CCA-102: Data Communications

ASSIGNMENT

Q1:What are the different types of network?

Ans.

11 Types of Networks in Use Today

 Personal Area Network (PAN) ...

 Local Area Network (LAN) ...

 Wireless Local Area Network (WLAN) ...

 Campus Area Network (CAN) ...

 Metropolitan Area Network (MAN) ...

 Wide Area Network (WAN) ...

 Storage-Area Network (SAN) ...

 System-Area Network (also known as SAN)

Q2:Explain the Shielded twisted pair (STP) and Unshielded twisted pair (UTP)

Ans. Difference between Unshielded Twisted Pair

(UTP) and Shielded Twisted Pair (STP) cables

Last Updated: 21-05-2020

UTP:

UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data

and voice both are transmitted through UTP because its frequency range is suitable.

In UTP grounding cable is not necessary also in UTP much more maintenance are not needed therefore it is cost effective.

STP:

STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required but in UTP grounding cable is not required. in Shielded Twisted Pair (STP) much more maintenance are needed therefore it is costlier than Unshielded Twisted Pair (UTP).

Difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables:

S.NO UTP STP

1. UTP stands for Unshielded twisted pair.

STP stands for Shielded twisted pair.

2. In UTP grounding cable is not necessary.

While in STP grounding cable is required.

3.

Data rate in UTP is slow compared to

STP. Data rate in STP is high.

4. The cost of UTP is less. While STP is costlier than UTP.

5.

In UTP much more maintenance are not

needed.

While in STP much more

maintenance are needed.

6. In UTP noise is high compared to STP. While in STP noise is less.

7.

In UTP the generation of crosstalk is also

high compared to STP.

While in STP generation of

crosstalk is also less.

8.

In UTP, attenuation is high in comparison

to STP. While in STP attenuation is low.

and become industry ready.

Q3: What is difference between baseband and broadband transmission?

Ans. Difference between Broadband and Baseband Transmission

Last Updated: 25-11-2019

Broadband system use modulation techniques to reduce the effect of noise in the environment. Broadband transmission employs multiple channel unidirectional transmission using combination of phase and amplitude modulation.

Baseband is a digital signal is transmitted on the medium using one of the signal codes like NRZ, RZ Manchester biphase-M code etc. is called baseband transmission.

These are following differences between Broadband and Baseband transmission.

Baseband transmission –

1. Digital signalling.
2. Frequency division multiplexing is not pssible.
3. Baseband is bi-directional transmission.
4. Short distance signal travelling.
5. Entire bandwidth is for single signal transmission.
6. Example: Ethernet is using Basebands for LAN.

Broadband transmission –

1. Analog signalling.
2. Transmission of data is unidirectional.
3. Signal travelling distance is long.

4. Frequency division multiplexing possible.

5. Simultaneous transmission of multiple signals over different frequencies.

6. Example : Used to transmit cable TV to premises.

Q4:What is the difference between a hub, modem, router and a switch?

Ans. When computers, network devices or other networks are required to be connected, hubs, switches and routers are the bridges to link them together. All the three types of devices can perform the same function, and technicians sometimes may use the terms interchangeably. However, this will make people confuse whether they are the same thing or different from each other. This post is going to explore the actual meanings of hub, switch, router and what they are used for.

Overview of Hub, Switch & Router

Hub

A hub is to sent out a message from one port to other ports. For example, if there are three computers of A, B, C, the message sent by a hub for computer A will also come to the other computers. But only computer A will respond and the response will also go out to every other port on the hub. Therefore, all the

computers can receive the message and computers themselves need to decide whether to accept the message.

Switch

A switch is able to handle the data and knows the specific addresses to send the message. It can decide which computer is the message intended for and send the message directly to the right computer. The efficiency of switch has been greatly improved, thus providing a faster network speed.

Router

Router is actually a small computer that can be programmed to handle and route the network traffic. It usually connects at least two networks together, such as two LANs, two WANs or a LAN and its ISP network. Routers can calculate the best route for sending data and communicate with each other by protocols.

