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How the Web Functions

Navigating to https://www.techtonicgroup.com/ starts with the browser (in this case Chrome) looking up the IP address for the domain name. The browser then sends an HTTP request to the web server and the server handles the request and sends out an HTTP response. The browser begins interpreting the response and renders the HTML, CSS, and JavaScript (which serve different functions) into the webpage on the client.

- HTML provides the basic structure of the website that can be enhanced and modified by other technologies (CSS and JavaScript). In the Techtonic Group webpage, the HTML creates the structure for the webpage including the navigation bar, the header, the background video, the section for Twitter, etc.
- CSS is used to control overall presentation, format and layout of the webpage. CSS allows Techtonic Group to use specific fonts (font family, color, size, etc) and to customize the layout of any pictures, videos, and text.
- JavaScript allows developers to design interactive portions of a webpage. In Techtonic Group’s website, Javascript allows the user to scroll through the Twitter section as well as to fill out the Apprenticeship form, among other interactive web elements.

All three of these technologies make up the client-side code, whose main function is to allow the user to view and interact with the webpage. Inspecting the Techtonic Group webpage shows that 207 instances of client-side assets were created (207 requests when refreshing the webpage).

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Server-side code can be written in a number of programming languages (PHP, Ruby, C#, etc). The main function of the server-side code is to interact with permanent storage (databases of files). The server will also render pages to the client and process any input by the user. Examples include saving/retrieving data, navigating to other webpages, and user validation. The server-side code is hidden from the client and is not available to view. The client makes requests to the server and the server handles those requests separately.

Runtime is the state of the application while it is currently running. It starts when the program is first executed and enters a runtime state. During this state, the program can send instructions to the computer’s processor and access the computer’s memory (RAM) and other resources. Runtime environment (RTE) is an execution environment provided to an application by the operating system. All development applications include a runtime environment that allows the testing of the application during execution as developers need to test their software’s functioning. Tracking bugs for any errors are done with the help of RTEs.

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