

Introduction to jQuery

BCA

Introduction

jQuery is a lightweight, "write less, do more", JavaScript library.

The purpose of jQuery is to make it much easier to use JavaScript on your website.

jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.

jQuery also simplifies a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.

Features

- HTML/DOM manipulation
- CSS manipulation
- HTML event methods
- Effects and animations
- AJAX
- Utilities

Why jQuery?

- Simple to use
- Cross browser compatibility
- Light weight and lean
- Open Source library
- High community
- Extensible

Fundamental of jquery

Installing jQuery

jQuery can be installed by two ways

- 1) By downloading file
- 2) By CDN Link

Installation process

1) Download a latest version of jquery file form online jquery.org website.

a) Link that file to your web page with script tag

```
<script type="text/javascript" src="jquery.3.7.1.js"></script>
```

2) Now call the jquery on the website with following code

```
$(document).ready(function){  
    //code here  
});
```

jQuery Syntax

jQuery selectors

- By ID
- By Class
- By element
- By attribute
- Parent
- Child
- Siblings

jQuery Events

The events are same as HTML

- Click
- On
- Ready
- Load
- change

Manipulating DOM

DOM Manipulation

jQuery provides a number of methods to manipulate DOM in efficient way. You do not need to write big and complex code to set or get the content of any HTML element.

jQuery provides methods such as `attr()`, `html()`, `text()` and `val()` which act as getters and setters to manipulate the content from HTML documents.

Operations

- Extract the content of an element
- Change the content of an element
- Adding a child element under an existing element
- Adding a parent element above an existing element
- Adding an element before or after an existing element
- Replace an existing element with another element
- Delete an existing element
- Wrapping content with-in an element

Overview of Popular Frameworks/Library

React Js

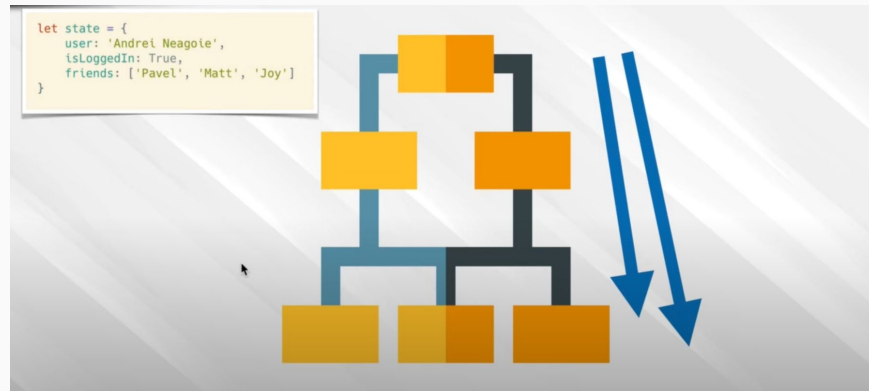
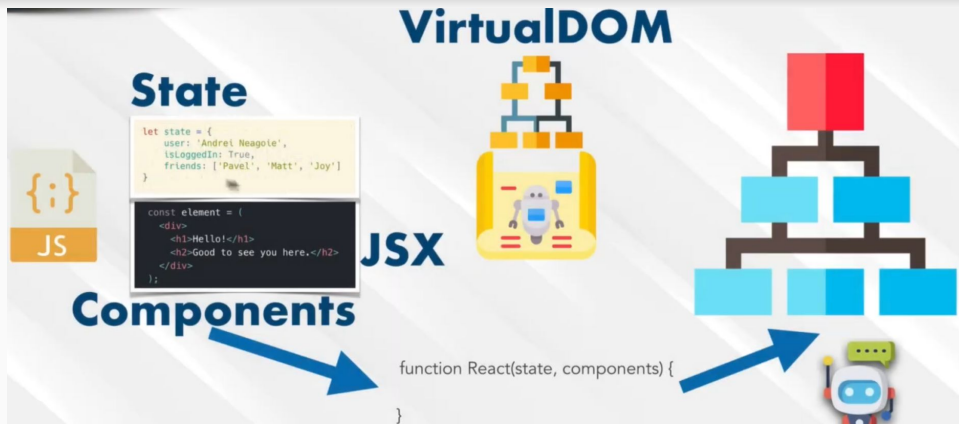
ReactJS is a component-based JavaScript library, developed by facebook, used to build dynamic and interactive user interfaces.

It simplifies the creation of single-page applications (SPAs) with a focus on performance and maintainability.

