NETWORKING – PART 1

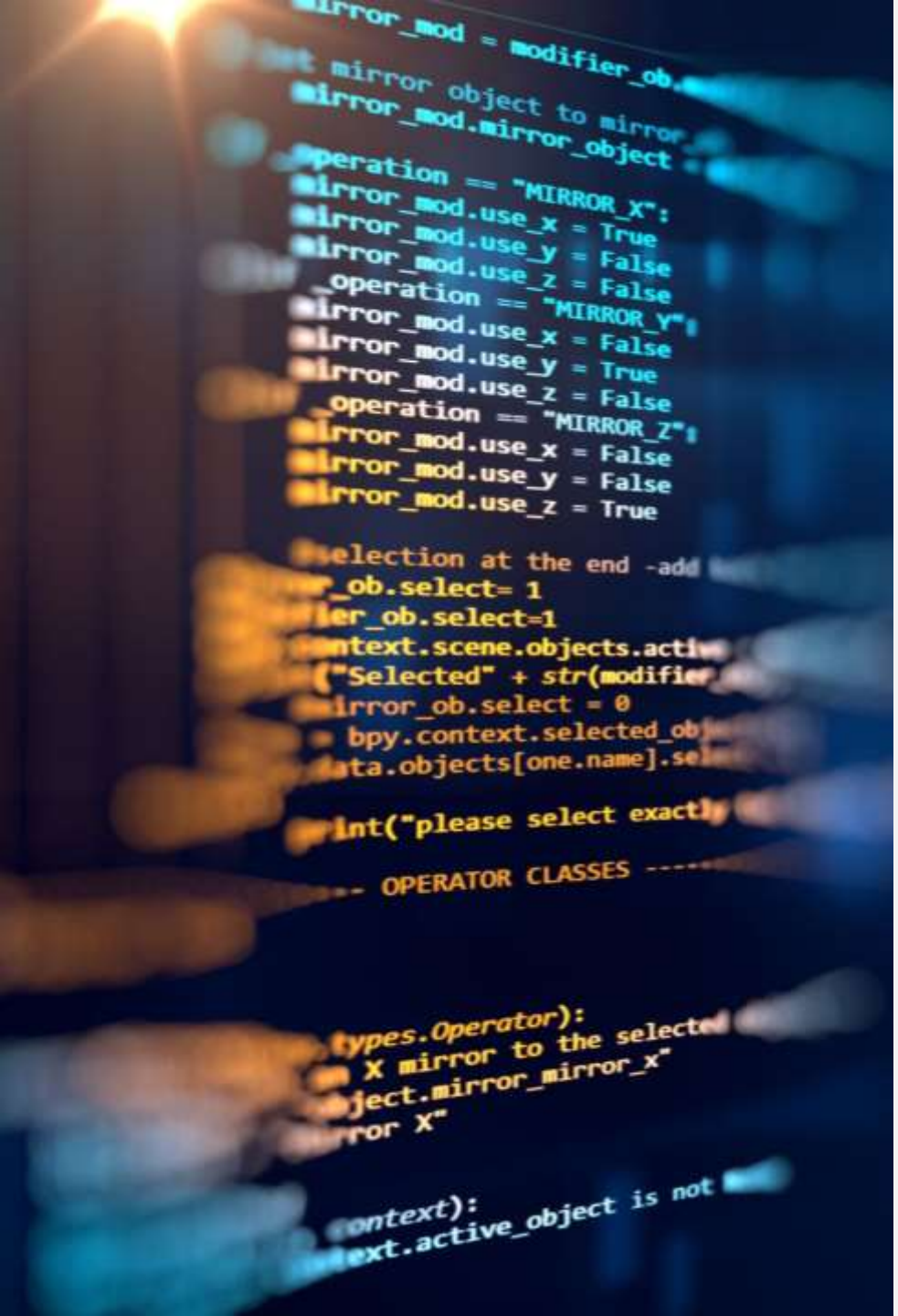
By: Dr. Fayzeh Abdulkareem Jaber

WHAT IS THE INTERNET

- a worldwide computer network that transmits a variety of data and media across interconnected devices.

HISTORY OF THE INTERNET

- In its earliest days, the internet was only used by computer experts, scientists, engineers, and librarians who had to learn a complicated system in order to use it.
- The 1970s was a serious time of transition for the internet. Email was introduced in 1972, libraries across the country were linked, and above all, information exchange became more seamless thanks to Transport Control Protocol and Internet Protocol (TCP/IP) architecture.
- The invention of these protocols helped to standardize how information was sent and received over the web, making the delivery more consistent, regardless of where or how you're accessing the internet.

