

Frontend Web Architecture

<https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference>

What is JavaScript?

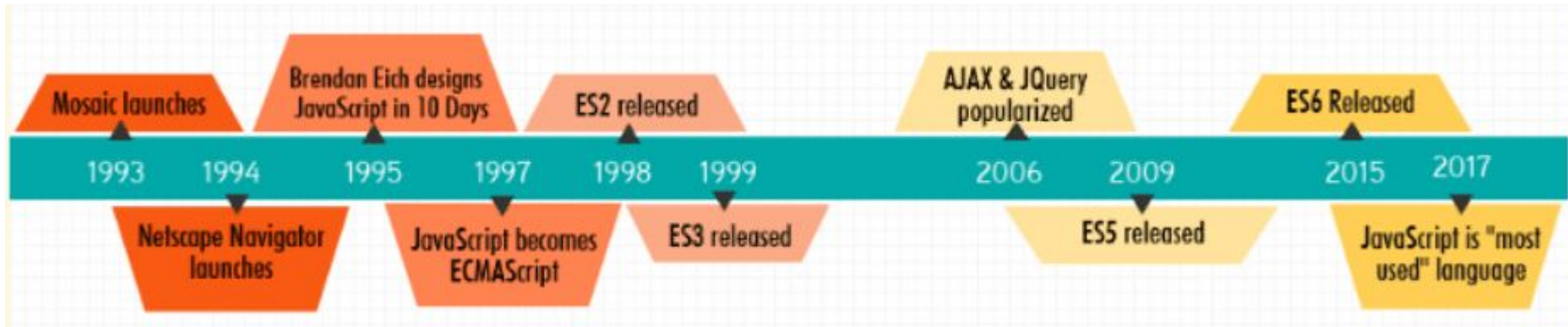
- General programming language, but designed with HTML in mind
- Provides interactivity to web pages
- Can modify HTML and CSS after a web page has been loaded
- Some web applications are written only in JavaScript

What is JavaScript?

- From Wikipedia:
 - ... high-level, dynamic, untyped, and interpreted programming language
 - ... is prototype-based with first-class functions, ...
 - ... supporting object-oriented, imperative, and functional programming
 - ... has an API for working with text, arrays, dates and regular expressions
- Not particularly similar to Java
- Also known as ECMAScript

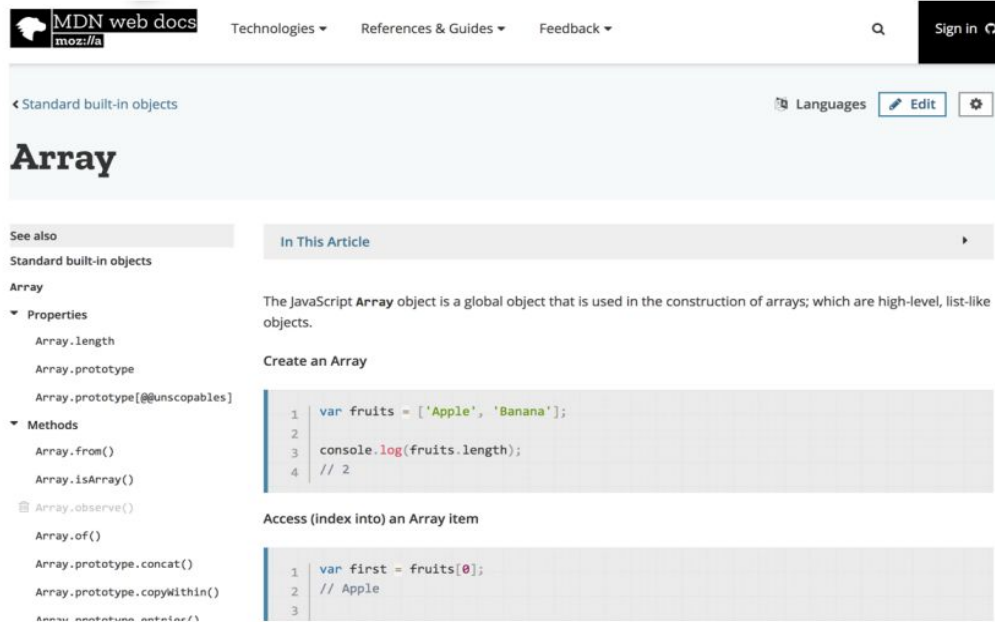
What is JavaScript?

