

# **Session 6: The Internet**

**Tech Skills 101: Driver's Ed for the Digital World**

# Agenda

- What the Internet and Web are
- How browsers interact with sites on the Internet
- What a URL is and how to “read” them
- Time permitting
  - Cookies
  - Private browsing
  - The Dark Web

# Terminology

<b>site</b>	A site (a.k.a., “website” is a presence on the World Wide Web. As of 2025, there are more than one billion sites. Sites are identified to the public by their “domain name,” such as “apple.com” or “pcmag.com”.
<b>page</b>	A page (a.k.a., “web page”) is one of many files that make up a website. A page is actually a text file coded in HTML and JavaScript with links to separate files (images, videos, buttons, etc.) that also appear on the page.
<b>URL</b>	Essentially, the address of a page. A URL includes the name of a site and the name of a page at that site that you want to view.
<b>link</b>	A link (a.k.a. “hyperlink”) typically refers to an icon or text on a page that, when clicked or tapped, transfers the user to another part of the page or to another page on the current website or to a completely different website.
<b>browser</b>	A browser (a.k.a., “web browser”) is an app for accessing sites. The purpose of a browser is to fetch content from a site and display it on the your device. When a you request a page from a particular website, the browser retrieves its files from a web server and then displays the page on the your screen.
<b>address bar</b>	An address bar is a text field near the top of a browser window that displays the URL of the current page. The URL, reflects the address of the current page and automatically changes whenever you visit a new page. Therefore, you can always check the location of the page you are currently viewing with the browser's address bar. While the URL in the address bar updates automatically when you visit a new page, you can also manually enter a web address. Therefore, if you know the URL of a site or specific page you want to visit, you can type the URL in the address bar and press Enter to open the location in your browser.
<b>HTTP / HTTPS</b>	An acronym for “Hypertext Transport Protocol”, HTTP is the
<b>IP address</b>	A number that uniquely identifies your device when accessing the Internet. A devices’s IP address may be permanently assigned or supplied each time that it connects to the Internet by an Internet service provider. There are two different kinds of IP Addresses being used today: IPv4 and IPv6; IPv4 is being “phased out” in favor of IPv6 due to the exponential growth of the Internet.
<b>cookie</b>	<i>See slide titled “Definition of Cookie”.</i>

# Terminology: the *Internet* vs *Web*

The **internet** is a global network of billions of servers, computers, and other **hardware** devices. Each device can connect with any other device as long as both are connected to the internet using a valid **IP address**. The internet makes the information sharing system known as the web possible.

The **web** (a.k.a., the “World Wide Web”) is one of the ways information is shared on the internet (others include **email**, File Transfer Protocol (FTP), and **instant messaging** services). The web is composed of billions of connected digital documents that are viewed in a web browser, such as Chrome, **Safari**, Microsoft Edge, **Firefox**, and others.

Think of the internet as a library. Think of the books, magazines, newspapers, DVDs, audiobooks, and other media it contains as websites.

Both the internet and the web serve unique purposes but work hand in hand to provide information, entertainment, and other services to the public.

<https://olli-shamlin.github.io/spring-2024/syllabus.html>



# Uniform Resource Locator



# Anatomy of a URL

*protocol://hostname/resource?parameters*

# URL Protocol

*protocol://hostname/resource?parameters*

- Usually HTTP or HTTPS
- The site determines whether HTTP or HTTPS is used  
*When you enter a URL into the Address Bar, you don't have to type the protocol*
- HTTP is an acronym for  
HyperText Transport Protocol
- The “S” in “HTTPS” stands for “secure”  
When HTTPS is used...
  - Communication between the browser and the site is encrypted
  - The browser can “prove” the site’s identify using a certificate sent to the browser by the site

# URL Hostname

*protocol://hostname/resource?parameters*



- The hostname provides the address of the site
- The value found here is typically a **domain name**
  - Think of “domain name” as a synonym for “site name”
- Domain names are “words” separated by periods; for example...
  - www.amazon.com
  - en.wikipedia.org
  - courses.learnmore.duke.edu
- Note: domain names are used in email addresses!  
E.g., “gmail.com” is the domain in the email address “dukeollitotw@gmail.com”

# URL Resource

*protocol://hostname/**resource**?parameters*

- The resource is the address of the page
- The value found here is usually a list of words separated by forward slashes ('/')
- Sometimes the value may also contain

- A file extension

`https://olli-shamlin.github.io/spring-2024/syllabus.html`

- An anchor point

`https://en.wikipedia.org/wiki/IP_address#Subnetworks`

# URL Parameters

*protocol://hostname/resource?parameters*

- Parameters are pieces of information your browser sends to the site in addition to the resource
- When parameters are needed is determined by the page currently loaded in the View Pane
- Your browser generates parameters part of a URL when needed
- Don't be surprised if/when the parameters value looks like "gibberish"  
Your browser and the site you are visiting know how to "read" them

