

# JavaScript ES6

## Lesson 12:ES6 Introduction



# Lesson Objectives

At the end of this module you will be able to:

- Explain the importance of ES6
- ES6 compatibility with modern browsers
- Run ES6 code in incompatible browsers using Transpilers like Babel, Traceur and TypeScript





# Introduction

JavaScript is a superset of ECMAScript scripting language.

ECMAScript forms the language base for JavaScript, JScript and ActionScript.

ES6 gives a vast makeover to JavaScript by adding new syntaxes and APIs to write complex applications and libraries that are easier to debug and maintain.

**ECMAScript 2015**



# Why ECMAScript 6 ?

JavaScript is extremely powerful and flexible, but it is often criticized for having unnecessary redundancy.

JavaScript developers often use abstractions such as CoffeeScript and Typescript, which provide easier syntax, powerful features, and compile to JavaScript.

ES6 was introduced to improve JavaScript and ensure that developers no longer needed to use abstractions or other techniques to write quality code, which leads to a lengthy process.



ECMAScript 5 6 next intl non-standard compatibility table

Sort by Engine types Show obsolete platforms Show unstable platforms

V8 SpiderMonkey JavaScriptCore Chakra Carakan KJS Other

Minor difference (1 point) Small feature (2 points) Medium feature (4 points) Large feature (8 points)

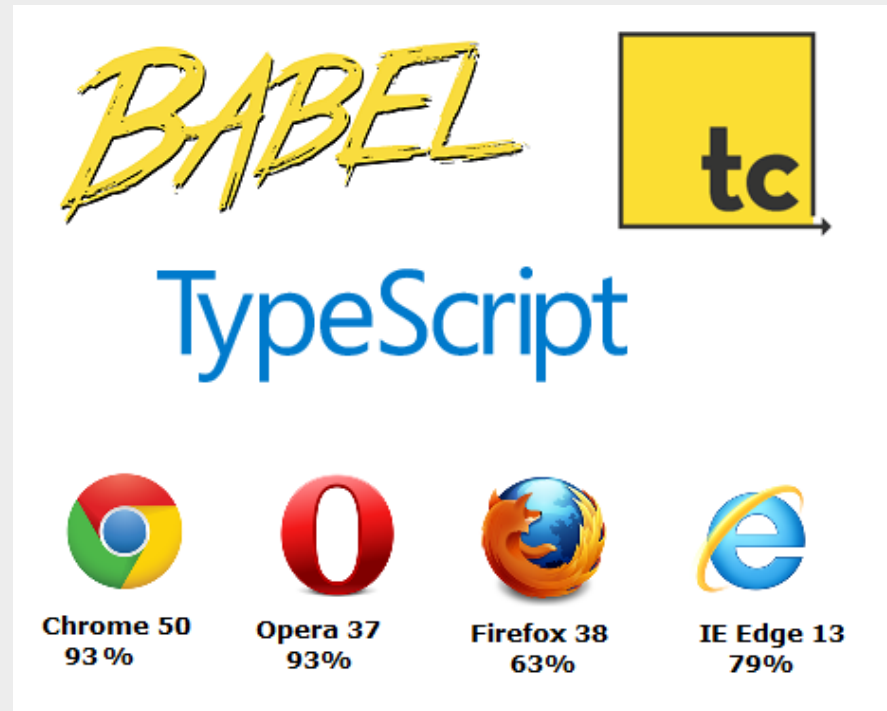
Feature name	Current browser	Traceur	Babel + core-js	Closure	Type-Script + core-js	es6-shim	IE 11	Edge 12	Edge 13	FF 38 ESR	FF 45 ESR	CH 50, OP 37	SF 6.1, SF 7	SF 7.1, SF 8	SF 9	KQ 4.14
<b>Optimisation</b>																
proper tail calls (tail call optimisation)	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2	0/2
<b>Syntax</b>																
default function parameters	7/7	4/7	4/7	4/7	5/7	0/7	0/7	0/7	0/7	3/7	4/7	7/7	0/7	0/7	0/7	0/7
rest parameters	5/5	4/5	3/5	2/5	4/5	0/5	0/5	5/5	5/5	4/5	5/5	5/5	0/5	0/5	0/5	0/5
spread (...) operator	15/15	15/15	13/15	12/15	4/15	0/15	0/15	12/15	15/15	15/15	15/15	15/15	0/15	5/15	9/15	0/15
object literal extensions	6/6	6/6	6/6	4/6	6/6	0/6	0/6	6/6	6/6	6/6	6/6	6/6	0/6	1/6	5/6	0/6
for...of loops	7/9	9/9	9/9	6/9	3/9	0/9	0/9	6/9	7/9	7/9	7/9	7/9	0/9	2/9	8/9	0/9
octal and binary literals	4/4	2/4	4/4	4/4	4/4	2/4	0/4	4/4	4/4	4/4	4/4	4/4	0/4	0/4	4/4	0/4
template literals	5/5	4/5	4/5	3/5	3/5	0/5	0/5	4/5	5/5	5/5	5/5	5/5	0/5	0/5	5/5	0/5
RegExp "y" and "u" flags	2/5	3/5	3/5	0/5	0/5	0/5	0/5	2/5	4/5	2/5	2/5	5/5	0/5	0/5	0/5	0/5
destructuring declarations	21/22	20/22	21/22	18/22	15/22	0/22	0/22	0/22	0/22	19/22	19/22	21/22	0/22	9/22	19/22	0/22
destructuring assignment	23/24	23/24	24/24	15/24	19/24	0/24	0/24	0/24	0/24	20/24	21/24	23/24	0/24	12/24	21/24	0/24
destructuring parameters	22/23	19/23	20/23	17/23	15/23	0/23	0/23	0/23	0/23	18/23	18/23	22/23	0/23	10/23	18/23	0/23