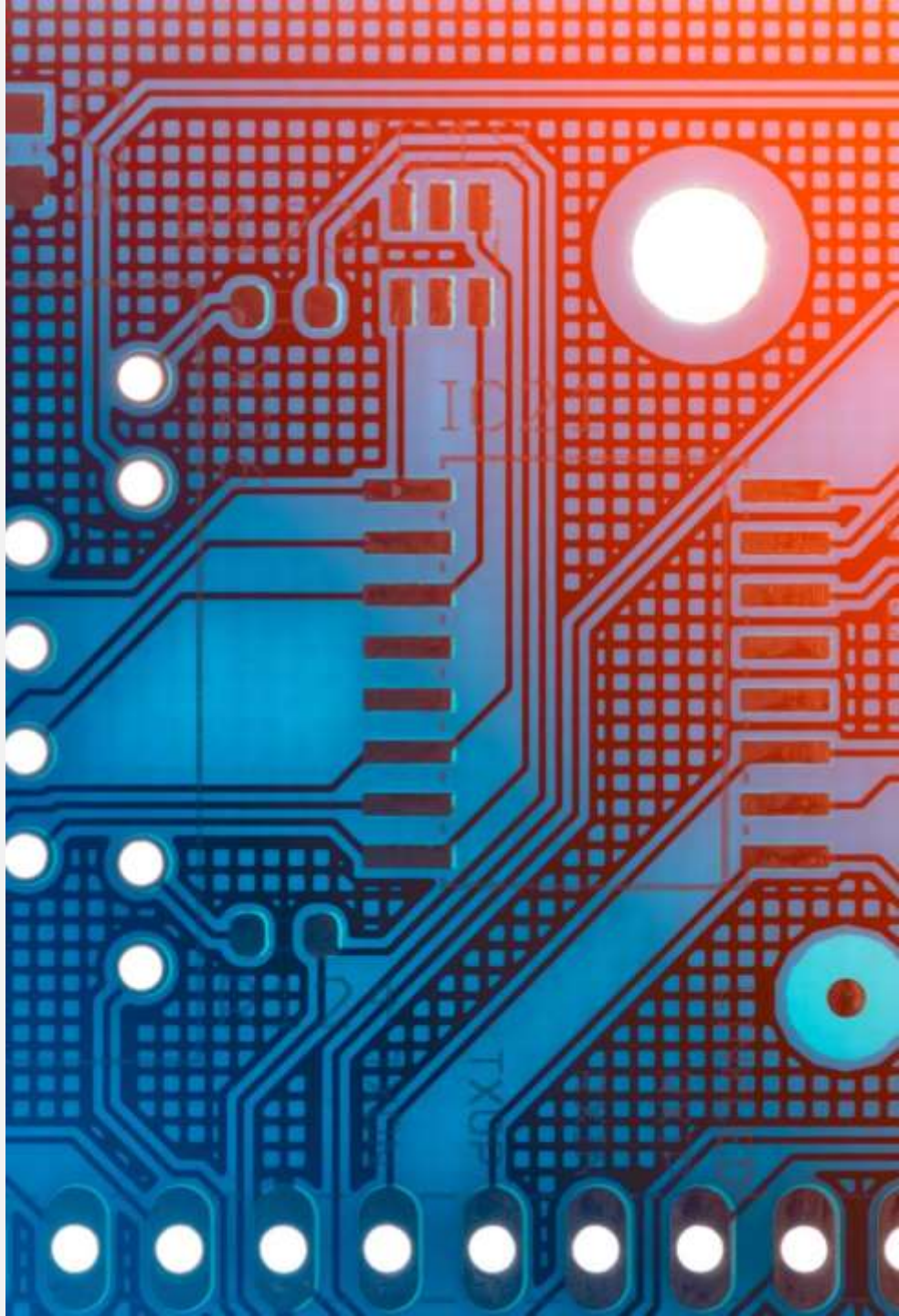


INTERNET BECOME USER-FRIENDLY

- in 1986, the National Science Foundation took the development of the internet to the next echelon by funding NSFNET, a network of supercomputers throughout the country.
- These supercomputers laid the groundwork for personal computing, bridging the gap between computers being used exclusively for academic purposes and computers used to perform daily tasks.
- In 1991, The University of Minnesota developed the first user-friendly internet interface, making it easier to access campus files and information. The University of Nevada at Reno continued to develop this usable interface, introducing searchable functions and indexing.

CONSUMERS BEGIN USING THE INTERNET

- the National Science Foundation discontinued its sponsorship of the internet's backbone (NSFNET) in May of 1995.
- The debut of WIFI and Windows 98 in the late nineties marked the tech industry's commitment to developing the commercial element of the internet. This next step gave companies like Microsoft access to a new audience, consumers (like yourself).

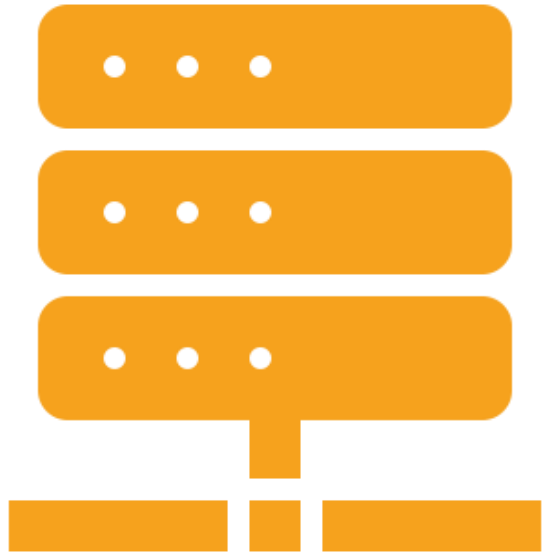


HOW DOES THE INTERNET WORK?

