UNIT 7 INTERNET SERVICES AND E-MAIL CONFIGURATION

Structure

7.0 OBJECTIVES

After studying this unit, you should be able to:

- identify various usages and advantages of Internet;
- explain how Internet functions;
- describe different types of Internet services; and
- describe the significance of domain names and URLs.

7.1 INTRODUCTION

With the developments in the domain of Information Technology, Internet has become a ubiquitous tool for accessing information, providing opportunities which were unheard of, and easing the exchange of information, It provides us with a gateway to access, interact and connect with people and resources. The rise in popularity of Internet can be attributed to the services provided by it which are used for business, interactions, improving the knowledge/skills, banking etc.

E-mails (Electronic mails) are the most popular service provided by the Internet. E-mail is basically electronic message communication between people across globe. Few other popular services include World Wide Web (WWW), Web services, File Transfer Protocol (FTP), Chat Rooms, Video conferencing, News groups, Instant messaging etc. Most of these services are discussed in detail in upcoming sections of unit.

7.2 ABOUT THE INTERNET

As defined by Strauss, El-Ansary, Frost (2003) "The Internet is a whole network that is connected to each other. Some computers in this network store files, such as web pages, which can be accessed by all network computers." While O'Brien (2003) posited "the Internet is a rapidly growing computer network of millions of businesses, education, and government networks that are interconnected by the number of users more than 200 countries."

Based on above definitions the basic concept of Internet is global network of physically connected devices for exchange of information. It can be referred to as 'network of networks' consisting of millions of interconnected devices linked by networking technology. The Internet offers myriads of benefits and opportunities. Some of these are listed as follows:

- **Ease of communication:** with emailing and chatting options available, we can easily connect to other individuals in real time.
- **Available round the clock:** the Internet services are available round the clock.
- **Information source:** Internet has enabled us to access unlimited amount of Internet from anywhere on earth.
- **E-commerce:** Electronic commerce owes its birth to Internet. We can shop online across different websites at just one click. We need not visit the stores to order things.
- **Other services:** Internet has made available, services like online banking, hotel booking ticket booking, job search and counseling services in electronic form conveniently over the Web.

7.2.1 How the Internet Functions

The Internet functions via a packet routing network following the protocols - specifically IP (Internet Protocol) and TCP (Transport Control Protocol). Each of the term has been explained below for clarity:

- **Protocol:** Set of rules in accordance of with computer communicates with each other's is known as protocol.

- **Packet Routing Network:** Fragments of data sent across the Internet is called packets. In case of the packet routing network, the packets are directed the source to the destination computer.
- **Internet Protocol:** Set of rules for specifying how to route information by attaching addresses onto the data sent by it.
- **Transport Control Protocol:** TCP handles the reconstruction of message at destination, re-sending of the information in case any information is missed.

7.3 TYPES OF INTERNET SERVICES

As explained in the previous section Internet is the interconnected global computer network which operates through certain set of rules called protocols. From an end-user perspective it's the services that Internet provides make it popular.

- **E-mail:** E-mail is digital form of message exchange between people. The ability to send the message across globe within seconds has made it the most popular form of message communication and has replaced almost every other physical form of communication such as letters in many spheres of life.
- **World Wide Web:** Most important service of Internet which is essentially for global information sharing. It is combination of all resources- text pages, digital photographs, music files, videos and through communication model enables the exchange of the information over Internet.
- **Web Services:** Web services are the standardized medium for propagation of communication taking place between the client and server applications on the Internet.
- **File Transfer Protocol (FTP):** FTP is used for exchange of files across computers through Internet.
- **Chat Rooms:** They are the mediums which are used for real time conversations between persons in form of text, voice or video.
- **Mailing list:** It is the collection of names or/and addresses for including the people who subscribe to mailing distribution on regular basis.
- **News groups:** It is an Internet-based forum for discussion on various topics by remotely connecting different users across the globe.

Check Your Progress A

1) What is an Internet?

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2) List down any four benefits of Internet.

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3) Fill in the blanks:

i) ……are the mediums which are used for real time conversations between persons in form of text, voice or video.

ii) A …….. is a network that directs packets from the source to destination computer.

iii) …… is used for exchange of files across computers through Internet.

iv) …….. can be referred to as 'network of networks'.