MODEM:

Stands for "modulating-demodulating":

modems are hardware devices that allow a computer or another device, such as a router or switch, to connect to the Internet. They convert or "modulate" an analog signal from a telephone or cable wire to digital data (1s and 0s) that a computer can recognize.

Simply send traffic from point A to piont B without further manipulation.

Q5:When you move the NIC cards from one PC , does the MAC address gets transferred as well?

Ans. But the MAC address is part and parcel of the network adapter, just as your internal organs are part of you. When you move to a new house, you take your liver with you. In the same way, when you move a NIC to a different computer, it takes its MAC address with it.

Q6: When troubleshooting computer network problems, what common hardware-related problems can occur?

Ans.

A large percentage of a network is made up of hardware. Problems in these areas can range from malfunctioning hard drives, broken NICs and even hardware startups. Incorrectly hardware configuration is also one of those culprits to look into.

Q7: In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program ?

Ans.

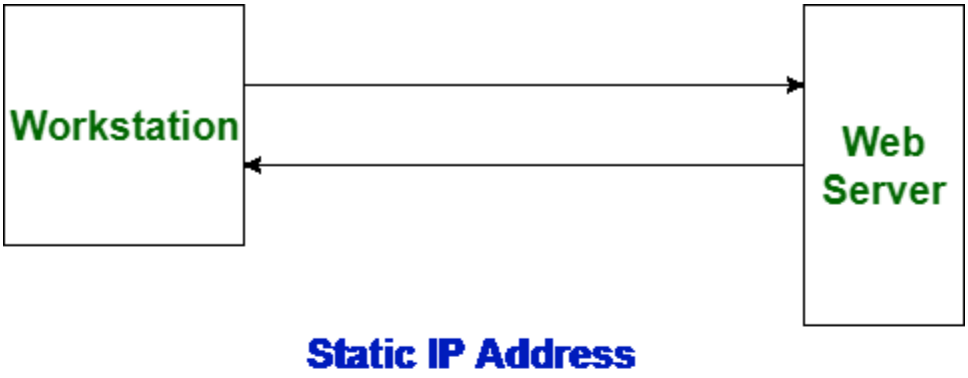
An anti-virus program must be installed on all servers and workstations to ensure protection. That's because individual users can access any workstation and introduce a computer virus when plugging in their removable hard drives or flash drives.

Q8: Define static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

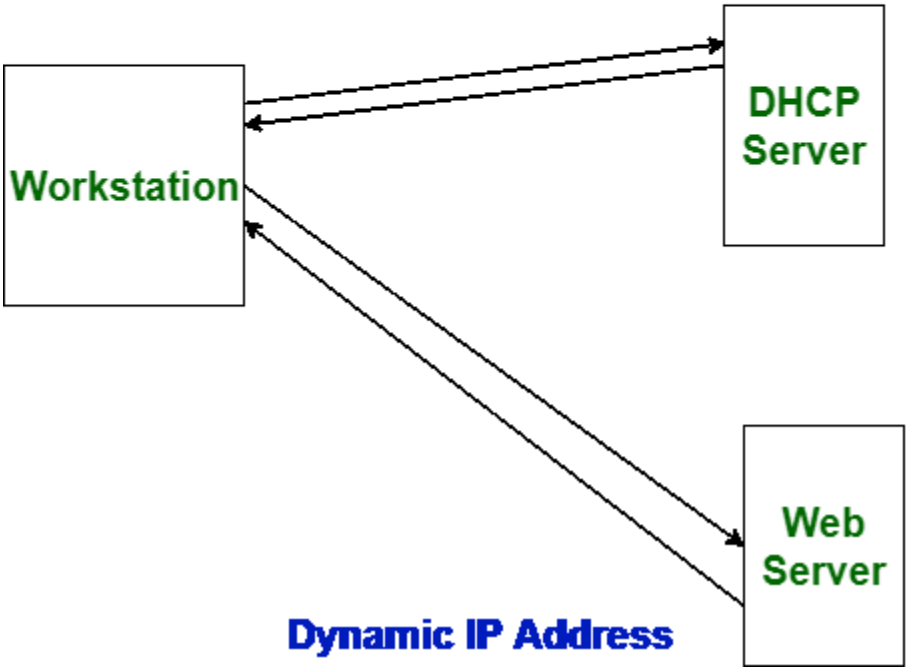
Ans. Difference between Static and Dynamic IP address

