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Internet

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INTRODUCTION TO INTERNET

- The Internet, sometimes called simply "the Net," is a worldwide system of computer networks -- a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers).

- It was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the ARPANET. The original aim was to create a network that would allow users of a research computer at one university to "talk to" research computers at other universities. A side benefit of ARPANet's design was that, because messages could be routed or rerouted in more than one direction, the network could continue to function even if parts of it were destroyed in the event of a military attack or other disaster.

- Today, the Internet is a public, cooperative and self-sustaining facility accessible to hundreds of millions of people worldwide. It is used by many as the primary source of information consumption, and fueled the creation and growth of its own social ecosystem through social media and content sharing. Furthermore, e-commerce, or online shopping, has become one of the largest uses of the Internet.

➢ **How the Internet works**

- Physically, the Internet uses a portion of the total resources of the currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called Transmission Control Protocol/Internet Protocol (TCP/IP). Two recent adaptations of Internet technology, the Intranet and the extranet, also make use of the TCP/IP protocol.

- The Internet can be seen as having two major components: network protocols and hardware. The protocols, such as the TCP/IP suite, present sets of rules that devices must follow in order to complete tasks. Without this common collection of rules, machines would not be able to communicate.

- The protocols are also responsible for translating the alphabetic text of a message into electronic signals that can be transmitted over the Internet, and then back again into legible, alphabetic text.

- Hardware, the second major component of the Internet, includes everything from the computer or smartphone that is used to access the Internet to the cables that carry information from one device to another. Additional types of hardware include satellites, radios, cell phone towers, routers and servers.

- These various types of hardware are the connections within the network. Devices such as computers, smartphones and laptops are end points, or clients, while the machines that store the information are the servers. The transmission lines that exchange the data can either be wireless signals from satellites or 4G and cell phone towers, or physical lines, such as cables and fiber optics.

- The process of transferring information from one device to another relies on packet switching. Each computer connected to the Internet is assigned a unique IP address that allows the device to be recognized. When one device attempts to send a message to another device, the data is sent over the Internet in the

form of manageable packets. Each packet is assigned a port number that will connect it to its endpoint.

- A packet that has both a unique IP address and port number can be translated from alphabetic text into electronic signals by travelling through the layers of the OSI model from the top application layer to the bottom physical layer. The message will then be sent over the Internet where it is received by the Internet service provider's (ISP) router. The router will examine the destination address assigned to each packet and determine where to send it.

- Eventually, the packet reaches the client and travels in reverse from the bottom physical layer of the OSI model to the top application layer. During this process, the routing data -- the port number and IP address -- is stripped from the packet, thus allowing the data to be translated back into alphabetic text and completing the transmission process.

➢ **Uses of the internet**

In general, the Internet can be used to communicate across large or small distances, share information from any place in the world and access information or answers to almost any question in moments.

Some specific examples of how the Internet is used include:

- Social media and content sharing;
- E-mail and other forms of communication, such as Internet Relay Chat (IRC), Internet telephony, instantmessaging, video conferencing
- education and self-improvement through access to online degree programs, courses and workshops and
- searching for jobs -- both the employer and applicant use the Internet to post open positions, apply for jobs and recruit individuals found on social networking sites like LinkedIn.

Other examples include:

- Online discussion groups and forums
- Online dating
- Online gaming
- Research
- Reading electronic newspapers and magazines
- Online shopping, or e-commerce.

- **Difference between the World Wide Web and the Internet**

- The key difference between the Internet and the World Wide Web (WWW or the Web) is that the Internet is a global connection of networks while the Web is a collection of information that can be accessed using the Internet. In other words, the Internet is the infrastructure and the Web is a service on top.

- The Web is the most widely used part of the Internet. Its outstanding feature is hypertext, a method of instant cross-referencing. In most Web sites, certain words or phrases appear in text of a different color than the rest; often this text is also underlined. When a user selects one of these words or phrases, they will be transferred to the related site or page. Buttons, images, or portions of images are also used as hyperlinks.

- The Web provides access to billions of pages of information. Web browsing is done through a Web browser, the most popular of which are Google Chrome, Firefox and Internet Explorer. The appearance of a particular Web site may vary slightly depending on the browser used. Later or more updated versions of a particular browser are able to render more complex features, such as animation, virtual reality, sound and music files.

- **History of the Internet**

- The ARPANet, the predecessor of the Internet, was first deployed in 1969. In 1983, the ARPANet transitioned into using the TCP/IP open networking protocol suite and in 1985, the National Science Foundation Network (NSFN) designed the network to connect university computer science departments around the country.

- Communications over the Internet greatly improved in 1989 when the hypertext transfer protocol (HTTP) was created, giving different computer platforms the ability to connect to the same Internet sites. In 1993, the Mosaic Web browser was created.

- The Internet has continued to grow and evolve over the years of its existence. IPv6, for example, was designed to anticipate enormous future expansion in the number of available IP addresses. In a related development, the IoT is the burgeoning environment in which almost any entity or object can be provided with a unique identifier (UID) and the ability to transfer data automatically over the Internet.

REFERNECE

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