

# Typescript Themes

Wednesday, September 14, 2016

1:23 PM

- A superset of JavaScript (ECMAScript)
- A modern language for large scale applications
- Type checking via compiler and type annotations
- Interoperability with existing JavaScript Libraries
- Open Source with Apache licensing

# JavaScript Superset

Thursday, September 22, 2016  
7:42 AM

- Any JavaScript source code is valid typescript
- Compiles to JavaScript (ES3, ES5, es2015)
- Typescript also tracks and implements current and future ECMAScript standards like ES6 and the new features from ES7 like decorators.
- Can leverage existing JavaScript code

## Modern Language

Thursday, September 22, 2016  
7:18 AM

Typescript is a superset of JavaScript/ES6 but like Java or CSharp it allows you to define new types. Declaring variables with types rather than the generic vars enables better tooling support: syntax checking and code refactoring.

- Basic types (string, number, boolean, null, undefined, void, arrays, function)
- Arrow functions
- Classes
- Interfaces
- Generics
- Enums
- Default and Optional parameter
- Private, protected, public access modifiers
- Function overloading

## Type Annotations

Thursday, September 22, 2016  
7:18 AM

- Type annotations for functions, variables, class and interface fields and methods.
- These type annotations are compiled away by the code generation process and have no runtime impact.
- Type annotations catch errors at compile time
- Annotations are optional and the 'any' type can be used to work around compile issues.
- IDE support for highlighting type errors.

# Interoperability

Thursday, September 22, 2016  
7:20 AM

- Typescript also supports 3rd party JavaScript libraries by using type definitions that add type annotations for many popular JavaScript libraries (jQuery,). <http://definitelytyped.org/>
- Ambient declarations for external variables like the Document Object Module (with pre-defined interfaces)
- Works with other JavaScript tooling: Grunt, Gulp, Browserify, WebPack...
- Works with popular JavaScript frameworks: Angular, React, Ember...

# Open Source Project

Thursday, September 22, 2016  
7:20 AM

- Even though Typescript originated from Microsoft it is an open source project with an Apache style license.
- Typescript is hosted on GitHub with 150+ contributors.
- Notably the Angular 2 team has chosen Typescript as the core language for Angular2.
- Many other open source projects also use TypeScript

# History

Monday, September 19, 2016  
8:36 AM

## TypeScript

From Wikipedia, the free encyclopedia

# TypeScript

<b><u>Paradigm</u></b>	<b><u>Multi-paradigm: scripting, object-oriented, structured, imperative, functional, generic</u></b>
<b><u>Designed by</u></b>	<b><u>Microsoft</u></b>
<b><u>Developer</u></b>	<b><u>Microsoft</u></b>
<b><u>First appeared</u></b>	<b><u>October 1, 2012</u></b> <sup>[1]</sup>
<b><u>Stable release</u></b>	<b><u>1.8 / January 2016; 8 months ago</u></b>
<b><u>License</u></b>	<b><u>Apache License 2.0</u></b>
<b><u>Filename extensions</u></b>	<b><u>.ts</u></b>
<b><u>Website</u></b>	<b><u><a href="http://www.typescriptlang.org">www.typescriptlang.org</a></u></b>
<b><u>Influenced by</u></b>	<b><u>JavaScript, Java, C#</u></b>
<b><u>Influenced</u></b>	<b><u>AtScript</u></b>

## TypeScript

TypeScript is a free and open source programming language developed and maintained by Microsoft. It is a strict superset of JavaScript, and adds optional static typing and class-based object-oriented programming to the language. Anders Hejlsberg, lead architect of C# and creator of Delphi and Turbo Pascal, has worked on the development of TypeScript.<sup>[2][3][4][5]</sup> TypeScript may be used to develop JavaScript applications for client-side or server-side (Node.js) execution.

TypeScript is designed for development of large applications and transcompiles to JavaScript.<sup>[6]</sup> As TypeScript is a superset of JavaScript, any existing JavaScript programs are also valid TypeScript programs.

TypeScript supports definition files that can contain type information of existing JavaScript libraries, much like C/C++ header files can describe the structure of existing object files. This enables other programs to use the values defined in the files as if they were statically typed TypeScript entities. There are third-party header files for popular libraries like jQuery, MongoDB, and D3.js. TypeScript headers for the Node.js basic modules are also available, allowing development of Node.js programs within TypeScript.<sup>[7]</sup>

The TypeScript compiler is itself written in TypeScript, transcompiled to JavaScript and licensed under the Apache 2 License.

Pasted from <<https://en.wikipedia.org/wiki/TypeScript>>

## Other JavaScript trans-piled languages

Tuesday, September 20, 2016  
11:21 AM

*Some years ago I said that JavaScript is the Assembly Language of the Web. In fact, lots of people said it, because it's true. Later, some folks disagreed, saying that this is an inaccurate analogy. Of course, it is inaccurate because it's an analogy. That said, as analogies go, it's pretty good. Sure, assemblers are architecture and processor specific. Maybe "JavaScript is the Web's Bytecode" is better. At the very least, JavaScript is a totally reasonable compile target.*

<http://www.hanselman.com/blog/JavaScriptIsWebAssemblyLanguageAndThatsOK.aspx>

- CoffeeScript - cleaner version of JavaScript (braces, semi-colons, arrow functions, ...)
- DART (Google)
- ELM (Haskell based)
- Purescript (Haskell based)
- Scala.js (Scala based)
- ClojureScript (Lisp based)
- LiveScript
- Many others...



