Microsoft

Introduction to TypeScript

Tooling up

- TypeScript
- WebPack
- React

Getting Started

- First SPFx Project
- Accessing SharePoint and Graph APIs
- Provisioning
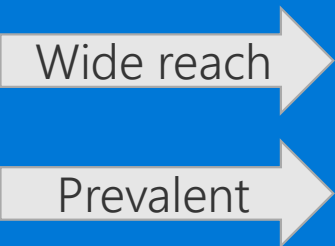- Web part Editing
- Extensions

Agenda

- What is it, and why should I use it?
- Code walkthroughs
- An example
- Debugging TypeScript

A Brief History of JavaScript

December 1995	JavaScript	Netscape and Sun Microsystems announce JavaScript
June 1997	ES1	The European Computer Manufacturer's Society (ECMA) adopts the JavaScript standard
December 1999	ES3	Adds regular expressions, try/catch, number formatting, etc.
December 2009	ES5 (IE9+, Chrome 23+, FF 21+)	Adds strict mode, library support for JSON, better object reflection
June 2015	ES6 / ES2015 (Edge 12+, Chrome 49+, FF44+)	Adds classes, modules, promises, arrow functions, block scoped variables, and more
(work in progress)	ES7 / ES2016, ES2017 …	Proposed features include concurrency, zero copy binary data transfer, observable streams

Wide reach

Prevalent

TypeScript can target specific versions ES5 or newer

How many mistakes can you find?

Function to display a random message and the day of the week, such as "Happy Thursday"

```
 1  (function () {
 2    function loadMe() {
 3      var greetings = ["Happy", "Have a good", "It's"];
 4      var weekdays = ["Sunday", "Monday", "Tuesday", "Wednesday",
 5                                  "Thursday", "Friday", "Saturday"];
 6      var greeting = greetings[Math.floor(Math.random *
 7        greetings.length)];
 8      var todayIs = weekdays[Date().getDay()];
 9      document.getElementByID('elt1').innerHTML =
10          greeting + " " + todayIs + "!";
11    }
12    window.onload = loadMe();
13  })()
```

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   })()
```

15% reduction in bugs

http://bit.ly/TSBugResearch

https://link.bobg.tv/JSMistakes

What is TypeScript?

- Strict superset of JavaScript
- Supports
  - Static types
  - Object classes, inheritance, interfaces (ES6 compatible)
  - Greatly improved editing/"intellisense" experience
- Compiles into JavaScript (target ES5 or ES6/ES2015)
- From Microsoft; Google likes it too
  (Angular 2+ is written in TypeScript)
- Compiler is written in TypeScript, generally runs under Node.js

Language Features

- Type Annotations
- Classes
- External Libraries

http://link.bobg.tv/LearnTypeScript

demo

Instant Lab

Typescript Playground

https://www.typescriptlang.org/play/

Shows:
- Adding types to JavaScript
- Classes, interfaces, and inheritance
- Unions and type guards

Questions

From a recent presentation at Full Stack Academy

- Is TypeScript used at Microsoft?
  How does it scale?
  With what libraries/frameworks?
- What is the impact on bugs?   http://bit.ly/TSBugResearch

Resources

Bob's TS Examples

- http://bit.ly/LearnTypeScript

TypeScript Playground

- http://bit.ly/TSPlayground

`this` in TypeScript

- http://bit.ly/TypeScriptThis

Code Samples

- http://bit.ly/LearnTypeScript
- http://bit.ly/TSWeather

JSON to TS Definition

- http://json2ts.com