Last Updated: 15-06-2020

IP stands for **Internet Protocol**. IP address may be a distinctive numerical symbol allotted to every device on a network to spot each affiliation unambiguously.
The distinction between Static and Dynamic IP address lies inside the length of allotted scientific discipline address. The static scientific discipline address is fastened scientific discipline address that is manually allotted to a tool for a protracted amount of your time. On the opposite hand, the Dynamic scientific discipline address oft changes whenever user boots his/her machine, and it's mechanically allotted.



Static IP Address



Dynamic IP Address

Difference between Static and Dynamic IP address:

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
1.	It is provided by ISP(Internet Service Provider).	While it is provided by DHCP (Dynamic Host Configuration Protocol).
2.	Static ip address does not change any time, it means if a static ip address is provided then it can't be changed or modified.	While dynamic ip address change any time.
3.	Static ip address is less secure.	While in dynamic ip address, there is low amount of risk than static ip address's risk.
4.	Static ip address is difficult to designate.	While dynamic ip address is easy to designate.
5.	The device designed by static ip address can be trace.	But the device designed by dynamic ip address can't be trace.
6.	Static ip address is more stable than dynamic ip address.	While dynamic ip address is less stable than static ip address.
7.	The cost to maintain the static ip address is higher than dynamic ip address.	While the maintaining cost of dynamic ip address is less than static ip address.

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
8.	It is used where computational data is less confidential.	While it is used where data is more confidential and needs more security.

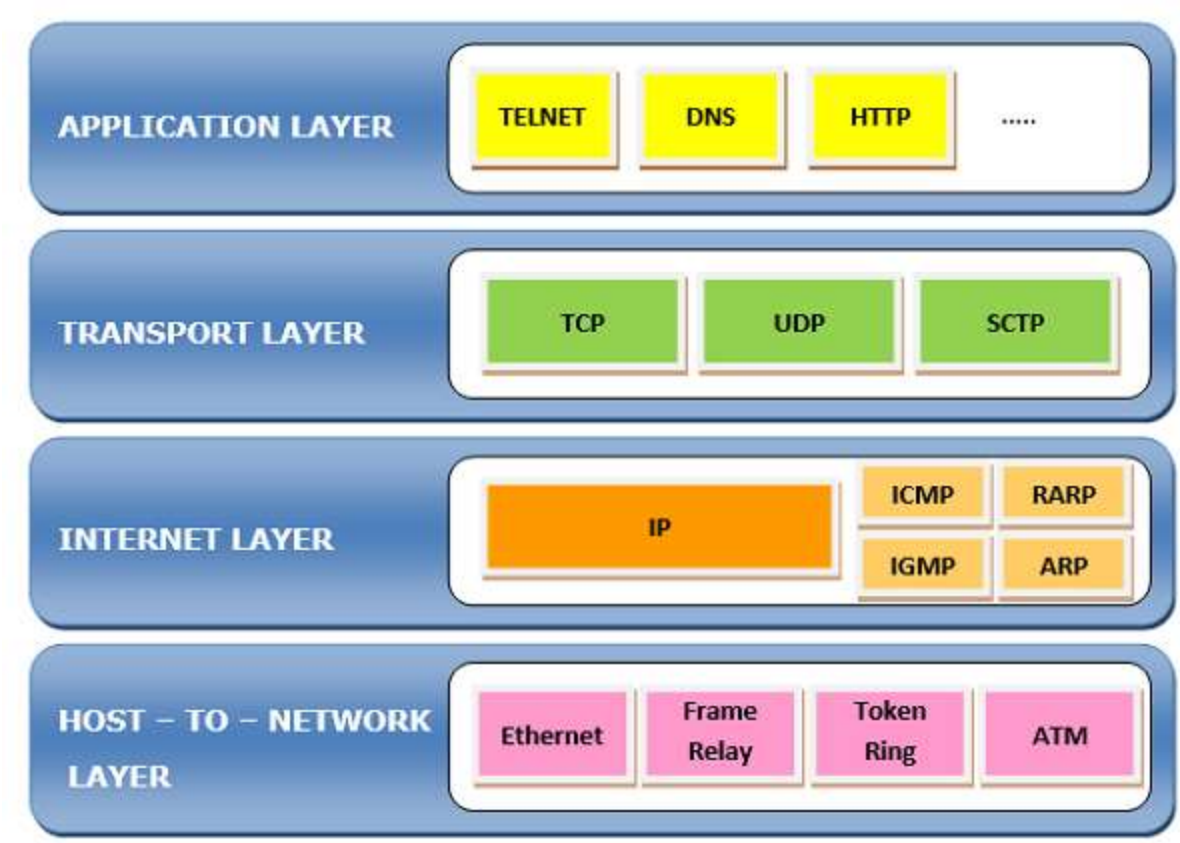
Q9: Discuss TCP/IP model in detail.

