Chapter 1 : The Cloud, Search Engines, Internet Browsers, and Cookies

What is the cloud?

https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-the-cloud/

The definition for the cloud can seem murky, but essentially, it's a term used to describe a global network of servers, each with a unique function. The cloud is not a physical entity, but instead is a vast network of remote servers around the globe which are hooked together and meant to operate as a single ecosystem. These servers are designed to either store and manage data, run applications, or deliver content or a service such as streaming videos, web mail, office productivity software, or social media. Instead of accessing files and data from a local or personal computer, you are accessing them online from any Internet-capable device—the information will be available anywhere you go and anytime you need it.

Businesses use four different methods to deploy cloud resources. There is a public cloud that shares resources and offers services to the public over the Internet, a private cloud that isn't shared and offers services over a private internal network typically hosted on-premises, a hybrid cloud that shares services between public and private clouds depending on their purpose, and a community cloud that shares resources only between organizations, such as with government institutions.

Computer Basics: What Is the Cloud?
https://youtu.be/4OO77HFcCUs?si=VdAo1dXHbEDPeuK1

What is a search engine?

https://www.techtarget.com/whatis/definition/search-engine

A search engine is a coordinated set of programs that searches for and identifies items in a database that match specified criteria. Search engines are used to access information on the World Wide Web.

How do search engines work?
Google is the most commonly used internet search engine. Google search takes place in the following three stages:

1. **Crawling.** Crawlers discover what pages exist on the web. A search engine constantly looks for new and updated pages to add to its list of known pages. This is referred to as *URL discovery*. Once a page is discovered, the crawler examines its content. The search engine uses an algorithm to choose which pages to crawl and how often.
2. **Indexing.** After a page is crawled, the textual content is processed, analyzed and tagged with attributes and metadata that help the search engine understand what the content is about. This also enables the search engine to weed out duplicate pages and collect signals about the content, such as the country or region the page is local to and the usability of the page.
3. **Searching and ranking.** When a user enters a query, the search engine searches the index for matching pages and returns the results that appear the most relevant on the search engine results page (SERP). The engine ranks content on a number of factors, such as the authoritativeness of a page, back links to the page and keywords a page contains.

Specialized content search engines are more selective about the parts of the web they crawl and index. For example, Creative Commons Search is a search engine for content shared explicitly for reuse under Creative Commons license. This search engine only looks for that specific type of content.

What is an internet browser?

https://en.wikipedia.org/wiki/Web_browser

A **web browser**, often shortened to **browser**, is an application for accessing websites. When a user requests a web page from a particular website, the browser retrieves its files from a web server and then displays the page on the user's screen. Browsers can also display content stored locally on the user's device.

Browsers are used on a range of devices,
including desktops, laptops, tablets, smartphones, smartwatches and consoles.
As of 2024, the most used browsers worldwide are Google Chrome (~66% market share), Safari (~16%), Edge (~6%), Firefox (~3%). As of 2023, an estimated 5.4 billion people had used a browser.

The purpose of a web browser is to fetch content and display it on the user's device. This process begins when the user inputs a Uniform Resource Locator (URL), such as *https://en.wikipedia.org/*, into the browser's address bar. Virtually all URLs on the Web start with either ***http:*** or ***https:*** which means they are retrieved with the Hypertext Transfer Protocol (HTTP). For secure mode (HTTPS), the connection between the browser and web server is encrypted, providing a secure and private data transfer. For this reason, a web browser is often referred to as an HTTP client or a user agent. Requisite materials, including text, style sheets, images, and other types of multimedia, are downloaded from the server. Once the materials have been downloaded, the web browser's engine (also known as a layout engine or rendering engine) is responsible for converting those resources into an interactive visual representation of the page on the user's device. Modern web browsers also contain separate JavaScript engines which enable more complex interactive applications inside the browser. A web browser that does not render a graphical user interface is known as a headless browser.

Web pages usually contain hyperlinks to other pages and resources. Each link contains a URL, and when it is clicked or tapped, the browser navigates to the new resource. Most browsers use an internal cache of web page resources to improve loading times for subsequent visits to the same page. The cache can store many items, such as large images, so they do not need to be downloaded from the server again. Cached items are usually only stored for as long as the web server stipulates in its HTTP response messages.

A web browser is not the same thing as a search engine, though the two are often confused. A search engine is a website that provides links to other websites and allows users to search for specific resources using a textual query. However, web browsers are often used to access search engines, and most modern browsers allow users to access a default search engine directly by typing a query into the address bar.

What are cookies on the Internet?

https://www.microsoft.com/en-us/edge/learning-center/what-are-cookies?form=MA13I2

Cookies are bits of data that are sent to and from your browser to identify you. When you open a website, your browser sends a piece of data to the web server hosting that website. This data usually appears as strings of numbers and letters in a text file. Every time you access a new website, a cookie is created and placed in a temporary folder on your device. From here, cookies try to match your preferences for what you want to read, see, or purchase.

