

What is the Internet?

Intro to Web Technologies



In a nutshell, the Internet is a global network of connected computers (including yours!) that communicate with each other. They do this through a standardized set of protocols, or rules, known as the Internet Protocol Suite. The World Wide Web is a massive system of linked web pages built on top of the Internet. Let's look at some of the technologies that allow it to work.

Web Technologies

Web technologies are the tools and software that enable the World Wide Web to function. These include:

- **HTML (HyperText Markup Language):** The standard language for creating web pages. A “markup language” is a type of coding language but it's not a “programming language” like Python or Java, which means it doesn't deal with calculations or logic. It's just used for creating and organizing the skeleton of a web page.

- **CSS (Cascading Style Sheets):** A styling language used to design web pages, which complements HTML. On its own, HTML is very plain and unattractive. CSS takes the content and structure from HTML and dresses it up by adding colors, fonts, layouts, and much more. The "cascading" part means that some style rules can override others, allowing for a lot of flexibility.
- **JavaScript:** A programming language that adds functionality to web pages. It allows the programmer to create interactive elements like response forms, animations, and even games. Unlike HTML and CSS, JavaScript can perform logical operations and respond to user actions, making your web pages much more engaging and interactive. We won't dive into JavaScript in this course, but know that it's one of the "big three" building block languages of web development.
- **Protocols:** Rules and standards that define how data is transferred over the web. For example, **HTTPS** (Hypertext Transfer Protocol Secure) is the modern standard for transferring web content. It's a more secure version of the old HTTP, adding a layer of encryption to protect data. Protocols make sure that information can travel safely from point A to point B on the internet.
- **Web Servers:** Powerful computers that store web pages and serve them to users through the web.
- **Web Browsers:** Software programs like Chrome, Firefox, and Safari that request and display web content. They understand and interpret HTML, CSS, and JavaScript to present web pages as they were designed.

How Web Pages Work

When you get to a web address, either via searching or by clicking a link, your browser goes through a series of steps:

1. The browser requests the page from a web server using HTTP or HTTPS.
2. The server processes the request and sends back the data for the requested page.
3. The browser renders and displays the page by interpreting the HTML and CSS.

Internet Infrastructure

The backbone of the Internet is a collection of routers, servers, and data lines (like fiber optic cables) that span the globe.

- **DNS (Domain Name System):** A hierarchical system that directs internet traffic by translating a domain name (for example, www.wikipedia.org) to an IP address.
- **ICANN (Internet Corporation for Assigned Names and Numbers):** An organization responsible for coordinating and maintaining things like domain names and IP addresses. Also plays a role in Internet security and policy development.
- **ISP (Internet Service Provider):** Companies that provide you with access to the Internet through physical hardware. They also assign IP addresses to users' devices, which helps route internet traffic to the right destination.