# Example of a URL with parameters

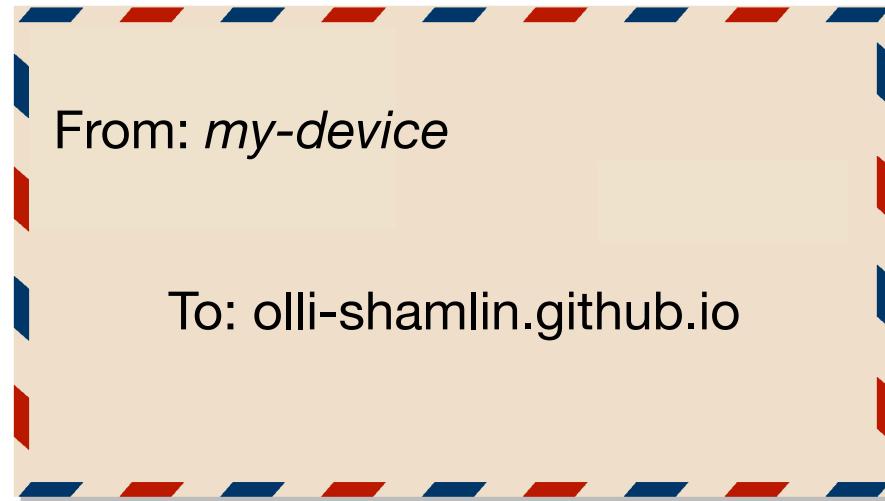
<https://www.google.com/search?>

q=what+is+a+url&sca\_esv=ef32433310457e91&sca\_upv=1&ei=FUwiZsuiFcOs5NoP\_7CMYAk&ved=0ahUKEwiLgcOrjc6FAxVDFIkFHX8YA5kQ4dUDCBA&uact=5&oq=what+is+a+url&gs\_lp=Egxnd3Mtd2I6LXNlcnAiDXdoYXQgaXMgYSB1cmwyCBAA GIAEGLEDMgUQABiABDIFEAAgAQyBRAAGIAEMgUQABiABDIFEAAgAQyBRAAGIAEMgUQABiABDIFEAAgAQyBRAAGIAESPAeUMYNWJgccAR4AZABAJgBZK ABuAaqAQQxMi4xuAEDyAEA-AEBmAIRoAKOB8ICChAAGLADGNYEGEfCAg0QABiABBiwAxhDGloFwgITEC4Yg AQYsAMYQxjIAxiKBdgBAcICEBAAGIAEGLEDGEMYgwEYigXCAgsQLhiABBixAxi DAclCCxAAGIAEGLEDGIMBwgIREC4YgAQYsQMY0QMYgwEYxwHCAg4QLhiAB BixAxjRAxjHAcICChAAGIAEGEMYigXCAg4QLhiABBixAxiDARiKBcICDhAAGIAEGL EDGIMBGloFwgINEAAAYgAQYsQMYQxiKBcICCBAAGIAEGMkDwgILEAAAYgAQYkg MYigXCAgsQLhiABBiRAhiKBcICBBAAGAPCAiMQLhiABBiRAhiKBRiXBRjcBBjeBB jgBBj0AxjxAxj1A9gBApgDAlgGAZAGDLoGBAgBGAi6BgYIAhABGBSSBwQxNi4xo AeVZg&sclient=gws-wiz-serp

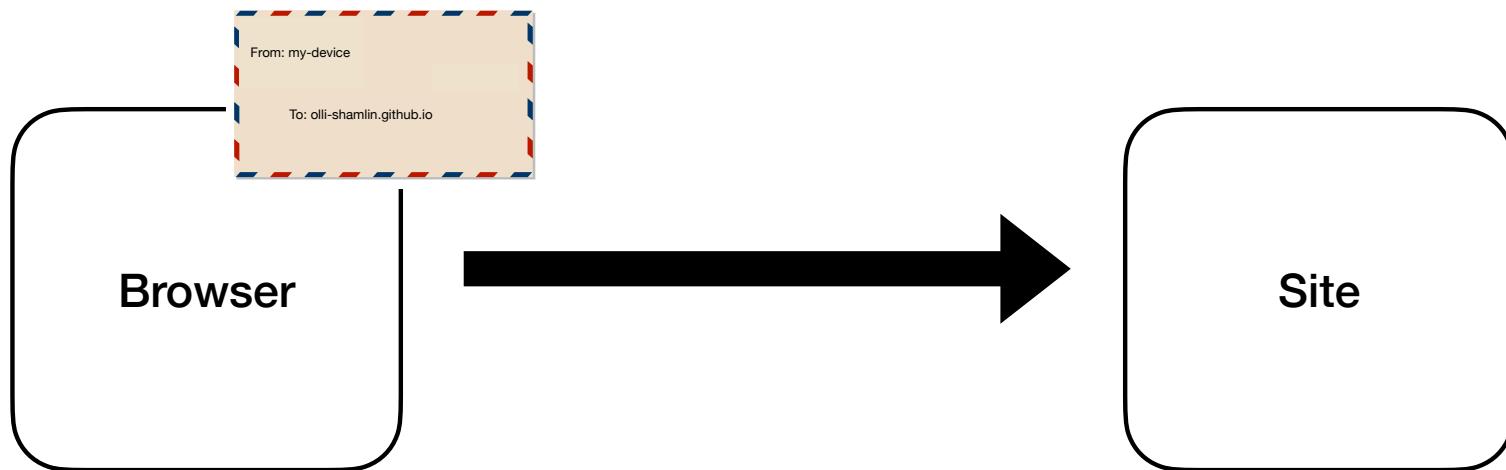
<https://olli-shamlin.github.io/spring-2024/syllabus.html>



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<https://olli-shamlin.github.io/spring-2024/syllabus.html>



## <h2>Course Aims and Outcomes</h2>

```
<div class="container">
<p>
```

This course is designed to increase your digital proficiency specifically as it pertains to the Internet, Lectures presented over the course's sessions will give you a working understanding of the Internet, the World Wide Web, and the Cloud work. While lectures will include discussions of how computers and software used with the Internet work, the lectures are intended for a general audience. There is no prerequisite technical understanding needed to participate in this course.