Ans: TCP/IP Reference Model is a four-layered suite of communication protocols. It was developed by the DoD (Department of Defence) in the 1960s. It is named after the two main protocols that are used in the model, namely, TCP and IP. TCP stands for Transmission Control Protocol and IP stands for Internet Protocol.

The four layers in the TCP/IP protocol suite are −

- **Host-to- Network Layer −**It is the lowest layer that is concerned with the physical transmission of data. TCP/IP does not specifically define any protocol here but supports all the standard protocols.
- **Internet Layer −**It defines the protocols for logical transmission of data over the network. The main protocol in this layer is Internet Protocol (IP) and it is supported by the protocols ICMP, IGMP, RARP, and ARP.
- **Transport Layer −** It is responsible for error-free end-to-end delivery of data. The protocols defined here are Transmission Control Protocol (TCP) and User Datagram Protocol (UDP).
- **Application Layer −** This is the topmost layer and defines the interface of host programs with the transport layer services. This layer includes all high-level protocols like Telnet, DNS, HTTP, FTP, SMTP, etc.

The following diagram shows the layers and the protocols in each of the layers −



Q10: What is a web browser (browser) ? Give some explain of browser.

Ans. A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari.

The primary function of a web browser is to render HTML, the code used to design or "mark up" webpages. Each time a browser loads a web page, it processes the HTML, which may include text, links, and references to images and other items, such as cascading style sheets and JavaScript functions. The browser processes these items, then renders them in the browser window.

Early web browsers, such as Mosaic and Netscape Navigator, were simple applications that rendered HTML, processed form input, and supported bookmarks. As websites have evolved, so have web browser requirements. Today's browsers are far more advanced, supporting multiple types of HTML (such as XHTML and HTML 5), dynamic JavaScript, and encryption used by secure websites.

The capabilities of modern web browsers allow web developers to create highly interactive websites. For example, Ajax enables a

browser to dynamically update information on a webpage without the need to reload the page. Advances in CSS allow browsers to display a responsive website layouts and a wide array of visual effects. Cookies allow browsers to remember your settings for specific websites.
While web browser technology has come a long way since Netscape, browser compatibility issues remain a problem. Since browsers use different rendering engines, websites may not appear the same across multiple browsers. In some cases, a website may work fine in one browser, but not function properly in another. Therefore, it is smart to install multiple browsers on your computer so you can use an alternate browser if necessary.

