JavaScript, TypeScript & Dependencies – Complete Notes

1. Dependencies

Dependencies are packages that are required for the application to run properly. Without these packages, the app will not work.
Example:

```
"dependencies": { "express": "^4.18.2", "react": "^18.2.0" }
```

These packages are installed when the application is deployed to production.

2. Dev Dependencies

Dev dependencies are packages that are only needed during development. They help developers but are not required when the app is running for users.
Example:

```
"devDependencies": { "nodemon": "^3.0.1", "eslint": "^8.50.0" }
```

Difference Between Dependencies and Dev Dependencies

Feature	Dependencies	Dev Dependencies
Needed to run app	Yes	No
Used by users	Yes	No
Used during development	Yes	Yes
Installed in production	Yes	No

3. JavaScript

JavaScript is a programming language used to make web pages interactive. It does not check data types strictly.
Example:

```
let age = 20; age = "twenty"; // No error console.log(age);
```

4. TypeScript

TypeScript is a superset of JavaScript. It adds type checking and helps find errors before running the code.
Example:

```
let age: number = 20; age = "twenty"; // Error
```

Difference Between JavaScript and TypeScript

Feature	JavaScript	TypeScript
Type checking	No	Yes
Error detection	At runtime	Before execution
Browser support	Runs directly	Compiled to JavaScript
Project size	Small projects	Large projects

5. Why We Use TypeScript

- It reduces bugs by checking types early.
- It makes code easier to understand and maintain.
- It is very useful for large and team projects.
- It provides better auto-complete and error suggestions.
- All JavaScript code works in TypeScript.