# Language Popularity on Github

Monday, September 19, 2016  
9:14 AM

## Programming languages

A list of programming languages that are actively developed on GitHub.

📁 42 repositories    <> 31 languages    ⌚ Last updated on Jul 26

Stars

Language



apple/swift

The Swift Programming Language

C++ ★ 34,007 🍴 4,821



golang/go

The Go programming language

Go ★ 20,248 🍴 2,671



rust-lang/rust

A safe, concurrent, practical language.

Rust ★ 18,329 🍴 3,532



Microsoft/TypeScript

TypeScript is a superset of JavaScript that compiles to clean JavaScript output.

TypeScript ★ 14,929 🍴 2,011



jashkenas/coffeescript

Unfancy JavaScript

CoffeeScript ★ 13,320 🍴 1,816

# Github - committers

<https://github.com/Microsoft/TypeScript>

Wednesday, September 21, 2016

2:44 PM

Microsoft / TypeScript

Watch

1,082

Star

15,009

Fork

2,018

Code

Issues 1,236

Pull requests 59

Projects 1

Wiki

Pulse

Graphs

Contributors

Commits

Code frequency

Punch card

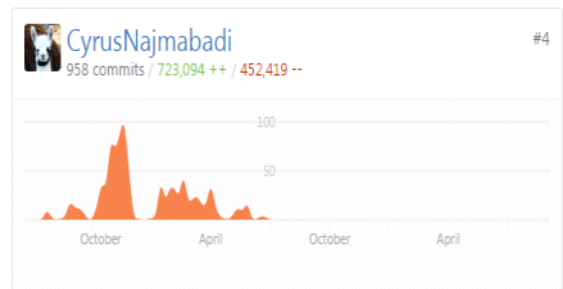
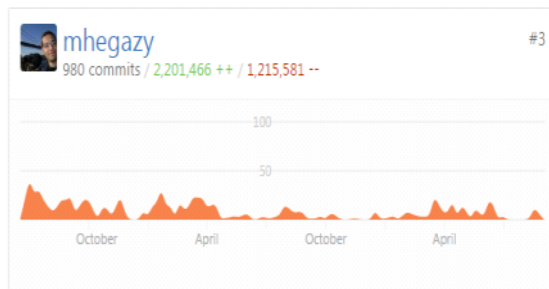
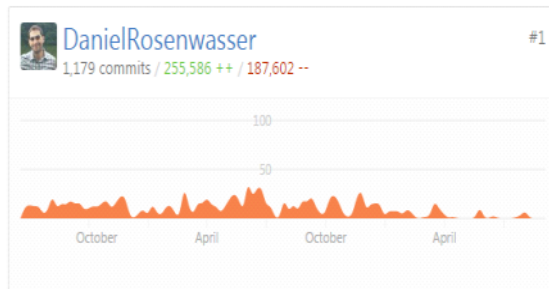
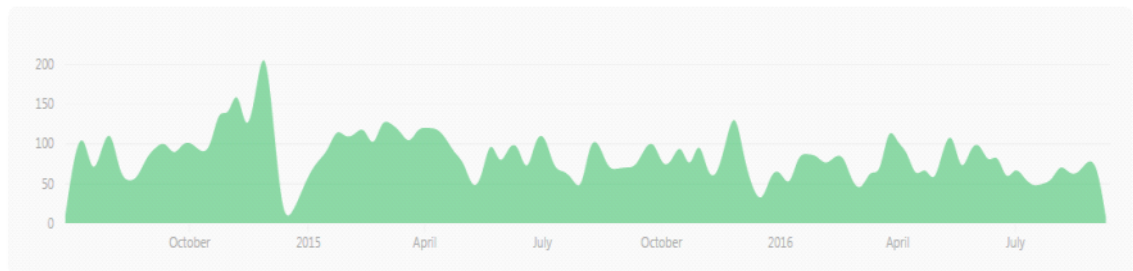
Network

Members

Jul 6, 2014 – Sep 21, 2016

Contributions: Commits

Contributions to master, excluding merge commits



Screen clipping taken: 9/21/2016 2:45 PM

## Redmonk Ranking

Monday, September 19, 2016  
9:28 AM

TypeScript: Outside of Go or Swift, the fastest growing language we've observed in recent years is TypeScript. The Microsoft-backed JavaScript superset and [Angular 2 foundation](#) has made significant gains for the second consecutive quarter, jumping from #31 to #26. That was the biggest single change in any Top 30 language, and the second largest jump overall (Standard ML, 7 spots). At #26, in fact, TypeScript is now tied with Erlang, one spot behind Powershell and four behind CoffeeScript, which is just outside the Top 20. The question facing the language isn't whether it can grow, but whether it has the momentum to crack the Top 20 in the next two to three quarters, leapfrogging the likes of CoffeeScript and Lua in the process.

