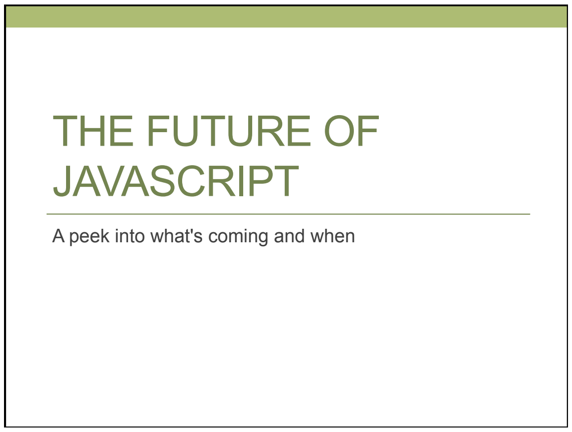
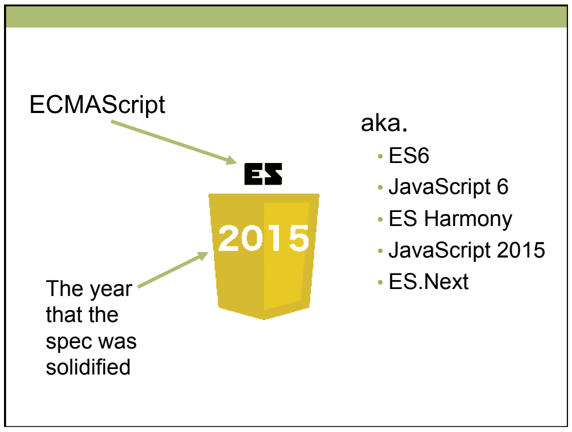


THE FUTURE OF JAVASCRIPT

A peek into what's coming and when

Technology continues to improve but ...

"The web is an odd place where breaking changes can't just be hidden behind a version."
- Jared Faris



ECMAScript

The year that the spec was solidified

aka.

- ES6
- JavaScript 6
- ES Harmony
- JavaScript 2015
- ES.Next

We're adding new features every year

Best to stick with "ES20XX" naming

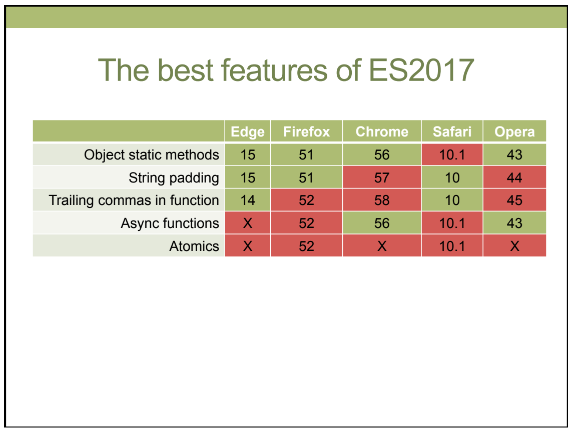
ecma INTERNATIONAL

The best features of ES2015

	Edge	Firefox	Chrome	Safari	Opera
Arrow functions	13	43	45	10	35
Block scoping (let, const)	13	44	45	10	35
Default parameters	14	45	49	10	36
Classes	13	45	49	9	36
Promises	12	38	49	9	36
New collections (Map, Set)	12	38	49	9	36
New iterators (for-of)	12	38	49	9	36
String templates (`${}`)	12	38	49	9	36
Destructuring	14	38	49	9	36
Modules (export, import)	X	X	X	10.1	X
Spread & rest	13	38	49	10	39

