

🌟 Beginner's Guide to React.js

📘 1. What is React?

React is a **JavaScript library** used to build **user interfaces (UI)** – especially for websites that update content without reloading the entire page.

It was developed by **Facebook** and is now maintained by **Meta** and the open-source community.

🎯 Think of React as:

“LEGO blocks” for building websites – each block (component) can be reused!

🔍 2. Why Learn React?

Reason	Explanation
★ Popular	Used by Facebook, Instagram, Netflix, etc.
🔄 Reusable Code	Break your UI into components and reuse them.
⚡ Fast	Uses Virtual DOM for better performance.
💡 Easy to Learn	Uses JavaScript and a syntax called JSX.
🧩 Rich Ecosystem	Many tools available: React Router, Redux, etc.

🧱 3. Key Concepts in React

a. Component

- A building block of UI (like a button, navbar, etc.)
- Two types: Functional (modern) and Class-based (older)

b. JSX

- A syntax to write HTML inside JavaScript:

```
jsx
```

```
<h1>Hello React!</h1>
```

c. Props

- Pass data **from parent to child** components.

d. State

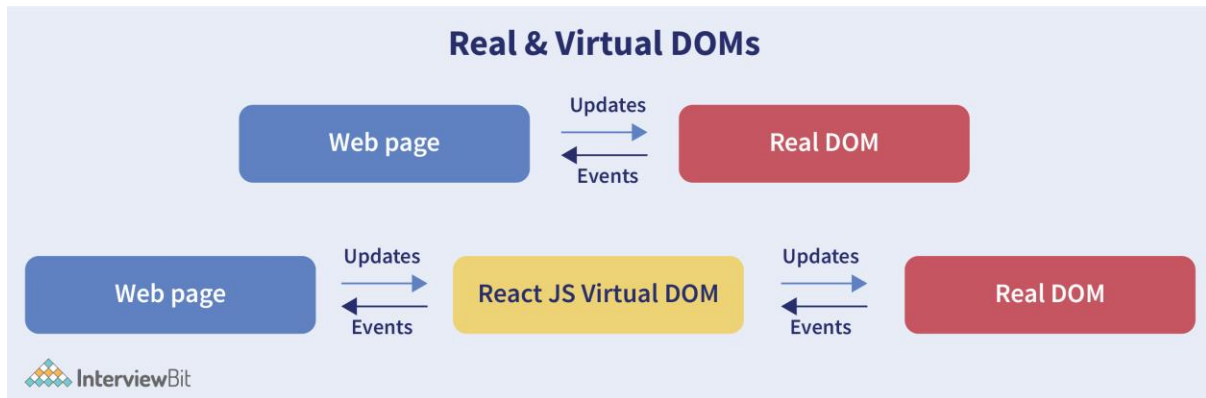
- Manage data **inside** a component.

e. Hooks

- Special functions like `useState()` and `useEffect()` to add features in functional components.

4. React Architecture – How it Works

Here's a simple visual representation:



✓ What Happens Behind the Scenes:

1. You write components using JSX.
2. React creates a **Virtual DOM** (a copy of real DOM in memory).
3. When data changes (state or props), React:
 - Re-renders the Virtual DOM.
 - Compares new Virtual DOM with the old one (this is called "**diffing**").
 - Finds what changed.
 - Updates **only that part** in the actual **Real DOM**.

This process makes React apps **faster and smoother** than traditional JavaScript apps that reload the entire page or DOM section.

5. Basic Example

jsx

```
import React, { useState } from 'react';

function Counter() {
  const [count, setCount] = useState(0); // state variable
  return (
    <div>
      <h2>You clicked {count} times</h2>
```

```
    <button onClick={() => setCount(count + 1)}>Click Me</button>

  </div>

);

}

export default Counter;
```

🔗 6. Starting a React App (with Vite)

```
npm create vite@latest my-react-app -- --template react
cd my-react-app
npm install
npm run dev
```

Open <http://localhost:5173> in your browser.

Summary Table

Term	Meaning
React	Library to build user interfaces
Component	Reusable UI block
JSX	HTML + JavaScript syntax
Props	Data passed to components
State	Internal data for a component
Hooks	Functions to use state and features
Virtual DOM	Lightweight copy of the real DOM