7.4 ABOUT E-MAIL AND ITS CONFIGURATION

E-mail or electronic mail is one of the most popular services provided by Internet where we can send or receive message from people sitting anywhere in globe in seconds over Internet. The electronic mail was introduced in 1960s. In today's world most of us are using emails to make our lives easier.

The communication in an electronic mail is usually done via three protocols:

- **SMTP:** The SMTP stands for "Simple Mail Transfer Protocol" which is used for sending mails. The message in the mail is sent by a mail client (like Gmail) to a receiver comprising of receiving email server. The sender uses SMTP server for carrying out the process of transmitting an email message.
- **IMAP:** The IMAP stands for "Internet Mail Access Protocol" which deals with managing and retrieving email from receiving servers. These protocols are used only while receiving the email and they cannot be used for sending the email. The emails will be present in the server and not get downloaded to the user's device and they can be edited as if they are on the user's device. The user can also simultaneously connect with the server from multiple devices.
- **POP:** POP stands for "Post Office Protocol" which is also used for incoming emails. The current version is 3 and POP3 is most widely used version. Unlike IMAP it downloads the entire email into the local user device. Once the mail is downloaded on the user system, it would delete the data on the server which is quite helpful in a server with less free

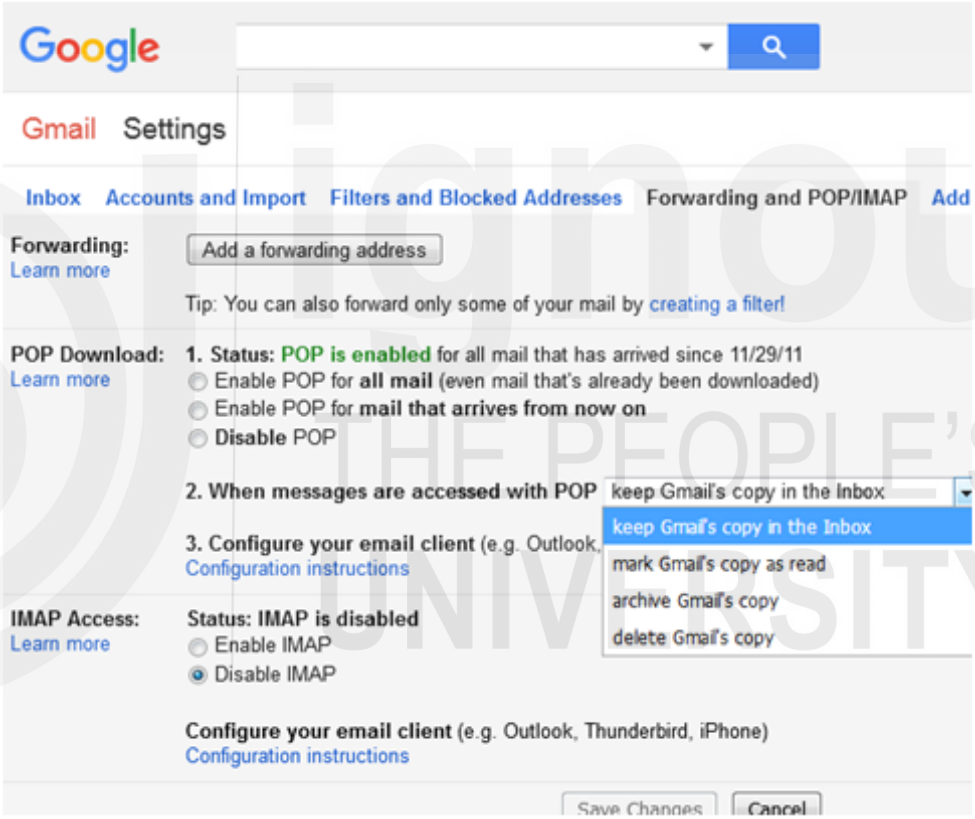
memory. It works like a post office where letters are temporarily stored before being delivered to the end user.

Should you be using IMAP or POP3?