**HTML**

The image shows a large white "HTML" logo centered on a teal background. Behind the logo, there is a faint watermark of the Simplilearn logo and some code snippets. A yellow callout box contains the text "Hyper Text Markup Language".

```
<!DOCTYPE html>
<html>
  <head>
    <title> My First Page </title>
  </head>
  <body>
    <p> Welcome to <em>Simplilearn!!</em></p>
    <p> This is the <b>HTML</b> tag</p>
    <a href="https://www.simplilearn.com/">Simplilearn</a>
  </body>
</html>
```

```
<!DOCTYPE html>
<html>
  <head>
    <title> My First Page </title>
  </head>
  <body>
    <em> This is the <b>HTML</b> tags <u>article.</u>
    .com/"> This is the link to <a href="https://www.simplilearn.com/"> This is the link to
    Simplilearn website</a>
  </body>
</html>
```

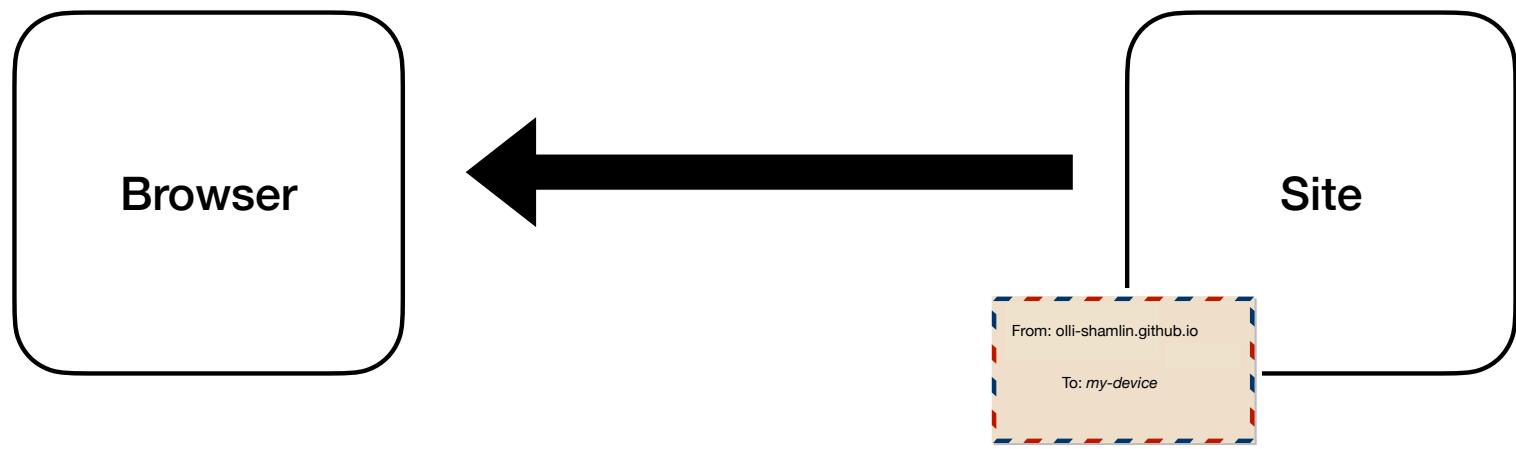
**Hyper Text Markup Language**

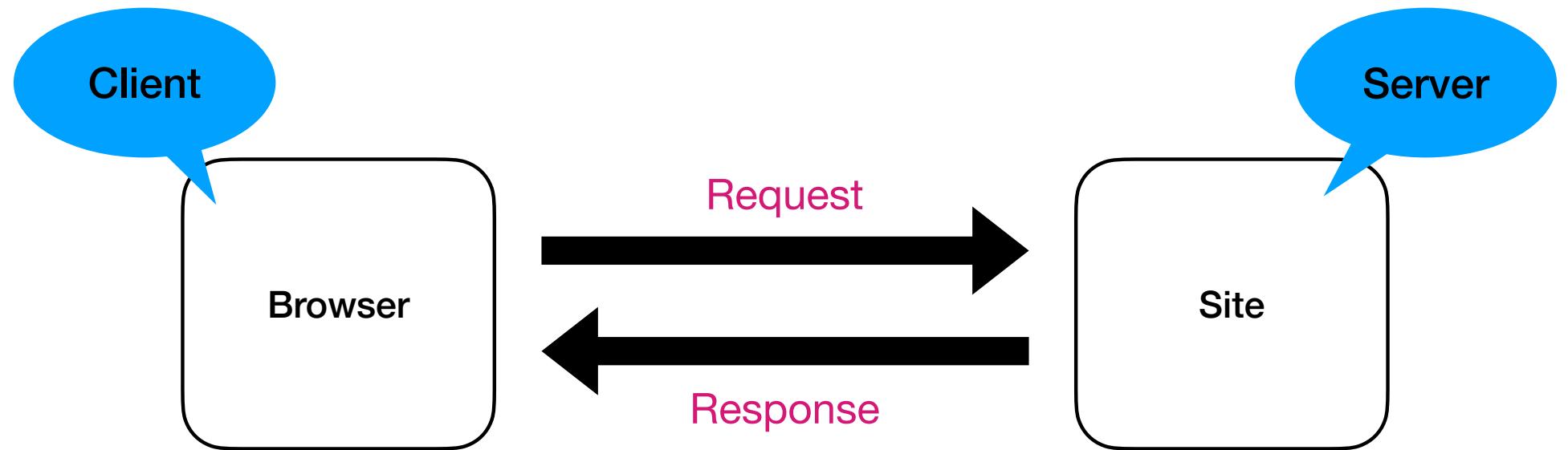
This is the <b>HTML</b> tags <u>article.</u>  
.com/"> This is the link to <a href="https://www.simplilearn.com/"> This is the link to  
Simplilearn website</a>

