Because this page hit a limit on a GitHub wiki page size, it's now hosted on the website: <a href="https://www.typescriptlang.org/docs/handbook/release-notes/overview.html">https://www.typescriptlang.org/docs/handbook/release-notes/overview.html</a>

# **TypeScript 3.6**

See <u>TypeScript 3.6</u>

#### **Stricter Generators**

See Stricter Generators

## **More Accurate Array Spread**

See More Accurate Array Spread

## **Improved UX Around Promises**

See Improved UX Around Promises

## **Better Unicode Support for Identifiers**

See <u>Better Unicode Support for Identifiers</u>

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See import.meta Support in SystemJS

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See get and set Accessors Are Allowed in Ambient Contexts

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See Ambient Classes and Functions Can Merge

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See APIs to Support --build and --incremental

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See New TypeScript Playground

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See TypeScript 3.5

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#### Improved excess property checks in union types

See Improved excess property checks in union types

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See Smarter union type checking

# Higher order type inference from generic constructors

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See Caveats

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See <a href="const">const</a> <a href="assertions">assertions</a>

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See Improved behavior for calling union types

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# Incremental file watching for composite projects in --build --watch

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See Generic spread expressions in object literals

## **Generic object rest variables and parameters**

See Generic object rest variables and parameters

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# tsconfig.json inheritance via Node.js packages

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## Object.defineProperty declarations in JavaScript

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# Mapped types on tuples and arrays

See Mapped types on tuples and arrays

# **Properties declarations on functions**

See Properties declarations on functions

## Version selection with types Versions

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#### **Matching behavior**

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#### **Multiple fields**

See Multiple fields

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## Tuples in rest parameters and spread expressions

See <u>Tuples in rest parameters and spread expressions</u>

#### Rest parameters with tuple types

See Rest parameters with tuple types

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See <u>Spread expressions with tuple types</u>

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See Generic rest parameters

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#### Optional elements in tuple types

See Optional elements in tuple types

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#### Rest elements in tuple types

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## New unknown top type

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# Support for defaultProps in JSX

See Support for defaultProps in JSX

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#### Explicit types on defaultProps

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# /// <reference lib="..." /> reference directives

See /// <reference lib="..." /> reference directives

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# **TypeScript 2.9**

See <u>TypeScript 2.9</u>

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See Support number and symbol named properties with keyof and mapped types

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# **Generic type arguments in JSX elements**

See Generic type arguments in JSX elements

#### Example

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# **Generic type arguments in generic tagged templates**

See <u>Generic type arguments in generic tagged templates</u>

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# import types

See <u>import</u> types

#### Example

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# Relaxing declaration emit visiblity rules

See Relaxing declaration emit visiblity rules

# Support for import.meta

See <u>Support for import.meta</u>

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#### New --resolveJsonModule

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# --pretty output by default

## New --declarationMap

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# **TypeScript 2.8**

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#### **Distributive conditional types**

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#### Type inference in conditional types

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See <u>Example</u>

# Improved control over mapped type modifiers

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# Improved keyof with intersection types

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# Better handling for namespace patterns in .js files

See Better handling for namespace patterns in .js files

#### **IIFEs as namespace declarations**

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#### **Defaulted declarations**

See <u>Defaulted declarations</u>

#### **Prototype assignment**

See <u>Prototype assignment</u>

# **Nested and merged declarations**

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#### **Per-file JSX factories**

See Per-file JSX factories

#### Example

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# **Locally scoped JSX namespaces**

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# New --emitDeclarationsOnly

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See TypeScript 2.7

# **Constant-named properties**

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#### Example

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#### unique symbol

See <u>unique symbol</u>

#### Example

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#### Example

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#### **Strict Class Initialization**

See Strict Class Initialization

# **Definite Assignment Assertions**

See <u>Definite Assignment Assertions</u>

# **Fixed Length Tuples**

See Fixed Length Tuples

# Improved type inference for object literals

See Improved type inference for object literals

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# Improved handling of structurally identical classes and instanceof expressions

See Improved handling of structurally identical classes and instanceof expressions

#### Example:

See Example:

# Type guards inferred from in operator

See <u>Type guards inferred from in operator</u>

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See Example

# Support for import d from "cjs" form CommonJS modules with -esModuleInterop

See Support for import d from "cjs" form CommonJS modules with --esModuleInterop

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# **Numeric separators**

See Numeric separators

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# Cleaner output in --watch mode

See Cleaner output in \_-watch \_mode

# Prettier --pretty output

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# **TypeScript 2.6**

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Note:

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# Cache tagged template objects in modules

See <u>Cache tagged template objects in modules</u>

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# Localized diagnostics on the command line

See Localized diagnostics on the command line

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# Suppress errors in .ts files using '// @ts-ignore' comments

