

Production Ready Web Components



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WEB ARCHITECT

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Overview



Understand the current browser support

Use Babel to transpile ES2015 code

Identify the different polyfills

Understand the limitations of polyfilling the Shadow DOM

Use the ShadyCSS polyfill

- Simulated style encapsulation
- CSS Custom Property and @apply mixin support



</> Custom Elements V1

IE	Edge [*]	Firefox	Chrome	Safari	Opera	iOS Safari [*]	Opera Mini [*]	Android Browser [*]	Chrome for Android
			49			7.1			
			¹ 54			8.4			
		51	¹ 55	9.1		9.3			
11	14	52	¹ 56	10	43	10.2	all	53	56
	15	53	¹ 57	¹ 10.1	44				
		54	¹ 58	¹ TP	45				
		55	¹ 59						

<http://caniuse.com/#feat=custom-elementsv1>





Shadow DOM V1

IE	Edge [*]	Firefox	Chrome	Safari	Opera	iOS Safari [*]	Opera Mini [*]	Android Browser [*]	Chrome for Android
			49			7.1			
			54			8.4			
		51	55	9.1		9.3			
11	14	52	56	¹ 10	43	¹ 10.2	all	53	56
	15	53	57	¹ 10.1	44				
		54	58	¹ TP	45				
		55	59						

<http://caniuse.com/#feat=shadowdomv1>





HTML Templates

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Chrome for Android
			49			7.1			
			54			8.4			
		51	55	9.1		9.3			
11	14	52	56	10	43	10.2	all	53	56
	15	53	57	10.1	44				
		54	58	TP	45				
		55	59						

<http://caniuse.com/#feat=template>





HTML Imports

IE	Edge [*]	Firefox	Chrome	Safari	Opera	iOS Safari [*]	Opera Mini [*]	Android Browser [*]	Chrome for Android
			49			7.1			
			54			8.4			
		1 51	55	9.1		9.3			
11	14	1 52	56	10	43	10.2	all	53	56
	15	1 53	57	10.1	44				
		1 54	58	TP	45				
		1 55	59						

<http://caniuse.com/#feat=imports>



Transpiling Web Components



ES2015 for Web Components

Classes

```
class RwStarRating extends HTMLElement {  
  constructor() {  
    super();  
  }  
}
```



ES2015 for Web Components

Template Strings

```
this._root.innerHTML = `  
  <p>My Template!</p>  
`;  
;
```



ES2015 for Web Components

Arrow Functions

```
$element.addEventListener("click", (event) => {  
    // Do Stuff  
});
```



BABEL

<https://babeljs.io>



Demo



Transpiling the Star Rating
Web Component

Use NPM to install Babel

Use Babel to convert to ES5



An Introduction to the Polyfills



https://github.com/webcomponents



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Web Components

<https://www.webcomponents.org>

Repositories

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[webcomponentsjs](#)

A suite of polyfills supporting the HTML Web Components specs

JavaScript ★ 2.1k 🍴 318

[custom-elements](#)

A polyfill for HTML Custom Elements v1

JavaScript ★ 111 🍴 30

[shadydom](#)

ShadowDOM v1 shim

HTML ★ 44 🍴 17

[react-integration](#)

Converts web components into React components so that you can use them as first class citizens in your React components.

JavaScript ★ 134 🍴 16

[webcomponents.org](#)

HTML ★ 66 🍴 30

[shadycss](#)

JavaScript ★ 48 🍴 13



https://goo.gl/e7NwmT



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A suite of polyfills supporting the HTML Web Components specs <http://webcomponents.org/polyfills/>

762 commits

8 branches

47 releases

56 contributors

BSD-3-Clause

Branch: master ▾

[New pull request](#)

[Find file](#)

[Clone or download ▾](#)

azakus 1.0.0-rc.6 with html-imports 1.0.0-rc.2

Latest commit 3b3bd26 5 days ago

entrypoints	Make sure ce-es5 bundle fires WebComponentsReady	9 days ago
externs	Use closure for bundles	15 days ago
src	fix let	12 days ago
tests	fix test, ShadyCSS may not load	27 days ago
.eslintrc.json	Make everything advance compile	12 days ago
.gitattributes	[ci skip] make sure webcomponents-es5-loader is not marked binary	9 days ago
.gitignore	convert Template	a year ago
.travis.yml	fix firefox focus flakiness	a month ago



