**React Installation**

1. Next.js is a framework of react and react is promoting to shift there for production purposes.

2. Now we can not setup react like old times. Now have to use VITE, a powerful tool to install react.

3. Installation steps:



**React facts**

1. React is made to make Developer life easy. Not performance Optimization.
2. React is a javascript object
3. React creates a separate dom which is known as virtual DOM
4. JSX simplifies react. Like:

const element = React.createElement("div", null,

[React.createElement("p",null, "hello world"),

React.createElement("p",null, "hello world"),

React.createElement("p",null, "hello world")]);

Simplified:

<div> <p> hello world </p> <p> hello world </p> <p> hello world </p> </div>

1. Babel transpiles XML into Javascript
2. State is an important thing in React that helps to simplify process through state variable.
3. State is an array of var and function. So, in [var, function], function helps to update the value of var

**Virtual DOM**

DOM is fast but the process of showing the change of DOM is slow.



To make it fast, we can do:

1. Optimize Batch update: As an example, for a 10000 time loop, if we do batch update (div.innerHTML=value) in every loop, then it gets much slower. But after the loop, if we do the batch update, then it takes no time. So, without, virtualDOM, we can optimize batch update to make the site faster.

2. Less DOM operation

Here comes Virtual DOM. It acts like a rough DOM sheet to use reconciliation algorithm to do the exact change and make the operation much faster.



Example:



Here, when we insert gggggg, the normal DOM changes every element. But Virtual DOM only changes the element after gggggg or the necessary parts by comparing.

\*\*Virtual DOM compares between previous UI and new UI and render only the changed part, not the whole page.