See Suppress errors in .ts files using '// @ts-ignore' comments

**Example** 

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Faster tsc --watch

See Faster tsc --watch

# Write-only references now flagged as unused

See Write-only references now flagged as unused

Example

See <u>Example</u>

Example

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# **TypeScript 2.5**

See <u>TypeScript 2.5</u>

# Optional catch clause variables

See Optional catch clause variables

# Type assertion/cast syntax in checkJs / @ts-check mode

See Type assertion/cast syntax in <a href="mailto:checkJs">checkJs</a> / <a href="mailto:@ts-check">@ts-check</a> mode

## **Deduplicated and redirected packages**

See <u>Deduplicated and redirected packages</u>

The --preserveSymlinks compiler flag

See The --preserveSymlinks compiler flag

# **TypeScript 2.4**

See <u>TypeScript 2.4</u>

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See **Dynamic Import Expressions** 

## **String Enums**

See String Enums

# Improved inference for generics

See <u>Improved inference for generics</u>

#### Return types as inference targets

See Return types as inference targets

#### Type parameter inference from contextual types

See <u>Type parameter inference from contextual types</u>

#### Stricter checking for generic functions

See <u>Stricter checking for generic functions</u>

# **Strict contravariance for callback parameters**

See Strict contravariance for callback parameters

## **Weak Type Detection**

See Weak Type Detection

# **TypeScript 2.3**

See TypeScript 2.3

## **Generators and Iteration for ES5/ES3**

#### See Generators and Iteration for ES5/ES3

#### Iterators

See <u>Iterators</u>

#### Generators

See **Generators** 

New --downlevelIteration

See New --downlevelIteration

# **Async Iteration**

See <u>Async Iteration</u>

#### **Async iterators**

See <u>Async iterators</u>

#### **Async Generators**

See Async Generators

#### The for-await-of Statement

See The for-await-of Statement

#### Caveats

See <u>Caveats</u>

# **Generic parameter defaults**

See Generic parameter defaults

## Example

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# New --strict master option

See New --strict master option

# **Enhanced** --init output

See Enhanced \_--init output

# Errors in .js files with --checkJs

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# **TypeScript 2.2**

See TypeScript 2.2

# **Support for Mix-in classes**

See Support for Mix-in classes

First some terminology:

See First some terminology:

Putting all of the above rules together in an example:

See Putting all of the above rules together in an example:

object type

See object type

Support for new.target

See <u>Support for new.target</u>

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See Example

Better checking for null / undefined in operands of expressions

See <u>Better checking for null / undefined in operands of expressions</u>

# **Dotted property for types with string index signatures**

See <u>Dotted property for types with string index signatures</u>

# Support for spread operator on JSX element children

See Support for spread operator on JSX element children

**Example** 

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New jsx: react-native

See New jsx: react-native

# **TypeScript 2.1**

See <u>TypeScript 2.1</u>

# keyof and Lookup Types

See <a href="keyof">keyof</a> and Lookup Types

#### Example

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#### Example

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# **Mapped Types**

See Mapped Types

```
Partial, Readonly, Record, and Pick
```

See Partial , Readonly , Record , and Pick

## **Object Spread and Rest**

See Object Spread and Rest

# **Downlevel Async Functions**

See **Downlevel Async Functions** 

#### Example

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#### tsconfig.json

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#### dramaticWelcome.ts

See <u>dramaticWelcome.ts</u>

# Support for external helpers library (tslib)

See <u>Support for external helpers library (tslib</u>)

# **Untyped imports**

See **Untyped** imports

#### Example

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# Support for --target ES2016, --target ES2017 and --target

#### **ESNext**

See <u>Support for --target ES2016 \_ --target ES2017 and --target ESNext</u>

# Improved any Inference

See Improved any Inference

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# **Implicit any errors**

See **Implicit** any errors

#### Example

See <u>Example</u>

# **Better inference for literal types**

See <u>Better inference for literal types</u>

#### Example

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#### Example

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# Use returned values from super calls as 'this'

See <u>Use returned values from super calls as 'this'</u>

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# **Configuration inheritance**

See Configuration inheritance

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# New --alwaysStrict

See New --alwaysStrict

# **TypeScript 2.0**

See <u>TypeScript 2.0</u>

# **Null- and undefined-aware types**

See Null- and undefined-aware types

#### --strictNullChecks

See --strictNullChecks

#### Example

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## **Assigned-before-use checking**

See Assigned-before-use checking

#### Example

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## **Optional parameters and properties**

See Optional parameters and properties

#### Non-null and non-undefined type guards

See Non-null and non-undefined type guards

#### Example

See Example

#### **Dotted names in type guards**

See **Dotted names in type guards** 

#### Example

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#### **Expression operators**