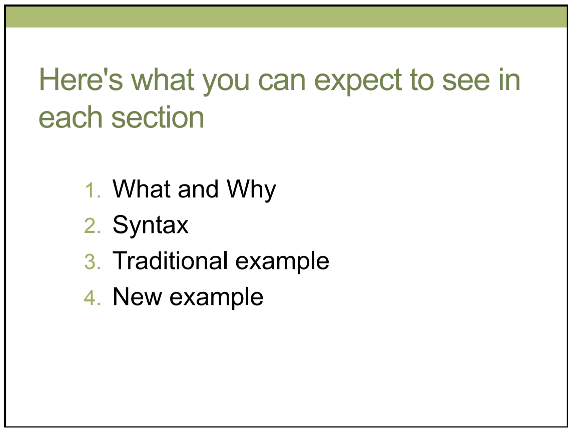
The best features of ES2016

	Edge	Firefox	Chrome	Safari	Opera
Exponentiation Operator	14+	52+	54+	10.1+	43+
Array.prototype.includes	14+	40+	54+	10+	43+



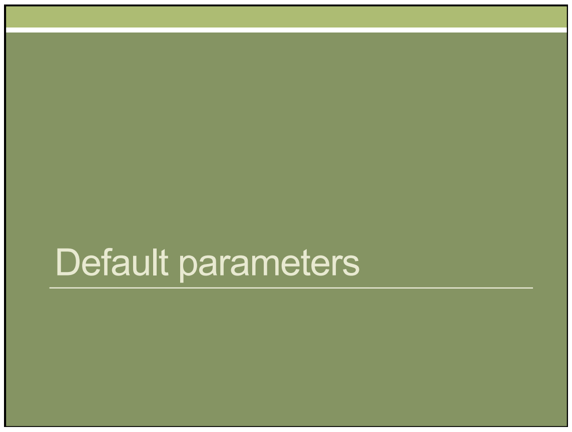
The best features of ES2017

	Edge	Firefox	Chrome	Safari	Opera
Object static methods	15	51	56	10.1	43
String padding	15	51	57	10	44
Trailing commas in function	14	52	58	10	45
Async functions	X	52	56	10.1	43
Atomics	X	52	X	10.1	X

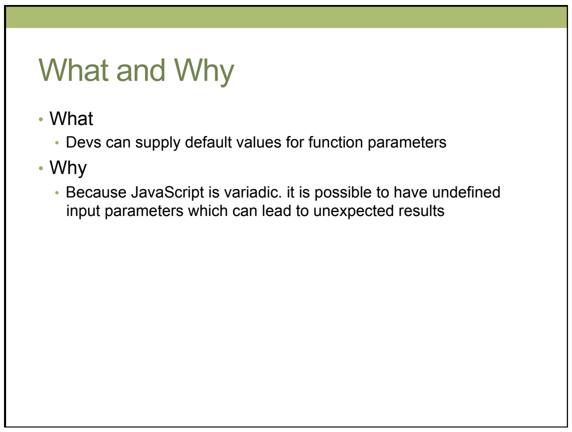


Here's what you can expect to see in each section

1. What and Why
2. Syntax
3. Traditional example
4. New example

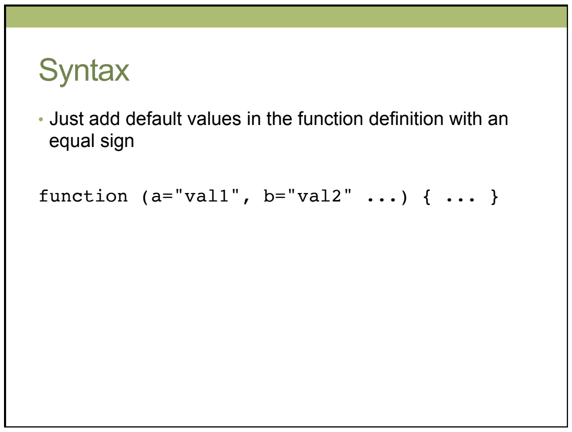


Default parameters



What and Why

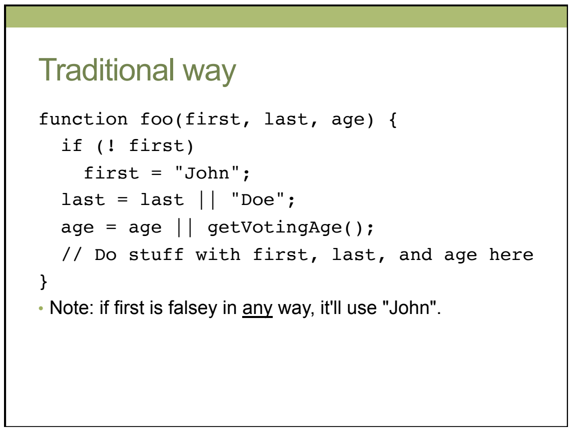
- What
  - Devs can supply default values for function parameters
- Why
  - Because JavaScript is variadic. it is possible to have undefined input parameters which can lead to unexpected results



