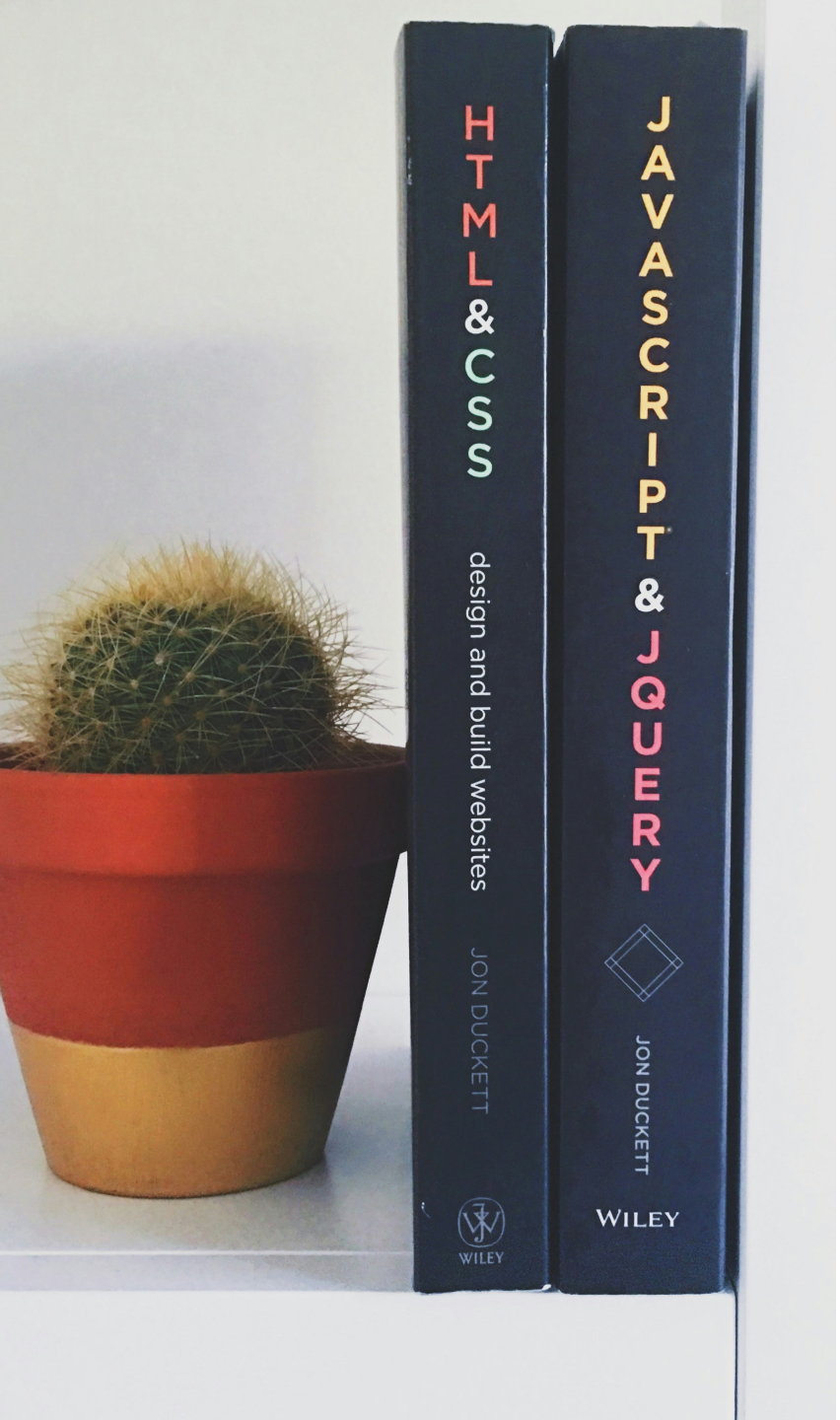

INTRO WEB APP 26

Politecnico di Torino