A common analogy for a cookie is a coat check ticket at a concert or event: It's something you receive from a service, has no intrinsic value outside of the event, and is tailored exactly to you. However, you'll need it if you want to get your coat back.

What types of cookies are there? There are two types of Internet cookies:

Authentication cookies
Authentication cookies save a user's information when they log into a website. This includes username and password, which account they're using, and whether they're currently logged in. By authenticating the user's credentials through a unique session identifier, this cookie allows the user to access the website without logging in again. Microsoft Edge does not use cookies to manage your passwords, in fact, it stores passwords with a technique called local data encryption to keep your private data truly safe.

Tracking cookies
Tracking cookies record your web usage and save information about your "session," i.e. your time on a website. They track pages you visit and personalize your searches, displaying custom content tailored to your interests. When you use a search engine, for example, a website like Microsoft Bing will note what you're looking for and show you products or services that you might find useful. It's the latter function of Internet cookies that has raised issues related to online privacy and security — to the extent that government regulators in Europe and the United States have enacted laws aimed at protecting consumer privacy and making it harder for hackers to use cookies to access your sensitive data.

How do computer cookies affect your privacy?
Advertising-related tracking cookies can be placed on your device in two ways, even if you don't interact with the ads on a website:
First-party cookies are created by major websites themselves and are generally considered to be safe and reliable, matching the reputation and credibility of the website involved.
Third-party cookies are usually associated with the ads that populate a website, which are distinct from the website you may be visiting. These cookies may contain tracking information that keep tabs on your browsing history, so advertising and analytics platforms can reach you with personalized ads. For example, if you recently searched for pet supplies, a website's third-party ads may show you cat toys or dog food — even if you're not reading about pets.

Third-party cookies are more susceptible to hacking and data breaches, as they're tied to advertising and analytics platforms instead of major websites.

In 2002, the European Union dictated that users must consent to cookies when visiting a new website. That's why you often see the "Accept Cookies" pop-up when going online, with the choice to opt out of all but the most common cookies. This was designed to protect users' privacy from targeted advertising. The United States enacted similar requirements in 2005.

How to remove Internet cookies

Many browsers feature a Do Not Track feature that can block third-party tracking cookies. Whether it's integrated in your browser, such as on Microsoft Edge, or available as an extension, it's a useful feature to stay both connected and private online. Otherwise, you can clear cookies yourself, usually from the Settings > Privacy menu in browsers.

Cookies are a vital part of spending time online. Still, privacy concerns are valid, and always worth considering.

Chapter 2 : Web Applications & Productivity Software

What is web application (web apps) and its benefits?

A web application (web app) is an application program that is stored on a remote server and delivered over the internet through a browser interface.

Developers: creators of applications

- **Google:** Free
- **Microsoft:** Subscription (Free version available – Fee for advance features)
- **Apple:** Free

App Store: application marketplace to obtain software for use on devices

- Google Play Store
- Apple App Store

"The" Cloud:

https://en.wikipedia.org/wiki/Cloud_computing

Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each of which is a data center.

- **(Android & Apple) Google Drive**
- **(Android & Apple) Microsoft OneDrive**
- **(Apple) iCloud**
- **(Samsung) migrating to Microsoft OneDrive**

Word Processors:

https://en.wikipedia.org/wiki/Word_processor

a device or computer program that provides for input, editing, formatting, and output of text, often with some additional features.

- **(Android & Apple) Microsoft Word**
- **(Android & Apple) Google Docs**
- **(Apple) Pages**
- **(Adobe) Acrobat (write/view) / Acrobat Reader (view)**

Spreadsheets:

https://en.wikipedia.org/wiki/Spreadsheet

a computer application for computation, organization, analysis and storage of data in tabular form. Spreadsheets were developed as computerized analogs of paper accounting worksheets. The program operates on data entered in cells of a table. Each cell may contain either numeric or text data, or the results of formulas that automatically calculate and display a value based on the contents of other cells.

- **(Android & Apple) Microsoft Excel**
- **(Android & Apple) Google Sheets**
- **(Apple) Numbers**

Presentations:

https://en.wikipedia.org/wiki/Presentation_program

In computing, a presentation program (also called presentation software) is a software package used to display information in the form of a slide show. It has three major functions:

1. an editor that allows text to be inserted and formatted
2. a method for inserting and manipulating graphic images and media clips
3. a slide-show system to display the content

- **(Android & Apple) Microsoft PowerPoint**
- **(Android & Apple) Google Slides**
- **(Apple) Keynote**

Photo Gallery

An application used to store photo images and video

- (Android & Apple) **Google Photos**
- (Apple) **Photos**
- (Samsung) **Gallery**

Notes

Digital "scrap paper" used for casual notetaking to write out thoughts, task lists, reminders, and other uses when creating a formal document isn't desired.