<http://redmonk.com/sogady/2016/07/20/language-rankings-6-16>

# Trending Projects using TypeScript

Monday, September 19, 2016  
9:27 AM

## Trending in open source


See what the GitHub community is most excited about today.

Repositories

Developers

Trending: today ▾


### angular/angular

TypeScript • 61 stars today • Built by 

★ Star

### Microsoft/vscode

Visual Studio Code

TypeScript • 43 stars today • Built by 

★ Star

### angular/material2

Material Design components for Angular 2

TypeScript • 39 stars today • Built by 

★ Star

### Microsoft/TypeScript


TypeScript is a superset of JavaScript that compiles to clean JavaScript output.

TypeScript • 39 stars today • Built by 

★ Star

### angular/angular-cli

CLI tool for Angular2

TypeScript • 29 stars today • Built by 

★ Star

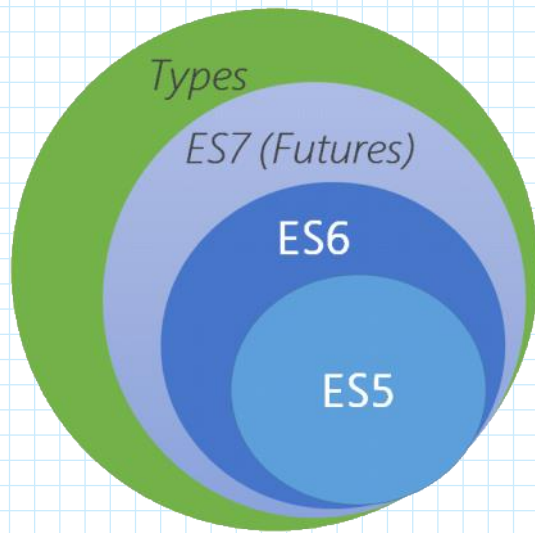
## Typescript Overview

Tuesday, September 13, 2016  
2:16 PM

A super-set of JavaScript or ECMAScript that supports the latest ECMAScript standard and futures and type annotations.

Language specification:

<https://github.com/Microsoft/TypeScript/blob/master/doc/spec.md>



## ECMAScript features

Thursday, September 22, 2016  
8:20 AM

ES6 Features: <http://es6-features.org>

- Optional parameters or default parameters in functions.
- Template strings: `This is a example: \${hello}`
- let and const
- for of loops
- Arrow functions
- De-structuring
- Spread operator
- Computed properties
- Classes
- Static properties

ES7 Features:

- Decorators or annotations (used by angular2)

## Typescript Specific Features

Tuesday, September 20, 2016  
3:12 PM

## TypeScript features (as of 2.0RC)

- **Type annotations**
- **Type inference**
- **Type Alias**
- **readonly properties**
- **Namespaces\modules**
- **Duck typing ( quack-quack)**
- **Interfaces**
- **Tuples**
- **Enumerated types**
- **Generics**
- **Union types ( x : string | number)**
- **Tagged Unions**
- **Intersection types**
- **Literal Types**
- **Ambients (static type over existing JS Code)**
- **Function overloads**
- **Non-nullable**

## Tool chain

Tuesday, September 13, 2016  
4:02 PM

**Typescript leverages the vast node\npm ecosystem for tooling.**

- First Steps
  - Install Nodejs and Npm
  - Install Typescript Compiler tsc
    - `npm install -g typescript@next`
  - Install Typings
    - `npm install -g typings`



## Build Tool integration

Thursday, September 22, 2016  
8:24 AM

<https://www.typescriptlang.org/docs/handbook/integrating-with-build-tools.html>

- Browserify
- Grunt
- Gulp
- Webpack
- MSBuild
- Others...

## Compiler Options

Monday, September 19, 2016  
10:59 AM

tsconfig.json defines various compiler options

<https://www.typescriptlang.org/docs/handbook/compiler-options.html>

module: support to javascript module formats like

'none', 'commonjs', 'amd', 'system', 'umd', 'es6', or 'es2015'.

Example:

```
{  
  "compilerOptions": {  
    "module": "commonjs", // module code generation format  
    "noEmitOnError": true, // don't emit javascript on errors  
    "removeComments": true, // removes comments from generated source  
    "outDir": "out", // saves output js files in the specified directory  
    "sourceMap": true // generates a source map for debugging  
  },  
}
```

## IDE Support

Monday, September 19, 2016  
10:56 AM

### IDE support

<https://github.com/Microsoft/TypeScript/wiki/TypeScript-Editor-Support>

- Atom
- Eclipse
- Emacs
- Netbeans
- Sublime Text
- Vim
- Visual Studio
- Visual Studio Code
- Webstorm

## Code Demo

Wednesday, September 21, 2016

9:12 AM

1. Basic types
2. Classes
3. Static properties
4. Functions
5. Interfaces
6. Enum types
7. Namespaces
8. Type Inference
9. Module format
10. Discriminated Unions and literal types, null-able types
11. Decorators
12. React JSX support
13. Generics
14. Angular2 App