Q11: What is search engine ? Give explain

Ans. A search engine is a web-based tool that enables users to locate information on the World Wide Web. Popular examples of search engines are Google, Yahoo!, and MSN Search. Search engines utilize automated software applications (referred to as robots, bots, or spiders) that travel along the Web, following links from page to page, site to site. The information gathered by the spiders is used to create a searchable index of the Web.

search engines work

There may be some differences in how the search engines work but the fundamentals remain the same. Each of them has to do the following tasks:

1. Crawling
2. Indexing
3. Creating results

1. Crawling

Search engines have their own crawlers, small bots that scan websites on the world wide web. These little bots scan all sections, folders, subpages, content, everything they can find on the website.

Crawling is based on finding hypertext links that refer to other websites. By parsing these links, the bots are able to recursively find new sources to crawl.

2. Indexing

Once the bots crawl the data, it's time for indexing. The index is basically an online library of websites.

Your website has to be indexed in order to be displayed in the search engine results page. Keep in mind that indexing is a constant process. Crawlers come back to each website to detect new data.

Quick tip:
Quickly check all indexed pages of your website by using this search operator: *"site:domain.com"*

3. Creating results

Search engines create the results once the user submits a search query. It's a process of checking the query against all website records in the index. Based on the algorithm, the search engine picks the best results and creates an ordered list.

Q12: What is the internet & WWW? What are the uses of internet in our daily life?

Ans. Today, the internet has become unavoidable in our daily life. Appropriate use of the internet makes our life easy, fast and simple. The internet helps us with facts and figures, information and knowledge for personal, social and economic development. There are many uses of the internet, however, the use of the internet in our daily life depends on individual requirements and goals.

1. Uses of the Internet in Education

The Internet is a great platform for students to learn throughout their lifetime. They can use the internet to learn new things and even acquire degrees through online education programs. Teachers can also use the internet to teach students around the world.

2. Internet Use to Speed Up Daily Tasks

The Internet is very much useful in our daily routine tasks. For example, it helps us to see our notifications and emails. Apart from this, people can use the internet for money transfers, shopping order online food, etc.

3. Use of the Internet for Shopping

With the help of the internet, anybody can order products online. The increase in online shopping has also resulted in companies offering a huge discount for their customers.

4. Internet for Research & Development

The Internet plays a pivotal role in research and development as it is propelled through internet research. The benefit of the internet is enjoyed by small businessmen to big universities.

5.Business Promotion and Innovation

The Internet is also used to sell products by using various e-Commerce solutions. The result is new services and businesses starting every day thereby creating job opportunities and reducing unemployment.

6.Communication

Without a doubt, the internet is the most powerful medium of communication at present. It connects people across different parts of the world free and fast.

7. Digital Transactions

The internet facilitates internet banking, mobile banking, and e-wallets. Since all digital transactions are stored in a database, it helps the government to track income tax details or income reports in the ITR.

8. Money Management

The internet can also be used to manage money. Now, there are many websites, applications, and other tools that help us in daily transactions, transfers, management, budget, etc.

9. Tour & Travel

During tour and travel, the use of the internet is highly effective as it serves as a guide. People browse the internet before they start visiting the places. Tour bookings can also be done using the internet.

The influence of the internet in our daily life is huge. It has opened us a magical world of information and we would have never seen the world as it is without the internet. Considering its scope and importance, it would be hard to imagine a world without the internet.

Q13: What is an internet service provider ? Give some explain of ISP in india.

Ans. An Internet Service Provider (ISP) is a company that provides Internet access by using copper, fiber, or even satellite communications to the customer. In this lesson, we will cover exactly what an ISP is, how the ISP connects customers, and what type of services the ISPs provide.

Definition

An **Internet Service Provider** (**ISP**) is a company such as AT&T, Verizon, Comcast, or BrightHouse that provides Internet access to companies, families, and even mobile users. ISPs use fiber-optics, satellite, copper wire, and other forms to provide Internet access to its customers.