# Running ECMAScript 6 in an Incompatible Browser



ES6 on development phase can embed the compiler like Babel, TypeScript, Traceur in the webpages which compiles the ES6 to simple browser supportable JavaScript code.

On production phase, It is recommended to use node compiler to compile and embed the compiled JS in web pages using the node packages of mentioned compilers.



# Compiling ES6 using Babel online compiler



## Babel Transpiler

The screenshot shows the Babel online compiler interface in a web browser. The browser's address bar displays the URL: [https://babeljs.io/repl/#?evaluate=true&lineWrap=false&presets=es2015%2Creact%2Cstage-2&code=\(function\(\)](https://babeljs.io/repl/#?evaluate=true&lineWrap=false&presets=es2015%2Creact%2Cstage-2&code=(function(){). The page features a yellow header with the Babel logo and navigation links: Learn ES2015, Setup, Plugins, Usage, Try it out, Discuss, Chat, Issues, Blog, Twitter, and GitHub. Below the header, a black bar contains the 'Evaluate' button and a list of presets: es2015 (checked), es2015-loose, react (checked), stage-0, stage-1, stage-2 (checked), stage-3, and Line Wrap. The version 'Babel 6.7.7' is shown on the right. The main area is split into two panels. The left panel shows the input ES6 code: 

```
1 (function(){
2   let demoVariable = 5;
3   {
4     let demoVariable = 10; //accessible only inside this block
5     //let demoVariable = 9; // throws error
6   }
7   console.log(demoVariable);
8 })();
```

 The right panel shows the transpiled ES5 code: 

```
1 "use strict";
2
3 (function () {
4   var demoVariable = 5;
5   {
6     var _demoVariable = 10; //accessible only inside this block
7     //let demoVariable = 9; // throws error
8   }
9   console.log(demoVariable);
10 })();
```

<https://babeljs.io/repl/>



# Compiling ES6 using TypeScript online compiler

## TypeScript Transpiler

The screenshot shows the TypeScript Playground interface in a web browser. The address bar displays <https://www.typescriptlang.org/play/index.html>. The page features a navigation bar with links to Documentation, Samples, Download, Connect, and Playground. A banner for TypeScript 1.8 is visible. The main area has two tabs: TypeScript (selected) and JavaScript. The TypeScript tab shows the following code:

```
1 (function(){
2     let demoVariable = 5;
3     {
4         //accessible only inside this block
5         let demoVariable = 10;
6         // throws error
7         //let demoVariable = 9;
8     }
9     console.log(demoVariable);
10 })();
```

The JavaScript tab shows the compiled output:

```
1 (function () {
2     var demoVariable = 5;
3     {
4         //accessible only inside this block
5         var demoVariable_1 = 10;
6     }
7     console.log(demoVariable);
8 })();
9
```

<https://www.typescriptlang.org/play/index.html>





# Compiling ES6 using Traceur online compiler

## Traceur Transpiler

Traceur

<https://google.github.io/traceur-compiler/demo/repl.html#let%20demoVariable%20>

For quick access, place your bookmarks here on the bookmarks bar. [Import bookmarks now...](#)

