

# Introduction to React

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In this lecture, we will set the foundation for working with React using Vite. The goal is to understand what React is, why we use it, and how to quickly set up a React project with Vite.

## What is React?

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React is a popular JavaScript library for building user interfaces. Instead of manipulating the DOM directly, React allows you to build applications using reusable components. These components make your code more organized, modular, and easier to maintain.

Key benefits of React:

- Component-based structure
- Declarative code style
- Efficient updates with the virtual DOM
- Large ecosystem and community support

## Why use Vite?

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Traditionally, React apps were created using Create React App (CRA). While CRA works, it can feel slow and bloated. Vite is a modern alternative that offers:

- Extremely fast startup times
- Hot Module Replacement (HMR) for instant updates
- Simpler configuration
- Lightweight builds

Vite makes it much easier to get started with React development.

# Setting Up Your Environment

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Before we can use Vite, make sure you have the following installed:

- Node.js (LTS version recommended)
- npm (comes bundled with Node.js)

You can check if Node.js and npm are installed by running:

```
node -v  
npm -v
```

## Creating a React Project with Vite

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To create a new React project with Vite, run the following command in your terminal:

```
npm create vite@latest my-react-app
```

This will prompt you to choose a framework. Select **React** (or **React + JavaScript** if you see multiple options).

Once the project is created, navigate into the folder and install dependencies:

```
cd my-react-app  
npm install
```

Now, run the development server:

```
npm run dev
```

You should see a development URL, usually `http://localhost:5173`, where your React app will be running.

## Recap

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- React is a JavaScript library for building user interfaces using components.
- Vite is a modern build tool that makes React development faster and simpler.
- We created a new React app using Vite and ran it locally.