# Group 1: Introduction to ReactJS

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## 1. Introduction to ReactJS

### What is React?

ReactJS, or simply React, is an open-source JavaScript library developed by Facebook for building user interfaces, particularly single-page applications. It allows developers to create reusable UI components and efficiently manage the application's state.

### Why use React?

React is popular because it:

• Simplifies the creation of complex, interactive user interfaces.

• Allows for efficient DOM (Document Object Model) updates through a virtual DOM, which improves performance.

• Supports reusable components, enabling modular and maintainable code.

• Has a large ecosystem and community, with many libraries and tools supporting it.

## 2. React Project Structure and Setting Up a React Development Environment

### Project Structure

A typical React project includes directories for:  
• src: Contains the source code, including components, assets, and styles.  
• public: Contains the HTML file and static assets.  
• node\_modules: Holds installed dependencies (handled by npm or yarn).

### Setting Up

React projects are commonly initialized using Create React App, which configures the environment with essential tools and libraries for React development.

## 3. Understanding JSX and Its Syntax

### JSX (JavaScript XML)

JSX is a syntax extension for JavaScript, allowing HTML-like code to be written within JavaScript. JSX is compiled to JavaScript and makes it easier to build the structure of the UI directly in the component code.

### Syntax

JSX elements are written similarly to HTML but are case-sensitive, and you must use className instead of class for CSS classes. Expressions in JSX are wrapped in {}.

## 4. Introduction to Components

### Functional Components vs. Class Components

• Functional Components: Written as JavaScript functions, functional components receive props as arguments and return JSX.

• Class Components: These are ES6 classes extending from React.Component and include methods like render() for returning JSX. Class components can manage local state, while functional components rely on React hooks for state management.