Syntax

- Just add default values in the function definition with an equal sign

```
function (a="val1", b="val2" ...) { ... }
```



Traditional way

```
function foo(first, last, age) {
  if (! first)
    first = "John";
  last = last || "Doe";
  age = age || getVotingAge();
  // Do stuff with first, last, and age here
}
```

- Note: if first is falsey in any way, it'll use "John".

New way

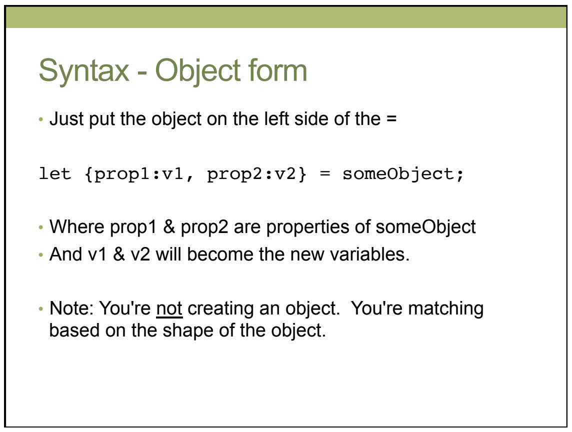
```
function foo(first="John",
  last="Doe", age=getVotingAge()) {
  // Do stuff with first, last, and age here
}
```

- If you supply a value it'll be used. If not, the default value is.
- Allows you to pass in null, "", 0, or false as valid values and have them used.

Destructuring

What and Why

- What
  - Use arrays and objects as lvalues for assignments
- Why
  - Fewer lines of code



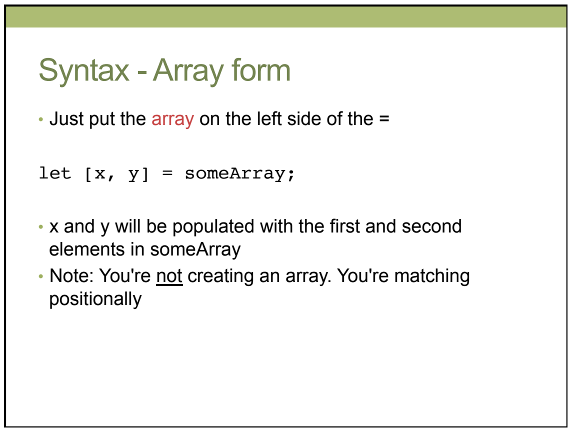
Syntax - Object form

- Just put the object on the left side of the =

```
let {prop1:v1, prop2:v2} = someObject;
```

- Where prop1 & prop2 are properties of someObject
- And v1 & v2 will become the new variables.

- Note: You're not creating an object. You're matching based on the shape of the object.

