

TypeScript

Martin Schray
Sr. Technical Evangelist
Microsoft Corporation

Contact Info

Blog: <http://aka.ms/martin>

Twitter: @mschray

Email: mschray@microsoft.com



We enjoy programming
in JavaScript, but...



Large scale JavaScript
development is hard.

Concerns with JavaScript

- Organizing a large and growing code base
 - Need to come up with “**compensating**” patterns for classes and modules/namespaces
- Refactoring JavaScript code is difficult
 - “JavaScript code ‘rots’ over time”
 - “Writing JavaScript code in a large project is like **carving code in stone**”
- Describing APIs
 - Keep the description in synch with the implementation

TypeScript: A language for large scale
JavaScript development.

TypeScript: A typed superset of JavaScript that compiles to plain JavaScript.

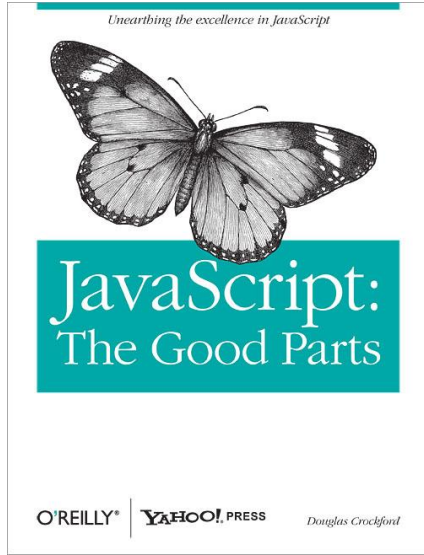
Any browser. Any host. Any OS.

TypeScript wants to help...

- Optional and structural typing
 - Fewer type annotations are necessary than you think
- Classes, modules
 - Formalization of common JavaScript patterns
- Interfaces
 - Interfaces named object types for describing the shape of JavaScript objects

“JavaScript has a type system it’s just not manifest until runtime” - Anders Hejlsberg

The essence of TypeScript is that it is a static formalization of JavaScript dynamic runtime type system.



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Type systems have historically been either on or off. TypeScript makes it a dial and you get to turn that dial

TypeScript -> TypeScript Compiler =
JavaScript

Type System

- An accurate static representation of JavaScript's dynamic run-time type system

Structural typing and type inference

- In practice very few type annotations are necessary

Generics

- Increases accuracy and expressiveness of type system
- Allow you to flow typing easily and accurately

Works with existing JavaScript libraries

- Declaration files can be written and maintained separately
- Nearly 400 libraries have type annotation for Type Script

Types enable tooling

- Provide verification and assistance, but not hard guarantees
- Provides statement completion, refactoring and such

TypeScript @ Microsoft

- Microsoft products using JavaScript are all in on TypeScript

- Visual Studio Online – 150k lines of TypeScript (port of existing JS Code base)
- Project Monoco – browser based editor environment – 150k lines of code (seen in <http://try.buildwinjs.com/>)
- Internet Explorers F12 tools
- TypeScript Compiler, TypeScript Language service
- ...

Classes, Interfaces, Modules

- Code structuring approaches for large scale apps aligned with emerging standards

Scalable application structuring

Classes, interfaces, and modules enable clear contracts in code

Aligned with emerging standards

- Class and lambda syntax aligns with ECMAScript 6 proposals

Supports popular module systems

- CommonJS and AMD modules in any ECMAScript 3 environment

TypeScript Ecosystem

- An Open Source language for large scale JavaScript development.

Community

- Over 4000 CodePlex posts, 170 forks, 500 feature requests, 2000 StackOverflow questions
- Now taking pull requests

Frameworks

- Over 400 .d.ts library definitions on Definitely Typed repository covering more than 90% of popular JavaScript frameworks

Tool support

- IDEs: VS, Monaco, Eclipse, IntelliJ, Resharper, Sublime Text, Brackets, ...
- Build: Heroku, Ruby, grunt, ASP.NET, node.js, compile-in-client
- Testing: Chutzpah, tsUnit

Demo

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- The image features a dark purple background with two spotlights at the top, casting beams of light onto a central area. In the background, there are stylized blue and cyan clouds. The spotlights illuminate a list of topics written in red text.
- Just JS
 - Parameters
 - Classes
 - Generics
 - Lamda
 - Node
 - Converting

Announcing TypeScript 1.0



TypeScript Getting Started

TypeScript Resources

These resources will help you get started with TypeScript

Details

Visual Studio 2013 Update 2 includes TypeScript

TypeScript Anders Build Session [3-576](#)

Building a Large Scale JavaScript Application in TypeScript [3-358](#)

<http://www.typescriptlang.org/>

Source: <http://typescript.codeplex.com/>

Definitely Typed:

<https://github.com/borisyankov/DefinitelyTyped>

WinJS: <http://try.buildwinjs.com/>