Lesson Proper for Week 2

Server-Side and Client-Side

Often in web design, you'll hear references to "**client-side**" or "**server-side**" applications. These terms are used to indicate which machine is doing the processing. Client-side applications run on the user's machine (also referred to as the **frontend**), while server-side applications and functions use the processing power of the server computer (the **backend**).

The ***server*** is a computer agent that is normally active 24 hours a day, 7 days a week, listening for queries from any client who make a request. A ***client*** is a computer agent that makes requests and receives responses from the server, in the form of response codes, images, text files, and other data.

*   **The Client**

Client machines are the desktops, laptops, smartphones, and tablets you see everywhere in daily life. These machines have a broad range of specifications regarding operating system, processing speed, screen size, available memory, and storage. In the most familiar scenario, client requests for web pages come through a web browser. But a client can be more than just a web browser. When your word processor's help system accesses online resources, it is a client, as is an iOS game that communicates with a game server using HTTP.

Frontend Development

Frontend development includes the following web technologies:

[a] HyperText Markup Language (HTML) is a markup language used to define the structure and contents of web pages.

ª Cascading Style Sheets (CSS) are used for styling web pages.

ª JavaScript is a programming language used for making web pages interactive.

* **The Server**

The server in this model is the central repository, the command center, and the central hub of the client-server model. It hosts web applications, stores user and program data, and performs security authorization tasks. The essential characteristic of a server is that it is listening for requests, and upon getting one, responds with a message. The exchange of information between the client and server is summarized by the request-response loop.

Backend Development

The following technologies are typically in the domain of the backend developer:

ª Server software (Apache, Microsoft IIS)

ª Web application languages (PHP, Ruby, Python, JSP, ASP.NET)

ª Database software (MySQL, Oracle, SQL Server)

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* **Hypertext Preprocessor (PHP)** is a server scripting language, and a powerful tool for making dynamic and interactive Web pages.

* **Ruby** is an interpreted, high-level, programming language most commonly used for Web Development.

* **Python** is an interpreted, high-level and general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace.

* **MySQL** is an open-source relational database management system.

* **Microsoft SQL Server** is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications, which may run either on the same computer or on another computer across a network.

Full-Stack Developers

When looking for a job in web development, you will frequently see posts looking for "full-stack" developers. That means a person who is fluent in both frontend (HTML, CSS, JavaScript) and backend (server applications, databases) languages.

Other Roles

Not surprisingly, there are a myriad of other roles that contribute to the creation and maintenance of a site. Here are a few common roles that fall just outside the moniker "web design."

ª **Product manager**

Ä The product manager of a website or application guides its design and development in a way that meets business goals. This member of the team must have a thorough understanding of the target market as well as the processes involved in the creation of the site itself. Product managers develop the overall strategy for the site from a marketing perspective including how and when it gets released.

ª **Project manager**

Ä The project manager coordinates the designers, developers, and everyone else who is working on the site. They manage things like timelines, development approaches, deliverables, and so on. The project manager works with the product manager and other product owners to make sure that the project gets done on time and on budget.

ª **SEO specialist**

Ä A website or application isn't much good if nobody knows it exists, so it is crucial that a site be easily found by search engines. **Search Engine Optimization** (*SEO*) is a discipline focused on tweaking the site structure and code in a way that increases the chances it will be highly ranked in search results. There may be an SEO specialist on the in-house team, or a company may choose to hire an outside SEO firm. SEO is sometimes perceived as a dark art, but there are many ways to improve findability that are not underhanded. In fact, the number one technique for improving SEO is simply having good content with savvy HTML markup.

ª **Multimedia producers**

Ä One of the cool things about the web is that you can add multimedia elements to a site, including sound, video, animation, and even interactive games. Creating multimedia elements is generally best left to artists and technicians in those fields, although they may be part of the web team if video, animation, or interactivity are core to the site's mission.