- (Android & Apple) **Microsoft OneNote**
- (Android & Apple) **Google Keep**
- (Apple) **Notes**

Email Clients

An email client, also known as an email reader or mail user agent, is a software application that allows users to access and manage their email accounts. These clients provide a user interface for composing, sending, receiving, and organizing emails.

- (Android & Apple) **Microsoft Outlook**
- (Apple) **Mail**
- (All) **Gmail**
- (All) **Yahoo**
- (All) **Titan**

Email Provider

A variety of email providers are available, each offering unique features and catering to different needs. Popular options include Gmail, Outlook.com, Yahoo Mail, ProtonMail, iCloud Mail, and Zoho Mail. Gmail is known for its large user base, integration with other Google services, and robust spam filtering. Outlook.com is favored by Microsoft users, offering seamless integration with Microsoft products. For Apple users, iCloud Mail is a convenient choice, tightly integrated with the Apple ecosystem.

Here's a more detailed look at some of the top email providers:

Gmail: The most popular email service globally, offering 15GB of free storage shared across Google services. It integrates well with other Google products like Google Drive and Calendar.

Outlook.com: Formerly Hotmail, Outlook.com provides a clean interface and strong integration with Microsoft services like OneDrive and Office Online.

Yahoo Mail: Yahoo Mail is known for its large storage capacity.

iCloud Mail: Offered by Apple, iCloud Mail is a convenient option for Apple users, providing tight integration with the Apple ecosystem.

Chapter 3 : Tech Terms

What is a web server?
A web server is software and hardware that uses HTTP and other protocols to respond to client requests made over the World Wide Web.

Search Engine
A search engine is a coordinated set of programs that searches for and identifies items in a database that match specified criteria. Search engines are used to access information on the World Wide Web.

Web browser
Google Chrome browser is a free web browser used for accessing the internet and running web-based applications.

What is HTTP and how does it work? Hypertext Transfer Protocol
HTTP (Hypertext Transfer Protocol) is the set of rules for transferring files -- such as text, images, sound, video and other multimedia files -- over the web.

Hypertext Transfer Protocol Secure (HTTPS)
Hypertext Transfer Protocol Secure (HTTPS) is a protocol that secures communication and data transfer between a user's web browser and a website.

What is a URL (Uniform Resource Locator)?
A URL (Uniform Resource Locator) is a unique identifier used to locate a resource on the internet.

What is Transport Layer Security (TLS)?
Transport Layer Security (TLS) is an Internet Engineering Task Force (IETF) standard protocol that provides authentication, privacy and data integrity between two communicating computer applications.

What is SSL (Secure Sockets Layer)?
SSL (Secure Sockets Layer) is a networking protocol that secures connections between web clients and web servers over internal networks or the internet by encrypting the data sent between those clients and servers.

What is IMAP (Internet Message Access Protocol)?
IMAP (Internet Message Access Protocol) is a standard retrieval protocol for receiving email.

What is ChatGPT?
ChatGPT is an AI chatbot that uses natural language processing to create humanlike conversational dialogue. ChatGPT search is a generative AI search engine that ingests information in real time.

What is OpenAI?
OpenAI is a private research laboratory that aims to develop and direct artificial intelligence (AI) in ways that benefit humanity as a whole.

MAC address vs. IP address: What's the difference?
A MAC address and an IP address each identify network devices, but they do the jobs at different levels. Explore the differences between the two and learn why both are necessary.

Chapter 4 Part 4: Online Security & Safety

What is a VPN?
A virtual private network (VPN) is a service that creates a safe, encrypted online connection.

What is pharming?
Pharming is a scamming practice in which malicious code is installed on a PC or server, misdirecting users to fraudulent websites without their knowledge or consent.

What is cyber hijacking?
Cyber hijacking, or computer hijacking, is a type of network security attack in which the threat actor takes control of computer systems, software programs and network communications.

What is SSL (Secure Sockets Layer)?
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What is an attack vector?
An attack vector is a path or means by which an attacker or hacker can gain access to a computer or network server to deliver a payload or malicious outcome.

What is spyware?
Spyware is a type of malicious software (malware) that is installed on a computing device without the end user's knowledge.

How to prevent and protect against ransomware
Organizations sometimes learn difficult lessons about gaps in their cybersecurity defenses. Here's what to know about ransomware preparation, detection, response and recovery.

Anonymous browsing explained: What you need to know
Anonymous browsing, also known as private browsing or incognito mode, enables users to browse the internet without leaving a trail of online activities. Is it really anonymous?

What is the dark web (darknet)?
The dark web is an encrypted portion of the internet not visible to the general public via a traditional search engine such as Google.

What is malware? Prevention, detection and how attacks work
Malware, or malicious software, is any program or file that's intentionally harmful to a computer, network or server.