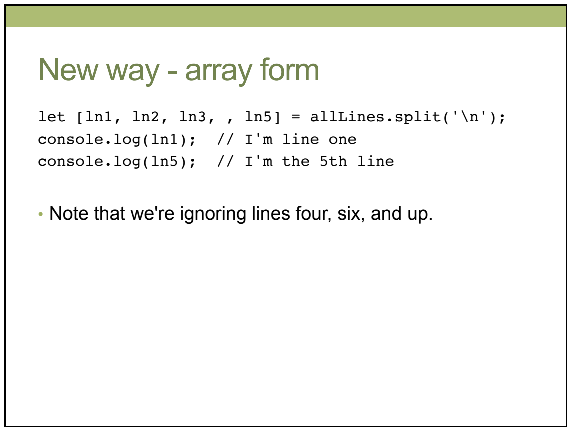


Syntax - Array form

- Just put the array on the left side of the =

```
let [x, y] = someArray;
```

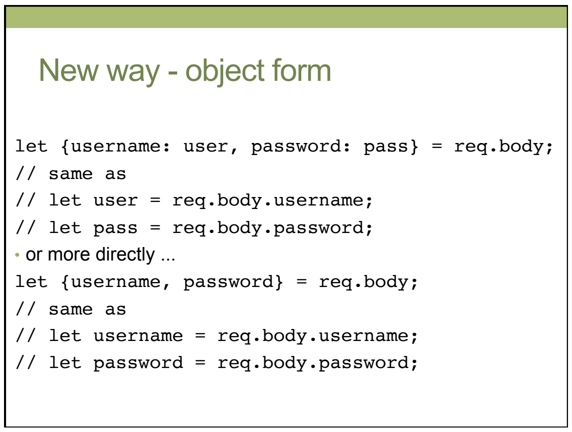
- x and y will be populated with the first and second elements in someArray
- Note: You're not creating an array. You're matching positionally



New way - array form

```
let [ln1, ln2, ln3, , ln5] = allLines.split('\n');
console.log(ln1);  // I'm line one
console.log(ln5);  // I'm the 5th line
```

- Note that we're ignoring lines four, six, and up.

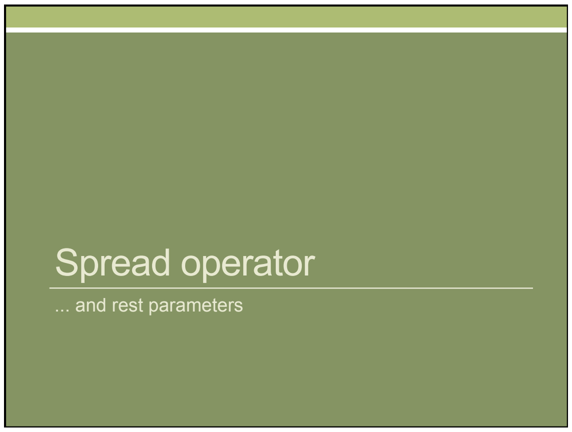


New way - object form

```
let {username: user, password: pass} = req.body;
// same as
// let user = req.body.username;
// let pass = req.body.password;
```

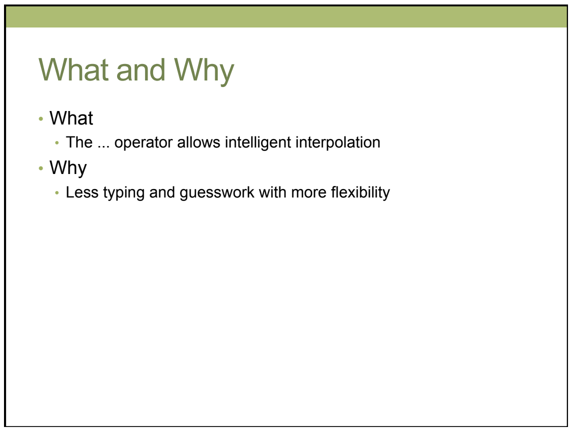
- or more directly ...

```
let {username, password} = req.body;
// same as
// let username = req.body.username;
// let password = req.body.password;
```



Spread operator

... and rest parameters



What and Why

- What
  - The ... operator allows intelligent interpolation
- Why
  - Less typing and guesswork with more flexibility

Syntax

`...someArray`
- In any JavaScript line
- Called "spread operator"
- It *spreads* out the array into its parts

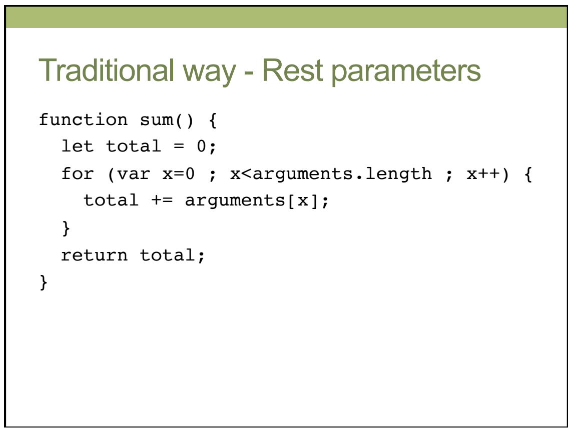
`function (...rest) { ... }`
- Only in a function declaration
- Called "rest parameters"
- Because that is the *rest* of the parameters

