

EXERCISE

Perform the following activities till you are confident:

S.No.	Activities
1.	Use StickyKeys option
2.	Use SoundSentry option
3.	Use High Contrast option
4.	Use SerialKeys option

ASSESSMENT

Fill in the blanks

1. The option in Microsoft Windows XP used for helping users with physical disabilities and to reduce repetitive strain is _____.
2. Sound Sentry is designed to help users with _____ impairments.
3. The High Contrast option in Microsoft Windows XP is designed to assist people with _____ impairments.
4. _____ is designed to assist people that have difficulty using a keyboard or a mouse.

SESSION 2: NETWORKING FUNDAMENTALS

Relevant Knowledge

A computer network is a collection of computers and other hardware components interconnected by communication channels (cables or satellites) that allow sharing of resources and information. This session introduces you to the basic fundamental concepts of networking and Internet and using different types of Internet connection.

Networks are designed using the following architecture:

Peer-to-peer (P2P) Architecture:

Networks in which all computers have an equal status are called peer to peer networks. Generally in such a network each terminal has an equally competent CPU.

Client-Server Architecture:

Networks in which certain computers have special dedicated tasks, providing services to other computers (in the network) are called client server networks. The computer(s) which provide services are called servers and the ones that use these services are called *clients*.

Types of networks

There are two major types of network Local Area Network (LAN) and Wide Area Network (WAN).

Local Area Network

A local area network (LAN) is one which connects computers and devices in a limited geographical area such as home, school, computer laboratory, office building, or closely positioned group of buildings.

Usually local area networks offer very high speeds and are used for connecting computers and peripherals such as printers, scanners, etc.

Wide Area Network

A wide area network (WAN) is one which covers a broad area (i.e., any network that links across metropolitan, regional, or national boundaries). The Internet is the most popular WAN, and is used by businesses, governments, non-profit organizations, individual consumers, artists, entertainers, and many others.

Internet

The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks.

Internet is one of the most useful technologies of modern times which help us in our daily, personal and professional life. Internet is widely used by students, educational institutes; scientist and professionals to gather information for research and general information. Businesses use the Internet to access complex databases such as financial database. The Internet is the largest encyclopaedia for all age groups. The Internet helps in maintaining contact with friends and relatives who live across different locations via Internet chatting systems and email software. Internet is also becoming a major source of entertainment for the general public.

World Wide Web

World Wide Web (*abbreviated as WWW or W3, commonly known as the Web*), is a system of interlinked hypertext documents accessed via the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia, and navigate between them via hyperlinks.

Information is stored on *web servers* referred to as web pages are retrieved by using a *web browser* such as Firefox on the local computer. A Web Browser is a software used to view Web sites and acts as an interface between the user and the World Wide Web. A Web server is a computer that stores web sites and their related files for viewing on the Internet.

Some of the advantages associated with networking are:

- **Data Sharing:** One of the most important uses of networking is to allow the sharing of data. Users can send text files, spread sheets, documents, presentations, audio files, video files, etc. to other users.
- **Hardware Sharing:** Hardware components such as printers, scanners, etc. can also be shared. For example, instead of purchasing 10 printers for each user, one printer can be purchased and shared among multiple users thus saving cost.
- **Internet Access Sharing:** You can purchase a single Internet connection and share it among other computers in a network instead of purchasing multiple Internet connection for each computer. This is very commonly found in Internet café (browsing centres), schools, colleges, companies, etc.
- **Usage of network based applications:** Such as web browsers, email clients, chat application, audio & video calling, etc is another advantage.

Getting access to the Internet

To use the Internet, you need an Internet connection. Internet connections are provided by Internet Service Providers such as Bharat Sanchar Nigam Limited (BSNL), Airtel, MTS, Vodafone, Tata Docomo, etc.

Internet Service Provider

An Internet service provider (ISP) is an organization which provides you with access to the Internet via a dial-up (using modem) or direct (hard wired) or wireless connection.

Choosing connectivity depends on the availability of a particular technology, speed and connection type in your area. Usually small and medium business users, home users use connectivity types such as DSL, cable modem, dial-up, broadband wireless, WiMAX or 3G. Medium to large business users or customers with more demanding requirements may use high speed connectivity such as DSL (High Speed), ISDN, etc.

Modem

A modem is a device that converts digital computer signals into a form (analog signals) that can travel over phone lines. It also re-converts the analog signals back into digital signals. The word modem is derived from its function MODulator/DEModulator.

