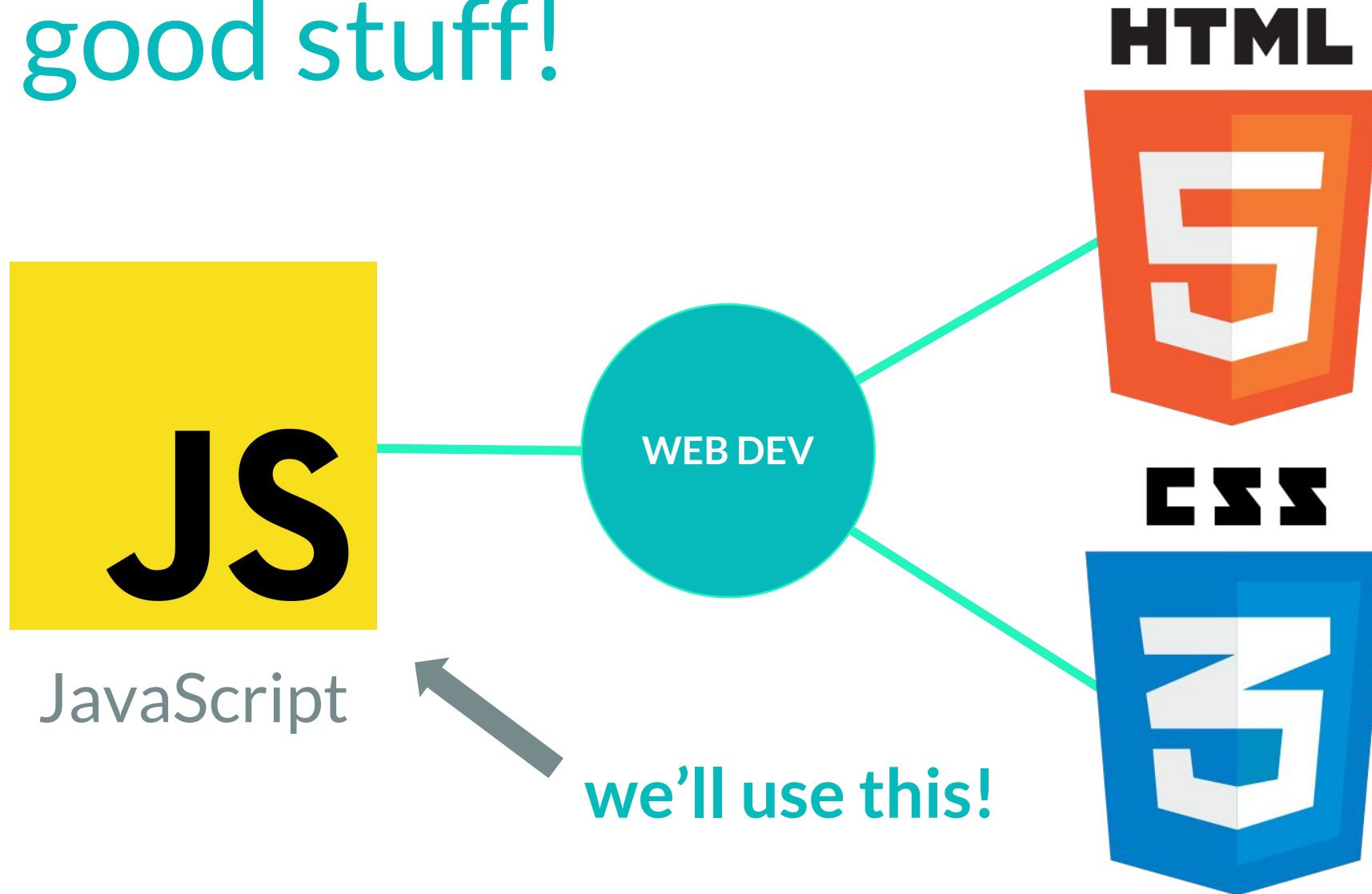
why section?



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 get programming!

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



variables

repl.it

```
var x;
```

```
typeof x;
```

```
x = 42;
```

```
typeof x;
```



variables

```
var x; // dynamic typing
```

```
typeof x; // 'undefined'
```

```
x = 42; // typeof x == 'number'
```

```
x = "CS106S rocks" // typeof x == 'string'
```

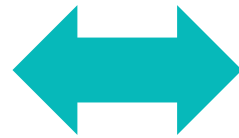
```
x = true; // typeof x == 'boolean'
```



variable scoping

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

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



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



quick setup

copy the contents of
starter.js
into your repl



number

repl.it (run function number)

$(0.1 + 0.1) == 0.2 \rightarrow \text{true?}$

$(0.1 + 0.2) == 0.3 \rightarrow \text{true?}$

$1/0 \rightarrow ?$

$\text{Math.sqrt}(-1) = i?$



number

- no distinction between int and double
- stored in floating point
- “non-numbers” are numbers
 - NaN = Not a Number
 - Infinity



string

repl.it (run function string)

```
var studentQuote = 'I love CS 106S!'  
console.log(studentQuote.length);  
console.log(studentQuote.indexOf(' '));  
console.log('CS' + 'SG');
```



boolean

repl.it (run function boolean)

```
var cs = true;  
var socialGood = true;  
console.log(cs && socialGood);  
console.log(Math.sqrt(-1) == cs);  
console.log(Boolean(1/0) == cs);
```



boolean

- **truthy or falsy**
- falsy: false, 0, "", null, undefined, NaN
- truthy: everything else!



objects

repl.it (run function objects)

```
var cs = true;  
var socialGood = true;  
console.log(cs && socialGood);  
console.log(Math.sqrt(-1) == cs);  
console.log(Boolean(1/0) == cs);
```



objects

- unordered collection of name-value pairs: **properties**
- name can be any string
- add properties by **assignment**
- remove properties by the **delete** keyword
- use **Object.keys()** to enumerate



arrays

repl.it (run function arrays)

```
var colors = ['red', 'blue', 'yellow'];  
console.log(typeof colors);  
colors[10] = true;  
console.log(colors);  
console.log(colors.length);
```



arrays

- can be **sparse** and **polymorphic** and **polymorphic**
- **length** is a property
- 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 & 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 sentinel value

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

```
null == undefined, null !== undefined
```



conditionals & loops

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

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

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



functions

- untyped parameters
- all functions return a value
 - default: undefined



assignment 0 - cryptography

- important to store secret keys, PII, etc.
- implement a Caesar cipher
- extension: Vigenere cipher
- submit through email to
cs106s-spr1718-staff@lists.stanford.edu
- due: friday, april 13th at noon



attendance checkoff

link given in class



next week...

sentiment analysis

a simple introduction to nlp
(natural language processing)

download node.js





See you next time, friends!