Traditional way - Spread

```
var fourTo9 = [4, 5, 6, 7, 8, 9];
var foo = [1, 2, 3, 10];
fourTo9.reverse().forEach(x => {
  foo.splice(3, 0, x);
});
// foo now has 1 - 10
```

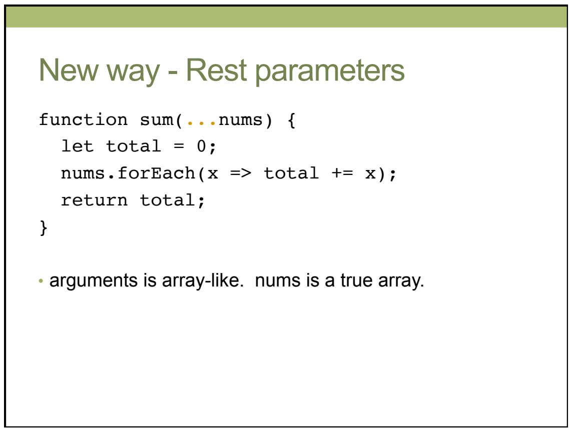
New way - Spread

```
const fourTo9 = [4, 5, 6, 7, 8, 9];
const foo = [1, 2, 3, ...fourTo9, 10];
// foo now has 1 - 10
```



Traditional way - Rest parameters

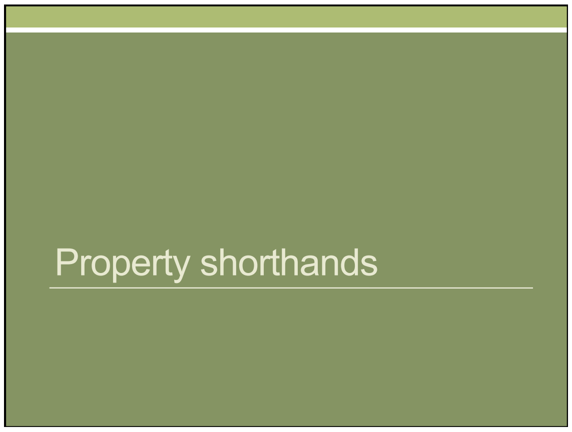
```
function sum() {
  let total = 0;
  for (var x=0 ; x<arguments.length ; x++) {
    total += arguments[x];
  }
  return total;
}
```



New way - Rest parameters

```
function sum(...nums) {
  let total = 0;
  nums.forEach(x => total += x);
  return total;
}
```

- arguments is array-like. nums is a true array.



Property shorthands

What and Why

- What
  - Object properties can be shortened if they're named similarly
- Why
  - Less typing and more concise code

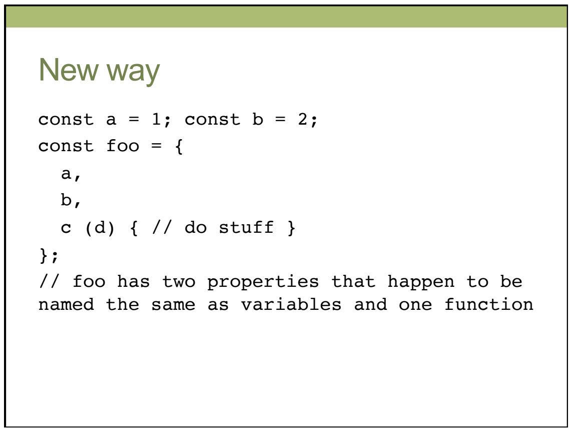
Syntax

```
const o = { foo, bar, ... }
```

- In a JavaScript object
- Note: no colons (:)