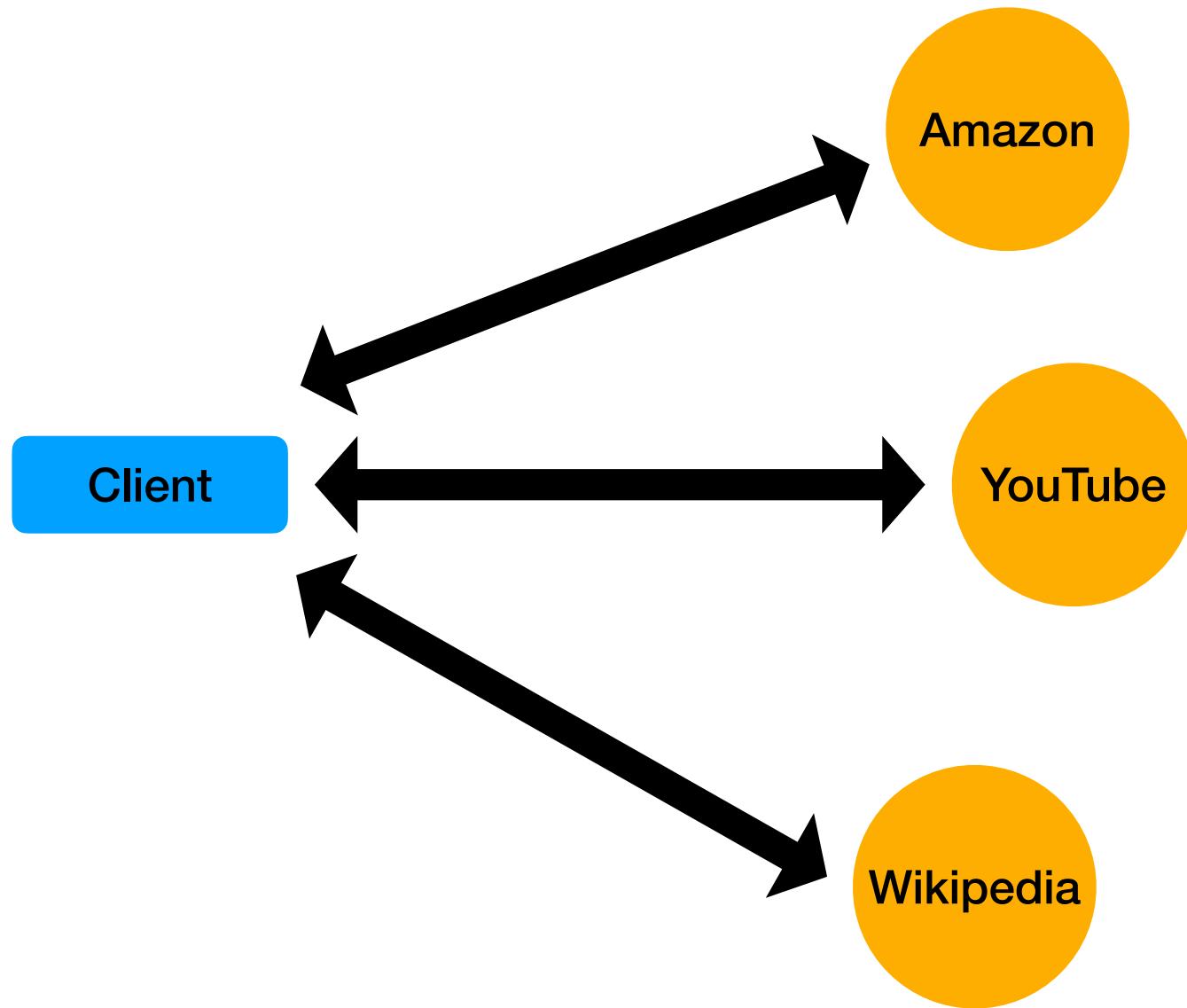


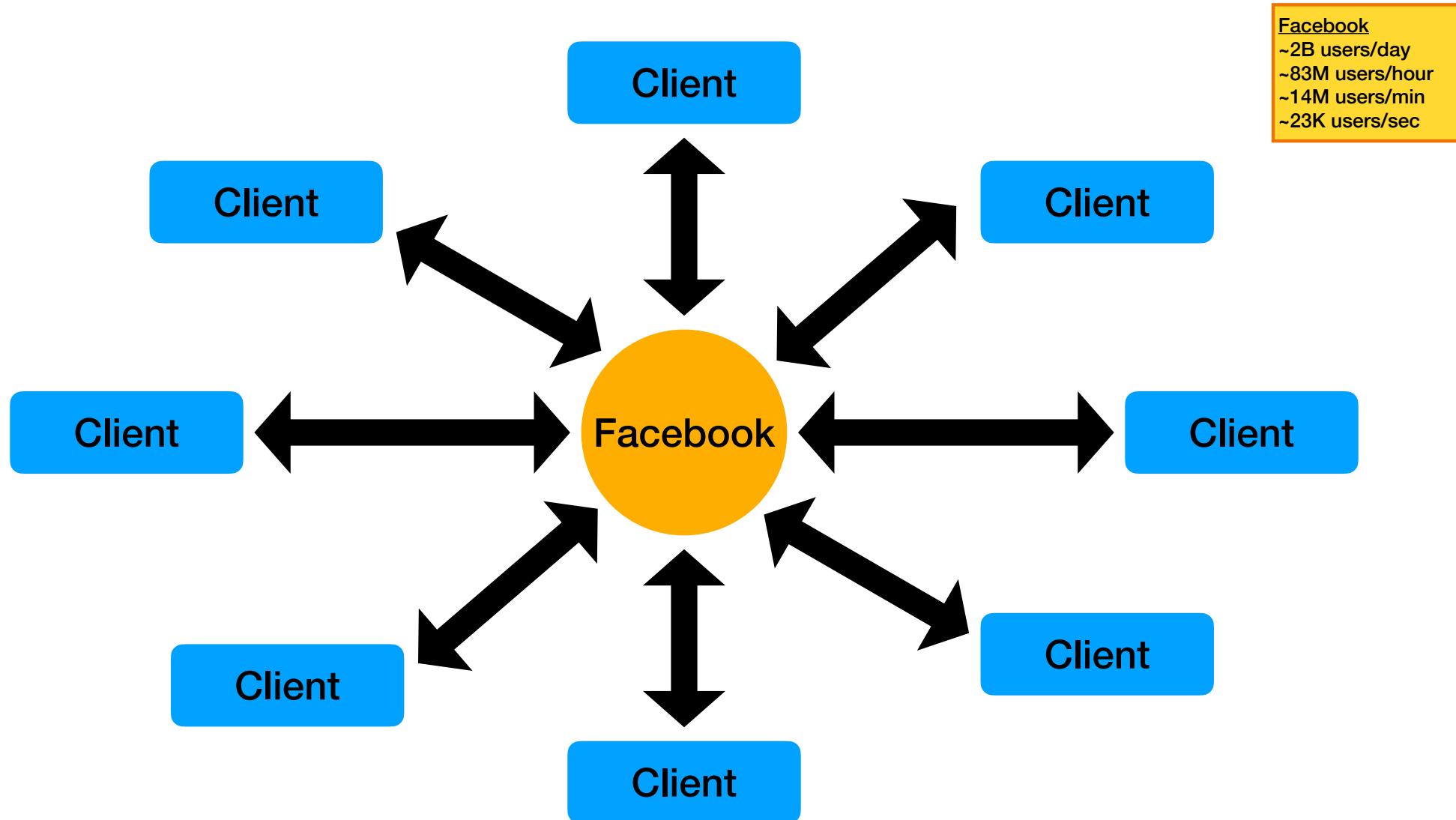
From: olli-shamlin.github.io

To: *my-device*

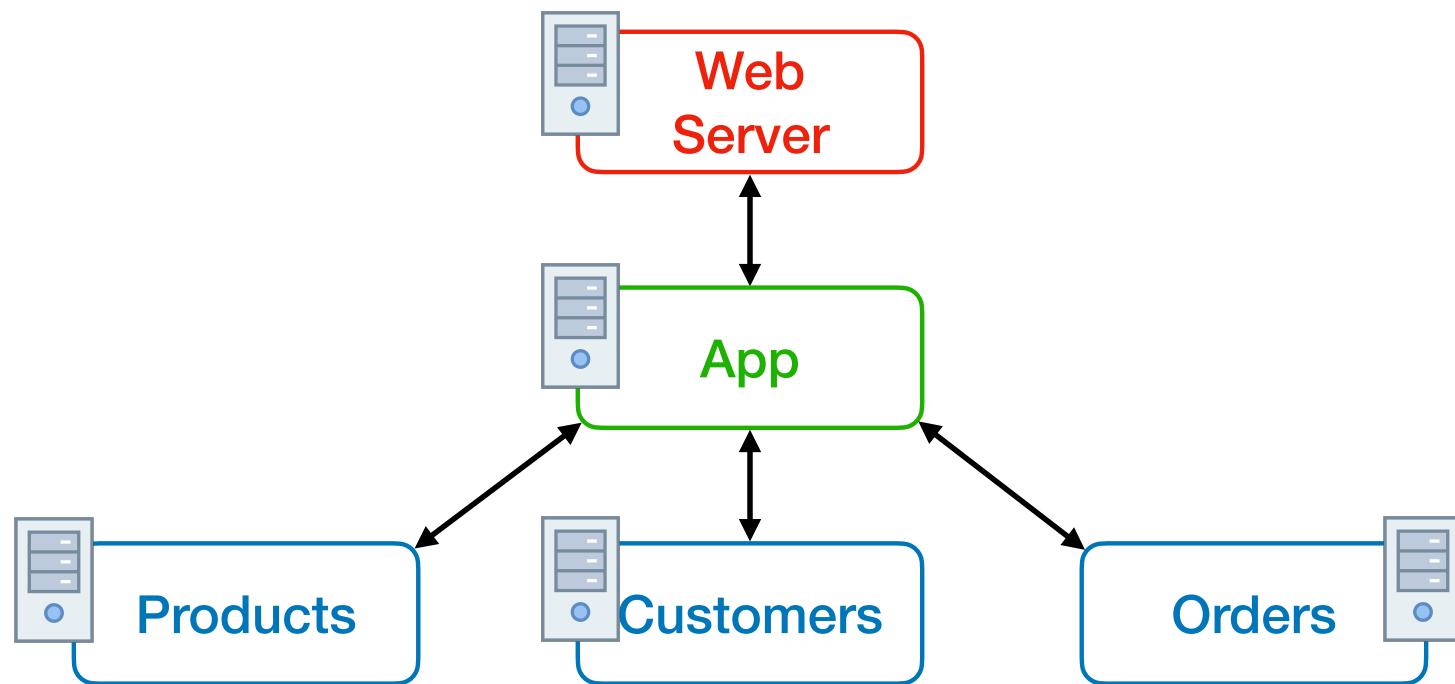








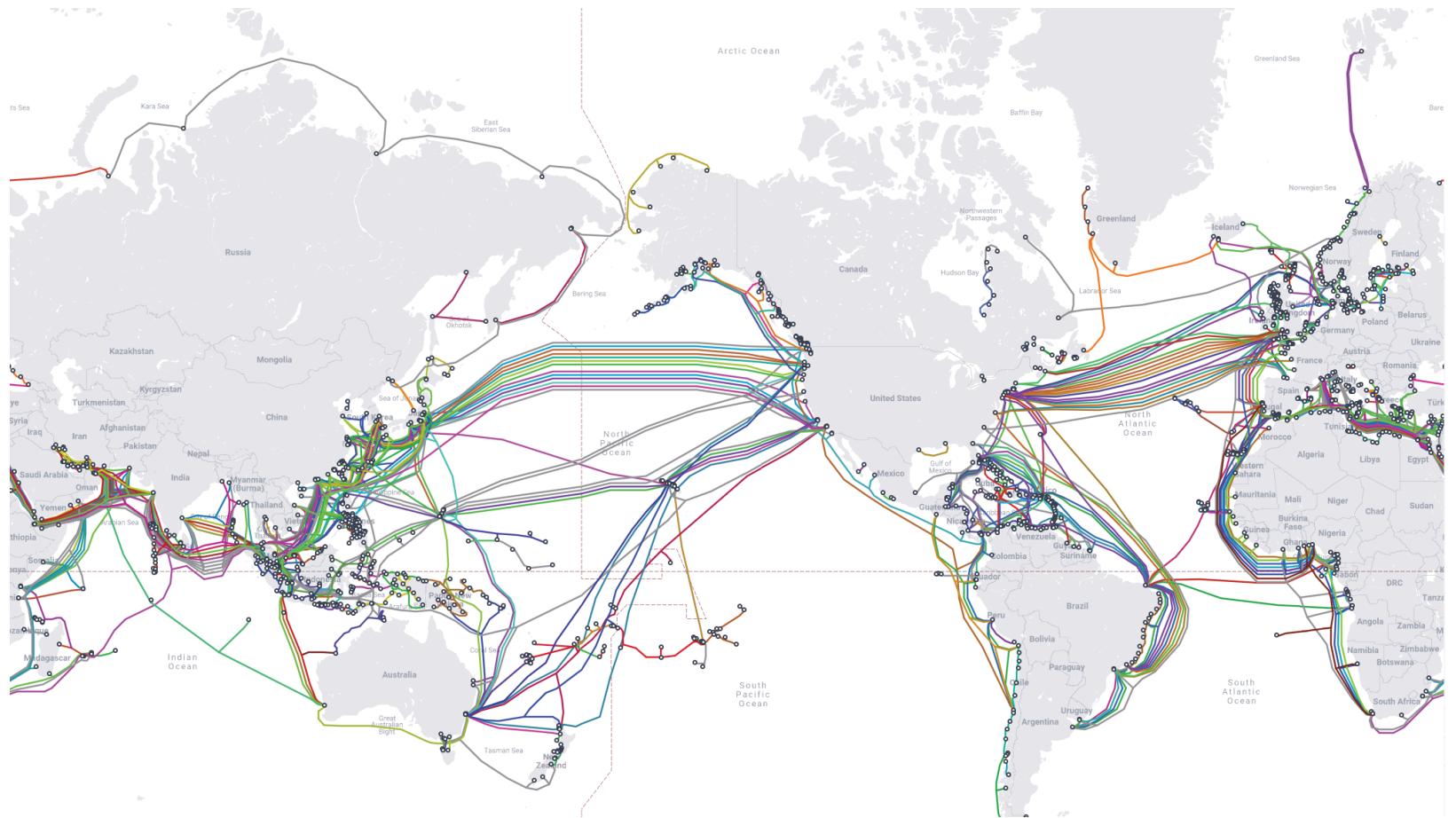
# Example: Retail Site





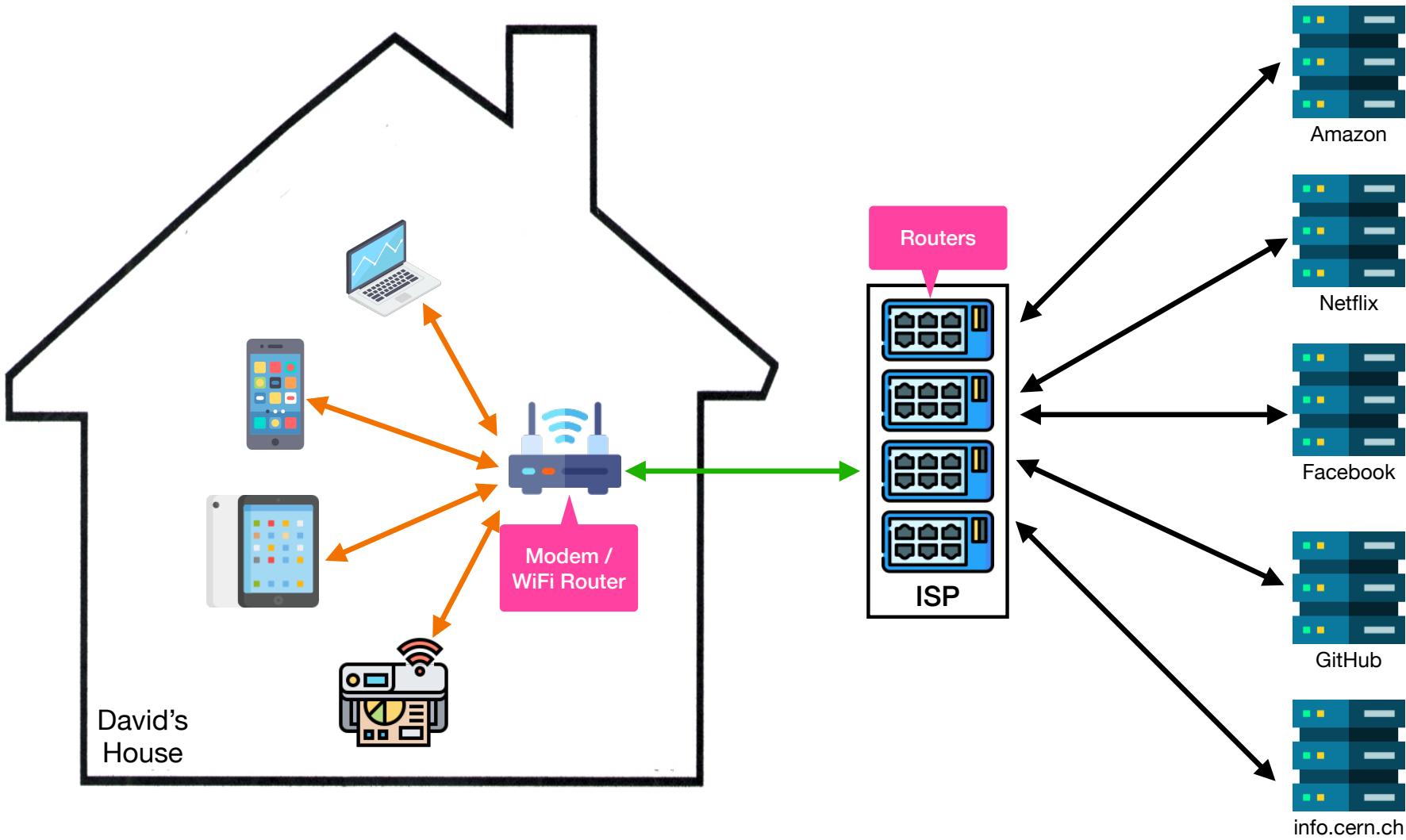


# The Internet Backbone



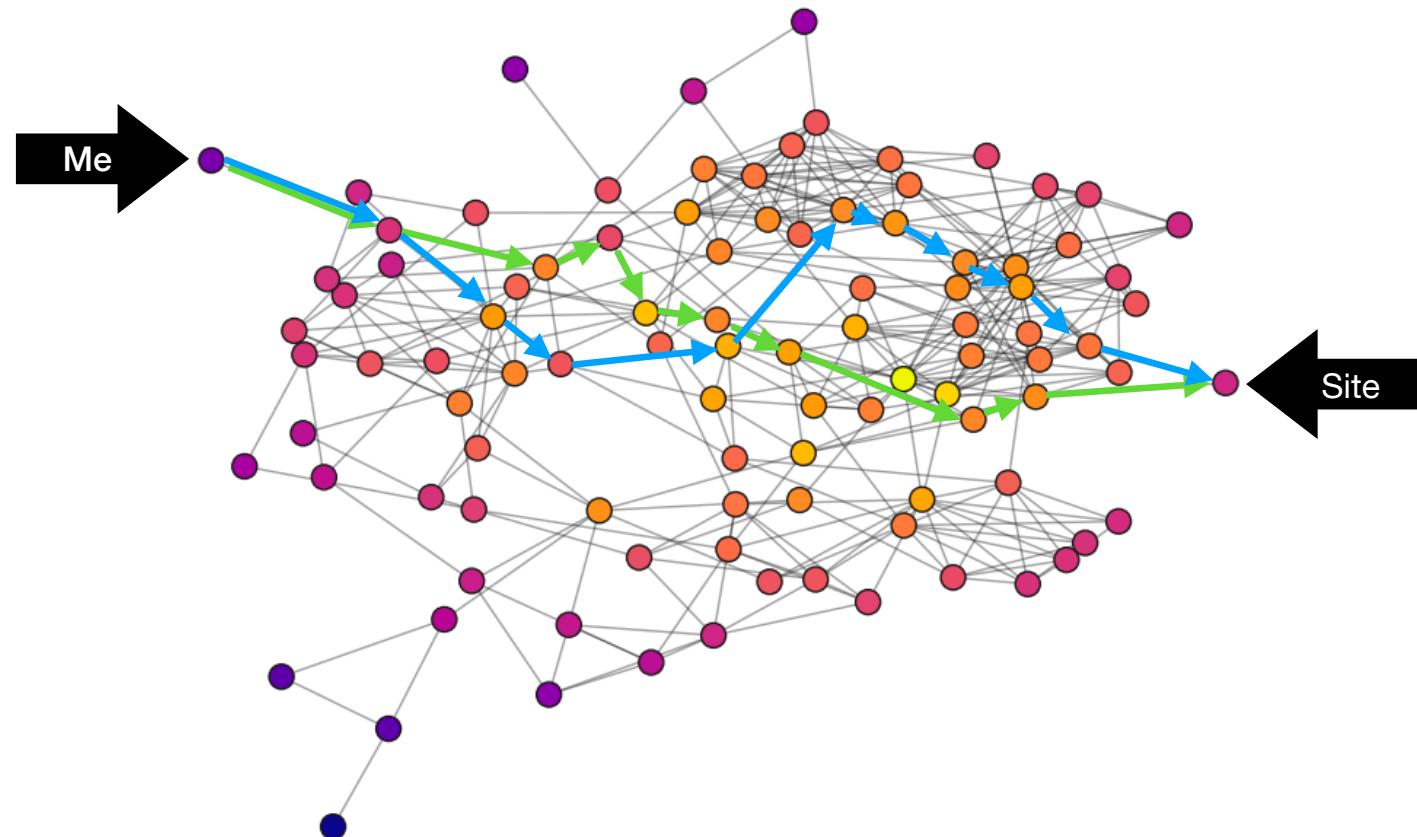
# The Internet Backbone





# Routing

How packets find their way from point A to point B on the Internet