Types of Common Internet Connectivity

There are different types of Internet Connectivity available today; it can be widely categorized into wired and wireless access. Following table is a summary of different types of Internet connectivity categorized into wired and wireless:

Technology	Type of Connectivity
Dial-Up	Wired
DSL	Wired
Cable Internet Access	Wired
3G	Wireless
WiMAX	Wireless
Wi-Fi	Wireless

Some of the commonly used Internet connectivity are:

Dial-up: Dial-up Internet access is a form of Internet access that uses the facilities of the public switched telephone network (PSTN) to establish a connection to an Internet service provider (ISP) via telephone lines using a device called MODEM. Users dial a particular number provided by the ISP and gain access to the Internet.

Dial-up connections are extremely slow and in most cases, it is replaced by a high speed connection such as DSL or Cable Modem.

DSL: Digital subscriber line(DSL) provide Internet access by transmitting digital data over wires of a local telephone network. DSL service is delivered along with wired telephone service on the same telephone line. On the customer premises, a DSL filter removes the high frequency interference, enabling simultaneous use of the telephone and data transmission. For using a DSL connection, you need a DSL modem and a subscription.

Cable Internet Access: Cable Internet Access is a form of broadband Internet access that uses the cable television infrastructure. Cable Internet Access is provided through existing cable TV networks; this is similar to DSL that is provided over existing telephone lines.

3G: 3G, short for 3rd Generation is a set of standards used for mobile devices and mobile telecommunication services and networks. High-Speed Downlink Packet Access (HSDPA) is 3G mobile telephony communications protocol that allows higher data transfer speeds and capacity. If support for 3G is available on your mobile phone, you can subscribe to the 3G connectivity with your ISP in order to get high speed Internet connection on your phone.

WiMAX: WiMAX (Worldwide Interoperability for Microwave Access) is a wireless communications standard designed to provide mobile broadband connectivity across cities and countries through

a variety of devices. WiMAX is a long range system, covering many kilometres and is typically used where DSL or Cable Internet Access cannot be used; this could be difficult in laying out cables for home or offices located in remote locations but need access to the Internet.

Wi-Fi: Wi-Fi is a popular technology that allows an electronic device such as computers or mobile phones to exchange data wirelessly over a network, including high-speed Internet connections. Wi-Fi devices such as personal computer, smartphones, video game console, etc. can connect to a network resource such as Internet through a device called the Wireless Access Point (WAP). Wi-Fi is used where cables cannot be run (such as old buildings, outdoor areas) to provide network and Internet access. Wi-Fi can also be used where users require mobile connectivity.

Wi-Fi connectivity is used in home & offices, hotels, college & school campus typically for Internet Access. Shopping malls, coffee shops, resorts mostly offer free or paid Wi-Fi access to the Internet for their customers.

Data transfer on the Internet

Having talked of data transfer and the Internet, have you ever wondered how sitting in one corner of the world, you get information from another distant area in a few seconds?

In very simple language, let's see what happens to a piece of data, say a Web page, when it is transferred over the Internet:

- The data is broken up into bits of same sized pieces called **packets**.
- A **header** is added to each packet explaining where the data has come from, where it should end up and where it fits in with the rest of the packets.
- Each packet is sent from computer to computer until it finds its **destination**. Each computer on the way decides where next to send the packet. All packets may not take the same route.
- At the destination, the packets are **examined**. If any packets are missing or damaged, a message is sent asking for them to be re-sent. This continues until all packets have been received intact.
- The packets are now **reassembled** into their original form. All this done in seconds!

To access the Internet, you need an active internet connection. You need to gather and understand your requirement carefully before subscribing to an internet connection plan. In this exercise, you will learn how to choose an Internet connection.

Some of the common questions that help you in your decision are:

- What is the purpose of getting this connection?
- Will you use the connection regularly?
- How much data will be downloaded on an average per month?

- How much speed do you need?
- What technology is available in your particular area?
- What are the different plans available from the ISP?
- Is there any limitation or catch for the selected plan?

Use the following table to compare different subscription plans to get an estimate and analyse if that would suit your requirement.