- The internet is a worldwide computer network that transmits a variety of data and media across interconnected devices. It works by using a packet routing network that follows Internet Protocol (IP) and Transport Control Protocol (TCP).
- TCP and IP work together to ensure that data transmission across the internet is consistent and reliable, no matter which device you're using or where you're using it.
- When data is transferred over the internet, it's delivered in messages and packets. Data sent over the internet is called a message, but before messages get sent, they're broken up into tinier parts called packets.

HOW DOES THE INTERNET WORK?

- These messages and packets travel from one source to the next using Internet Protocol (IP) and Transport Control Protocol (TCP).
- IP is a system of rules that govern how information is sent from one computer to another computer over an internet connection.
- Using a numerical address (IP Address) the IP system receives further instructions on how the data should be transferred.
- The Transport Control Protocol (TCP) works with IP to ensure transfer of data is dependable and reliable. This helps to make sure that no packets are lost, packets are reassembled in proper sequence, and there's no delay negatively affecting the data quality.

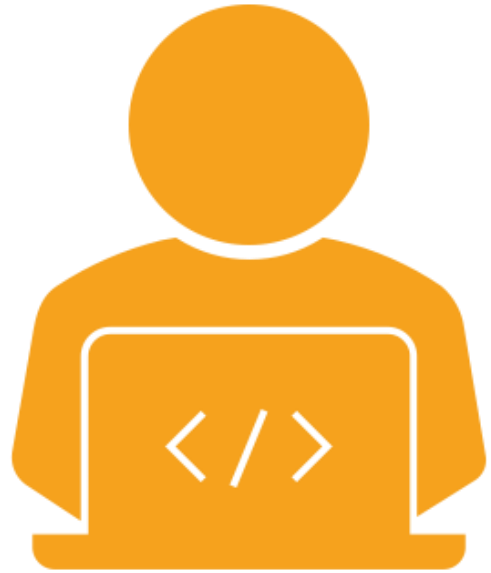


SHORT ANSWERS

- **HOW DOES THE INTERNET WORK?**
- The internet is a worldwide computer network that transmits a variety of data and media across interconnected devices. It works by using a packet routing network that follows Internet Protocol (IP) and Transport Control Protocol (TCP).

SHORT ANSWERS

- **MESSAGES + PACKETS ?**
- Data sent over the internet is called a message
- Before messages get sent, they’re broken up into tiny parts called packets



SHORT ANSWERS

- **INTERNET PROTOCOL (IP)?**
- Rules that govern how information is sent from one computer to another computer over an internet connection
- Specifies how computers should send information to other computers by sending data with an attached numerical address (IP Address)

SHORT ANSWERS

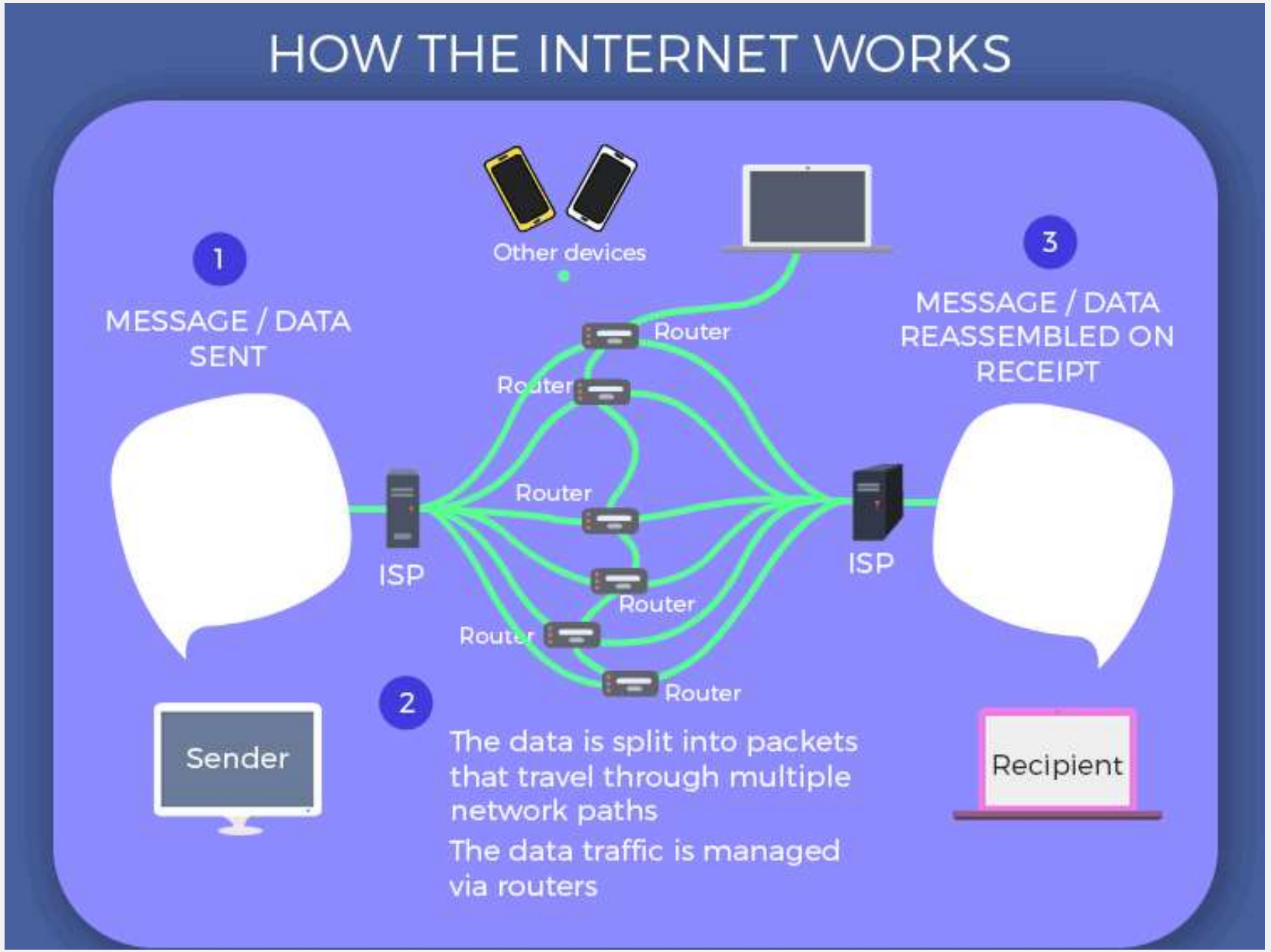
- **TYPES OF INTERNET PROTOCOL (IP)?**
- **Public IP Address:** Accessible over the internet
- **Private IP Address:** Assigned to a device on a closed network such as a home or business network that’s not accessible over the internet