Essentially, it depends on the way we would be accessing our emails. In case of working across multiple devices the recommended method for receiving email would be IMAP or Internet Mail Access Protocol. However, if we have a designated device for email and prefer to have all emails accessible offline, then we can go with POP as suitable option.

Gmail: IMAP and POP3 configuration

As an example we would be showing the IMAP and POP3 settings in Gmail and how they are configured:



Source: Gmail Settings

Fig. 7.1: IMAP and POP3 settings in Gmail

7.5 WEB BROWSERS

Imagine you want to go out for a picnic, how do you get there? We can opt for a car, public bus, metro, rickshaw or any other mode of transportation depending on our choice and convenience. A web browser is a digital mode of transportation which allows us to travel through the Internet and visit our favourite websites. Depending on our taste and convenience, we can go for any web browsers.

Web browsers are the computer software application installed in one's computer, which is used for viewing the web pages on the Internet. There are different web browsers used today.

Source: Interactive Powers' Elaboration

Fig. 7.2: Different Web Browser

Most popular out of them are:

- **Apple Safari:** The Safari is a web browser which has been developed by Apple Inc. It was first released by Apple in 2003.
- **Mozilla Firefox:** The browser was developed by Mozilla released in 2004 and is second most popular browser as of today.
- **Google Chrome:** This web browser was developed by Google in 2008. It is one of the most popular web browsers of world today.
- **Microsoft Edge**: Microsoft's Edge is a new built-in browser that's meant to replace Internet Explorer. Though Edge will still come with Windows, the older browser is being relegated to "legacy compatibility" duties. Microsoft is urging everyone to use Edge for its faster performance and improved features.
- **Opera Browser:** Opera is smaller and faster than most browsers was released first in 1996 by Opera Software ASA.

All of these browsers are free to download. They allow the users to access resources that have been stored on a server through the hyperlinks present in resources. For e.g. if you visit www.ignou.ac.in, then you are actually viewing a file that is displayed through the web browser using Hyper Text Mark-up Language or HTML. Web browser is not only good for viewing web pages, but can be used for downloading and uploading files using FTP.

Check Your Progress B

1) What are the three protocols for communicating via email?

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2) What are web browsers?

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3) Fill in the blanks:

i) …….. is a web browser developed by Apple Inc.

ii) Web browser is not only good for viewing web pages, but can be used for downloading and uploading files using …….. .

iii) …….. Web browser was developed by Google in 2008.

iv) ……. protocol works like a post office where letters are temporarily stored before being delivered to the end user.

7.6 WORLD WIDE WEB (WWW)

The World Wide Web or WWW is commonly known as web was created by Timothy Berners Lee in 1989 at the European Particle Physics Laboratory in Geneva for allowing researchers to work together at the Laboratory. Eventually in 1996, it became World Wide Web.

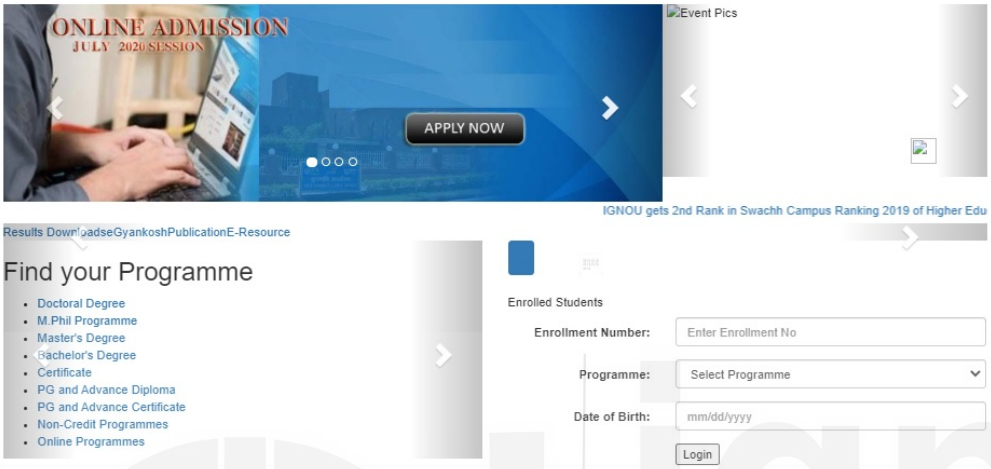
The World Wide Web is simply a mode of information exchange between computers on the Internet. The information is essentially documents and other web resources linked through hypertext and are identified by URL (Uniform Resource Locators); which we would be discussing in upcoming sections. These resources of WWW or web are first transferred via HTTP and then can be accessed by the users through the web browsers which we already discussed above. The web pages are formatted in Hypertext Markup Language (HTML) with embedded hyperlinks containing URLs that help users to navigate to other web resources. The web pages are displayed in the web browsers and may contain references to text, images, video, audio, and software components.

