

Stop Battling the Mundane

The Why and How of TypeScript



Cleveland JavaScript Meetup
June 19, 2017

Thanks to



**Rockwell
Automation**

LISTEN.
THINK.
SOLVE.™

HOUSEKEEPING

Bathrooms

Food

Vote for sessions on [meetup.com](https://www.meetup.com)

Call for presenters

The Meetup logo consists of the word "Meetup" in a bold, black, handwritten-style font. The text is centered within a white rectangular area that has rounded corners. This white area is framed by a thick, solid red border, also with rounded corners, creating a sign-like appearance.

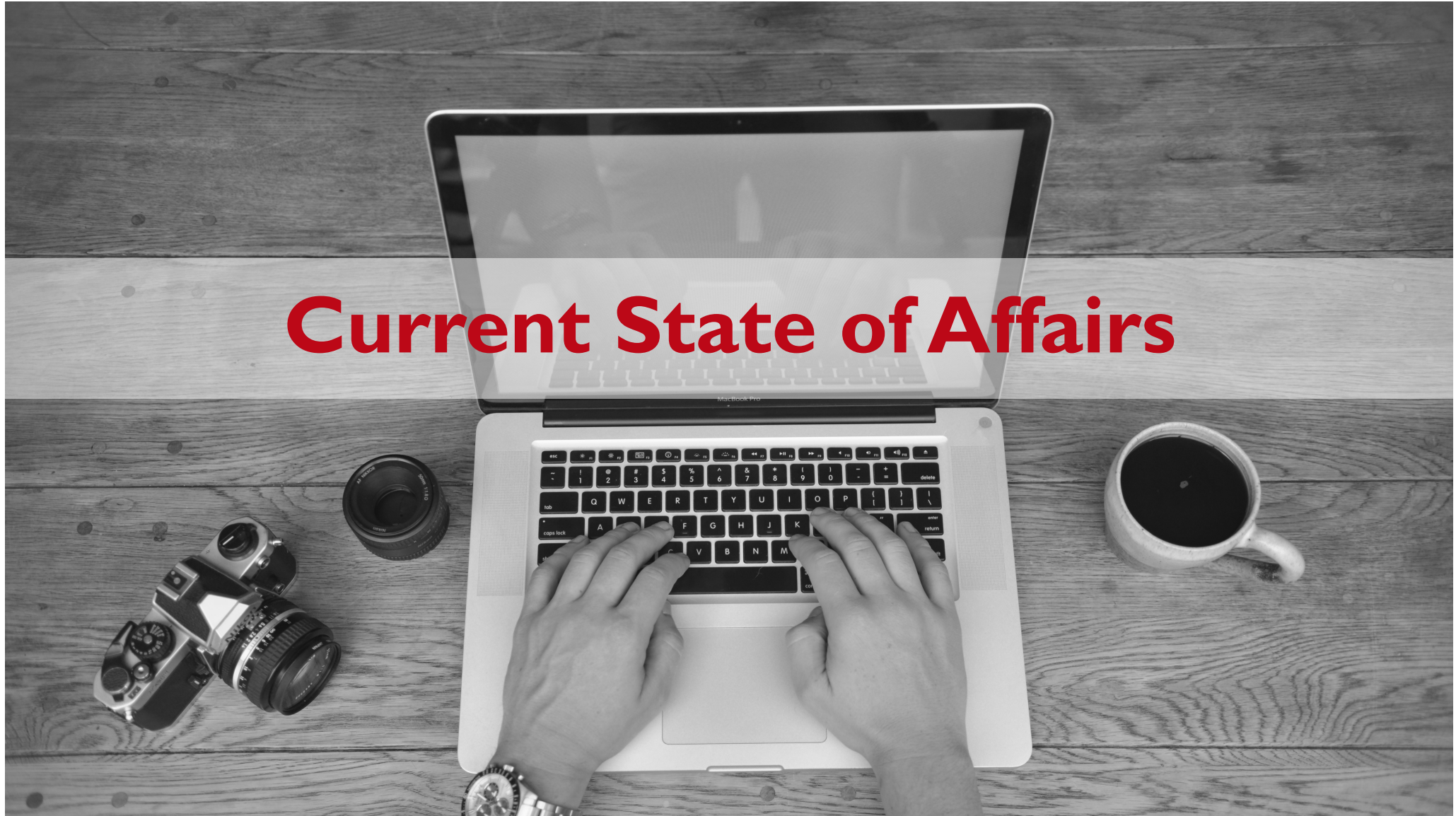
Meetup

TS

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26 // Get thumbnails
27 $arr = wp_get_attachment_image_src( get_post_thumbnail_id($post->ID), $size, $is );
28 $src_title = wp_get_attachment_image_src( get_post_thumbnail_id($post->ID), $size, $is );
29 $src_title = get_post_thumbnail_id()-post_title;
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Current State of Affairs





A Day in the Life



BEGIN.