See Expression operators

## Type widening

See <u>Type widening</u>

#### Non-null assertion operator

See Non-null assertion operator

## Compatibility

See Compatibility

# **Control flow based type analysis**

See Control flow based type analysis

#### Example

# **Tagged union types**

See <u>Tagged union types</u>

#### Example

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## The never type

See <u>The never type</u>

# Read-only properties and index signatures

See Read-only properties and index signatures

#### Example

See Example

# Specifying the type of this for functions

See Specifying the type of this for functions

## this parameters in callbacks

See <a href="mailto:this">this</a> <a href="parameters in callbacks">parameters in callbacks</a>

#### Example

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--noImplicitThis

See --noImplicitThis

## Glob support in tsconfig.json

See Glob support in tsconfig.json

#### Example

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# Module resolution enhancements: BaseUrl, Path mapping, rootDirs and tracing

See Module resolution enhancements: BaseUrl, Path mapping, rootDirs and tracing

#### **Base URL**

See Base URL

#### Example

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#### Path mapping

See Path mapping

#### Example

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# Virtual Directories with rootDirs

See <u>Virtual Directories with rootDirs</u>

#### Example

See Example

## **Tracing module resolution**

See <u>Tracing module resolution</u>

## **Shorthand ambient module declarations**

See **Shorthand ambient module declarations** 

#### declarations.d.ts

See <u>declarations.d.ts</u>

#### Wildcard character in module names

See Wildcard character in module names

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# **Support for UMD module definitions**

See Support for UMD module definitions

#### math-lib.d.ts

See math-lib.d.ts

# **Optional class properties**

See Optional class properties

See Example

#### **Private and Protected Constructors**

See Private and Protected Constructors

#### Example

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# **Abstract properties and accessors**

See Abstract properties and accessors

#### Example

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## Implicit index signatures

See <u>Implicit index signatures</u>

# Including built-in type declarations with --lib

See <u>Including built-in type declarations with \_-lib</u>

#### Example

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# Flag unused declarations with --noUnusedParameters and --

#### noUnusedLocals

See Flag unused declarations with \_-noUnusedParameters and \_-noUnusedLocals

#### **Example**

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# Module identifiers allow for .js extension

See  $\underline{\mathsf{Module}}$  identifiers allow for  $\underline{\mathtt{.js}}$   $\underline{\mathsf{extension}}$ 

# Support 'target: es5' with 'module: es6'

See Support 'target: es5' with 'module: es6'

## Trailing commas in function parameter and argument lists

See Trailing commas in function parameter and argument lists

See Example

New --skipLibCheck

See New --skipLibCheck

# Allow duplicate identifiers across declarations

See Allow duplicate identifiers across declarations

#### Example

See Example

**New** --declarationDir

See New --declarationDir

# **TypeScript 1.8**

See <u>TypeScript 1.8</u>

# Type parameters as constraints

See <u>Type parameters as constraints</u>

#### Example

See Example

# **Control flow analysis errors**

See Control flow analysis errors

#### **Unreachable code**

See <u>Unreachable code</u>

#### Example

See Example

#### **Unused labels**

See **Unused labels** 

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#### **Implicit returns**

See **Implicit returns** 

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#### **Case clause fall-throughs**

See Case clause fall-throughs

#### Example

See Example

## **Stateless Function Components in React**

See Stateless Function Components in React

# Simplified props type management in React

See Simplified props type management in React

# Augmenting global/module scope from modules

See Augmenting global/module scope from modules

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#### Example

See Example

# String literal types

See String literal types

# Improved union/intersection type inference

See Improved union/intersection type inference

#### Example

See Example

## Concatenate AMD and System modules with --outFile

See Concatenate AMD and System modules with --outFile

#### **Example**

See <u>Example</u>

# Support for default import interop with SystemJS

See Support for default import interop with SystemJS

# Allow captured let / const in loops

See Allow captured let / const in loops

#### Example

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# Improved checking for for..in statements

See Improved checking for for..in statements

#### **Example**

See <u>Example</u>

## Modules are now emitted with a "use strict"; prologue

See Modules are now emitted with a "use strict"; prologue

## Including .js files with --allowJs

See <a href="Including.js">Including.js</a> <a href="files.with">files.with</a> <a href="mailto-allowJs">--allowJs</a>

## Custom JSX factories using --reactNamespace

See <u>Custom JSX factories using</u> <u>--reactNamespace</u>

#### **Example**

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## this -based type guards

See <a href="this">this</a> -based type guards

#### Example

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# Official TypeScript NuGet package

See Official TypeScript NuGet package

## Prettier error messages from tsc

See Prettier error messages from  $\,\pm sc$ 

## Colorization of JSX code in VS 2015

See Colorization of JSX code in VS 2015

## The --project (-p) flag can now take any file path

See The \_-project ( -p ) flag can now take any file path

# Allow comments in tsconfig.json

See Allow comments in tsconfig.json

# **Support output to IPC-driven files**

See Support output to IPC-driven files

# Improved support for tsconfig.json in Visual Studio 2015

See Improved support for tsconfig.json in Visual Studio 2015

#### A couple of limitations:

See A couple of limitations:

