THE COMPLETE JAVASCRIPT COURSE

FROM ZERO TO EXPERT!

SECTION

MODERN JAVASCRIPT DEVELOPMENT: MODULES AND TOOLING

LECTURE

AN OVERVIEW OF MODULES IN JAVASCRIPT

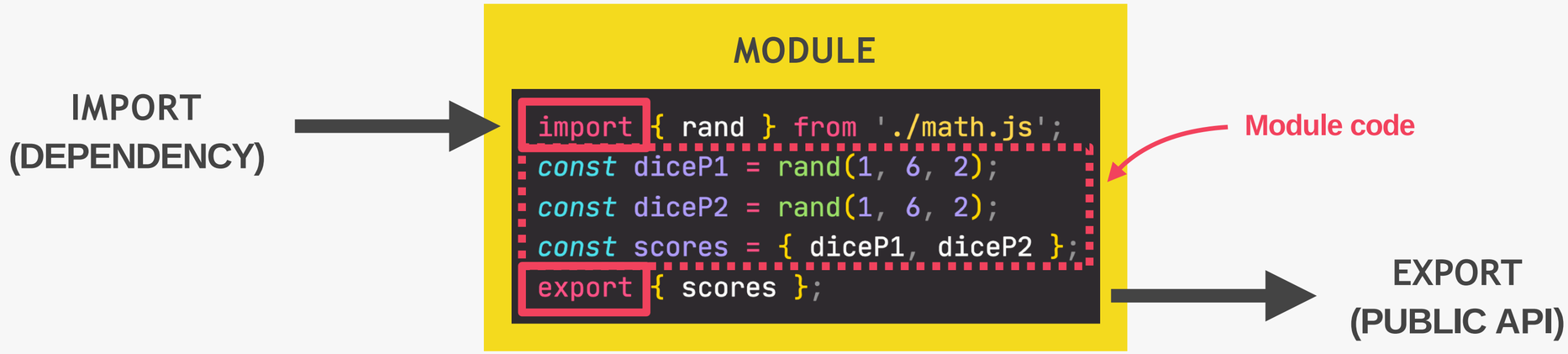
AN OVERVIEW OF MODULES

MODULE

- 👉 Reusable piece of code that **encapsulates** implementation details;
- 👉 Usually a **standalone file**, but it doesn't have to be.

WHY MODULES?

- 👉 **Compose software:** Modules are small building blocks that we put together to build complex applications;
- 👉 **Isolate components:** Modules can be developed in isolation without thinking about the entire codebase;
- 👉 **Abstract code:** Implement low-level code in modules and import these abstractions into other modules;
- 👉 **Organized code:** Modules naturally lead to a more organized codebase;
- 👉 **Reuse code:** Modules allow us to easily reuse the same code, even across multiple projects.



NATIVE JAVASCRIPT (ES6) MODULES

ES6 MODULES

Modules stored in files, **exactly one module per file.**

```
import { rand } from './math.js';
const diceP1 = rand(1, 6, 2);
const diceP2 = rand(1, 6, 2);
const scores = { diceP1, diceP2 };
export { scores };
```