- No relation to Java (maybe a little syntax, that's all)
- ECMAScript -> International standard for the language



Reference materials

- Not any “official” documentation
- Most definitive source for JavaScript, DOM, HTML, CSS: Mozilla Development Network (MDN)
- StackOverflow posts, blogs often have good examples



https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array

We will be using JavaScript

- To build our website
- To power interactivity between the user and the website
- To communicate to external servers using APIs
- The better you know pure JavaScript, the more you'll be able to build rich web applications
- Even to learn Angular, the better you know the JavaScript language, the better you will understand Angular

How do you add JavaScript to your page?

Internal JavaScript

```
<html>
<head>
  <title>Learning JavaScript</ title>
</head>
<body>

</body>
<script>
  // JavaScript goes here...
</script>
</html>
```

External JavaScript

```
<html>
<head>
  <title>Learning JavaScript</ title>
  <script src="script.js"></script>
</head>
<body>
</body>
</html>
```

Comments

- JavaScript supports two styles of comments.
- Any text between a `//` and the end of a line is treated as a comment and is ignored by JavaScript.
- Any text between the characters `/*` and `*/` is also treated as a comment; these comments may span multiple lines but may not be nested.

```
// This is a single-line comment.
```

```
/*
```

```
* This is a multi-line comment. The extra characters at the start of each line are  
* not a required part of the syntax; they just look cool!
```

```
*/
```


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Browser

- + Developer Tools

- + HTML + CSS

- + JavaScript

Features of a Browser

- Network Access
- Interpreting the fetched data
- Possibly fetching and interpreting dependencies like images
- Rendering HTML with CSS rules
- Running scripts in the context of the web page

Inspecting HTML Elements

- Click the inspector to highlight actual HTML elements in browser
- After highlighting an element in the browser, the “elements” section filters to highlight the code that generates that element

The screenshot shows a web browser displaying a page with a header image of students. Below the header, there are two main sections: "Novedades" (News) and "Próximos Eventos" (Upcoming Events). The "Novedades" section features a calendar for "RECUPERACIONES SEPTIEMBRE 2023" and a "MATRICULACIÓN" (Enrollment) section for the "CURSO 2023/2024". The "Próximos Eventos" section displays a message "¡No hay eventos!" (There are no events!) and a button "Todos los eventos de IES Belén".

