

Best JavaScript Libraries and Frameworks

JS



1

What's the Difference: JavaScript Libraries vs. Frameworks

What Are JavaScript Libraries?

Generally, a JS library is a reusable piece of code that oftentimes has one primary use case. A library can consist of several functions/objects/methods, depending on the language. Your application can “link” to a library to allow you access to that functionality. JavaScript libraries prevent you from having to reinvent the wheel for certain snippets of code. This leads to faster, easier development with fewer errors.

There are around 83 JavaScript libraries available, covering machine learning (TensorFlow), rapid prototyping (Meteor), animated 3D graphics (Three.js), DOM manipulation (Dojo Toolkit), and more!



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1

What's the Difference: JavaScript Libraries vs. Frameworks

What Are JavaScript Frameworks?

On the other hand, a JS framework has more control of your app. It helps direct you on the architecture and the project that follows. JavaScript frameworks consist of multiple libraries and they provide you with hooks and callbacks, so you can continue to build upon them.

There are around 24 JavaScript frameworks out there, including testing frameworks (Mocha, Jasmine), JS frameworks for hybrid mobile apps (Ionic), frameworks for developing rich UIs (Webix), and more. The most popular JS frameworks are listed in this article, and include some top JavaScript frameworks you may have heard of like Angular, Vue, and Bootstrap.



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How to Choose JavaScript Libraries and Frameworks

With so many options available (80+ libraries and 20+ frameworks), it can be overwhelming to choose the right ones for you.

One way to narrow down your decision is to look at job opportunities in your area. What does the demand look like? What are the most used JavaScript libraries and frameworks in the listings? For example, if there aren't any job postings that require Underscore, you might want to go with more common JavaScript libraries like React.

Another way is to think about the goals of the project you're working on. How big is your project, for example? That can help you narrow down your options and rule out libraries/frameworks that aren't good for smaller projects, for instance.

Yet another way is to see how big the community is and the number of learning resources/tutorials that are out there. This is especially important for beginners, as you don't want to pick too small or new JavaScript libraries or frameworks that have poor documentation and a tiny community you can't go to for help.



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The Most Popular JavaScript Libraries



jQuery is a classic JavaScript library that's fast, light-weight, and feature-rich. It was built in 2006 by John Resig at BarCamp NYC. jQuery is free and open-source software with a license from MIT.

It makes things simpler for HTML document manipulation and traversal, animation, event handling, and Ajax.



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Features/Benefits:

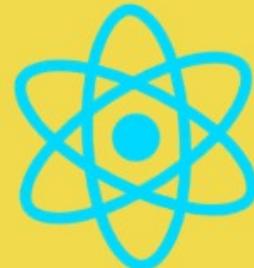
- It has an easy-to-use, minimalistic API.
- It uses CSS3 selectors in manipulating style properties and finding elements.
- jQuery is lightweight, taking just 30 kb to gzip and minify, and supports an AMD module.
- As its syntax is quite similar to that of CSS, it is easy for beginners to learn.
- Extendable with plugins.
- Versatility with an API that supports multiple browsers, including Chrome and Firefox.

Use cases:

- DOM manipulation with CSS selectors that use certain criteria to select a node in the DOM. These criteria include element names and their attributes (like class and id).
- Element selection in DOM using Sizzle (an open-source, multi-browser selector engine).
- Creating effects, events, and animations.
- JSON parsing.
- Ajax application development.
- Feature detection.



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React.js

React.js (also known as ReactJS or React) is an open-source, front-end JavaScript library. It was created in 2013 by Jordan Walke, who works at Facebook as a software engineer.

Now, it has the MIT license but was initially released under the Apache License 2.0. React was designed to make interactive UI creations painless.

Just design a simple view for individual states in your app. Next, it will render and update the right component efficiently upon data changes.



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Features/Benefits:

- The React code comprises components or entities that need rendering to a specific element in DOM with the help of a React DOM library.
- It uses a virtual DOM by creating an in-memory cache in a data structure, computing the difference, and updating the display DOM in the browser efficiently.
- Due to this selective rendering, the app performance boosts while saving the developers' efforts in recalculating the page layout, CSS styles, and full-page rendering.
- It uses lifecycle methods like render and componentDidMount to allow code execution at specific points during an entity's lifetime.

Use cases:

- Serving as the base while developing mobile or single-page applications.
- Rendering a state to the DOM and manages it.
- Building efficient user interfaces while developing web applications and interactive sites.
- Debugging and testing more easily.



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Underscore

underscore.js

Underscore is a JavaScript utility library that provides various functions for typical programming tasks. It was created in 2009 by Jeremy Askenas and released with an MIT license. Now, Lodash has overtaken it.



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Underscore

underscore.js

Features/Benefits:

Its features are similar to Prototype.js (another popular utility library), but Underscore has a functional programming design rather than object prototype extensions.

It has 100+ functions of 4 different types based on the datatypes they manipulate.