Introduction to Web Applications

JavaScript basics

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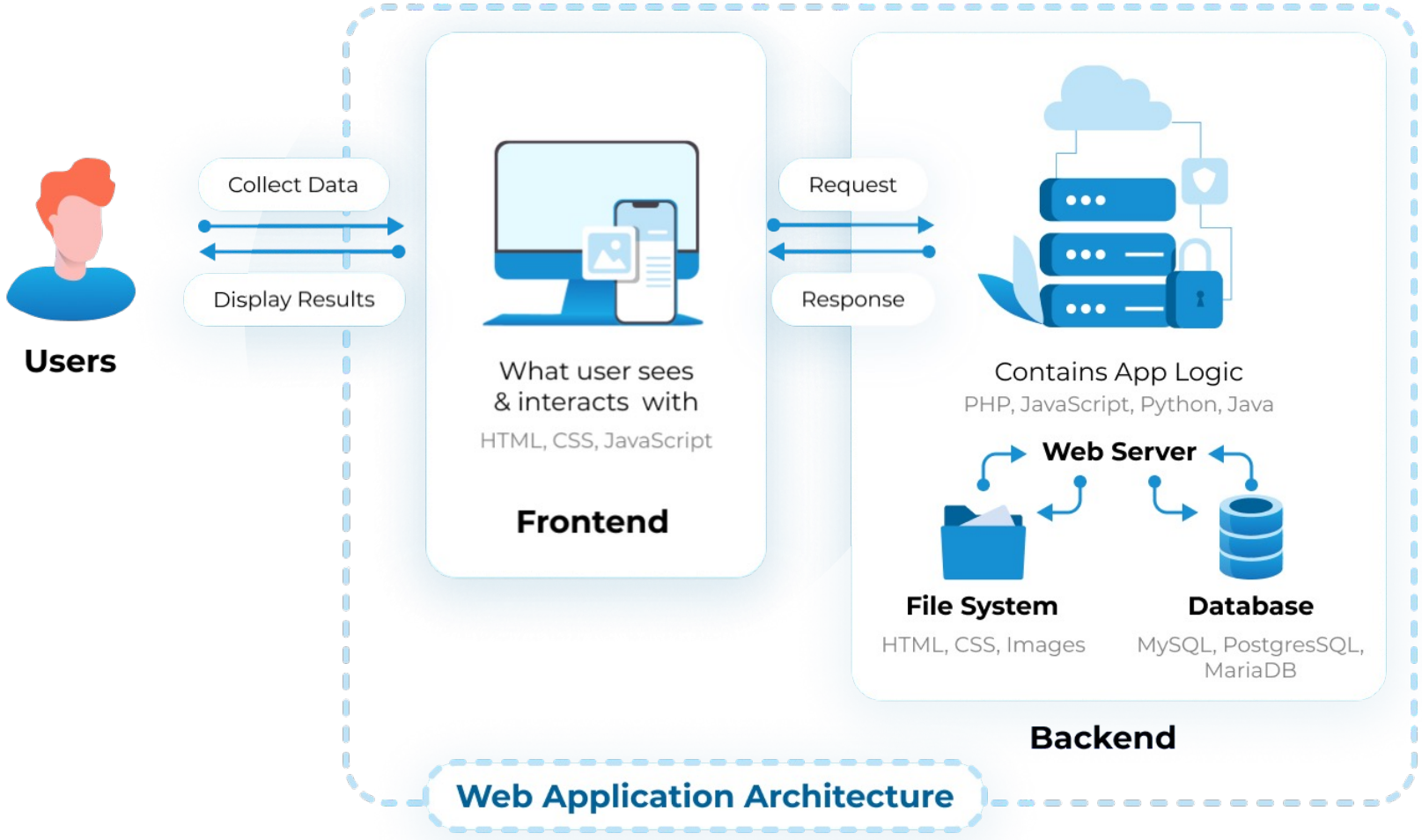
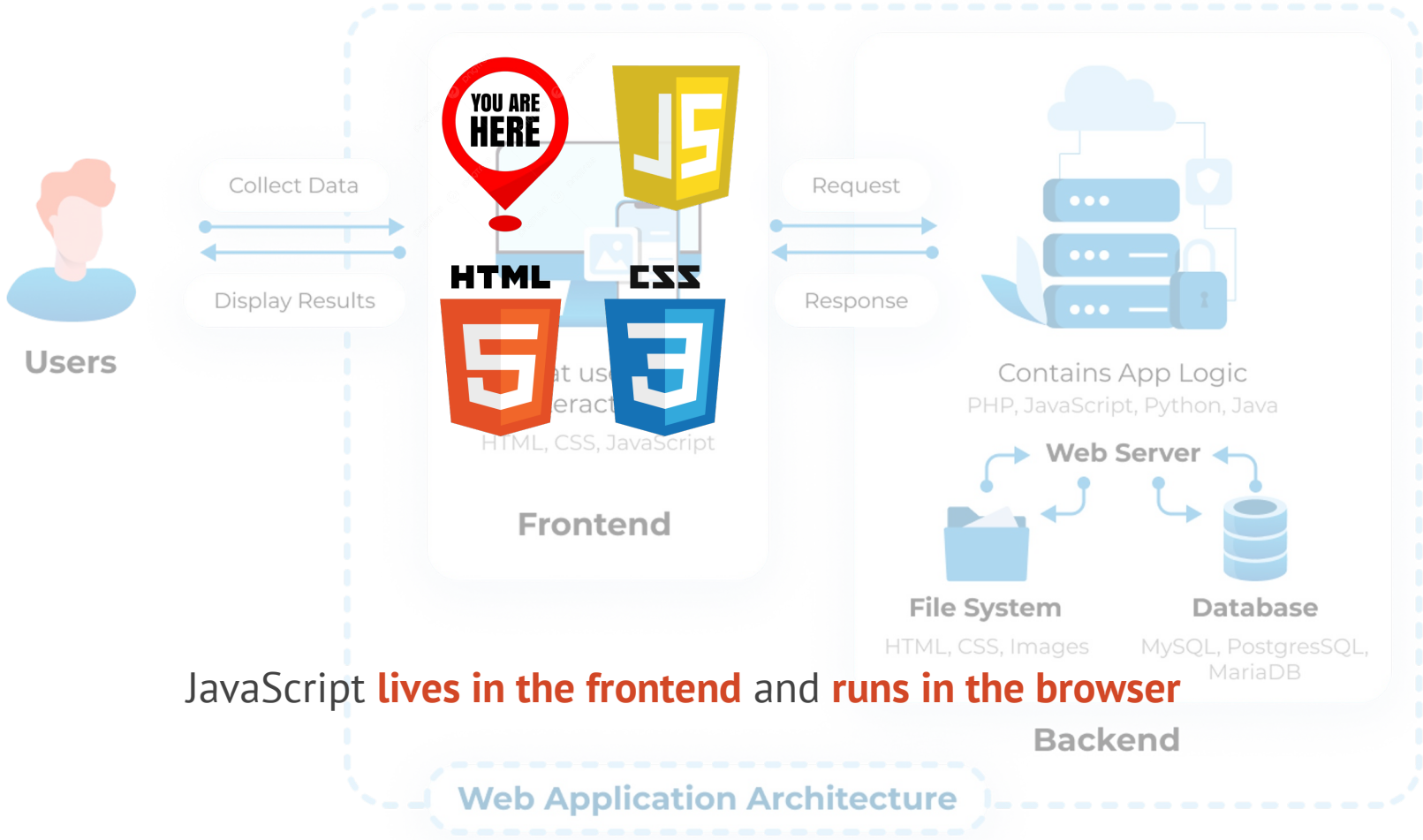
Goals