3G				
ISP	Plan Name	Download Speed	Download Limit	Free Modem

DSL				
ISP	Plan Name	Download Speed	Download Limit	Free Modem

Cable Internet Access				
ISP	Plan Name	Download Speed	Download Limit	Free Modem

WiMAX				
ISP	Plan Name	Download Speed	Download Limit	Free Modem

To access Wi-Fi, you need an access point with an active Internet connection. Usually when you subscribe to an Internet connection, the ISP provides options to purchase or rent a Wi-Fi router that can act as both an internet connectivity device and an access point for Wi-Fi connectivity. Setting up a Wi-Fi network requires technical expertise; however, you can access the Wi-Fi network by connecting to an access point that is already setup for use. On computers that run Windows XP, you can view the list of wireless networks available by using the following procedure:

- Right-Click on the Wireless Icon in the system tray and Click **View Available Wireless Networks** (figure 10)

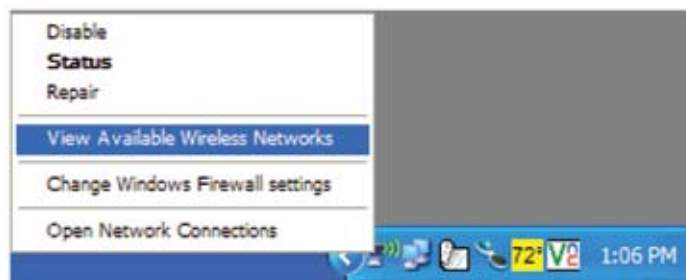


Figure 10

Windows XP will display the list of available Wi-Fi networks; you can choose any of the connection from the list. Select by Double-clicking on the name displayed in the list.

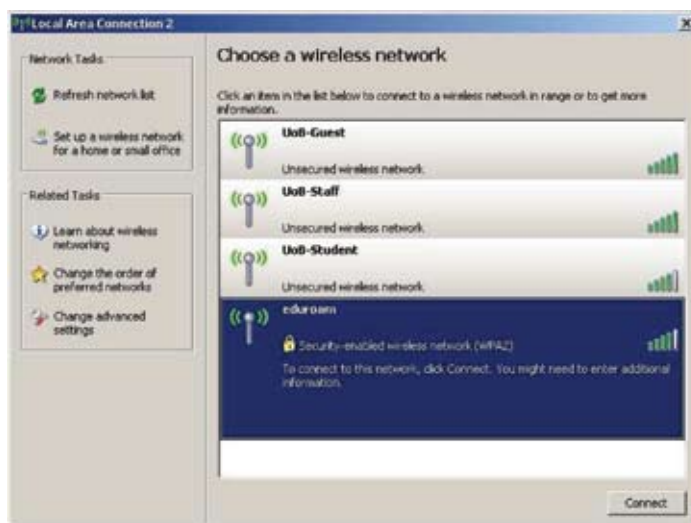


Figure 11

Note: You may be prompted to enter a password if the selected network is secure. You will receive a confirmation that you are connected to a wireless network. Now the system is ready to be used for network related applications such as Firefox, Chrome, Skype, etc.

EXERCISE

Perform the following activity till you are confident:

S.No.	Activities
1.	List any 3 ISP's available in your city. After collecting information such as connectivity type, speed and charges, compare them and state which is the best ISP and why?

ASSESSMENT

I. Fill in the blanks:

- The acronym for LAN is _____.
- Three types of Wired Internet Connectivity are _____, _____ & _____.
- Three types of Wireless Internet Connectivity are _____, _____ & _____.

II. Answer the following:

- What is the definition of networking?

2. What are the advantages of networking?
3. What are the different types of networking?
4. Explain LAN and WAN.

SESSION 3: INTRODUCTION TO INSTANT MESSAGING

Relevant Knowledge

Instant messaging (IM) is a form of communication over the Internet that offers an instantaneous transmission of text-based messages from sender to receiver. Most instant messaging software include the option for performing file transfers, audio chat, video calling and conferencing, sharing desktops, etc. apart from standard text chat. Instant messaging software is widely used for personal and commercial use. In this session, you will be introduced to the concept of instant messaging, the steps to create an instant messaging account and also work with instant messaging software.

Unlike email, instant messaging happens in real-time and the response from participants can be spontaneous. Some instant messaging software allows users to view messages received when they are not logged on. These are called “Offline Messages”.

For utilizing audio and video chat or conferencing, you need to have microphones and headsets or speakers and web cameras so that users can talk or see each other.

Key Features of an instant messaging are as follows:

- Text Messages can be sent to one or more person (Similar to SMS)
- Audio calling and conferencing.
- Video calling and conferencing.
- File transfers (Not limited to documents, spread sheets, audio files, video files, etc.)
- Message history (Save messages for future reference).

Instant Messaging Account

Participants messaging to each other need to be signed in to the same instant messaging software. To use instant messaging software, a user must have a valid instant messaging account.

Instant messaging accounts differ in formats; some instant messaging software such as Yahoo! Messenger, Windows Live Messenger use email addresses for managing the account and software such as Skype use standard names.