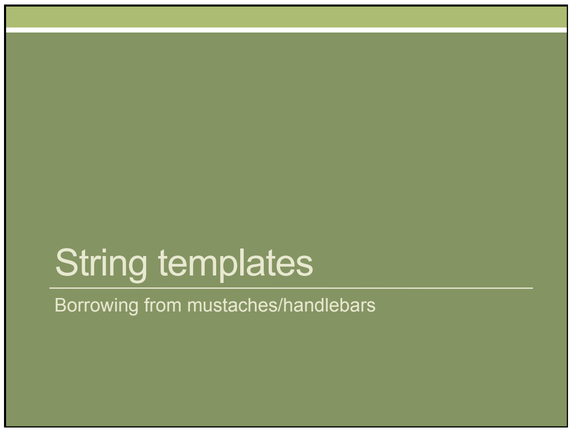
Traditional way

```
var a = 1; var b = 2;
var foo = {
  a: a,
  b: b,
  c: function (d) {
    // do stuff
  }
};
// foo has two properties that happen to be
named the same as variables and one function
```



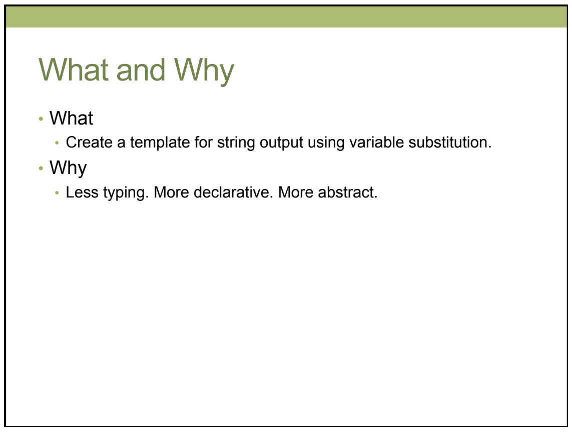
New way

```
const a = 1; const b = 2;
const foo = {
  a,
  b,
  c (d) { // do stuff }
};
// foo has two properties that happen to be
named the same as variables and one function
```



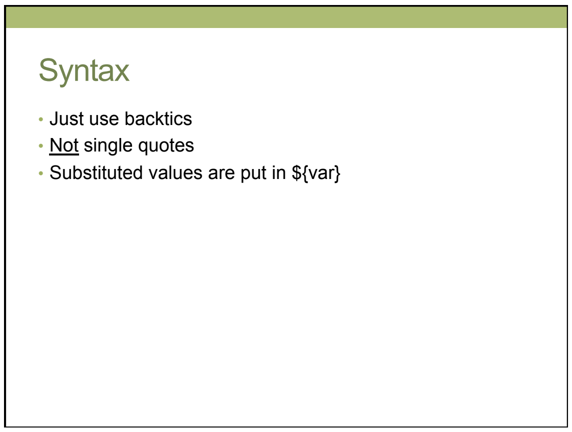
String templates

Borrowing from mustaches/handlebars



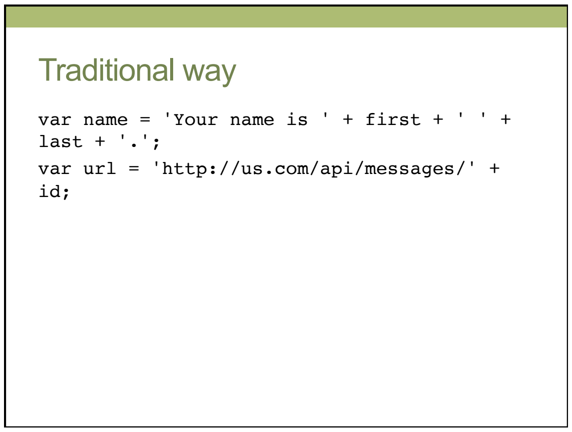
What and Why

- What
  - Create a template for string output using variable substitution.
- Why
  - Less typing. More declarative. More abstract.