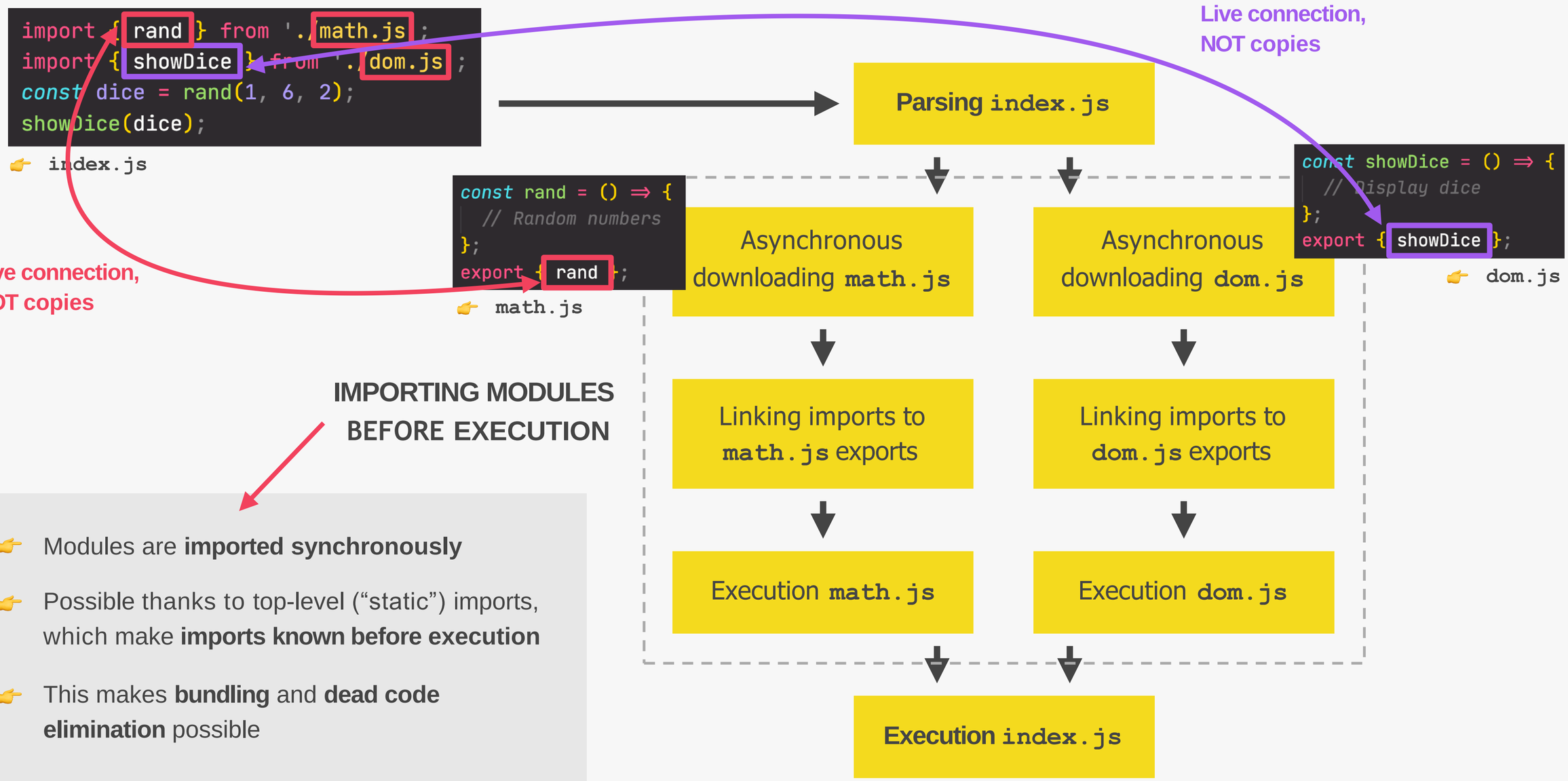
`import` and `export` syntax

	ES6 MODULE	SCRIPT
👉 **Top-level variables**	Scoped to module	Global
👉 **Default mode**	Strict mode	"Sloppy" mode
👉 **Top-level `this`**	`undefined`	`window`
👉 **Imports and exports**	✅ YES	🚫 NO
👉 **HTML linking**	`<script type="module">`	`<script>`
👉 **File downloading**	Asynchronous	Synchronous

☝️ Need to happen at top-level

Imports are hoisted!

HOW ES6 MODULES ARE IMPORTED



IMPORTING MODULES BEFORE EXECUTION

- Modules are **imported synchronously**
- Possible thanks to top-level (“static”) imports, which make **imports known before execution**
- This makes **bundling** and **dead code elimination** possible

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REVIEW: WRITING CLEAN AND MODERN JAVASCRIPT

REVIEW: MODERN AND CLEAN CODE

READABLE CODE

- 👉 Write code so that **others** can understand it
- 👉 Write code so that **you** can understand it in 1 year
- 👉 Avoid too “clever” and overcomplicated solutions
- 👉 Use descriptive variable names: **what they contain**
- 👉 Use descriptive function names: **what they do**

GENERAL

- 👉 Use DRY principle (refactor your code)
- 👉 Don’t pollute global namespace, encapsulate instead
- 👉 Don’t use `var`
- 👉 Use strong type checks (`===` and `!==`)

FUNCTIONS

- 👉 Generally, functions should do **only one thing**
- 👉 Don’t use more than 3 function parameters
- 👉 Use default parameters whenever possible
- 👉 Generally, return same data type as received
- 👉 Use arrow functions when they make code more readable

OOP

- 👉 Use ES6 classes
- 👉 Encapsulate data and **don’t mutate** it from outside the class
- 👉 Implement method chaining
- 👉 Do **not** use arrow functions as methods (in regular objects)

REVIEW: MODERN AND CLEAN CODE

AVOID NESTED CODE

- 👉 Use early **`return`** (guard clauses)
- 👉 Use ternary (conditional) or logical operators instead of **`if`**
- 👉 Use multiple **`if`** instead of **`if/else-if`**
- 👉 Avoid **`for`** loops, use array methods instead
- 👉 Avoid callback-based asynchronous APIs

ASYNCHRONOUS CODE

- 👉 Consume promises with async/await for best readability
- 👉 Whenever possible, run promises in **parallel** (**`Promise.all`**)
- 👉 Handle errors and promise rejections