Functional Tests

Unit Tests



com·pile

/kəmˈpīl/ 

verb

1. produce (something, especially a list, report, or book) by assembling information collected from other sources.


"the local authority must compile a list of taxpayers"

synonyms: [assemble](#), put together, make up, [collate](#), [compose](#), [organize](#), [arrange](#); [More](#)





Documentation



**Lack of
encapsulation,
destroyer of “flow”**

```
4 /**
5  * Says hello.
6  * @param {String} name a name
7  * @return {String}     a greeting for `name`
8  */
9  function sayHelloTo( name ) {
10     const toSay = `Hello, ${name}!`;
11
12     return toSay;
13 }
14
15 /**
16  * Adds all the values in an array.
17  * @param {Array} arr an array of numbers
18  * @return {Number}   the sum of all the array values
19  */
20 const addArray = arr => {
21     const result = arr.reduce((a, b) => a + b, 0);
22
23     return result;
```





Refactoring

Debugging



! 0/6 Execution error: Something went wrong when exe

[TypeError: Thursday is not a function]

✘ ▶ Uncaught TypeError: a.foo is not a function
at <anonymous>:1:3

✘ ▶ Uncaught TypeError: Cannot read property 'bar' of undefined
at <anonymous>:1:6

Elements Console Sources Network Timeline Profiles Resources Security Audits

<top frame> Preserve log

- ✘ Failed to load resource: net::ERR_UNKNOWN_URL_SCHEME <http://travisbklein.com/freezeiframe.js-master/src/js/vendor/jquery-2.1.4.js>
- ✘ Uncaught ReferenceError: jQuery is not defined [freezeiframe.min.js:1](#)
- ✘ Uncaught TypeError: freezeiframe is not a function [traviss-amazing-site-b0831e.webflow.io/:9](#)
- ✘ Uncaught SyntaxError: Unexpected token > [traviss-amazing-site-b0831e.webflow.io/:16](#)



TS

Interfaces

Enums

ESNext features

iterators, generators

async/await

Generics

Decorators

Nullable types

Intersection types

Union types

Strict null checking

String literal types

Discriminated unions

Structural subtyping

Indexed types

Mapped types

& more...



TS

Improved:

- **Unit testing**
- **Refactoring**
- **Documentation**
- **Debugging**

ONE WAY

Build with tsc

- Use `--allowJs`
- Passthrough

Check select JS files

- Add `// @ts-check` to the top of files
- Add type definitions for dependencies

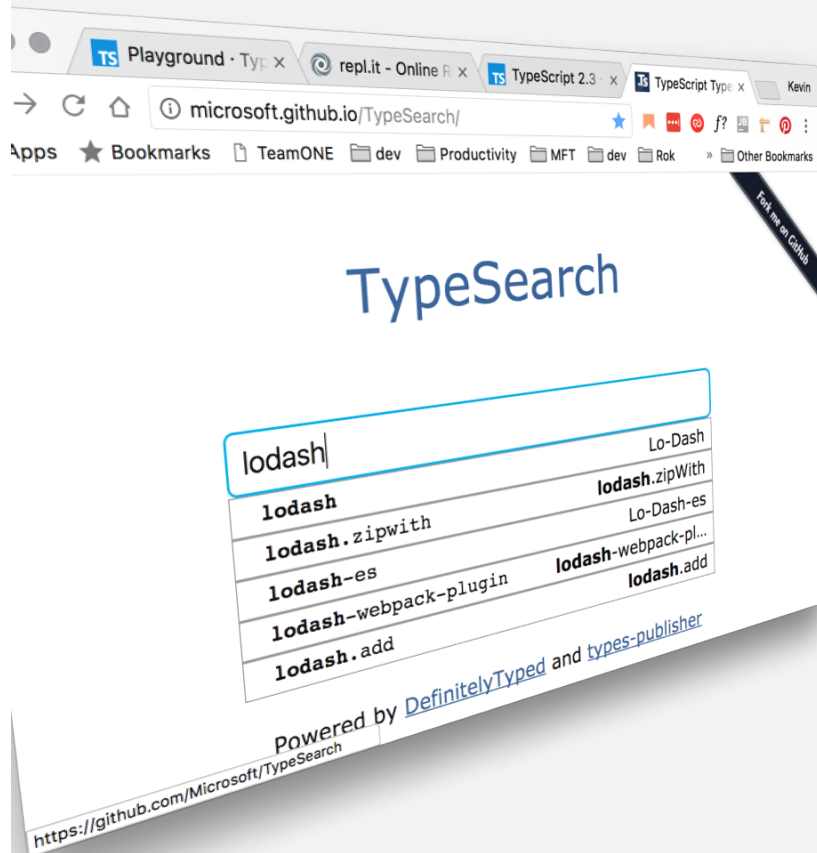
Check all JS files

- Use tsc's `--checkJs`
- Ignore specific files with `// @ts-nocheck`

Convert to TS

- Add types
- Leverage TS & ESNEXT features

Type Definitions



- Have a `.d.ts` extension
- Search for types at:
<http://microsoft.github.io/TypeSearch/>
- To install:
`npm install @types/<package_name>`
- `tsc` will by default search `node_modules/@types` for `*.d.ts` files
- Fore example:
`npm install @types/node`

Let's Create a TS Project

1

```
$ mkdir ts-sample
$ cd ts-sample
$ git init          # optional
$ npm init
$ npm install -save-dev typescript
$ ./node_modules/.bin/tsc --init
```

2

```
1 // greeter.ts
2
3 class Greeter {
4
5     private _greeting: string;
6
7     constructor(greeting: string) {
8         this._greeting = greeting;
9     }
10
11     public greet() {
12         return "Hello, " + this._greeting;
13     }
14 }
15
16 let greeter: Greeter = new Greeter("world");
17 console.log(greeter.greet());
18
```

3

```
$ tsc
```

4

```
$ npm install --save lodash
$ npm install --save-dev @types/lodash
```

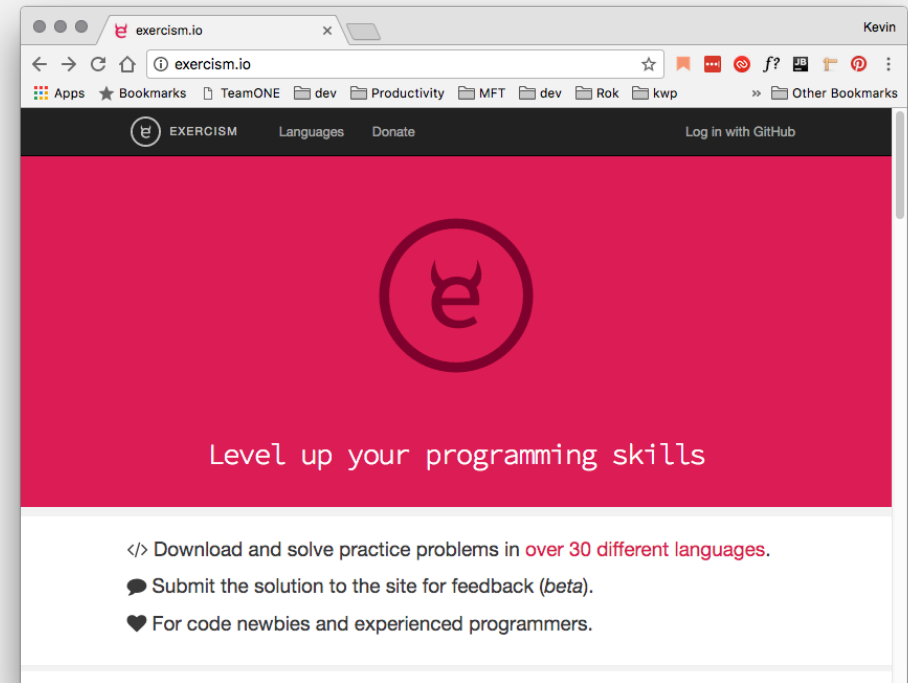
Let's Hack

1

Use new project to experiment with TypeScript

2

<http://exercism.io/>





References

[TypeScript Docs](#)

[TypeScript Types Search](#)

[TypeScript Playground](#)

[Exercism \(TypeScript\)](#)