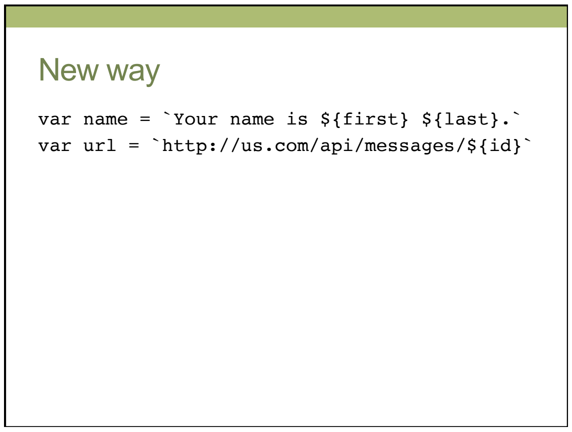
Syntax

- Just use backtics
- Not single quotes
- Substituted values are put in ${var}



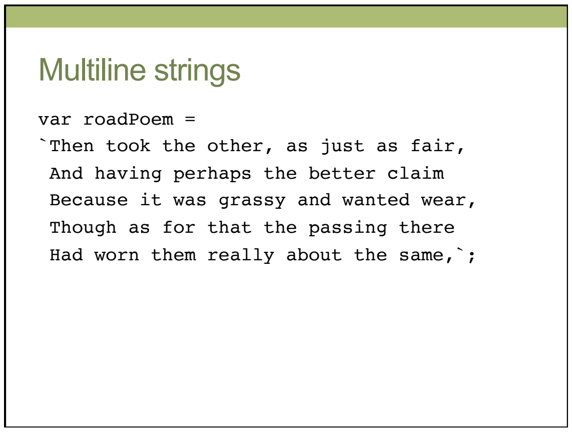
Traditional way

```
var name = 'Your name is ' + first + ' ' +
last + '.';
var url = 'http://us.com/api/messages/' +
id;
```



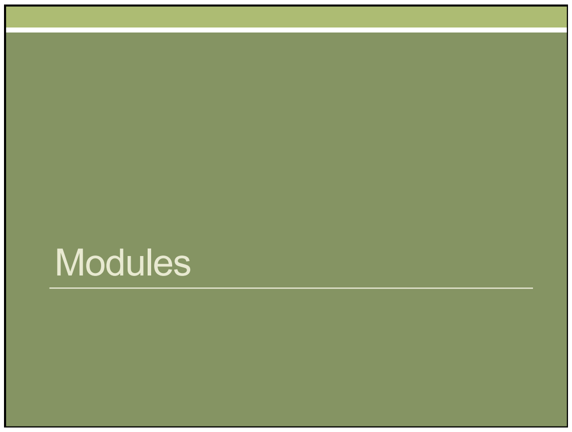
New way

```
var name = `Your name is ${first} ${last}.`
var url = `http://us.com/api/messages/${id}`
```

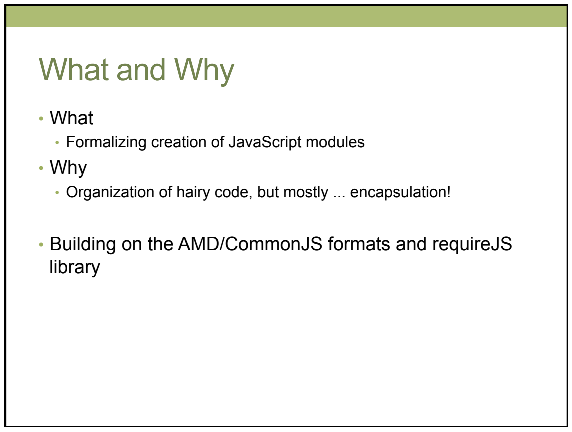


Multiline strings

```
var roadPoem =
`Then took the other, as just as fair,
 And having perhaps the better claim
 Because it was grassy and wanted wear,
 Though as for that the passing there
 Had worn them really about the same,`;
```



Modules



What and Why

- What
  - Formalizing creation of JavaScript modules
- Why
  - Organization of hairy code, but mostly ... encapsulation!
- Building on the AMD/CommonJS formats and requireJS library

Syntax

- To expose an object, function, string, class, whatever

```
export <anyObject>
```

- To read that in another file

```
import {anyObject} from 'theFileName.js';
// Now you can do something with anyObject.
```