The type of Internet access varies depending on what the customer requires. For home use, cable or DSL (digital subscriber line) is the perfect, affordable choice. The price of home use can range anywhere from free to roughly $120 a month. The amount of bandwidth is usually what drives the price. **Bandwidth** is the amount of data that can be sent through an internet connection in a given amount of time. The speed for home use usually varies from 14 kilobits per second to 100 megabits per second. For large companies and organizations, their bandwidth requirements may be 1 to 10 gigabits per second, which is both insanely fast and expensive!

An Internet Service Provider (**ISP**) is **a** company such as AT&T, Verizon, Comcast, or BrightHouse that provides Internet access to companies, families, and even mobile users. **ISPs** use fiber-optics, satellite, copper wire, and other forms to **provide** Internet access to its customers.

Q14: Discuss the difference between MAC address, IP address and port address.

Ans. Both MAC Address and IP Address are used to uniquely identify a machine on the internet. MAC address is provided by the chip maker while IP Address is provided by the Internet Service Provider.

Following are the important differences between MAC Address and IP Address.

Sr. No.	Key	MAC Address	IP Address
1	Definition	MAC Address stands for Media Access Control Address.	IP Address stands for Internet Protocol Address.
2	Usage	MAC Address ensure that physical address of the	IP Address is a logical address of the computer and is used to uniquely locate

Sr. No.	Key	MAC Address	IP Address
		computer is unique.	computer connected via a network.
3	Format	MAC Address is of six byte hexadecimal address.	IP Address is of 4 bytes or of 16 bytes.
4	Access Protocol	MAC Address can be retrieved using ARP protocol.	IP Address can be retrieved using RARP protocol.
5	Provider	Chip maker manufacturer provides the MAC Address.	Internet Service Provider, ISP provides the IP Address.

Q15: How do we view my internet browser's history ?

Ans. Today, all major browsers have functionality that allows you to quickly and easily view your Internet browser's history. However, as multiple devices contain browser history, there are multiple ways to view as well. To proceed, choose your devices from the section below and follow the instructions.

- Desktop or laptop computer.
- Android phone or tablet running Google Chrome.
- iPhone or iPad running Safari.