- Understand what JavaScript **adds to a web page**.
- Learn **basic syntax**: variables, values, conditionals, arrays, objects, and functions.
- Understand how JavaScript interacts with HTML through the **DOM**.
- React to **user actions** with **events**.
- Prepare for small **client-side interactions** in web applications.

HTML: where are we?



HTML: where are we?



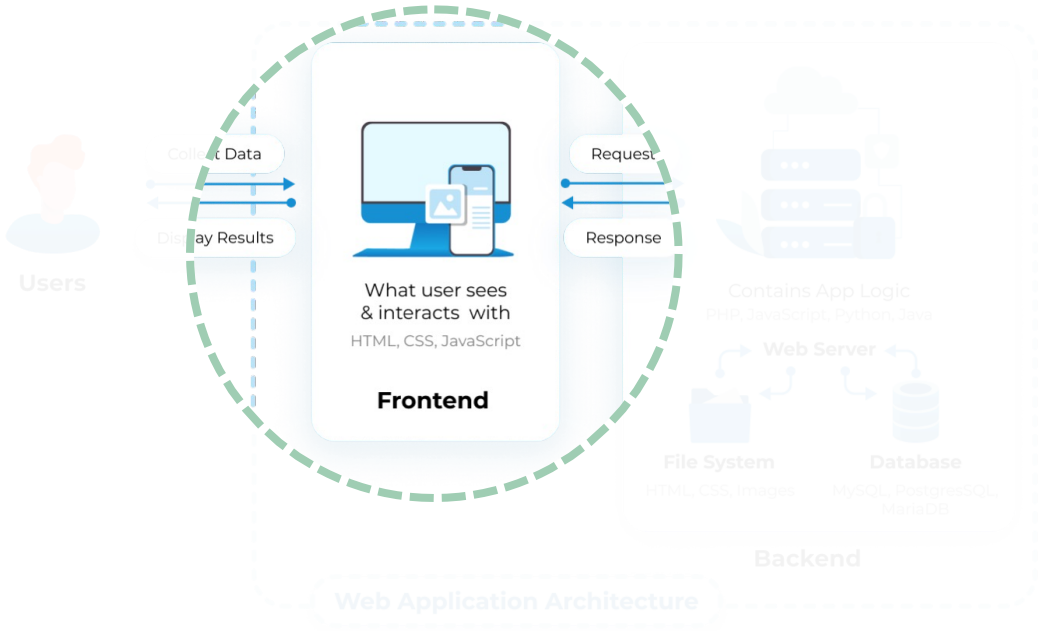
JavaScript **lives in the frontend** and **runs in the browser**

Web architecture components: Frontend

Frontend: what the user sees and interacts with

Languages:

- **HTML:** a markup language used to **structure content on the web**. It defines elements like headings, paragraphs, images, and links.
- **CSS:** a style sheet language used to **control the presentation of HTML elements**, such as colors, fonts, and layouts.
- **JavaScript:** a programming language used to **add interactivity and dynamic behavior** to web pages.

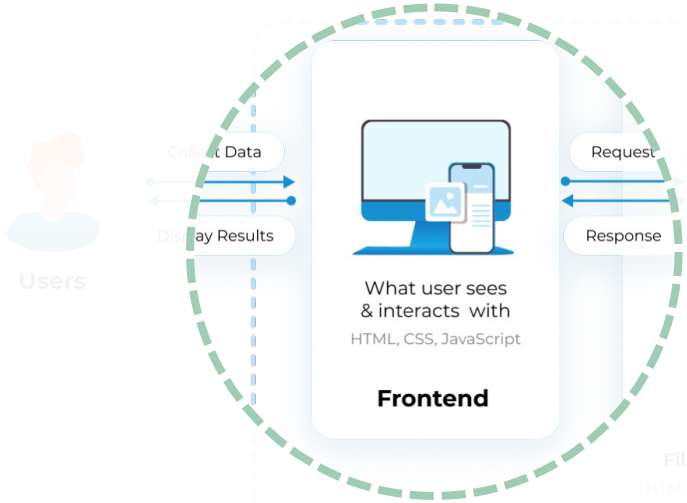


Web architecture components: Frontend

Frontend: what the user sees and interacts with

Applications:

- **Browser:** an application that **retrieves, interprets, and displays web content**, including HTML, CSS, and JavaScript.



What can JavaScript do?

- **Show or hide** parts of a form
- **Check** simple **input** before submitting
- Add or remove fields **dynamically**
- Update messages or counters
- **Filter** visible cards
- **Preview** selected **files**

JavaScript files (.js)

JavaScript can be written in a **separate .js file**

The **browser** loads and executes it

Code is executed from top to bottom

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Sample page</title>
  <script src="script.js"></script>
</head>
<body>
</body>
</html>
```

Variables: let and const

- Use **`const`** when the variable should not be reassigned
- Use **`let`** when the value may change

```
const maxSeats = 30;

let requestedSeats = 2;
```

Values and types

- **The type belongs to the value**, not to the variable

```
// string
const title = "City Center Visit";
// number
const duration = 90;
// boolean
const isAvailable = true;
// array
const languages = ["English",
"Italian"];
```

Comparisons and conditions

`===` is used to compare two values.

- `language === "English"`

```
if (requestedSeats > maxSeats) {
message = "Too many seats
requested.";
} else {
message = "Reservation possible.";
}
```

Arrays

- Arrays store ordered collections.
- **`.length`** gives the number of elements.
- **`.push()`** adds an element at the end.

