



Web Applications (Basic)

Session-1

Working with Accessibility Options

Computer Accessibility refers to the user friendliness of a computer system for all, regardless of their disability. This is mainly a software issue. However, when a combination of hardware and software, it enables a person with a disability or impairment to use a computer. It is known as Assistive Technology.

In this session, you will learn about the basic accessibility options available on your computer. There are numerous types of impairment that impact computer usage. These include:

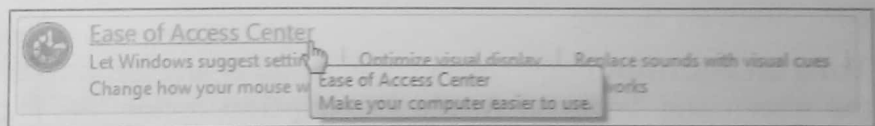
- Cognitive impairments and learning disabilities, such as dyslexia, attention deficit-hyperactivity disorder (ADHD) or autism.
- Visual impairment such as low-vision, complete or partial blindness, and color blindness.
- Hearing impairment including deafness.
- Motor or dexterity impairment such as paralysis, cerebral palsy, or carpal tunnel syndrome and repetitive strain injury.

Windows 7 includes accessibility options and programs that make it easier to see, hear, and use your computer.

Launching Accessibility Options

Steps to launch accessibility options in Windows 7 are as below:

- Click on **Start**.
- Click on **Control Panel**.
- Click the **Ease of Access** link.
- Click **Ease of Access Center** link.

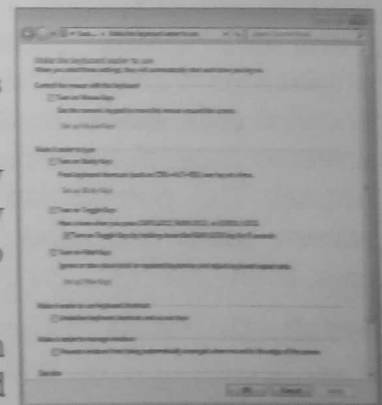


Setting up Keyboard Access

Click **Make the keyboard easier to use** in the **Ease of Access Center**.

Turn on **Mouse Keys** checkbox to allow the user make use of arrow keys on the numeric keypad to move the keys on screen and Enter key to click. For example, user can press top arrow and left arrow key to move mouse pointer diagonally upwards towards left side.

Turn on **Sticky Keys** checkbox allows user to keep the key active when it is pressed once and when any other key is pressed then it is processed



by the computer with the currently active key. For example, if user has pressed Window key on the keyboard then it will remain active. Now, if user clicks only letter E then it will be interpreted as Windows+E and Windows Explorer will open up.

Once enabled, sticky keys icon will appear in the system tray.

Turn on Toggle Keys checkbox allows user to hear an alert sound every time a key like caps lock, num lock etc. is pressed.

Turn on Filter Keys check box, when selected, makes keyboard ignore rapidly repeated or long pressed key to avoid repeated typing of the same key thereby helping people who type with trembling hand.

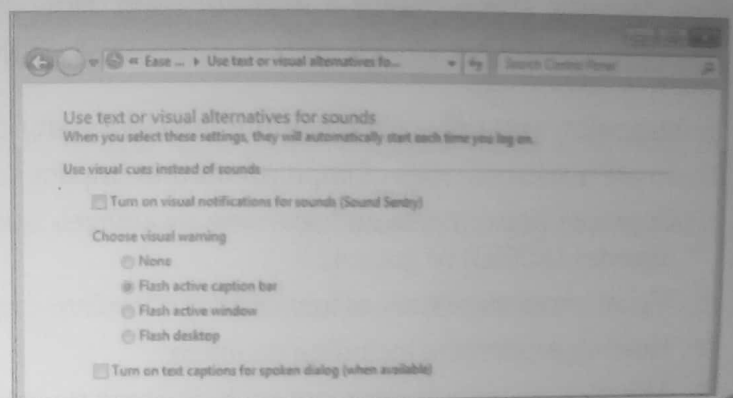
Text or Visual Alternatives to Sound

People with hearing impairment have great use to this feature where they can see the visual feedback or cues on the screen instead of sound.