SHORT ANSWERS

- **TRANSPORT CONTROL PROTOCOL (TCP) ?**
- Works with IP to ensure transfer of data is dependable and reliable
- No packets lost, no delay negatively affecting data quality, packets reassembled in proper sequence

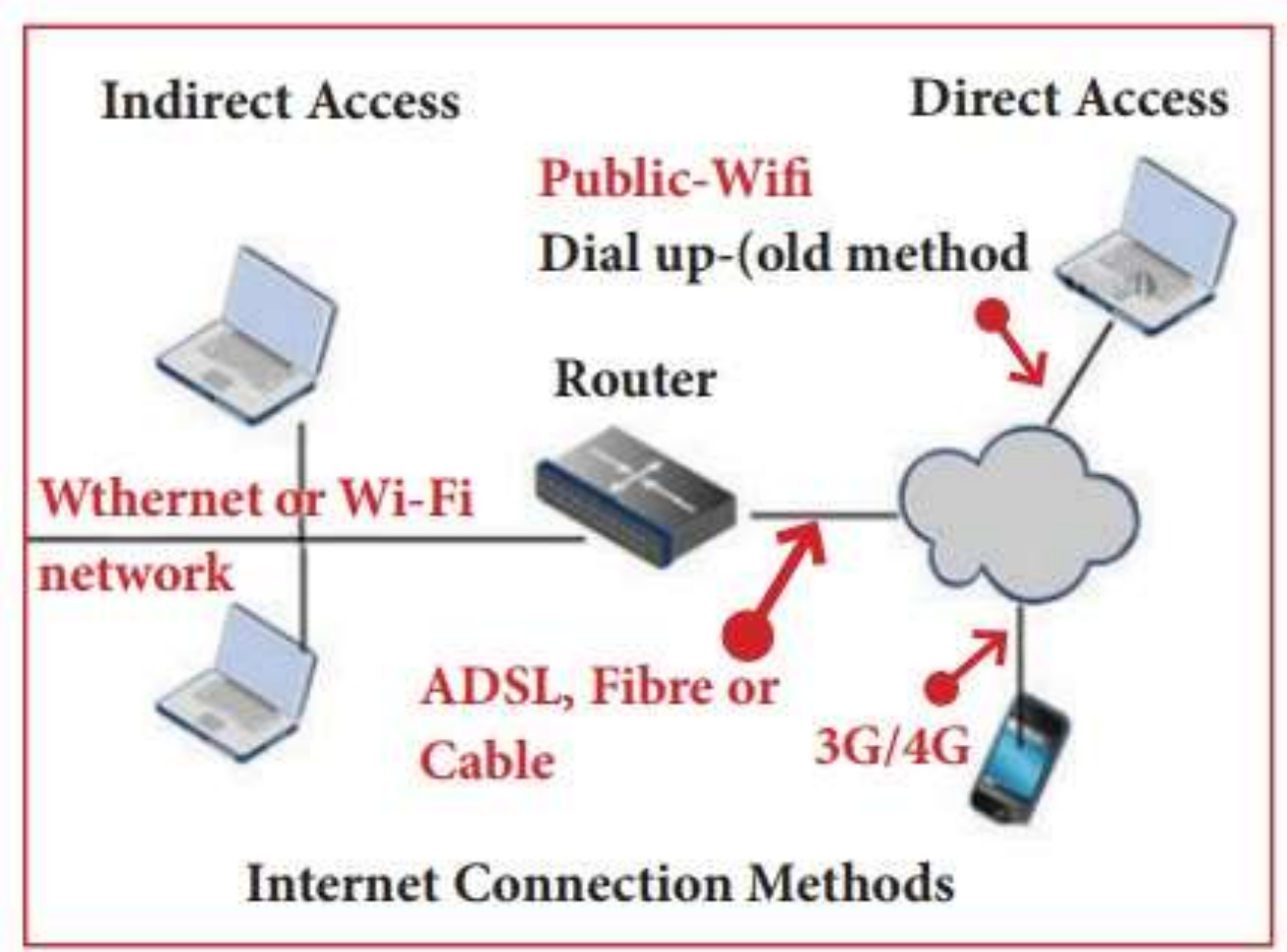
SHORT ANSWERS

- **HTTP & HTTPS ?**
- **HTTP:** Language used for internet communication.
- **HTTPS:** Secure version of HTTP, all communications between your browser and website are encrypted.


HOW THE INTERNET WORKS
