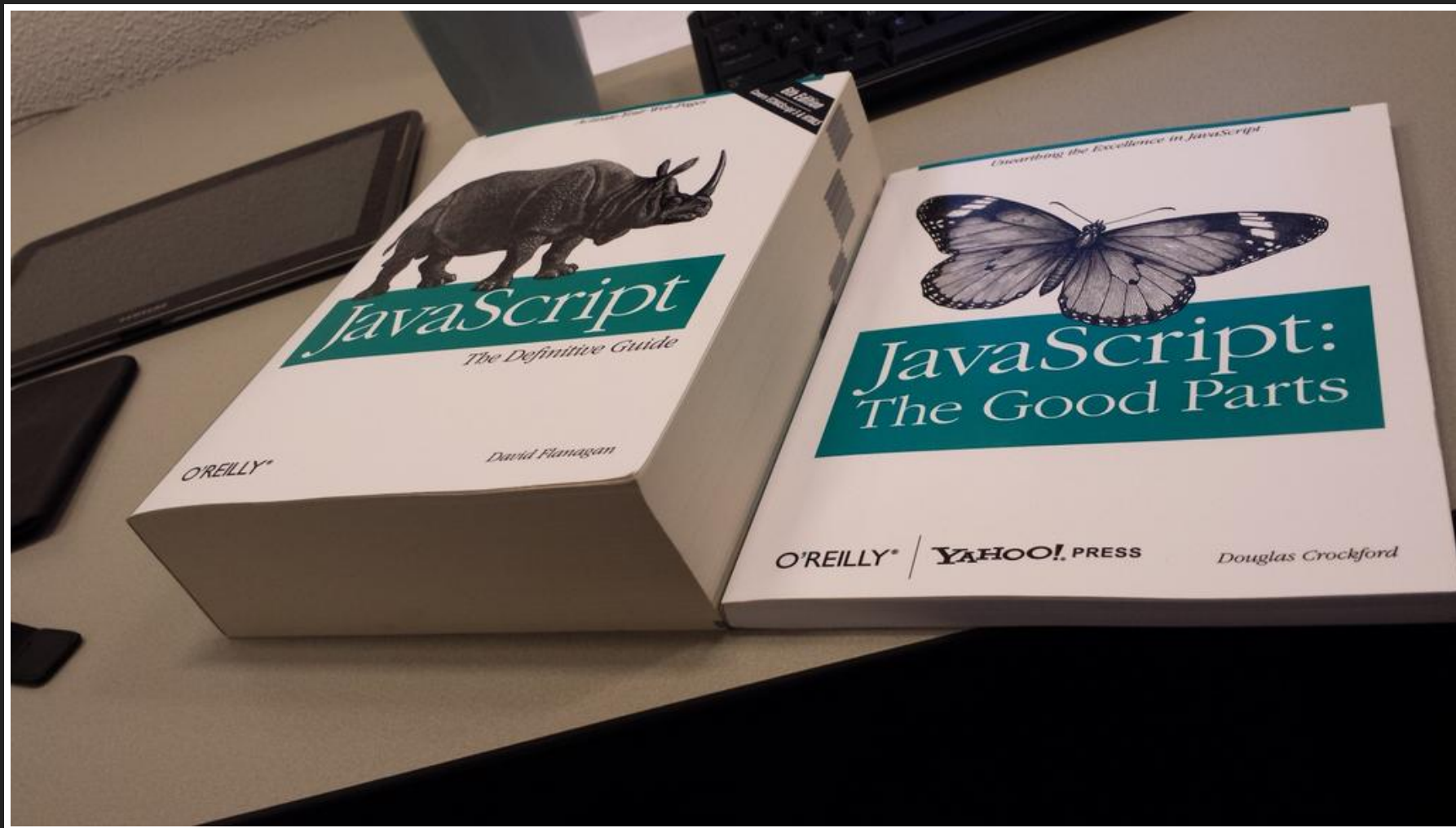# INTRODUCTION TO ES2015

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BIGGEST JS PROBLEMS:

- variables, **`this`** scoping
- lack of module system / million of different module systems
- callback hell (node)
- type safety

C# DEVELOPER STARTING WITH JS

MADE ON TOP OF ES5

LET

es5

```
function doingStuff() {
    if (true) {
        var someGuy = 'jeff'
    }

    someGuy = 'random guy';
    console.log(someGuy); // prints random guy
}
```

es2015

```javascript
function doingStuff() {
    if (true) {
        let someGuy = 'jeff'
    }

    someGuy = 'random guy'; // undefined
}
```

CONST

es2015

```
function doingStuff() {
    const someGuy = 'jeff'

    someGuy = 'random guy'; // error
}
```

DESTRUCTURING

```
let url = "http://www.meetup.com/meet-js-Katowice/";

let parsedURL = /^(\w+)\:\/\/([^\/]+)\/(.*)$/.exec(url);
let [, protocol, fullhost, fullpath] = parsedURL;

console.log(fullpath); // prints "meet-js-Katowice/"
```

```
function constructor (specObject) {
    let {firstMember, secondMember} = specObject;
}
```

```
function ajax ({url, success, error}) {
    // do stuff
}
```

```
function ajax ({url: uniformResourceLocator, success, error}) {
    // do stuff
}
```

DEFAULT PARAMETERS

```javascript
function ajax ({url, success, error} = {}) {
    // do stuff
}
```

REST PARAMETER

es5

```
function sortArgs() {
    var args = Array.prototype.slice.call(arguments);
    return args.sort();
}
```

es2015

```
function someWithRest(...argum) {
  console.log(argum);
}

someWithRest(1, 2, 3) // prints [1, 2, 3]
```

ARROW FUNCTIONS

es5

```
var odds = evens.map(function (n) {
    return n + 1;
});
```

es2015

```
let odds = evens.map(v => v + 1);
```

es2015

```
let concatenated = complicatedObjects
    .map(({ id, name, address }) => (id + name + address));
```

doesn't work with `call` and `apply`

TEMPLATING

es5

```
myApp.directive('myDir', function () {
    return {
        restrict: 'E',
        template: ['<div>',
            'Hello, ',
            '{{test}}!',
            '</div>'].join(''),
    };
});
```

es2015

```
`In ES5 this is
 not legal.`
```

es2015

```
let name = "Jeff", time = "today";
`Hello ${name}, how are you ${time}?`
```

es2015

```
String.raw`In ES5 "\n" is a line-feed.`
```

IMPROVED OBJECT LITERAL

es5

```
var ChatRoom = React.createClass({
    // ...
    propTypes: {
        username: React.PropTypes.string.isRequired
    },

    getInitialState: function() {
        return {
            messages: [],
            connectedUsers: []
        };
    },

    render: function() {

    }
```

es2015

```
let ChatRoom = React.createClass({
    // ...
    propTypes: {
        username: React.PropTypes.string.isRequired
    },

    getInitialState () {
        return {
            messages: [],
            connectedUsers: []
        };
    },

    render () {
        // ..
    }
```

es5

```
function add () {}

function subtract () {}

function multiply () {}

function divide () {}

module.exports = {
    add: add,
    subtract: subtract,
    multiply: multiply,
    divide: divide
};
```

es2015

```
function add () {}

function subtract () {}

function multiply () {}

function divide () {}

module.exports = { add, subtract, multiply, divide };
```