Traditional Way

- Create an IIFE to encapsulate the code

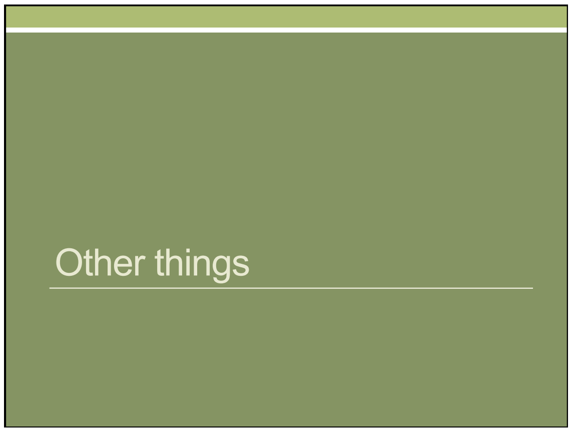
New Way

Car.js

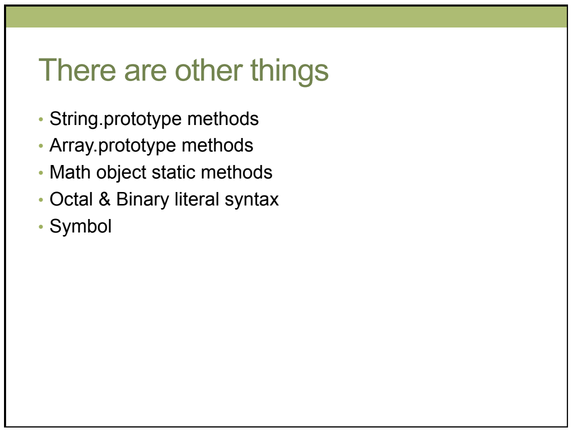
```
class Car{
  ...
};
export Car;
```

Main.js

```
import {Car} from 'Car.js';
const c = new Car();
```

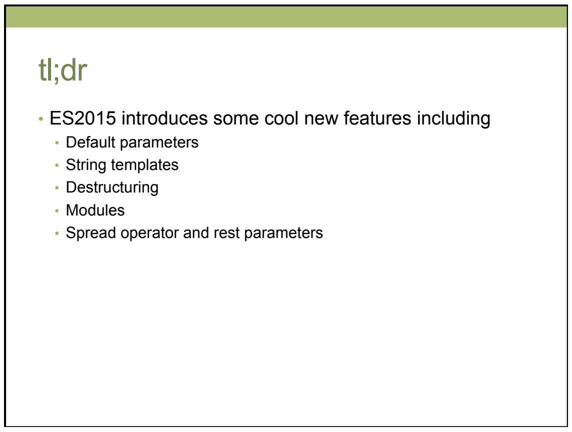


Other things



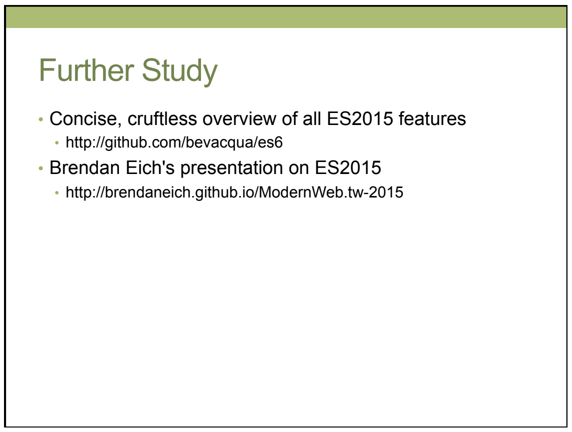
There are other things

- String.prototype methods
- Array.prototype methods
- Math object static methods
- Octal & Binary literal syntax
- Symbol



tl;dr

- ES2015 introduces some cool new features including
  - Default parameters
  - String templates
  - Destructuring
  - Modules
  - Spread operator and rest parameters



Further Study

- Concise, cruftless overview of all ES2015 features
  - http://github.com/bevacqua/es6
- Brendan Eich's presentation on ES2015
  - http://brendaneich.github.io/ModernWeb.tw-2015