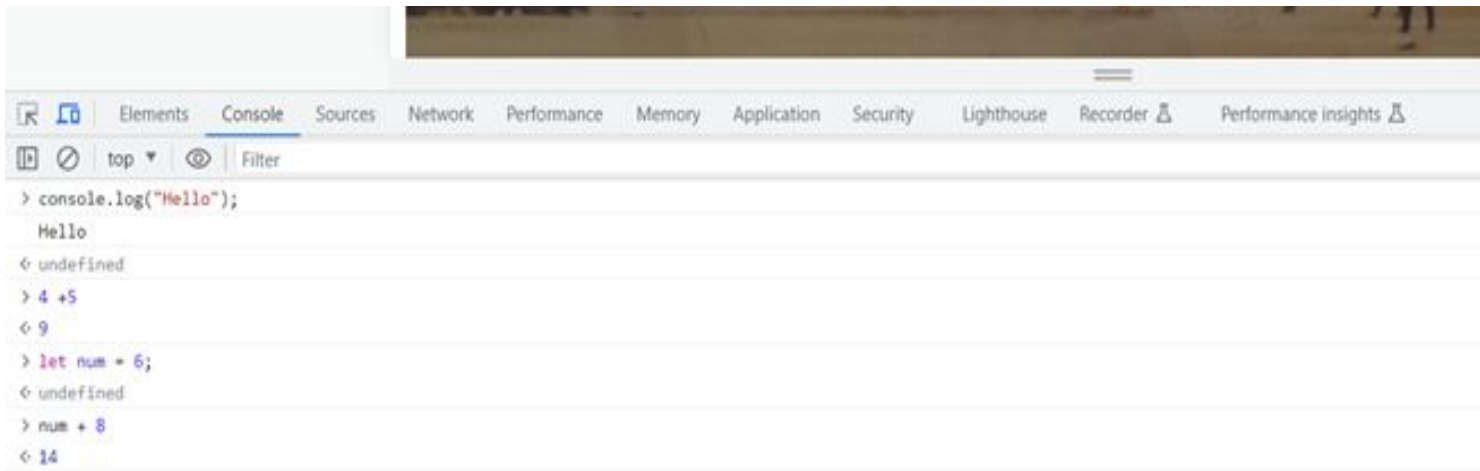
The Chrome DevTools "Elements" panel is open, showing the HTML structure of the page. The selected element is a heading for "Novedades". The HTML structure is as follows:

```
<div class="elementor-container elementor-column-gap-default">
  <div class="elementor-column elementor-col-66 elementor-top-column elementor-element elementor-element-26f7c4b" data-id="26f7c4b" data-element_type="column">
    <div class="elementor-widget-wrap elementor-element-populated">
      <div class="elementor-element elementor-element-b00cfca elementor-widget elementor-widget-heading" data-id="b00cfca" data-element_type="widget">
        <div class="elementor-widget-container">
          <h2 class="elementor-heading-title elementor-size-default">Novedades</h2>
        </div>
      </div>
    </div>
  </div>
```

The "Styles" panel on the right shows the default styles for the selected heading element.

Using the JavaScript Console

- In most current browsers, the JavaScript Console has been integrated as a tab within Developer Tools. The shortcut keys listed below will open Developer Tools, it might be necessary to switch to the right tab after that.



Using the JavaScript Console

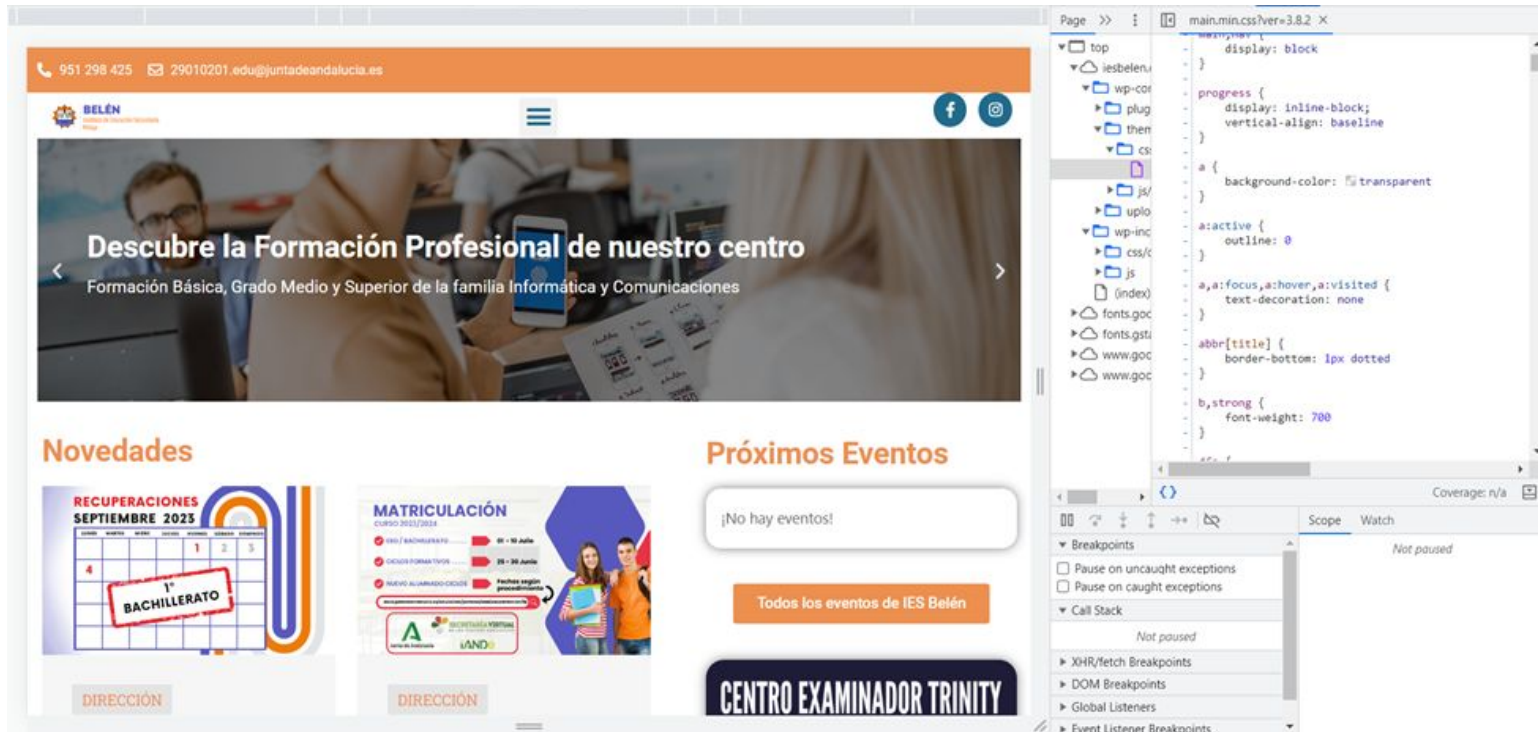
- The information displayed by a debugging/web console is made available through the multiple methods of the console Javascript object that can be consulted through `console.dir (console)`.

