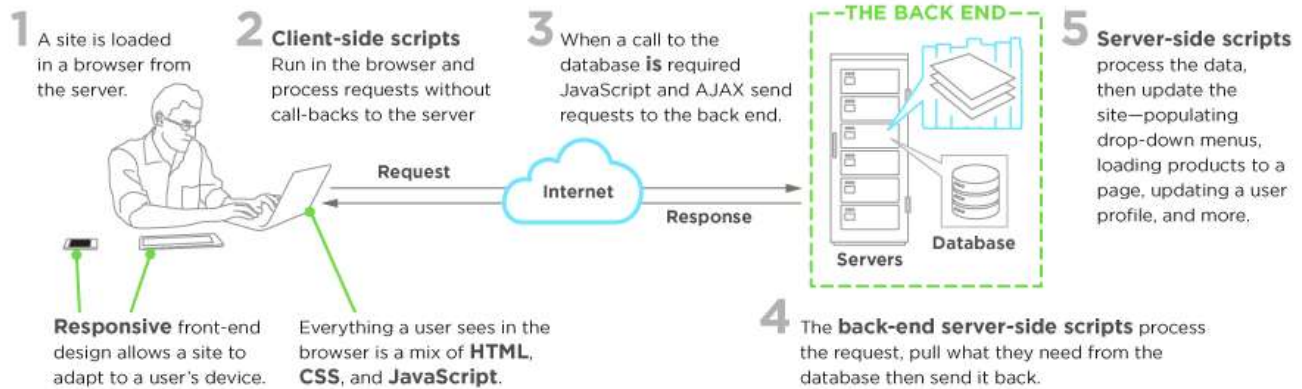


Front-End Web Development: Client-Side Scripting & User Experience



Everything you see, click, and interact with on a website is the work of **front-end web development** (<https://www.upwork.com/hiring/development/how-do-you-hire-a-front-end-developer/>). Client-side frameworks and scripting languages like **JavaScript** (<https://www.upwork.com/hiring/development/what-is-javascript/>) and **AngularJS** (<https://www.upwork.com/hiring/development/angularjs-javascript-framework/>) have made interactive websites possible. Here's a look at how this technology works in the scheme of a website, and some of the most popular scripts and frameworks you should know.

THE SERVER VS THE CLIENT



All websites run on three components: **the server, the database, and the client**. The client is simply the browser a person is using to view a site, and it's where client-side technology is unpacked and processed. *The server* is at a remote location anywhere in the world—housing data, running a site's **back-end architecture** (<https://www.upwork.com/hiring/development/back-end-web-developer/>), processing requests, and sending pages to the browser. *The client* is anywhere your users are viewing your site: **mobile devices, laptops, or desktop computers**. **Server-side scripting** (<https://www.upwork.com/hiring/development/server-side-scripting-back-end-web-development-technology/>) is executed by a web server; **client-side scripting** is executed by a browser.

Client-end scripts are embedded in a website's HTML **markup code** (<https://www.upwork.com/hiring/development/the-basics-of-web-development/>), which is housed on the server in a language that's compatible with, or compiled to communicate with, the browser. The browser temporarily downloads that code, and then, apart from the server, processes it. If it needs to request additional information in response to user clicks, mouse-overs, etc. (called "events"), a request is sent back to the server.

Client-side scripting is always evolving—it's growing simpler, more nimble, and easier to use. As a result, sites are faster, more efficient, and less work is left up to the server.

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HOW DOES CLIENT-SIDE SCRIPTING WORK?

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There is overlap between the two technologies as they work in tandem, but there are core differences. **Server-side scripting** (<https://www.upwork.com/hiring/development/server-side-scripting-back-end-web-development-technology/>) works in **the back end of a site** (<https://www.upwork.com/hiring/development/back-end-web-developer/>), which the user doesn't see. It creates a scaffolding for the site to access its database, all the behind-the-scenes mechanics that organize and power a website. Client-side code, however, handles what the user *does* see.

- Scripts are embedded within and interact with **the HTML of your site** (<https://www.upwork.com/hiring/development/the-basics-of-web-development/>), selecting elements of it, then manipulating those elements to provide an interactive experience.
- Scripts interact with a **cascading style sheet (CSS)** (<https://www.upwork.com/hiring/development/css-cascading-style-sheets/>) file that styles the way the page looks.
- It dictates what work the server-side code is going to have to accomplish (where utility should be built around these front-end functions), and returns data that's pulled from the site in a way that's readable by the browser. For example: If there's a form for updating a profile, the back end is built to pull specific data from the database to populate that form, while front-end scripts populate the form with that information.
- Scripts put **less stress on the server** because they don't require processing on the server once they're downloaded, just when post-backs are made. "Post-backs" perform specific call-and-answers with the server-side code, and respond to the user immediately.