Click on **Use text or visual alternatives for sounds** in **Ease of Access Center**.

or **Turn on visual notifications for sounds (Sound Sentry)** option replaces system sounds with visual warnings like flashing caption bar of active window, flashing the active window itself and flash desktop. Select the desired visual warning.

Any sound that reads the screen can be turned into text caption that appear on the screen by checking **Turn on text captions for spoken dialog** checkbox.



Make the Computer Easier to See

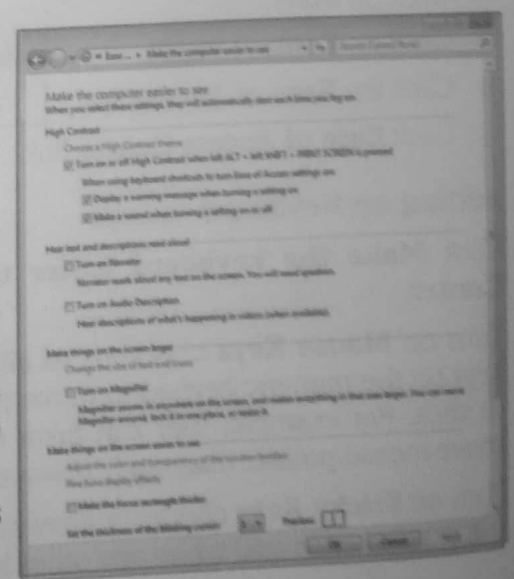
In **Ease of Access Center**, click **Make the computer easier to see** link.

Choose a High Contrast Theme: Select the option to turn high contrast on/ off by pressing **left Shift + left Alt** and **Print Screen** keys. This lets visually challenged people see screen comparatively clearly.

Turn on Narrator option allows read aloud of any text on the screen and **Turn on Audio Description** option lets visually impaired person hear descriptions of what is happening in any videos.

Turn on Magnifier option lets user move mouse pointer on the screen and see the objects larger in size. *This mode is called lens mode.* In **docked mode** a portion of the screen can be left magnified and rest of the screen remains normal. This portion can be changed as required. **Full screen mode** magnifies whole screen. Lens size, focus area, zoom level etc. can be set by the user.

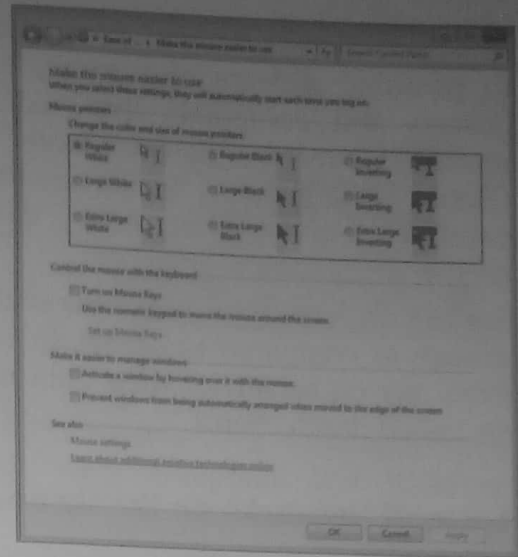
Set the thickness of the blinking cursor option makes blinking cursor thicker and larger to see them easily.



Make the Mouse Easier to Use

In **Ease of Access Center**, click **Make the mouse keys easier to use** link.

Here, you can change the colour and size of mouse pointers. You can turn on mouse keys of numeric keypad. You can set option to activate any window just by bringing mouse pointer over it instead of having to click it.



EXERCISE

1. Enable mouse keys on numeric keypad and test them to move mouse pointer on screen. Try opening a file using it.
2. Enable sticky keys then open MS Word and type some text. Now press Ctrl key and leave it. Then press other keys like A, C followed by V, P and observe what happens. These letters must make combination of command shortcuts Ctrl+A, Ctrl+C, Ctrl+V and Ctrl+P.
3. Open notepad and turn on Filter Key option. Now practice typing letters with brief pauses. Observe how the repeated strokes of same letter are ignored.
4. Enable toggle keys option and test them by pressing them on the keyboard.
5. Turn on Sound Sentry and open notepad. In notepad open Print dialog box and then try clicking in the notepad. Observe how it gives visual warning.
6. Try out various settings of Magnifier and see how screen looks like in various modes of magnifier.
7. Try out mouse ease of access options by changing cursor colours and size.