Skills Every Web Designer Needs

We have focused on quite a few technical skills that will be helpful in building websites. Skills that are just as critical to your success.

ª **Excellent communication skills**

In your work, you will need to communicate in person, on the phone, in email, and in text messaging tools with clients, team members, and superiors. Be clear, proactive, and straightforward with what you have to say. Good communication requires not only that you express yourself clearly, but also that you be a good listener.

Make sure that you understand issues being discussed, and don't be afraid to ask for clarification if you don't.

ᵃ *Flexibility*

Be able to change direction quickly because not only does web technology change quickly, but you will no doubt be thrown curveballs in your day-to-day work as well. For example, you may arrive at work one day to find that the client has changed your priorities completely. You might find that they've cancelled your project entirely. You might be asked to learn new skills and shift positions in the team. Staying adaptable is the key to survival.

ᵃ *Critical thinking and good judgment*

Problem-solving is central to all of the disciplines related to web design, so you need to be able to use critical thinking skills to come up with solutions and always employ basic common sense.

ᵃ *A good attitude*

Creating sites mean being part of a team, even if you work at home as a freelancer. Be mindful that the attitude with which you approach your work is contagious, so strive to be a positive and friendly team member.

Choosing Your Text Editor

The bread-and-water version of a text editor is the barebones program that came with your computer: Notepad if you run Windows, or TextEdit if you have a Mac. You can survive as a web developer using these programs. Although you can get by with the simple text editors that come with your computer, a dedicated code editor makes the task of writing HTML, CSS, and JavaScript much easier. Code editors understand the syntax of the code you write, so they can do things for you like color coding, error detection, and automatically finishing simple tasks like closing HTML tags. Some provide page previews so you can view the results of your code as you work.

These nutrients are the features and tools that are crucial to being an efficient and organized developer:

ᵃ **Syntax highlighting**

Ä Syntax refers to the arrangement of characters and symbols that create correct programming code, and syntax highlighting is an editing feature that color-codes certain syntax elements for easier reading. For example, while regular text might appear black, all the HTML tags might be shown in blue and the CSS properties might appear red. The best text editors let you choose the syntax colors, either by offering prefab themes, or by letting you apply custom colors.

ª **Line numbers**

Ä It might seem like a small thing, but having a text editor that numbers each line, can be a major timesaver. When the web browser alerts you to an error in your code, it gives you an error message and, crucially, the line number of the error. This enables you to quickly locate the culprit and (fingers crossed) fix the problem pronto.

ª **Code previews**

Ä A good text editor will let you see a preview of how your code will look in a web browser. The preview might appear in the same window as your code, or in a separate window, and it should update automatically as you modify and save your code.

ª **Code completion**

Ä This is a handy the feature that, when you start typing something, displays a list of possible code items that complete your typing. You can then select the one you want and press Tab or Enter to add it to your code without having to type the whole thing.

ª **Text processing**

Ä The best text editors offer a selection of text processing features, such as automatic indentation of code blocks, converting tabs to spaces and vice versa, shifting chunks of code right or left, removing unneeded spaces at the end of lines, hiding blocks of code, and more.

Here are just a few of the better-known code editors for web products that are worth exploring:

ª **Sublime Text:** Available for both Windows and Mac. $80, but a free trial is available. www.sublimetext.com

The Sublime Text editor is definitely one of our favorites! It offers a free version for testing, but all continual users are required to pay $80 to keep it active. While $80 might sound steep for a text editor, it's important to note that the licenses are per-user, rather than per-machine, so you can enjoy Sublime Text on as many computers and operating systems as you wish with your license.

ª **Atom:** Available for Windows and Mac. Free! http://atom.io

With Atom, you gain access to an open-source text editor with developers in mind. In fact, the creators of Atom state that they made it just for developers. Also, there's a community of developers who contribute themes and plugins, much like WordPress or some other open-source tools.