MODULES

```javascript
var _ = require('lodash');
```
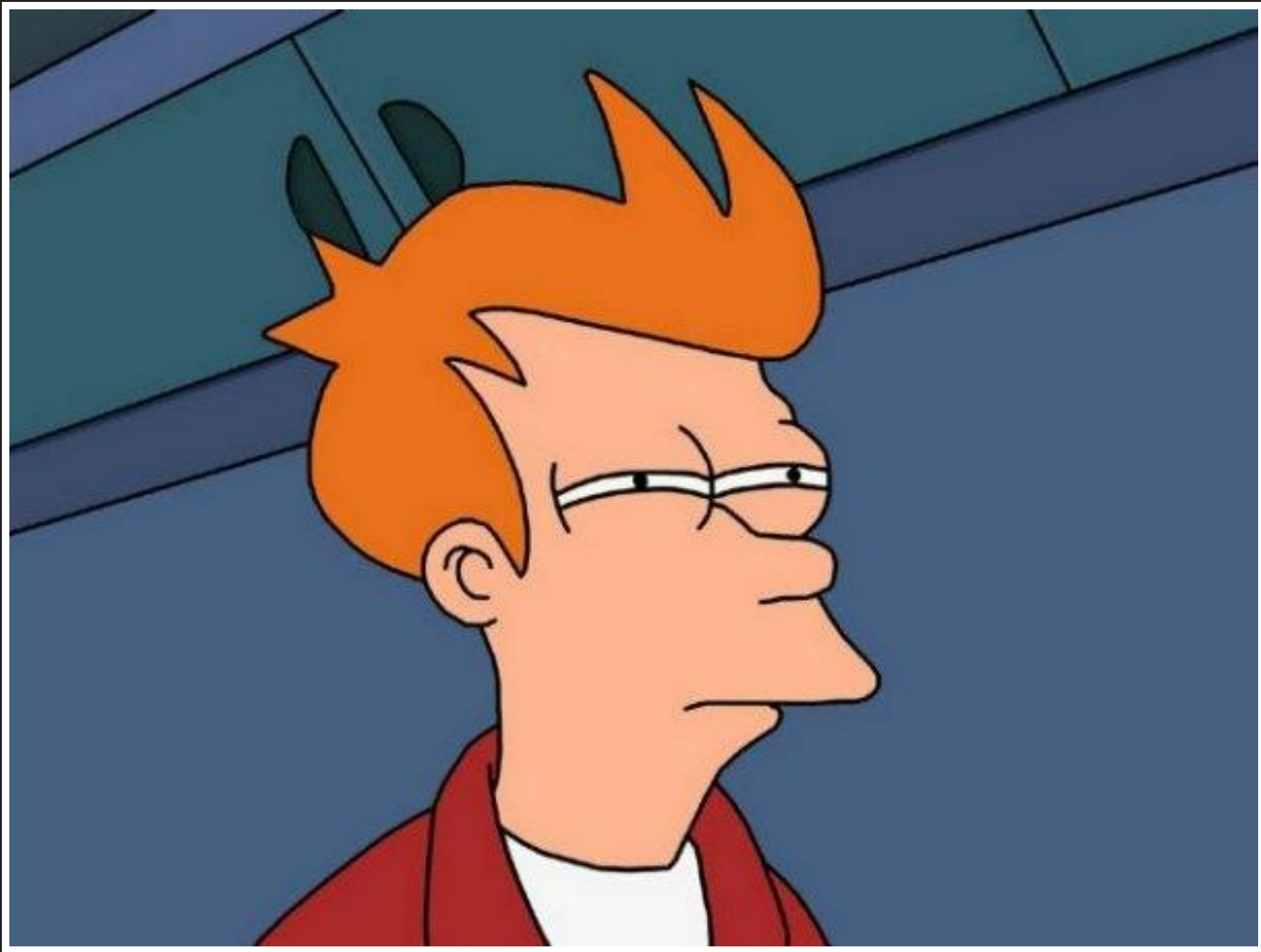
```
import _ from 'lodash';
```

```
import { map, filter } from 'lodash';
```

```
import { map as lodashMap, filter as lodashFilter } from 'lodash';
```

```
export function sum(x, y) {
  return x + y;
}

export const pi = 3.141593;
```

```
import * as math from './math';

math.sum(math.pi, 5);
```

```
export default let Chat = React.createClass(...);
```