# **TypeScript 1.7**

See <u>TypeScript 1.7</u>

# async / await support in ES6 targets (Node v4+)

See async / await support in ES6 targets (Node v4+)

#### Example

See Example

# Support for --target ES6 with --module

See <u>Support for</u> <u>--target ES6</u> with <u>--module</u>

## Example

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## this -typing

See <a href="mailto:this-typing">this -typing</a>

# **ES7** exponentiation operator

See ES7 exponentiation operator

#### **Example**

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# Improved checking for destructuring object literal

See <u>Improved checking for destructuring object literal</u>

#### Example

See Example

# **Support for decorators when targeting ES3**

See <u>Support for decorators when targeting ES3</u>

# **TypeScript 1.6**

See TypeScript 1.6

## JSX support

See JSX support

New .tsx file extension and as operator

See New .tsx file extension and as operator

#### **Using React**

See <u>Using React</u>

#### **Using other JSX frameworks**

See **Using other JSX frameworks** 

#### **Output generation**

See <u>Output generation</u>

# **Intersection types**

See <u>Intersection types</u>

#### Example

See Example

# Local type declarations

See Local type declarations

# **Class expressions**

See Class expressions

# **Extending expressions**

See Extending expressions

#### abstract classes and methods

See <u>abstract</u> <u>classes and methods</u>

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# **Generic type aliases**

See Generic type aliases

# Stricter object literal assignment checks

See Stricter object literal assignment checks

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## **ES6** generators

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# Experimental support for async functions

See Experimental support for async functions

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# **Nightly builds**

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# Adjustments in module resolution logic

See Adjustments in module resolution logic

# Merging ambient class and interface declaration

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# **User-defined type guard functions**

See <u>User-defined type guard functions</u>

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exclude property support in tsconfig.json

See <a href="mailto:exclude">exclude</a> <a href="property support">property support in tsconfig.json</a>

# --init command line option

See \_\_init command line option

# **TypeScript 1.5**

See <u>TypeScript 1.5</u>

## **ES6 Modules**

See ES6 Modules ##

#### **Export Declarations**

See Export Declarations

#### **Re-exporting**

See Re-exporting

#### **Default Export**

See <u>Default Export</u>

#### **Bare Import**

See Bare Import

# **Destructuring in declarations and assignments**

See <u>Destructuring in declarations and assignments</u>

#### **Declarations**

See <u>Declarations</u>

#### **Assignments**

See <u>Assignments</u>

## namespace keyword

See namespace keyword

## let and const support

See <u>let and const</u> support

#### Const

See Const

#### **Block scoped**

See **Block scoped** 

# for..of support

See for..of support

Example

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#### **Decorators**

See **Decorators** 

Example

See Example

# **Computed properties**

See Computed properties

## Support for UMD and System module output

See Support for UMD and System module output

# Unicode codepoint escapes in strings

See <u>Unicode codepoint escapes in strings</u>

# Tagged template strings in ES3/ES5

See Tagged template strings in ES3/ES5

# **AMD-dependency optional names**

See <u>AMD-dependency optional names</u>

# Project support through tsconfig.json

See <u>Project support through</u> <u>tsconfig.json</u>

Example

See <u>Example</u>

# --rootDir command line option

See \_-rootDir command line option

# --noEmitHelpers command line option

# --newLine command line option

See <u>--newLine</u> command line option

# --inlineSourceMap and inlineSources command line options

See \_-inlineSourceMap and inlineSources command line options

# **TypeScript 1.4**

See <u>TypeScript 1.4</u>

# **Union types**

See **Union types** 

#### Overview

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#### **Stricter Generics**

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#### **Better Type Inference**

See <u>Better Type Inference</u>

#### let declarations

See <u>let</u> <u>declarations</u>

## const declarations

See <a href="const">const</a> <a href="declarations">declarations</a>

# **Template strings**

See <u>Template strings</u>

# **Type Guards**

See Type Guards

# **Type Aliases**

See <u>Type Aliases</u>

# const enum (completely inlined enums)

See const enum (completely inlined enums)

# -noEmitOnError commandline option

See <u>-noEmitOnError</u> commandline option

#### **AMD Module names**

See AMD Module names

# **TypeScript 1.3**

See <u>TypeScript 1.3</u>

#### **Protected**

See Protected

# **Tuple types**

See <u>Tuple types</u>

# **TypeScript 1.1**

See <u>TypeScript 1.1</u>

## **Performance Improvements**

See <u>Performance Improvements</u>

# **Better Module Visibility Rules**

See Better Module Visibility Rules