[a] **Brackets:** Available for Windows and Mac. Also, free! http://brackets.io/

The Brackets text editor comes from the folks at Adobe, in an attempt to offer a more modern, open source solution for developers creating websites. This is a free text editor, with some appealing visual tools for previewing your work and allowing for frontend developers to examine the changes. Writing code is the main focus in Brackets, and it's done with the help of inline editors, live previews, and nicely organized files.

[a] **CoffeeCup –** Available for Windows. https://www.coffeecup.com/html-editor/

CoffeeCup's HTML Editor provides extremely advanced text editing for coding and overall web design management. The editor has a free trial, but in order to continue, you must pay the $49 one-time fee. There's also a fully free version, but the features are pretty watered down. We like CoffeeCup for creating HTML documents, but you might consider avoiding it for many other code languages. However, it makes sense to take advantage of CoffeeCup if you're simply learning a language like HTML or PHP.

[a] **TextMate:** Available for Windows and Mac. https://macromates.com/

TextMate comes offered as a free download, but you can also decide to upgrade to the premium version for $59. Keep in mind that this payment only gets you one license, so you would have to pay for multiple seats if you have a whole team of people in need of the text editor.

[a] **Komodo Edit (Or IDE):** Available for Windows and Mac. https://www.activestate.com/products/komodo-edit/

The idea behind Komodo Edit is to offer something powerful, yet with a certain level of simplicity, so that even beginners should be able to grasp it. You can download Komodo Edit for Mac or Windows operating systems. It's free and open source, allowing those who don't need all the advanced features a text editor that gets smaller projects done.

[a] **Notepad++:** Available for Windows only. Another freebie. https://notepadplus-plus.org/

Debatably the most popular advanced text editor on the market, Notepad++ comes in a compact package with no fees and powerful editing components. It is given away for free on a General Public License, meaning that all developers and content creators are able to take advantage of the text editor right after a quick download. Notepad++ runs on Microsoft Windows, and it strives to use less computing power than the average text editor.

[a] **UltraEdit:** Available for Windows, Mac and Linux.

UltraEdit also serves as a viable solution for your text editing needs. It's not free. In fact, you have to start by paying at least $99.95. That gets you the standard UltraEdit text editor, along with free upgrades for any future releases. You can also install the software on three machines, whether it's Windows, Mac, or Linux computers.

ª **CodeShare:** https://codeshare.io/

The CodeShare text editor takes a completely different approach to online code editing. It's built for developers, and it has a focus on giving these developers the opportunity to share code in real-time and speak to each other through a video chat. So, essentially it's a real-time code editor combined with a Skype-like communication service.

ª **Visual Studio Code:** Available for Windows, Linux, and Mac. https://visualstudio.microsoft.com/

As one of the younger players in the game (launched in 2015) Visual Studio Code puts forth quite an effort for building a stable community and ensuring that users are getting the features they need. The hard work definitely shows since the plugin library has been growing quite a bit. It's also an open-source project that you can download directly to macOS, Windows, or Linux for free.

NOTE: To do the exercises in this book, all you'll need is the text editor that came with your operating system and free image creation software. There is no need to purchase anything to follow along.

A variety of browsers

One of the biggest challenges for web designers is that our sites may look and behave differently from browser to browser. For this reason, it is critical that we test our designs early and often on the widest range of browsers possible.

These are the browsers designers and developers keep around for testing:

ª Chrome (google.com/chrome)

ª Firefox (www.mozilla.org)

ª MS Edge (www.microsoft.com/en-us/windows/microsoft-edge; Windows only)

ª Internet Explorer 9–11 (www.microsoft.com; search "Internet Explorer";

ª Windows only)

ª Safari (support.apple.com/downloads/#safari; Mac only)

ª Opera (opera.com)

You will also need to test on a variety of smartphone browsers including iOS Safari, Android browsers, and third-party mobile browsers.

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ℹ️ 2nd Semester Enrollment

🧩 Activities

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