

Assignment 1

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1) Difference between Framework and Library

Library:

- You call and use it whenever you need.
- You stay in control of the program flow.
- It provides specific functions or tools.
- Examples: **jQuery, React, Lodash**

Framework:

- The framework controls how your code should be structured.
 - It calls your code (Inversion of Control).
 - It gives you a complete structure to build an application.
 - Examples: **Angular, Django, Laravel**
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2) Difference between Compiler and Preprocessor

Preprocessor:

- Runs before the compiler.
- Performs simple text-based operations like:
 - Removing comments
 - Expanding macros
 - Including files (#include)
- Example: **C Preprocessor**

Compiler:

- Runs after the preprocessor.
 - Checks the code for errors (syntax/semantic).
 - Translates the code into:
 - Machine code
 - Bytecode
 - Or another executable form
 - Also performs optimization.
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3) Difference between TypeScript and JavaScript

JavaScript:

- A dynamic programming language.
- Does not require type declarations.
- Directly executed by browsers.
- Example:
 - `let x = 5;`
 - `x = "hello"; // Valid`

TypeScript:

- A superset of JavaScript.
- Adds static typing, interfaces, and better tooling.
- Needs to be compiled into JavaScript before running.