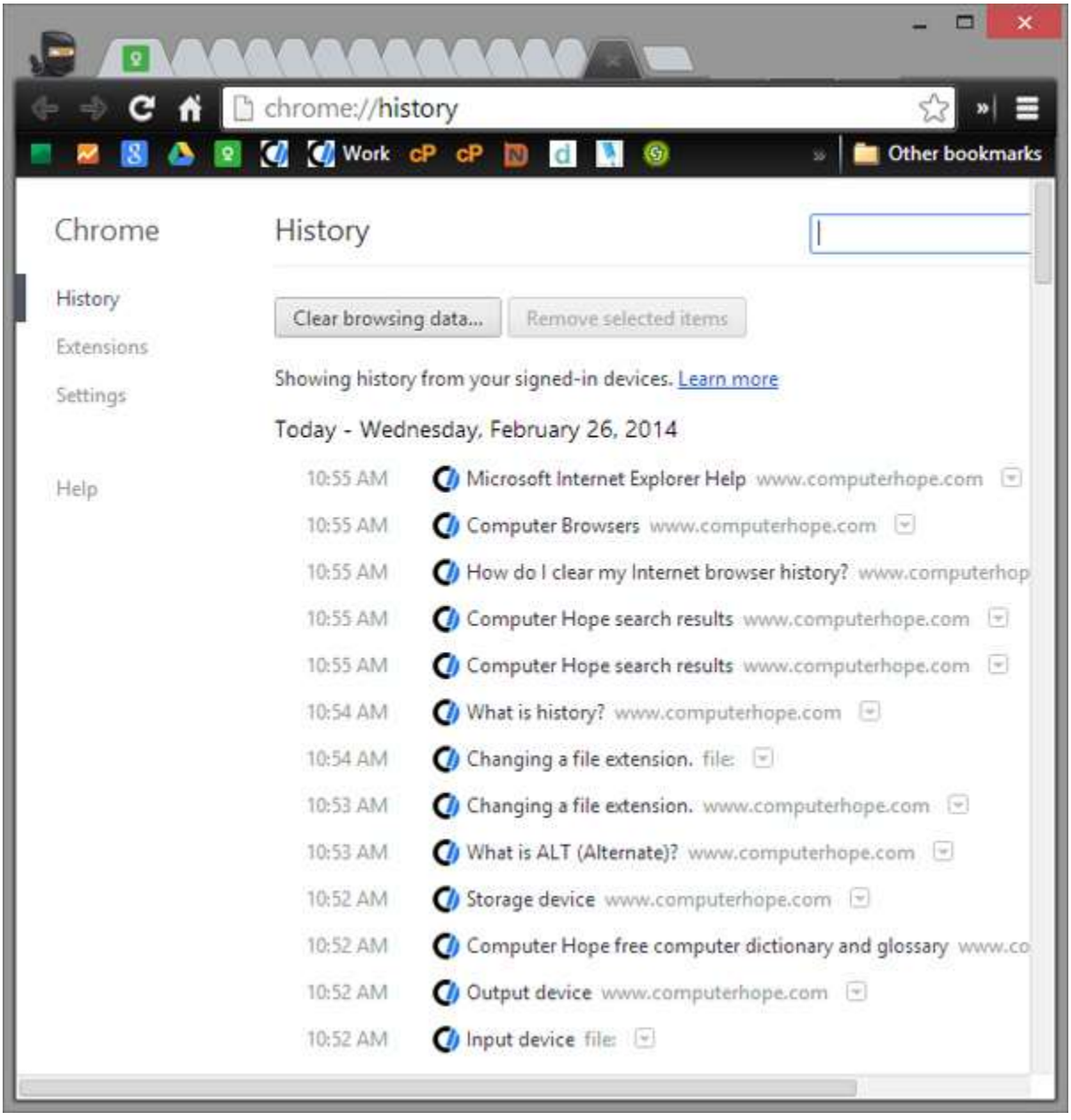
Desktop or laptop computer

If you are using Windows, Linux, or macOS, there are quick shortcut key combinations that allow you to view your history.

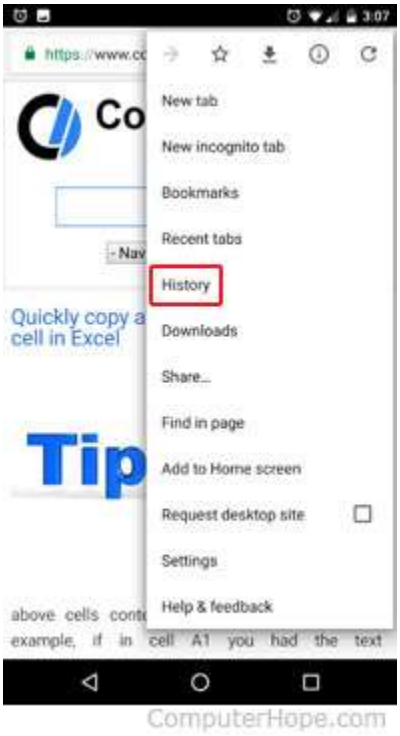
Windows and Linux users: Ctrl+H

Apple users: Command + Shift + H

Once one of the above shortcut keys is pressed, a history section similar to the example below should appear. In the following screenshot, browsing history is being viewed in Google Chrome.



Android phone or tablet running Google Chrome



Users who are running Google Chrome on their Android phone or tablet can view their history with the following steps.

1. Open the Google Chrome Internet browser.
2. In the upper-right corner of the screen **tap the**  **icon**.
3. In the drop-down menu that appears, select **history** and shown in the image.
4. The following page contains your device's history.

iPhone or iPad running Safari

Users who are running Safari for iOS on their iPhone or iPad can view their history with the following steps.

1. On your device, open the Safari Internet browser.

2. In the lower-left corner of the browser window, press and hold the back arrow.

3. The next screen contains your browser's history.