**Modules**

**In JavaScript, modules are a way to organize code into separate files, each containing related functionality. This modular approach helps in better structuring, maintaining, and reusing code within a project. Modules allow you to encapsulate variables, functions, and classes, making them accessible only where needed and preventing unintended global scope pollution.**

**There are two primary standards for JavaScript modules:**

**CommonJS:**

**CommonJS is a module format used primarily in server-side JavaScript environments, like Node.js. It uses require() to import modules and module.exports or exports to export functionality.**

**Example of exporting in CommonJS:**

// math.js

*function* add(*a*, *b*) {

    return *a* + *b*;

}

*module*.*exports* = {

    add: add

};

**Example of importing in CommonJS:**

// main.js

*const* math = require('./math');

console.log(math.add(2, 3)); // Output: 5

**ES Modules (ESM):**

**ES Modules are the standardized module system for JavaScript introduced in ECMAScript 6 (ES6). They use import and export statements to handle module dependencies.**

**Example of exporting in ES Modules:**

// utlity.js

export *function* add(*a*, *b*) {

    return *a* + *b*;

}

**Example of importing in ES Modules:**

// script.js

import { add } from "./utlity.js";

console.log(add(2, 3)); // Output: 5

**ES Modules have become increasingly popular due to their native support in modern browsers and in Node.js with appropriate configurations.**

**Modules provide benefits such as:**

* **Encapsulation: Variables and functions within modules are scoped, preventing unintended global variable access.**
* **Reusability: Modules can be imported into multiple files, promoting code reuse.**
* **Maintainability: Code is organized into smaller, manageable units, making it easier to understand and maintain.**
* **Dependency management: Modules explicitly define their dependencies, making it easier to track and manage dependencies between different parts of the codebase.**
* **Overall, modules are an essential feature in modern JavaScript development, promoting code organization, reusability, and maintainability.**