```
const languages = ["Italian",
 "English", "Spanish"];
const places = ["Museum", "Square",
 "Cathedral"];
places.push("Market");
places.length;
```

Loops

- `for...of` is useful for arrays

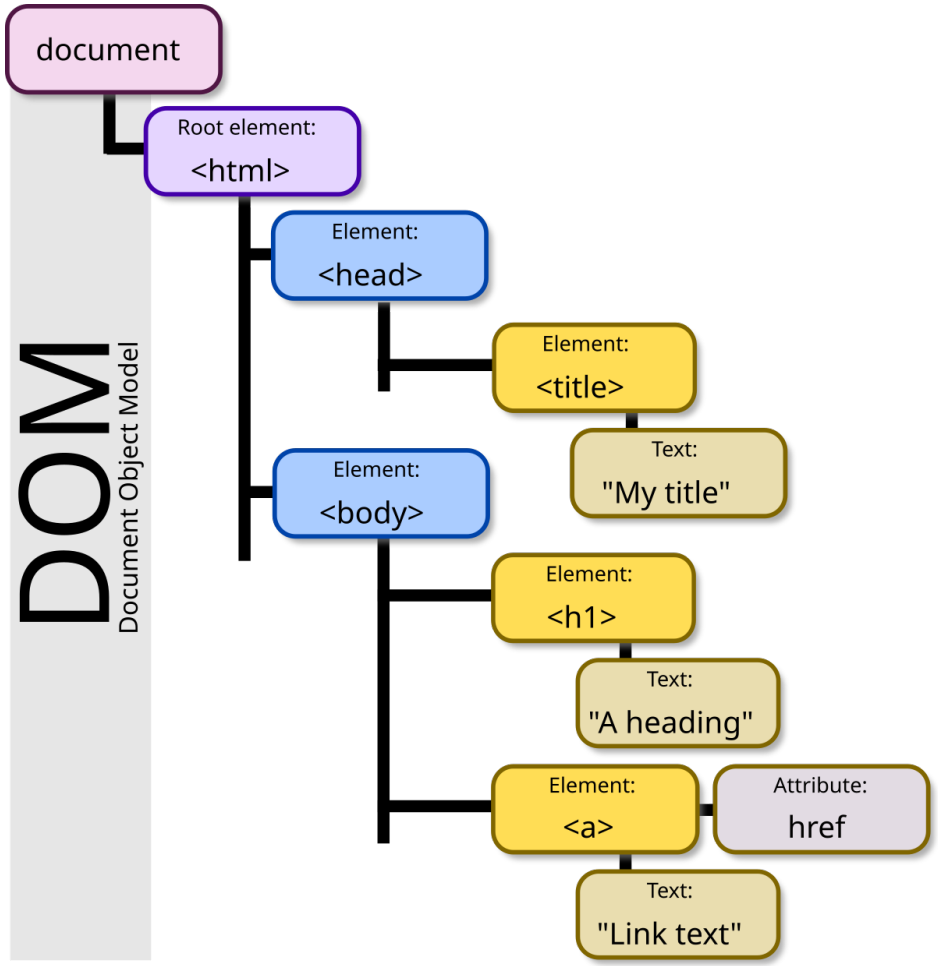
```
for (const language of languages) {
  console.log(language);
}
```

Functions

- Functions **group reusable code**
- They can receive **parameters**
- They can **return** a **value**

```
function canReserve(requestedSeats,
 availableSeats) {
return requestedSeats <=
 availableSeats;
}
```

Document Object Model (DOM)



- **Browser's internal representation** of a web page.
  - Obtained through parsing HTML.
  - Each node corresponds to a part of the document (e.g., elements, attributes, text)
- **Dynamic content manipulation**: allows JavaScript to modify a webpage's content, structure, and style in real time.
- **Navigation**: provides a way to traverse through elements and attributes, allowing scripts to access and manipulate specific parts of the webpage.

`https://en.wikipedia.org/wiki/Document_Object_Model`

DOM: Selecting and changing elements

- **`querySelector()`** finds an element.
- **`textContent`** changes its text.
- **`classList`** changes its CSS classes.

```
const message =
document.querySelector("#message");

message.textContent = "Reservation
possible.";
```

Events

- Events **allow JavaScript to react**
- Common events: **`click`, `change`, `submit`, `input`**

```
const button =
document.querySelector("#button");
button.addEventListener("click",
function () {
console.log("Button clicked");
});
```

Let's see it in practice

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