These are functions to manipulate:

- Objects
- Arrays
- Both objects and arrays
- Other functions

Underscore is compatible with Chrome, Firefox, Edge, and more.

Use cases:

It supports functional helpers such as filters, maps, etc., along with specialized functions such as binding, quick indexing, JavaScript templating, quality testing, etc.



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Lodash



Lodash is also a JS utility library that makes it easier to work with numbers, arrays, strings, objects, etc. It was released in 2013 and also uses functional programming design like Underscore.js.



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Lodash

Features/Benefits:

- It helps you write maintainable and concise JavaScript codes.
- Simplifies common tasks such as math operations, binding, throttling, decorating, - - -
- - - constraining, debouncing, etc.
- String functions like trimming, camel case, and upper case are made simpler.
- Creating, modifying, compressing, and sorting arrays.
- Other operations on the collection, object, and sequence.

Use cases:

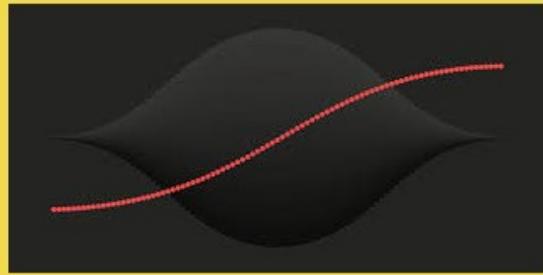
Its modular methods help you in:

- Iterating arrays, strings, and objects.
- Crafting composite functions.
- Manipulating and testing values.



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Anime.js



If you want to add animations to your site or application, Anime.js is one of the best JavaScript libraries you can find. It was released in 2019 and is lightweight with a powerful yet simple API.



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Anime.js

Features/Benefits:

- Anime.js runs with DOM attributes, CSS properties, SVG, CSS transforms, and JS objects.
- Works with a wide range of browsers such as Chrome, Safari, Firefox, Opera, etc.
- Its source code is effortless to decipher and use.
- Complex animation methods such as overlapping and staggering follow-through become easier.

Use cases:

- You can use Anime.js' staggering system on properties and timings.
- Create layered CSS transformations with multiple timings simultaneously over one HTML element.
- Play, pause, trigger, reverse, and control events in synchronizing manner using Anime.js call-backs and controls functions.



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Chart.js



Chart.js is a flexible and simple library for designers and developers who can add beautiful charts and graphs to their projects in no time. It is open-source and has an MIT license.



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Chart.js

Features/Benefits:

- Elegant and simple to add basic charts and graphs.
- Results in responsive web pages.
- Lightweight to load and easy to learn and implement.
- 8 different types of charts.
- Great for beginners.
- Animation capabilities to make pages more interactive.

Use cases:

Provide clear visual representations when different datasets are used with the help of mixed chart types.

Plot sparse and complex datasets on logarithmic, date, time, or custom scales.



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Moment.js



Moment.js helps you manage time and date effectively when working with different time zones, API calls, local languages, etc.



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Moment.js

Features/Benefits:

- It supports a lot of international languages.
- Object mutability.
- Multiple internal properties like epoch shifting, retrieving native Date objects, etc.
- To use its parser correctly, there are some guidelines such as strict mode, date formats, forgiving mode, etc.

Use cases:

To display the time in a published article.

Communicating with people from across the world in their local language.



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Popper.js



Popper.js was created to make it easier to position popovers, dropdowns, tooltips, and other contextual elements that appear close to a button or other similar elements.

Popper provides an excellent way to arrange them, stick them to other site elements, and enable them to perform seamlessly on any screen size.



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Popper.js

Features/Benefits:

- Lightweight library of about 3kb in size
- Ensures the tooltip continues to stay with the reference element when you scroll inside the scrolling containers
- Advanced configurability
- Uses robust library like Angular or React to write UIs, making integrations seamless

Use cases:

To build a tooltip from scratch.

To position these elements smoothly.



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The Most Popular JavaScript Frameworks



AngularJS

AngularJS by Google is an open-source JavaScript framework released in 2010. This is a front-end JS framework you can use to create web apps.

It was created to simplify the development and testing of web applications with a framework for MVC and MVVM client-side architectures.



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AngularJS

Features/Benefits:

- Supports 2-way data binding
- Uses directive to insert into an HTML code and provide the app with better functionality
- Quick and easy to declare static documents
- Its environment is readable, expressive, and fast to develop.
- Impressive extensibility and customizability to work with
- Built-in testability and support for dependency injection

Use cases:

- To develop ecommerce applications.
- Developing real-time data apps for weather updates
- Example: YouTube PlayStation 3



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Bootstrap



Design fast and mobile responsive sites quickly using Bootstrap, one of the most popular open-source toolkits for front-end development.

It was released in 2011 and provides developers with great flexibility in customizing various elements tailored to the client's needs.