compile time errors

asynchronous

http://www.2ality.com/2014/09/es6-modules-final.html

PROMISES

```javascript
let promise = new Promise(function(resolve, reject) {
  // do a thing, possibly async, then…

  if (/* everything turned out fine */) {
    resolve("Stuff worked!");
  }
  else {
    reject(Error("It broke"));
  }
});
```

```javascript
promise.then(function(result) {
  console.log(result); // "Stuff worked!"
}, function(err) {
  console.log(err); // Error: "It broke"
});
```

```
get('story.json').
  .then((response) => {
    return JSON.parse(response);
  })
  .then((response) => {
    console.log("Yey JSON!", response);
  });
```

```
get('story.json')
  .then(JSON.parse)
  .then((response) => {
    console.log("Yey JSON!", response);
  });
```

```
Promise.all(arrayOfPromises).then(function(arrayOfResults) {
  //...
});
```

http://www.html5rocks.com/en/tutorials/es6/promises/

GENERATORS

start/stop

```javascript
function* idMaker(){
  var index = 0;
  while(index < 3) {
    yield index++;
  }
}
```

```javascript
function* idMaker(){
  var index = 0;
  while(index < 3) {
    yield index++;
  }
}

var gen = idMaker();

console.log(gen.next().value); // 0
console.log(gen.next().value); // 1
console.log(gen.next().value); // 2
console.log(gen.next().value); // undefined
```

```javascript
runGenerator(function *main(){
    var result1 = yield request( "http://some.url.1" );
    var data = JSON.parse( result1 );

    var result2 = yield request( "http://some.url.2?id=" + data.id );
    var resp = JSON.parse( result2 );
    console.log( "The value you asked for: " + resp.value );
} );
```

CLASSES

```javascript
class Cat {
  constructor(name) {
    this.name = name;
  }

  speak() {
    console.log(this.name + ' makes a noise.');
  }
}

class Lion extends Cat {
  speak() {
    super.speak();
    console.log(this.name + ' roars.');
  }
}
```

bad part - people stay in **class**ical model

TOOLS

BABEL

```
npm install babel -g
```

```
babel -d client-dist client/*.js
```

source maps

babel-node

TRACEUR

babel > traceur

- better community support
- jsx support
- more readable code

CLIENT SIDE MODULE SYSTEM

browserify

webpack

```
webpack main.js bundle.js
```

basic config

```javascript
// webpack.config.js
module.exports = {
  entry: './main.js',
  output: {
    filename: 'bundle.js'
  },
  module: {
    loaders: [
      { test: /\.coffee$/, loader: 'coffee-loader' },
      { test: /\.js$/, loader: 'babel-loader' }
    ]
  }
};
```

images and css

```
require('./bootstrap.css');
require('./myapp.less');

var img = document.createElement('img');
img.src = require('./glyph.png');
```

images and css

```javascript
// webpack.config.js
module.exports = {
  // ...
  module: {
    loaders: [
      // use ! to chain loaders
      { test: /\.less$/, loader: 'style-loader!css-loader!less-loader
      { test: /\.css$/, loader: 'style-loader!css-loader' },
      // inline base64 URLs for <=8k images, direct URLs for the rest
      { test: /\.(png|jpg)$/, loader: 'url-loader?limit=8192'}
    ]
  }
};
```

async loading

```
if (window.location.pathname === '/feed') {
  showLoadingState();
  require.ensure([], function() { // this syntax is weird but it work
    hideLoadingState();
    require('./feed').show(); // when this function is called, the mo
  });
} else if (window.location.pathname === '/profile') {
  showLoadingState();
  require.ensure([], function() {
    hideLoadingState();
    require('./profile').show();
  });
}
```

ESLINT

ESLint

The pluggable linting utility for JavaScript and JSX

```
  _itemClicked (slideNumber) {
      this.props.handleItemClickk(slideNumber);
  },

  _getItems () {
      return this.props.items.map((item) => {
          return (
              <a href="#" key={item.slideNumber} onClick={this._itemClicked.bind(nul
          );
      });
  },

  _getElementStyle () {
      if (this.props.isAgendaOpen) {
          return {marginLeft: 0};
      }

      return {marginLeft: '-20%'};
  },

  render () {
      return (
          <div class="Agenda" style={this._getElementStyle()}>
              {this._getItems()}
          </div>
      );
```

SUMMARY

es2015 is cool

community supports it

hype

start using es2015 right now

THANKS!

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