Session-2

Networking Fundamentals

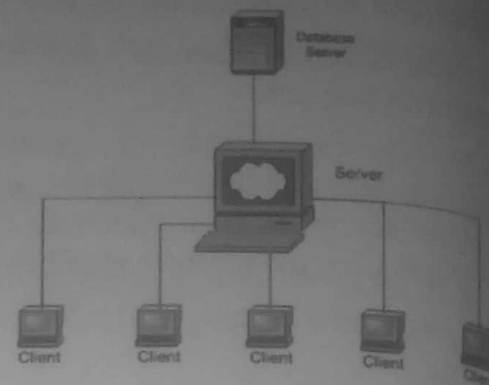
Computers, when connected with each other, through a communication medium form a network. The purpose of connecting computers to form a network is to share the data, services and various resources. For instance, one printer connected with a computer can be accessed for printing by other computers on the network or a file can be copied from one computer to another without having the need of sharable media like disks or pen drives. Communication medium can be as simple as cables or advanced as wireless and satellites.

On the basis of architecture, networks are of 2 types- Peer-to-peer and Client-Server.

In **peer-to-peer network**, computers are equipped with similar processing power and share information and resources with each other. There is no specifically designated computer that is the source of all data and services.

In **Client-Server** network computers which are dedicated to provided services and access to resources are called Servers and computers that access these services and resources over the network from the servers are called Clients. Depending on the service they provide, servers are called file server, print server, database server, internet access server (proxy server) etc.

Servers are equipped with powerful processors and larger storage as compared to clients. In certain networks, clients even rely on server for their data processing. Such clients are called dumb clients.



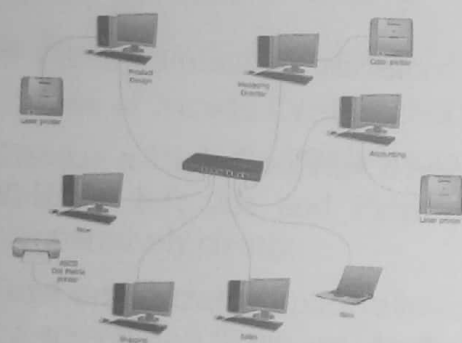
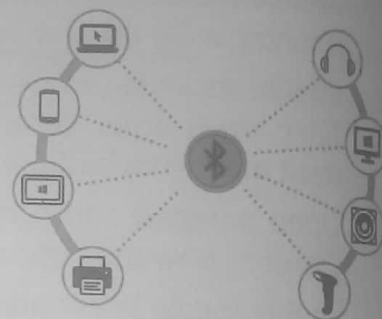
Types of Networks on the Basis of Span

On the basis of their span or space occupied, networks are classified into following types:

Personal Area Network (PAN)

A Personal Area Network (PAN) is a computer network which is used by a single person for communication among the computer devices. For example, printers, fax machines, telephones, or scanners are the computer devices used with a PAN.

The reach of a PAN is few metres only. Typically, this is used at home or in a small office. The devices are commonly connected here through wire or Bluetooth, Infrared technology.

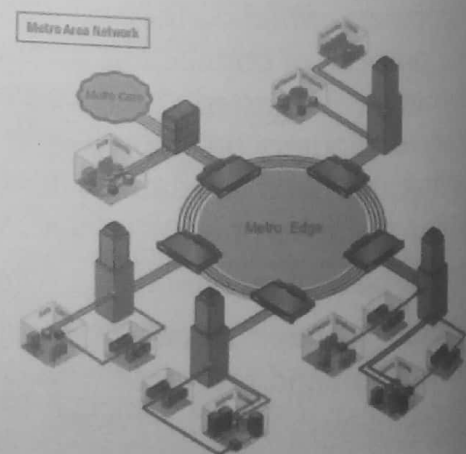


Local Area Network (LAN)

A Local Area Network (LAN) covers a small geographic area, such as home, office or any building. These are used within smaller geographic range and have limited communication lines. LANs have higher data transfer rate. It is useful for sharing resources like files, printers and other applications. A LAN can be set up using wireless media also.