CLIENT-SIDE PROGRAMMING LANGUAGES & FRAMEWORKS

Now that you've got a broad view of what **front-end technology** (<https://www.upwork.com/hiring/development/front-end-developer/>) is and does, here's a look at some of the most widely used scripting languages and front-end frameworks. Languages are almost always used in the context of their frameworks, which make quick work of complicated code with libraries of pre-packaged, shareable code, and lots of add-ons. Your developer may use one or a combination of these when building the front end of your site.

- HTML and CSS: These are the core building blocks of any site. **HTML** (<https://www.upwork.com/hiring/development/advantages-of-html5/>) dictates a site's organization and content. CSS comprises the code for every graphic element—from backgrounds to fonts—that make up the look and feel of a website. **Learn more about HTML and markup languages** (<https://www.upwork.com/hiring/development/the-basics-of-web-development/>).

- **JavaScript** (<https://www.upwork.com/hiring/development/what-is-javascript/>): JavaScript is client-side scripting. The most widely used client-side script—nearly every site on the web is a combination of JavaScript and HTML and CSS. JavaScript is fueled by an array of excellent frameworks that simplify it and give it more agility.

JavaScript Frameworks (<https://www.upwork.com/hiring/development/what-is-javascript/>):

- **AngularJS** (<https://www.upwork.com/hiring/development/angularjs-javascript-framework/>): An incredibly robust JavaScript framework for data-heavy sites
- **JQuery, jQuery Mobile** (<https://www.upwork.com/hiring/development/jquery-javascript-library/>): A fast, small, JS object library that streamlines how JavaScript behaves across different browsers
- **Node.js** (<https://www.upwork.com/hiring/development/what-is-node-js/>): A server-side platform that uses JavaScript, and is changing the way real-time applications can communicate with the server for faster response times and a more seamless user experience. It works with another JavaScript framework, **Express.js** (<https://www.upwork.com/hiring/development/express-js-a-server-side-javascript-framework/>), to build server-side Web applications.
- **Bootstrap** (<https://www.upwork.com/hiring/development/bootstrap-3-front-end-framework-responsive-mobile-first-sites/>): A mobile-first framework that uses HTML, CSS, and JavaScript to facilitate rapid responsive app development
- React, for user interface design
- **Express.js** (<https://www.upwork.com/hiring/development/express-js-a-server-side-javascript-framework/>), Backbone.js, Ember.js, MeteorJS, and more
- TypeScript: A compile-to-JavaScript language that is a superset of JavaScript, created by Microsoft
- **AJAX (JavaScript + XML)** (<https://www.upwork.com/hiring/development/how-ajax-works/>) —a technology that allows specific parts of a site to be updated without a full-page refresh by asynchronously connecting to the database and pulling **JSON** (<https://www.upwork.com/hiring/development/what-is-json/>)— or XML-based chunks of data.
- VBScript & JScript are Microsoft's front-end scripts that run on **the ASP.NET framework** (<https://www.upwork.com/hiring/development/asp-net-framework/>). JScript is Microsoft's reverse-engineered version of JavaScript.
- ActionScript, which creates animated interactive web applications for Adobe Flash Play
- Java (as “applets”) snippets of back-end code that run independently with a run-time environment in the browser

Tip:

It's worth researching what browsers your primary audience is most likely to use, and what back-end scripts and APIs you're using, then decide on a script based on a stack or compatibility.



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CLIENT-SIDE SCRIPTING BREAKTHROUGH

An important breakthrough that changed the hard-and-fast rules for client side vs. server side? AJAX. The old standard was that server-side processing and page post-backs were used when the browser needed to interact with things on the server, like databases. AJAX, with its asynchronous calls to the server, can pull the data instantly and efficiently, without requiring a post-back. Read more about how it works in this **AJAX Front-End Technology article** (<https://www.upwork.com/hiring/development/how-ajax-works/>).

Another major boost is **jQuery** (<https://www.upwork.com/hiring/development/jquery-javascript-library/>), a fast, small, and feature-rich JavaScript library with an easy-to-use API that works across a multitude of browsers. Like code libraries do, jQuery changed the way that millions of people write JavaScript, simplifying a number of other client-side scripts like AJAX at the same time.

*Learn more about client-side scripting in the context of **The Role of the Front-End Web Developer** (<https://www.upwork.com/hiring/development/front-end-developer/>).*

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AngularJS is one of the most popular JavaScript libraries for front-end development, but even long-time JS developers find some parts of AngularJS a bit challenging. If you're diving in for the first time or just looking for a better way to manage your Angular projects, here are some tips to help you along the way.

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June 20, 2016

While their names may sound the same, HTML, HTML5, and XHTML are three variations on the markup language HTML (Hypertext Markup Language) and each are different technologies with unique capabilities. Here's a look at how these three versions differ.

Read More (<https://www.upwork.com/hiring/development/html-vs-xhtml-vs-html5/>)

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