Other devices
1
MESSAGE / DATA SENT
Router
Router
Router
Router
Router
ISP
ISP
3
MESSAGE / DATA REASSEMBLED ON RECEIPT
Sender
2
The data is split into packets that travel through multiple network paths
The data traffic is managed via routers
Recipient

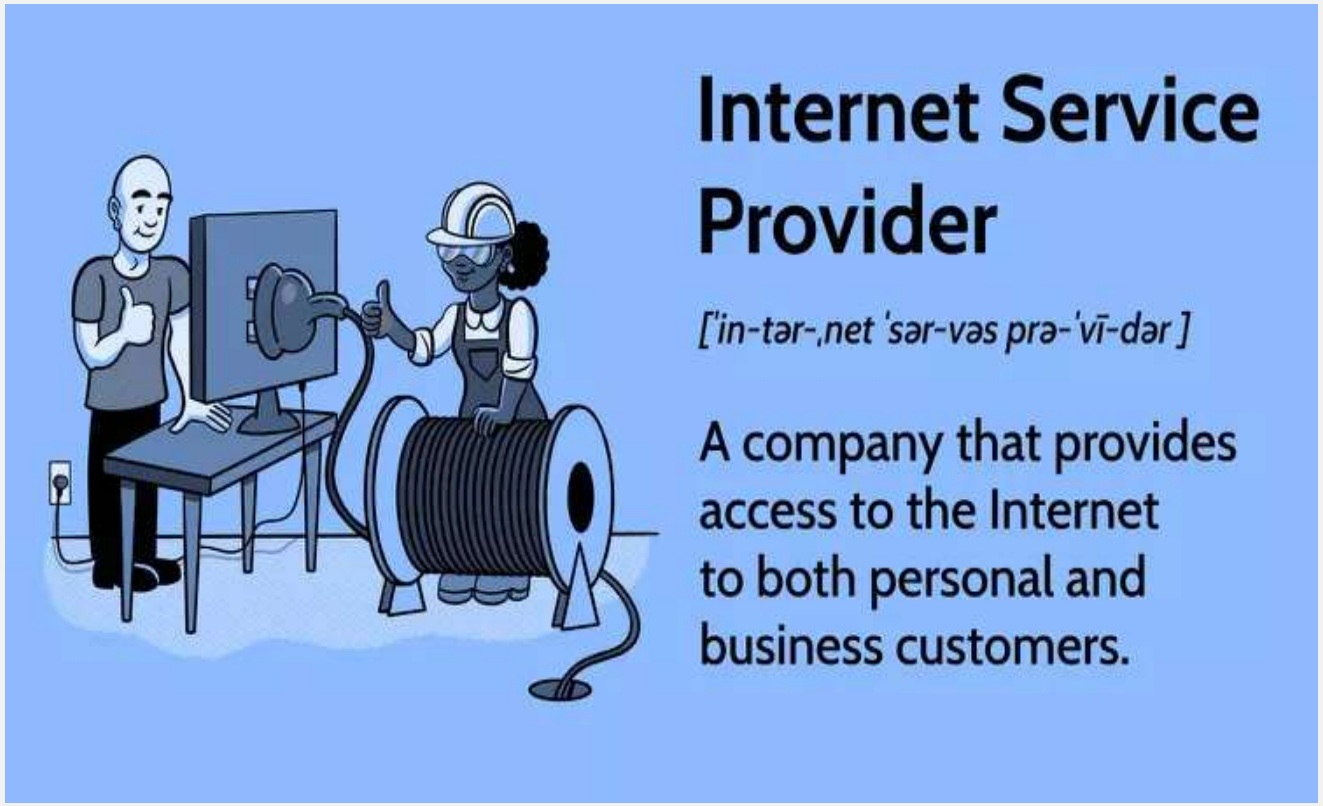
ACCESSING THE INTERNET

- Internet access can be provided using different broadband technologies including satellite, cable, telephone wires, wireless or mobile connections.