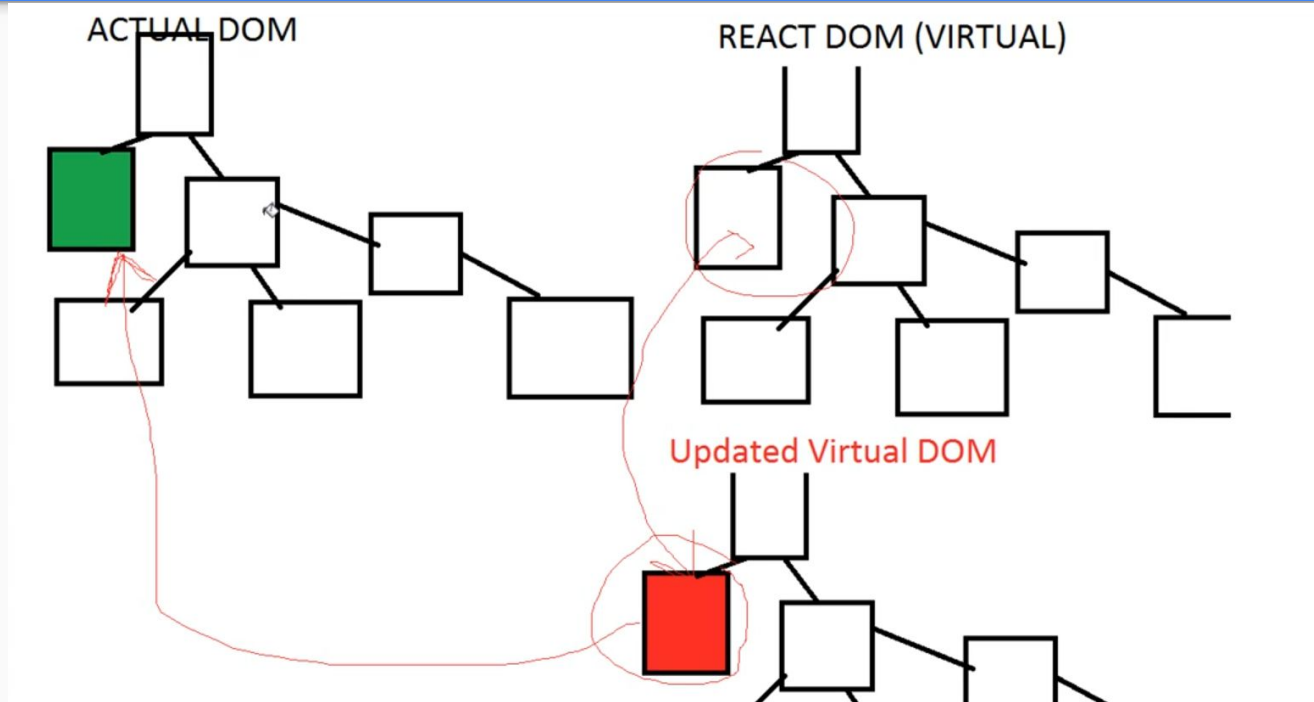
Features of React js

- Virtual DOM: Updates only the components that changed, ensuring high performance.
- Component-Based Architecture: Applications are divided into reusable components.
- One-Way Data Binding: Data flows in a unidirectional way, making the application easier to debug.
- JSX Syntax: Allows writing HTML within JavaScript for enhanced readability and functionality.
- Ecosystem: React doesn't provide routing, state management, or HTTP client libraries out of the box (you can use tools like Redux or React Router).

One-Way Data Binding



Virtual DOM



Advantages

- Lightweight and fast due to its library-based approach.
- Large developer community and extensive third-party libraries.
- Great for creating highly interactive UIs.

Disadvantages

- Relies on external tools for complete solutions.
- Moderate learning curve for beginners due to JSX and state management concepts.
- Frequent updates can make older projects difficult to maintain.

Vue js

Vue JS is a JavaScript framework, developed by Evan You, used to design and build user interfaces.

It is one of the best frameworks for Single Page Web Applications. It is compatible with other libraries and extensions as well.

Features of vue js

- Two-Way Data Binding: Ensures real-time synchronization between the UI and the model (like AngularJS).
- Virtual DOM: Similar to React, it ensures optimized performance.
- Component-Based Architecture: Enables building reusable UI components.
- Lightweight Framework: Small bundle size makes it faster to download and execute.
- Simple Integration: Easy to integrate with other projects and libraries.

Advantages

- Simpler and more beginner-friendly compared to React and Angular.
- Detailed documentation and strong community support.
- Combines the best of Angular's two-way binding and React's virtual DOM.

Disadvantage

- Smaller ecosystem compared to React and Angular.
- Limited scalability for very large projects (compared to Angular).

Angular js

AngularJS is a popular open-source framework, developed by Google, that simplifies web development by creating interactive single-page applications (SPAs).

Unlike traditional websites that load new pages for each click, SPAs offer a smoother user experience by updating content on the same page.

Full-fledged framework for building web applications.

Features of Angularjs

- Two-Way Data Binding: Automatically synchronizes data between the model and the view.
- Dependency Injection: Makes code more modular, reusable, and testable.
- Directives: Extend HTML with custom attributes.
- TypeScript Support: Angular is built with TypeScript, offering better type-checking and tooling.
- Rich Features: Provides routing, forms handling, HTTP client, and state management out of the box.

Advantages

- Suitable for large-scale applications due to its robust architecture.
- Complete solution: No need to rely on third-party libraries.
- Strong community and long-term support from Google.

Disadvantage

- Steeper learning curve compared to React and Vue.
- Larger bundle size, which can affect performance.
- Heavy for smaller or simple projects.

Comparison Study

Feature	React.js	Vue.js	Angular
Type	Library	Progressive	Full Framework
Language	JavaScript + JSX	JavaScript/HTML	TypeScript
Learning Curve	Moderate	Easy	Steep
State Mgmt	External (Redux)	Vuex	Services/NgRx
DOM	Virtual DOM	Virtual DOM	Real DOM (AOT)
Flexibility	High	High	Opinionated

Choosing the Right Framework for Projects

React.js: Best for dynamic, fast, and scalable applications with lots of user interaction. Great for single-page applications (SPAs) when paired with additional tools.

Vue.js: Ideal for small-to-medium projects or when you want simplicity and fast integration without compromising on performance.

AngularJS: Perfect for large-scale, enterprise-grade applications where a robust and feature-rich solution is required.