# Definition of *Cookie*

From wikipedia.org:

An HTTP **cookie** (also called web cookie, Internet cookie, browser cookie, or simply cookie) is a small block of data created by a web server while a user is browsing a website and placed on the user's computer or other device by the user's web browser. Cookies are placed on the device used to access a website, and more than one cookie may be placed on a user's device during a session.

Cookies serve useful and sometimes essential functions on the web. They enable web servers to store stateful information (such as items added in the shopping cart in an online store) on the user's device or to track the user's browsing activity (including clicking particular buttons, logging in, or recording which pages were visited in the past). They can also be used to save information that the user previously entered into form fields, such as names, addresses, passwords, and payment card numbers for subsequent use.

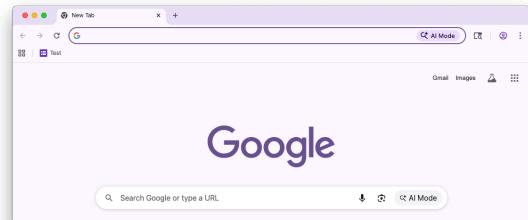
Examples:

av-timezone	America/New_York
csm-hit	tb:s-M6XQHR0B3T548ZJE02PH 1760965558625&t:1760965559766&adb:adblk_no
i18n-prefs	USD
lc-main	en_US
session-token	b+iYdts4XRFV5TD7RsVUPyK6ZQtJZDLsUkkagDgoTJVwdBKtFlgOaMCwy33KB122EYcaFUST1oGX4

# Private Browsing Mode

- Browsers save some info when we use them
  - Cookies
  - History of sites/pages you visit and search queries you make
  - Large files (a.k.a. “cached files”; eg, images and videos)
- You can use a browser’s “private browsing” feature to prevent your browser from saving the above types of data
- Private browsing mode inhibits others who you share your device with from seeing your browsing activity; it **does not** increase your privacy to others on the internet who may be “watching” (e.g., the sites you visit, your ISP, “bad guys” trying to scam or hack you)
- **Note:** Google Chrome calls this “incognito mode” / “incognito windows”

Regular window →



Private window →