INTERNET SERVICE PROVIDERS (ISPS)

- If you want to access the internet at home, you'll need an Internet Service Provider (ISP) and a router to connect to the ISP.



INTERNET SERVICE PROVIDERS (ISPS)

- The term “internet service provider (ISP)” refers to a company that provides access to the internet to both personal and business customers.
- This serves make it possible for their customers to surf the web, shop online, conduct business, and connect with family and friends—all for a fee.
- Also provide other services, including email services, domain registration, web hosting, and browser packages.
- For example, in addition to data and broadband internet services, AT&T (T) provides local and long-distance telephone service, managed networking, telecom equipment, and feature film, television, and gaming production and distribution.

BROADBAND

Broadband internet services are usually provided over a standard telephone line.

Broadband gives you much faster access to the internet, allowing you to download large files quickly, such as video and music.

DIRECT AND INDIRECT ACCESS

Indirect Access:

- This is most common method used in home and office networks.
- The device e.g. computer connects to a network using Ethernet or WiFi and the network connects to the Internet using Asymmetric digital subscriber line ADSL (cable or fibre).

DIRECT AND INDIRECT ACCESS

Direct Access:

- This is most common method used when travelling.
- The device e.g. smart phone connects directly to the Internet using 3G/4G mobile networks or public Wi-Fi.

WHAT IS A WEBSITE ?

is a collection of many web pages, and web pages are digital files that are written using HTML(Hypertext Markup Language).

The website's web pages are linked with hyperlinks and hypertext and share a common interface and design. The website might also contain some additional documents and files such as images, videos, or other digital assets.

COMPONENTS OF A WEBSITE

- Webhost
- Address
- Homepage
- Design
- Content
- The Navigation Structure

HOW TO ACCESS WEBSITES?

- When we type a certain URL in a browser search bar, the browser requests the page from the Web server and the Web server returns the required web page and its content to the browser.

TYPES OF WEBSITE

STATIC WEBSITE

DYNAMIC WEBSITE

STATIC WEBSITE

WEB PAGES ARE RETURNED BY THE SERVER WHICH ARE PREBUILT SOURCE CODE FILES BUILT USING SIMPLE LANGUAGES SUCH AS HTML, CSS, OR JAVASCRIPT.

WEB PAGES ARE RETURNED BY THE SERVER WITH NO CHANGE THEREFORE, STATIC WEBSITES ARE FAST.

THERE IS NO INTERACTION WITH DATABASES. ALSO, THEY ARE LESS COSTLY AS THE HOST DOES NOT NEED TO SUPPORT SERVER-SIDE PROCESSING WITH DIFFERENT LANGUAGES.

DYNAMIC WEBSITE

- Web pages are returned by the server which is processed during runtime means they are not prebuilt web pages, but they are built during runtime according to the user's demand with the help of server-side scripting languages such as PHP, Node.js, ASP.NET and many more supported by the server.

TYPES OF WEBSITES

Blogs

E-commerce

Portfolio

Brochure

News and Magazines

Social Media

Educational

Portal

THE INTERNET AND THE WEB

- The Internet: In simplest terms, the Internet is a global network comprised of smaller networks that are interconnected using standardized communication protocols. The Internet standards describe a framework known as the Internet protocol suite. This model divides methods into a layered system of protocols.
- These layers are as follows:

1. Application layer (highest) – concerned with the data(URL, type, etc.). This is where HTTP, HTTPS, etc., comes in.
2. Transport layer – responsible for end-to-end communication over a network.
3. Network layer – provides data route.

THE INTERNET AND THE WEB

- The World Wide Web: The Web is the only way to access information through the Internet. It's a system of Internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML, or "HyperText Markup Language", which supports a number of features including links and multimedia. These documents are interlinked using hypertext links and are accessible via the Internet.
- To link hypertext to the Internet, we need:

1. The markup language, i.e., HTML.
2. The transfer protocol, e.g., HTTP.
3. Uniform Resource Locator (URL), the address of the resource.

- We access the Web using **Web browsers**.

Internet	Web
The Internet is the network of networks and the network allows to exchange of data between two or more computers.	The Web is a way to access information through the Internet.
It is also known as the Network of Networks.	The Web is a model for sharing information using the Internet.
The Internet is a way of transporting information between devices.	The protocol used by the web is HTTP.

DIFFERENCE BETWEEN WEB AND INTERNET

DIFFERENCE BETWEEN WEB AND INTERNET

Internet	Web
Accessible in a variety of ways.	The Web is accessed by the Web Browser.
Network protocols are used to transport data.	Accesses documents and online sites through browsers.
Global network of networks	Collection of interconnected websites

DIFFERENCE BETWEEN WEB AND INTERNET

Internet	Web
Access Can be accessed using various devices	Accessed through a web browser
Connectivity Network of networks that allows devices to communicate and exchange data	Connectivity Allows users to access and view web pages, multimedia content, and other resources over the Internet
Protocols TCP/IP, FTP, SMTP, POP3, etc.	Protocols HTTP, HTTPS, FTP, SMTP, etc.