Using the JavaScript Console

- Opening the Console
- In most current browsers, the JavaScript Console has been integrated as a tab within Developer Tools. The shortcut keys listed below will open Developer Tools, it might be necessary to switch to the right tab after that.
- The information displayed by a debugging/web console is made available through the multiple methods of the console Javascript object that can be consulted through `console.dir(console)`.
- Measuring time - `console.time()`

Sources Panel

- View and edit CSS and JavaScript files



Network Panel

- View all resources loaded in a timeline

The screenshot shows a web browser window with the URL 29010201.edu@juntadeandalucia.es. The page content includes a header with contact information, a main banner for 'Descubre la Formación Profesional de nuestro centro', and two side sections: 'Novedades' (New News) and 'Próximos Eventos' (Upcoming Events). The 'Próximos Eventos' section displays a message '¡No hay eventos!' (No events!).

The Network Panel on the right side of the browser shows a list of 18 requests. The requests are categorized by type (e.g., Image, Script, Document) and status (e.g., Success, Error). The waterfall chart below the list shows the timing of each request, with a total of 18 requests, 540 kB transferred, and 7.3 MB resources.

Name	S	T	L	S	T...	Waterfall
We...	2	p	.	O	...	1...
23...	2	p	.	O	...	1...
23...	2	p	.	O	...	2...
Por...	2	p	.	O	...	1...
Por...	2	p	.	O	...	3...
trini...	2	p	.	O	...	2...
7cc...	2	p	.	O	...	1...
We...	2	p	.	O	...	2...
23...	2	p	.	O	...	5...
23...	2	p	.	O	...	9...
Por...	2	p	.	O	...	4...
Por...	2	p	.	O	...	1...
trini...	2	p	.	O	...	1...
7cc...	2	p	.	O	...	8...
We...	2	p	.	O	...	3...
7cc...	2	p	.	O	...	2...
128...	2	p	.	O	...	7...
e0d...	2	p	.	O	...	4...

Code editor

- You will need an editor that can save files in plain text
- Better if you find something that can highlight code to make it much more readable