**Source** **Traceur Transcoding Demo** **Options**

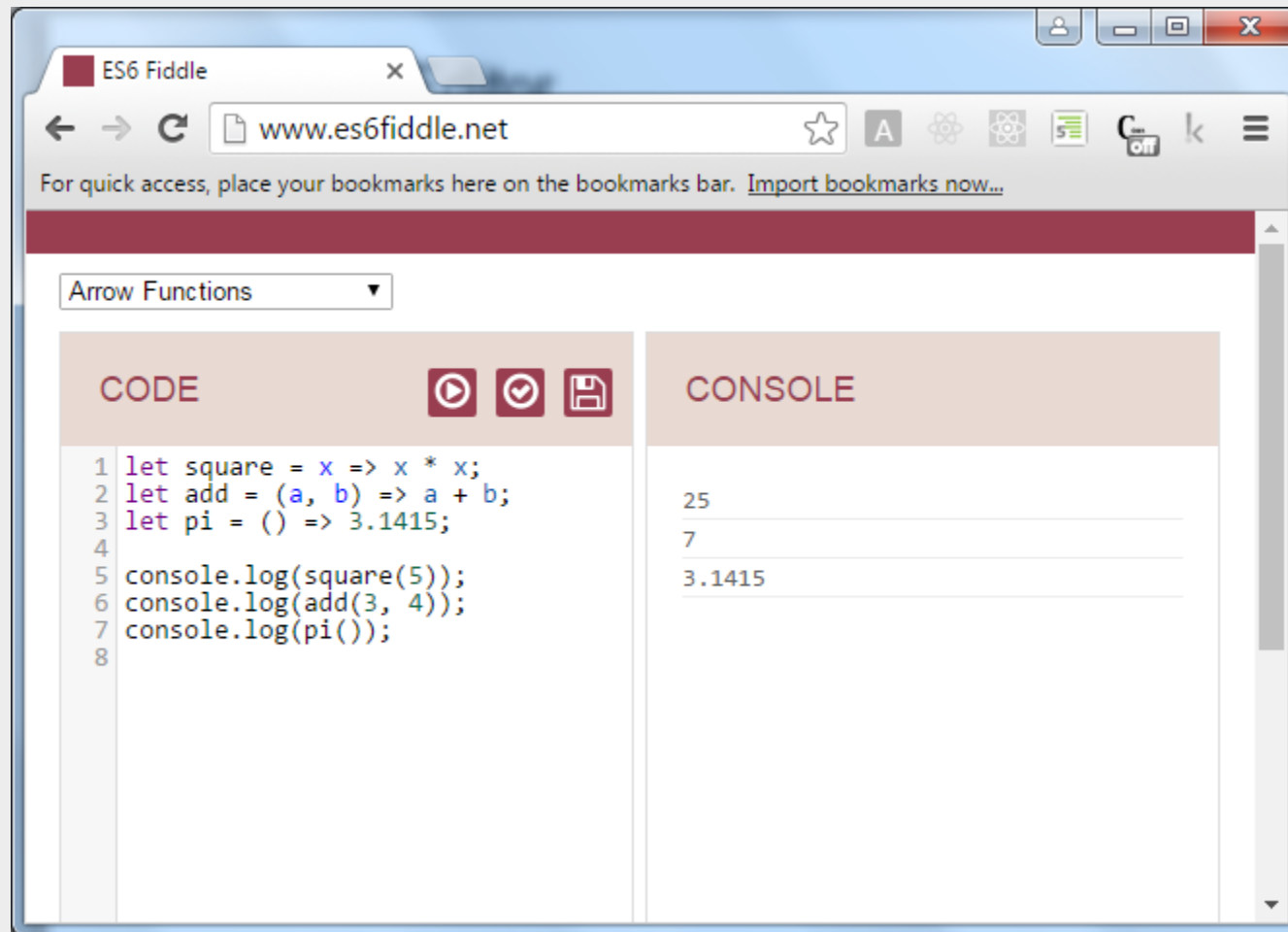
```
1 let demoVariable = 5;
2 {
3   //accessible only inside this block
4   let demoVariable = 10;
5 }
6 console.log(demoVariable);
7
```

```
1 $traceurRuntime.ModuleStore.getAnonymousModule(function() {
2   "use strict";
3   var demoVariable = 5;
4   {
5     var demoVariable$__0 = 10;
6   }
7   console.log(demoVariable);
8   return {};
9 });
10 ## sourceMappingURL=traceured.js
11
```

<https://google.github.io/traceur-compiler/demo/repl.html#>



# Online ES6 Editor – es6fiddle.net



<http://www.es6fiddle.net/>

# Summary



➤ECMAScript 2015 is the sixth version and the seventh edition of the ECMAScript language. In short, it is also called "ES6".

➤ES6 adds up a lot of new syntax-based features to JavaScript, which helps the developers to write less and do more.

➤Google Chrome and Opera supports most of the ES6 features.

➤In the production environment, It is recommended to use node compiler like babel, traceur and TypeScript to compile and embed the compiled JS.