DIFFERENCE BETWEEN WEB AND INTERNET

Internet	Web
Infrastructure Consists of routers, switches, servers, and other networking hardware	Infrastructure Consists of web servers, web browsers, and other software and hardware
Used for communication, sharing of resources, and accessing information from around the world	Used for publishing and accessing web pages, multimedia content, and other resources on the Internet
No single creator	Creator Tim Berners-Lee
Provides the underlying infrastructure for the Web, email, and other online services	Provides a platform for publishing and accessing information and resources on the Internet

CONTENT ON THE WEB

URI: URI stands for 'Uniform Resource Identifier'. A URI can be a name, locator, or both for an online resource whereas a URL is just the locator. URLs are a subset of URIs. A URL is a human-readable text that was designed to replace the numbers (IP addresses) that computers use to communicate with servers.

A URL consists of a protocol, domain name, and path (which includes the specific subfolder structure where a page is located) like-
protocol://WebSiteName.topLevelDomain/path

CONTENT ON THE WEB

- Protocol – HTTP or HTTPS.
- WebSiteName – geeksforgeeks, google etc.
- topLevelDomain- .com, .edu, .in etc.
- path- specific folders and/or subfolders that are on a given website.

WHO GOVERNS THE INTERNET?

- **The Internet is not governed and has no single authority figure. The ultimate authority for where the Internet is going rests with the Internet Society, or ISOC.**
  ISOC is a voluntary membership organization whose purpose is to promote global information exchange through Internet technology.
- **ISOC appoints the IAB- Internet Architecture Board. They meet regularly to review standards and allocate resources, like addresses.**
- **IETF- Internet Engineering Task Force. Another volunteer organization that meets regularly to discuss operational and technical problems.**

USES OF INTERNET AND THE WEB

Communication

Information sharing

Online shopping

Entertainment

Education

Business

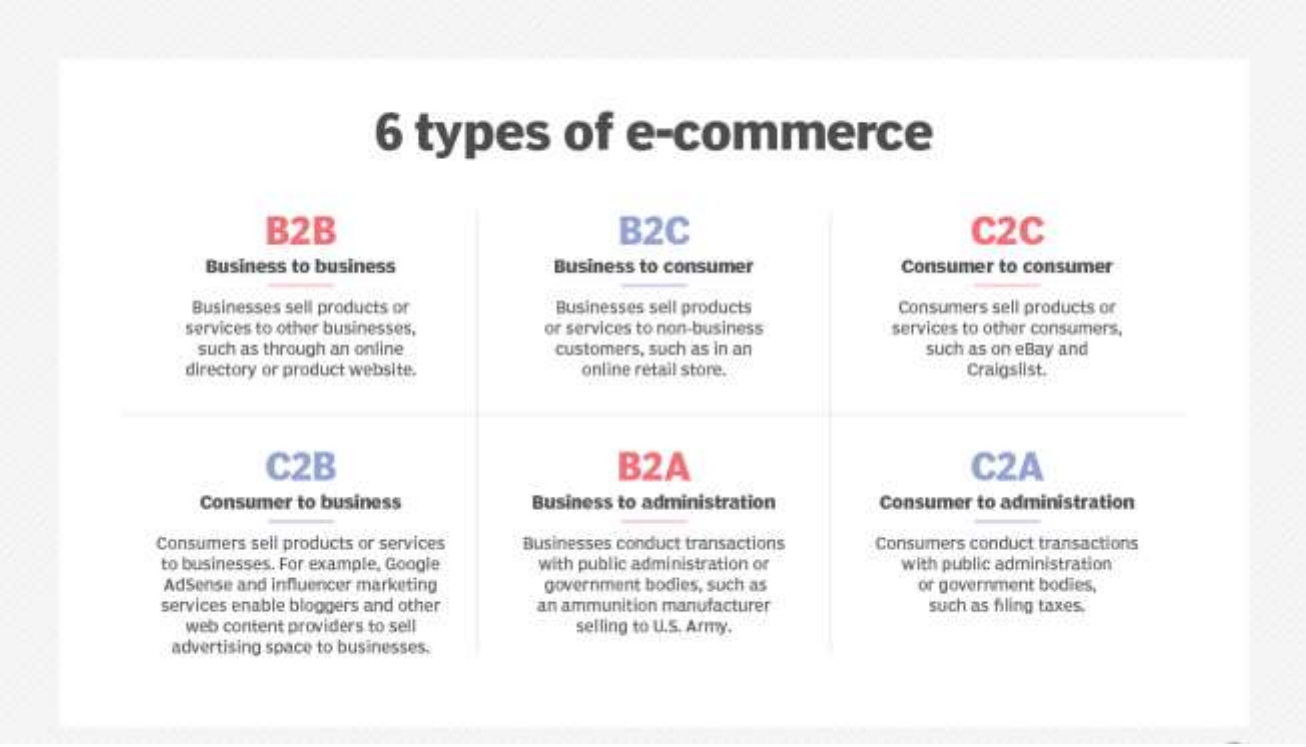
Research

ISSUES IN INTERNET AND THE WEB

- Privacy and security
- Cyberbullying
- Online addiction
- Disinformation
- Digital divide
- Online censorship
- Environmental impact

E-COMMERCE

- These websites are well known as online shops. These websites allow us to make purchasing products and online payments for products and services. Stores can be handled as standalone websites.



