React Installation & Setup

Using Vite with TypeScript

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What is React?

- React is a JavaScript library for building user interfaces
- Developed by Facebook
- Uses component-based architecture
- Fast rendering using Virtual DOM
- Widely used for Single Page Applications (SPA)

Why Vite?

- Vite is a modern frontend build tool
- Much faster than Create React App
- Instant server start
- Faster Hot Module Replacement (HMR)
- Optimized build using Rollup

Why TypeScript with React?

- TypeScript is a superset of JavaScript
- Provides static typing
- Better code readability & maintainability
- Early error detection during development
- Ideal for large-scale applications

Prerequisites

Before starting, make sure you have:

- Basic JavaScript knowledge
- Node.js installed
- npm or yarn installed
- Code Editor (VS Code recommended)

Install Node.js

Download from: https://nodejs.org

Install LTS version

Verify installation:

- node -v
- npm -v

Create React App using Vite (TypeScript)

Open terminal and run:

- npm create vite@latest

Project Setup Steps

After running the command:

1. Enter project name
2. Select Framework → React
3. Select Variant → TypeScript
4. Project will be created automatically

Navigate to Project Folder

- cd your-project-name

Install dependencies:

- npm install

Start Development Server:

- npm run dev

Default Project Structure

```
project-name/
├──── src/
│     ├──── assets/
│     ├──── App.tsx
│     ├──── main.tsx
│     └──── index.css
├──── public/
├──── package.json
├──── tsconfig.json
└──── vite.config.ts
```

Important Files Explained

main.tsx → Application entry point

App.tsx → Root component

index.css → Global styles

tsconfig.json → TypeScript configuration

vite.config.ts → Vite configuration

App.tsx Example

```tsx
function App() {

  return (

    <div>

      <h1>Welcome to React with Vite & TypeScript</h1>

    </div>

  );

}

export default App;
```

Advantages of Using Vite

- Lightning fast startup
- Better performance
- Easy configuration
- Supports TypeScript out of the box
- Ideal for modern React projects

Summary

- React is used for building UI
- Vite provides fast development
- TypeScript adds type safety
- Easy and modern setup process
- Best choice for new React projects