If there are multiple web resources using a common theme or domain name then they are termed as websites which are stored in computers running a program called a web server. It responds to every request which is made by the users over the Internet from web browsers. The contents on these websites can vary depending on the publisher who is responsible for the content. Different websites are targeted for different audiences based on the requirements of users. Today, in the Information age in which we are living, billions of people across the globe use WWW for accessing information

through websites, interacting on Internet making it the central of all its development.

7.7 UNIFORM RESOURCE LOCATOR (URL)

As discussed above the web resources are identified by URL. Technically URL or web address is just an address of a particular resource on the Internet.



Source: www.ignou.ac.in

Fig. 7.3: URL of IGNOU

Now taking our previous example http://www.ignou.ac.in is an URL to access the resources made available to public by IGNOU. An URL has three elements:

- Protocol
- Server name or host name
- Path to directory or file

Let's take our above example with some modification, if you will click on the below given URL http://www.ignou.ac.in/userfiles/ContactUs-2019.pdf, it will take you to the important contact details of IGNOU which would be a PDF file. Let's break the URL to have greater clarity.

http://www.ignou.ac.in/userfiles/ContactUs-2019.pdf

Fig. 7.4: Website Sub-pages

Let's discuss each element one by one.

- http:// or https:// - "Http" stands for Hypertext Transfer Protocol which tells the protocol to be used by browser for accessing the information. If the information transmitted is encrypted and secure, it's called "https", where "S" stands for secure. We need to put the colon (:) and two forward slashes (//) which separate the protocol from remaining of the URL.
- Next, "WWW" stands for World Wide Web which we already discussed in detail in above section. This portion is optional and can be left out. In the above example typing http://ignou.ac.in would still take you to the IGNOU website.
- "Ignou.ac.in" is the domain name of the website. The trailing portion of domain also called as domain suffix. It helps in identifying the type or location of the website. For example, "ac.in" domain is used by educational organization of India,".com" is for commercial, ".org" is for an organization, and ".co.uk" is for the United Kingdom, ".in" is used for Indian website as usual. We will read about domain in detail in the last section.
- "/userfiles" this portion of the above URL are the directories where the webpage is located on the server. The web pages can be two or more directories deep. In our example, it is one deep level.
- "/ContactUs-2019.pdf" Finally this is the actual web page on the given domain we are viewing. The trailing ".pdf" is the file extension which indicates that the web page file is a PDF file. There are many other extensions such as .jpg, .gif, .php, .xml, .html etc.

7.8 DOMAIN NAMES

Domain names are part of URL which helps in identifying the specific web pages. As discussed above in our example "ignou.ac.in" was the domain name. There are essentially two parts of the domain name:

- **Website's name** – In our case IGNOU is the website name. If we are using "facebook.com" then Facebook is the website's name
- **Domain suffix** – The trailing part or extension of the domain is called domain suffix which is kind of identifier for the website we are looking, helps in identifying the type of organization or location of organization. It indicates which TLD (top-level domain) they belong to.

Domain names are used as a shortcut to the server that is hosting the website. In absence of a domain name, we need to enter the full physical address also called IP address for the website, we are visiting. The problem with IP address is that they are difficult to remember. In our example of ignou.ac.in, let's say that it is pointing towards an IP address 192.90.80.70. There would

be similar IP addresses for other websites and as you can see that this can be time-consuming and confusing. So, majority of website owners including *IGNOU* opt to use a service which offers bundles domain names with web hosting packages. Every web server requires a Domain Name System (DNS) server to translate domain names into IP addresses, as Internet is based on IP addresses.