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Bootstrap

Features/Benefits:

- Responsive grid system.
- Powerful JS plugins.
- Extensive built-in components, Sass variables, and mixins.
- Includes open-source SVG icons that work perfectly with their components and styled using CSS.
- Offers beautiful and premium themes.
- They ensure you don't have to deal with lots of bugs when updating a new Bootstrap version.

Use cases:

- To create CSS or HTML-based design templates for forms, buttons, typography, navigation, dropdowns, tables, modals, etc.
- For images, image carousels, and icons.



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Vue.js

Vue.js was created in 2014 by Evan You while he worked for Google. It is a progressive JavaScript framework to build user interfaces.

Vue.js is incrementally adoptable from its core and can scale between a framework and library easily based on various use cases.



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Vue.js

Features/Benefits:

- Supports ES5-compliant browsers.
- It has a core library that is approachable and focuses only on the view layer.
- It also supports other useful libraries that can help you manage complexities associated with one-page applications.
- Blazing-fast virtual DOM, 20 kb min+gzip runtime, and needs fewer optimization.

Use cases:

- Perfect to use in small projects that need lesser reactivity, display a modal, include a form using Ajax, etc.
- You can also use it on large single-page applications using its Vuex and Router components.
- To create events, binding classes, update element content, etc.



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Ember.js



The open-source JS framework Ember.js is battle-tested and productive to build web applications with rich UIs, capable of working across devices.

It was released in 2011 and was named SproutCore 2.0 back then.



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Ember.js

Features/Benefits:

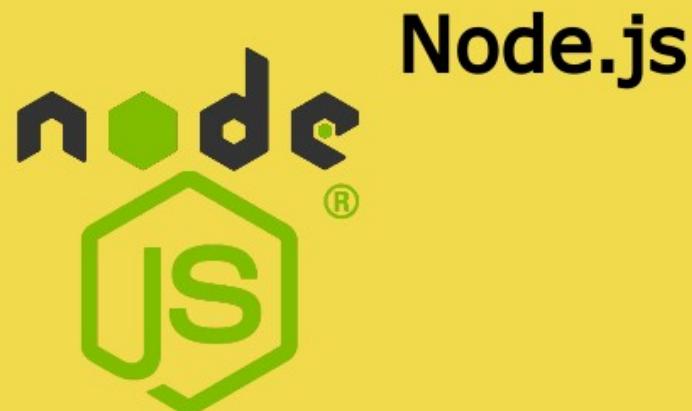
- Scalable user interface architecture.
- “Batteries included” perspective helps you find everything you need to start building your app right away.
- Features the Ember CLI working as the backbone for Ember apps and offering code generators for creating new entities.
- Comes with an in-built development environment with quick auto-reload, rebuilds, and test runners.
- A best-in-class router using data loading with query parameters and URL segments.

Use cases:

- To build modern interactive web apps.
- Used by DigitalOcean, Square, Accenture, etc.



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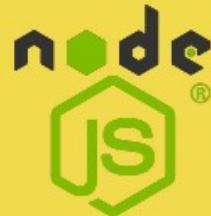


Node.js is a server-side, open-source JavaScript framework built on Chrome's JS V8 Engine, created in 2009. It is a runtime environment that executes JS codes outside a browser.

Node.js is designed to help you develop scalable, fast, and reliable network-based server-side applications.



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Node.js

Features/Benefits:

- Faster code execution.
- It can drive asynchronous I/O using its event-driven architecture.
- Shows similar Java properties such as forming packaging, threading, or forming loops.
Single-threaded model.
- No hassles of video or audio buffering by cutting down significant processing time.

Use cases:

- To develop server-side applications.
- Create real-time web apps.
- Communication programs.
- Develop browser games.
- Its corporate usage includes GoDaddy, LinkedIn, Netflix, PayPal, AWS, IBM, and more.



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ExpressJS

express

Express.js is a back-end JS framework for developing web applications. It was released in 2010 under MIT license as free, open-source software.

It is a fast and minimalist Node.js web framework that comes with an array of useful features.



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ExpressJS

express

Features/Benefits:

- Scalable and lightweight.
- Enables receiving HTTP responses by allowing you to set up middleware.
- Features a routing table to take actions based on URL and HTTP method.
- Includes dynamic HTML page rendering.

Use cases:

- Rapid node-based application development.
- Creation of REST APIs.



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Ionic



Released in 2013, Ionic is an open-source JavaScript framework to build high-quality hybrid mobile apps. Its latest release allows you to choose any UI framework like Vue.js, React, or Angular. It uses CSS, Sass, and HTML5 to build applications.



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Ionic

Features/Benefits:

- Leverages Cordova and Capacitor plugins to access host OS features like GPS, camera, flashlight, etc.
- Includes typography, mobile components, interactive paradigms, beautiful themes, and custom components.
- Offers a CLI for object creation.
- Enables push notifications, creates app icons, native binaries, and Splash screens.

Use cases:

- To build hybrid mobile apps.
- Build front-end UI framework.
- Create engaging interactions.