Available Polyfills

Source: <https://goo.gl/e7NwmT>

- **webcomponents-hi.js**
 - Included Polyfills: HTML Imports
 - *Needed by Safari Tech Preview*
- **webcomponents-hi-ce.js**
 - Included Polyfills: HTML Imports and Custom Elements v1
 - *Needed by Safari 10*
- **webcomponents-hi-sd-ce.js:**
 - Included Polyfills: HTML Imports, Custom Elements v1 and Shady DOM/CSS
 - *Needed by Safari 9, Firefox, Edge*
- **webcomponents-sd-ce.js**
 - Custom Elements and Shady DOM/CSS
 - *Needed by Safari 9, Firefox with the Pure JavaScript Method (No HTML Imports)*
- **webcomponents-lite.js:**
 - All of the polyfills



Available Polyfill Loaders

Source: <https://goo.gl/e7NwmT>

- **webcomponents-loader.js**
 - To be used when shipping ES2015 only Web Components
 - *Excludes IE11*
- **webcomponents-es5-loader.js**
 - To be used when shipping ES5 only Web Components
 - *Includes IE11*



webcomponents-lite.js

- **Spec Polyfills**
 - HTML Imports
 - Custom Elements
 - Shady DOM
 - Shady CSS
 - Template
- **Generic Polyfills**
 - Promise
 - Custom Event
 - Mouse Event
 - Object.assign
 - Array.from



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HTML Imports

<https://goo.gl/432waF>

```
<link rel="import" href="my-element.html">
```



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Custom Elements V1

<https://goo.gl/kUluUF>

```
customElements.define("my-component", MyComponent);
```



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Custom Elements V1

<https://goo.gl/kUIuUF>

native-shim.js

<https://goo.gl/Mz4P8s>



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Shady DOM

<https://goo.gl/NWRRKT>

```
this.attachShadow({mode: "open"});
```



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Shady DOM

<https://goo.gl/NWRRKT>

It is less correct but less intrusive and faster than the ShadowDOM Polyfill.



webcomponents-lite.js

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Shady CSS

<https://goo.gl/xmbpGJ>

- **Style Encapsulation**
- **CSS Custom Properties**
- **CSS @apply Mixins**



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Template

<https://goo.gl/1pjUKU>

`<template></template>`

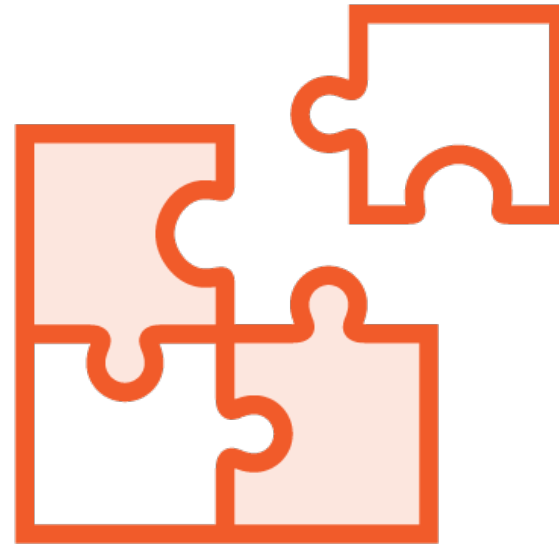


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 - **Array.from**

Generic Platform Polyfills

<https://goo.gl/d2YlgO>



```
<script src="webcomponents-es5-loader.js"></script>
```



Demo



Adding the Polyfills to the Star Rating Web Component Project

Install webcomponentsjs via Bower

Add webcomponents-es5-loader.js

Update index.html to use the ES5 code



Demo



Using the ShadyCSS Polyfill

Include the CustomStyleInterface

Update the component to use
`<template>`

Use `prepareTemplate` and `styleElement`

Use `addCustomStyle` for CSS Custom
Property support





Polyfills are a temporary
measure



Summary



Understanding of Web Component browser support

Overview of the available polyfills

Step-by-step instruction into implementing the polyfills

Ability to use Web Components in production