Metropolitan Area Network (MAN)

A Metropolitan Area Network (MAN) is a large network that usually spans a city, but does not extend the boundaries of the immediate town, city, or metropolitan area. Data transfer rate in Metropolitan Area Network is little slower than the Local Area Network. The distance covered by this kind of network enables a large number of users to communicate with each other in the network. For example, network set up by MTNL in Delhi and Mumbai, cable TV network in a city.



Wide Area Network (WAN)

A Wide Area Network (WAN) is a geographically independent communication network. It covers a large geographical area. For example, network between two or more countries. A Wide Area Network may be privately owned or rented. It has lower data transmission rate. For example, mobile network set up by BSNL



Internet

Networks all over the world are globally inter connected to form Internet. This is the reason why internet is called 'network of networks'. Today, almost every computer and handheld communication device is part of Internet. Computers over internet communicate through communication protocols.

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 encyclopedia 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.

The first workable form of internet came in 1969 with the creation of Advanced Research Projects Agency NETWORK (ARPANET) in USA under the U.S. Department of Defense. ARPANET allowed multiple computers to communicate on a single network. In 1990s, Internet came in wider use when computer scientist Tim Berners-Lee invented the World Wide Web.

World Wide Web

World Wide Web (www) is the largest information system on internet. It contains millions of web sites that provide information in the form of text, animations, pictures and videos. Thus, internet is like a library that contains millions of books.

What is the difference between Internet and World Wide Web? Internet is a massive network of computer networks. 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 connected to the Internet).

The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information-sharing model that is built on top of the Internet. The Web uses the HTTP protocol to transmit data.

The Web also utilizes browsers, such as Internet Explorer or Mozilla Firefox, to access Web documents called Web pages that are linked to each other via hyperlinks.

Advantages of networking

Data Sharing: One of the most important uses of networking is to allow the sharing of data. User 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 Internet

To connect your computer with internet you need some additional hardware and software. These are as follows:

- ⊙ A telephone or cable line or a dongle (internet data card) for internet connection by the Internet Service Provider
- ⊙ A modem: Modem is a device that enables a computer to transmit the data through telephone or cable lines. A modem modulates outgoing digital signals from a computer to analog signals for a conventional copper twisted pair telephone line and demodulates the incoming analog signal and converts it to a digital signal for the digital device.
- ⊙ Software (browser): A browser/web browser is an application software that is used to access the information (web sites) on the web. Mozilla Firefox, Internet Explorer, Google Chrome, Safari, Opera are some commonly used browsers.

Internet Service Provider

A company or organisation that provides the access to internet. Access is provided through a modem that connects your computer with the service providers internet server. Modem can be wired (Digital Subscriber Line, dial-up, cables) or wireless (Wi-Fi, 3G/4G etc.)

Connectivity provides a wide choice of data transfer speed and other services along with internet access. The kind of connectivity available to you depends connectivity facilities in your area.

Types of Common Internet Connectivity

Connectivity to internet can be broadly categorised into wired and wireless. 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
WiMA	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 support for 3Gis 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.

Wi MAX: Wi MAX (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. Wi MAX is a long range system, covering many kilometres and is typically used where DSL or Cable Internet Access cannot be used; this could be difficulty 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, smart phones, 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 an other 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 as king 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

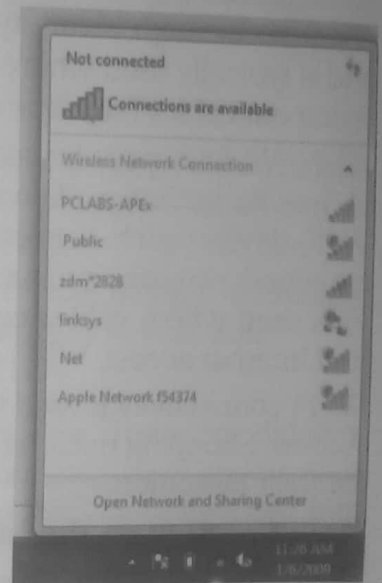
DSL				
ISP	Plan Name	Download Speed	Download Limit	Free Modem

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, you can view the list of wireless networks available by using the following procedure:

Windows 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.



EXERCISE