TYPES OF E-COMMERCE

- E-commerce is powered by the internet. Customers access an online store to browse through and place orders for products or services via their own devices.

ADVANTAGES E-COMMERCE

- Availability
- Speed of access
- Wide availability
- Easy accessibility
- International reach
- Lower cost
- Personalization and product recommendations

DISADVANTAGES OF E-COMMERCE

Limited customer service

Limited product experience

Wait time

Security

QUESTIONS

- **E-commerce is defined as the online exchange of _____ between firms and also between firms and their customers.**
- **A. Goods**
- B. **Services**
- C. **Money**
- D. **All of the above**

Correct Answer

D. All of the above

Explanation
The correct answer is "All of the above" because e-commerce involves the online exchange of goods, services, and money. It encompasses the buying and selling of products and services online, as well as the electronic transfer of funds for these transactions. E-commerce facilitates transactions between businesses and consumers, as well as between businesses themselves.

QUESTIONS

- E-commerce goes beyond buying and selling. It can involve the events leading to a purchase, as well as _____ after the sale.
  - A. Marketing
  - B. Communication
  - C. Customer Service
  - D. Management
  - Correct Answer
  - C. Customer Service

Explanation

E-commerce goes beyond buying and selling. It can involve the events leading to a purchase, as well as customer service after the sale. Customer service is an essential aspect of e-commerce as it involves providing support and assistance to customers before, during, and after the purchase. This includes addressing any queries or concerns, providing product information, handling returns or exchanges, and ensuring customer satisfaction. Good customer service is crucial for building trust, loyalty, and repeat business in the e-commerce industry.

QUESTIONS

- B2B is a type of e-commerce that refers to transactions that occur as:
  - A. **Business-to-consumer**
  - B. **Business-to-buyer**
  - C. **Business-to-business**
  - D. **Buyer-to-business**
- **Correct Answer**
  C. Business-to-business

Explanation
B2B refers to business-to-business transactions, where businesses sell products or services to other businesses. This type of e-commerce involves companies buying from and selling to each other, rather than directly to consumers. It is different from business-to-consumer (B2C) e-commerce, where businesses sell products or services directly to individual consumers. Similarly, it is also distinct from buyer-to-business (B2B) e-commerce, where individual buyers sell products or services to businesses. Therefore, the correct answer is business-to-business.

QUESTIONS

- B2E types of e-commerce are called _____.
  - A.
  - **Business-to-employee**
  - B.
  - **Buyer-to-employee**
  - C.
  - **Business-to-environment**
  - D.
  - **Business-to-everyone**
- **Correct Answer**
  A. Business-to-employee

Explanation
B2E types of e-commerce refer to the business-to-employee model, where businesses engage in transactions with their own employees. This type of e-commerce involves providing employees with access to various services, such as online training, employee benefits, and internal communication platforms. It enables businesses to streamline their internal processes and improve employee productivity and satisfaction.

QUESTIONS

- In the term m-commerce, what does the "m" refer to?
- A. Mobile
- B. Multimedia
- C. Multi-type
- D. Miscellaneous
- Correct Answer
  A. Mobile

Explanation
The term "m-commerce" refers to mobile commerce, which involves conducting business transactions through mobile devices. The "m" in m-commerce stands for mobile, indicating that the transactions are specifically carried out using mobile devices such as smartphones and tablets.

QUESTIONS

- Which option below best describes the Internet?
- A. A series of Tubes
- B. The largest computer network in the world, connecting millions of computers
- C. Found only at public libraries
- D. A home network
- Correct Answer
  B. The largest computer network in the world, connecting millions of computers

QUESTIONS

- **What are the two main types of computer networks?**
- **A. WAN & LAN**
- **B. PAN & LAN**
- **C. WAN & WWW**
- **D. INTERNET & LAN**
- **Correct Answer**
  A. WAN & LAN

QUESTIONS

- WWW stands for what?
- A. World Wild Worm
- B. World Wide West
- C. Wide Watch Web
- D. World Wide Web
- Correct Answer
  D. World Wide Web

QUESTIONS

- Which of the following is an example of a URL?
- A. Jean@yahoo.com
- B. Facebook
- C. Www.yahoo.com
- D. Windows 7
- Correct Answer
  C. Www.yahoo.com

QUESTIONS

- What is the name of this area of an Internet Browser?
  - A.
  - **Status Bar**
  - B.
  - **Address Bar**
  - C.
  - **WWW Zone**
  - D.
  - **Website Area**
- **Correct Answer**
  B. Address Bar

THE END