# Web Development Concepts – Beginner Friendly Guide

## How Websites Work (Client-Server Model)

Websites work using the \*\*client-server model\*\*. When you open a website in your browser (the client), a request is sent to a server that hosts the website files. The server responds by sending back the appropriate files (like HTML, CSS, JS) to the browser, which then displays the website to you.

\*\*Example:\*\* Typing www.example.com in your browser sends a request to the server where that website is stored. The server responds with the web page data.

## DOM Manipulation

DOM stands for \*\*Document Object Model\*\*. It represents the structure of an HTML document in a tree-like format. JavaScript can be used to change (manipulate) this structure.

\*\*Example:\*\* Change the text of a paragraph using JavaScript:

```javascript

document.getElementById("myPara").innerText = "New text!";

```

## What is npm?

\*\*npm\*\* stands for \*\*Node Package Manager\*\*. It is a tool that helps you install and manage packages (libraries or modules) for JavaScript applications.

\*\*Example:\*\* `npm install react` installs React into your project.

## Install Node.js, npm

To use tools like React or Vite, you first need to install \*\*Node.js\*\*, which automatically installs \*\*npm\*\* with it.

\*\*Steps:\*\*

1. Go to [https://nodejs.org](https://nodejs.org)

2. Download and install the recommended version.

## Introduction to React – what, why, and how

\*\*What:\*\* React is a JavaScript library for building user interfaces, especially single-page applications.

\*\*Why:\*\* It makes building dynamic, interactive UIs easier with reusable components.

\*\*How:\*\* React uses components and a virtual DOM to update only the parts of a page that need to change.

## Difference between React and traditional HTML+JS

| Feature | Traditional HTML + JS | React |

|----------------|------------------------|---------------------------|

| Structure | Mixed HTML/JS/CSS | Component-based |

| Reusability | Low | High |

| Speed | Full page reload | Fast, dynamic updates |

| Maintenance | Harder | Easier with components |

## What is Vite

\*\*Vite\*\* is a build tool that helps you start and run modern front-end projects quickly. It's faster than older tools like Webpack and works great with frameworks like React.

\*\*Why use Vite:\*\* Fast development server, instant updates, and better performance.

## What is JSX and TSX

\*\*JSX\*\* (JavaScript XML): A syntax extension that allows you to write HTML-like code inside JavaScript.

\*\*Example JSX:\*\*

```jsx

const element = <h1>Hello, world!</h1>;

```

\*\*TSX\*\* is the same as JSX but used with \*\*TypeScript\*\* instead of JavaScript.

## What is package.json

\*\*package.json\*\* is a file that keeps track of your project’s metadata and dependencies.

\*\*Includes:\*\*

- Project name and version

- Scripts (like `npm run dev`)

- List of packages the project needs

## What is package-lock.json

\*\*package-lock.json\*\* records the exact versions of packages installed. It ensures that everyone working on the project has the same versions.

This file is automatically generated by npm.

## What is .env file

The \*\*.env\*\* file is used to store environment variables like API keys or custom settings.

\*\*Example:\*\*

```

VITE\_API\_KEY=your\_api\_key\_here

```

You can access it in React using `import.meta.env.VITE\_API\_KEY`.