Different types of domains

The most common types of domain is TLD. The top-level domain is at the top level of the Internet's domain name.

- **ccTLD** – Country code Top level domain uses codes for country. The code is two letters based upon the country, such as .uk for United Kingdom, .in for India, .us for United States. They help users to identify the regions in which website is operating.
- **gTLD** - A generic top level domain is the type of domain which are intended for specific use-case and does not rely on any country code. There are more than thousand gTLDs available but the most common include ".com" for commercial business, ".org" for organizations, ".net" for network and ".edu" for educational institutions.

The domain sitting directly below the TLD are second level domains. Indian companies using ".co.in" instead of ".com", Indian academic institutions and universities using ".ac.in", these are perfect examples of second level domains.

Check Your Progress C

1) What are the different parts of URL?

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2) What is World Wide Web?

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3) Fill in the blanks:

i) The World Wide Web was created by ……... .

ii) Every web server requires …….. server to translate domain names into IP addresses.

iii) If there are multiple web resources using a common theme or domain name then they are termed as …… .

iv) The web resources are identified by …… .

7.9 LET US SUM UP

Internet is global network of physically connected devices for exchange of information. It can be referred to as 'network of networks' consisting of millions of interconnected devices linked by networking technology. Advantages of Internet are ease of communication, e commerce, available round the clock etc.

E-mails (Electronic mails) are the most popular service provided by the Internet. E-mail is basically electronic message communication between people across globe. IMAP used only while receiving the email and they cannot be used for sending the email. The emails will be present in the server and not get downloaded to the user's device and they can be edited as if they are on the user's device. Whereas, Unlike IMAP; POP downloads the entire email into the local user device. Once the mail is downloaded on the user system, it would delete the data on the server which is quite helpful in a server with less free memory.

Web browsers are the computer software application installed in one's computer, which is used for viewing the web pages on the Internet. Some of the popular web browsers are Google chrome, opera mini, apple safari, mozila firefox, etc.

The World Wide Web is simply a mode of information exchange between computers on the Internet. The information is essentially documents and other web resources linked through hypertext and are identified by Uniform Resource Locators (URL). URL or web address is just an address of a particular resource on the Internet. Domain names are part of URL which helps in identifying the specific web pages. Domain names are used as a shortcut to the server that is hosting the website. In absence of a domain name, we need to enter the full physical address also called IP address for the website, we are visiting.

7.10 KEY WORDS

Internet: Internet is global network of physically connected devices for exchange of information. It connects millions of computers together globally,

forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet.

Protocol: A protocol is a standard set of rules that allow electronic devices to communicate with each other. These rules include what type of data may be transmitted, what commands are used to send and receive data, and how data transfers are confirmed.

E-mail or Electronic mail: It is one of the most popular services provided by Internet where we can send or receive message from people sitting anywhere in globe in seconds over Internet.

Web Browsers: A web browser is a software application for accessing information on the World Wide Web. When a user requests a particular website, the web browser retrieves the necessary content from a web server and then displays the resulting web page on the user's device.

URL or Web Address: A uniform resource locator (URL) is the address of a resource on the Internet. A URL indicates the location of a resource as well as the protocol used to access it. It is an address of a particular resource on the Internet

Domain Name: Domain names are part of URL which helps in identifying the specific web pages. Domain names are used as a shortcut to the server that is hosting the website.

7.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

i) Chat rooms

ii) Packet routing network

iii) File Transfer Protocol (FTP)

iv) Internet

Check Your Progress B

i) Safari

ii) FTP

iii) Google Chrome

iv) Post Office Protocol

Check Your Progress C

i) Timothy Berners Lee

ii) Domain Name System (DNS)

iii) Websites

iv) URL

7.12 TERMINAL QUESTIONS

1) Write brief notes on following:
   i) World Wide Web
   ii) Domain Name
   iii) URL (Uniform Resource Locator)
   iv) Web Browsers
2) Differentiate between the following:
   i) IMAP and POP3
   ii) ccTLD and gLTD
3) Explain the meaning of different components of URLs.
4) Explain the advantages of using Internet.
5) Should you use IMAP or POP3?

Note: These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for yours practice.