

Applications of Information Technology

Every day, people use computers in new ways. Computers and other electronic devices are becoming increasingly affordable. They continue to be more powerful as information-processing tools as well as easier to use. Humans are continually becoming dependant on IT-enabled devices for carrying out simple tasks like remembering a phone number to complex ones like flying a fighter plane. Information Technology has applications in almost all aspects of our life. Some of the important ones are:

Science and Engineering: Scientific progress in fields like biotechnology is almost entirely dependent on the use of computers and other microprocessor-controlled devices. Using supercomputers, meteorologists predict future weather by using a combination of observations of weather conditions from many sources, a mathematical representation of the behavior of the atmosphere, and geographic data. Computer-aided design (CAD) and computer-aided manufacturing (CAM) programs have led to improved products in many fields, especially where designs tend to be very detailed. Computer programs make it possible for engineers to analyze designs of complex structures such as power plants and space stations.

Business & Commerce: One of the first and largest applications of computers is keeping and managing business and financial records. Most large companies keep the employment records of all their workers in large databases that are managed by computer programs. Similar programs and databases are used in business functions like billing customers; tracking payments received and payments to be made; and tracking supplies needed and items produced, stored, shipped, and sold. In fact, practically all the information companies need to do business involves the use of computers and Information Technology. Almost all the financial transactions in the world are done electronically. Newer technologies like m-commerce have enabled almost everybody to carry out routine financial transactions on the move.

On a smaller scale, many businesses have replaced cash registers with point-of-sale (POS) terminals. These POS terminals not only print a sales receipt for the customer but also send information to a computer database when each item is sold to maintain an inventory of items on hand and items to be ordered. Computers have also become very important in modern factories. Computer-controlled robots now do tasks that are hot, heavy, or hazardous. Robots are also used to do routine, repetitive tasks in which boredom or fatigue can lead to poor quality work.

With today's sophisticated hardware, software, and communications technologies, it is often difficult to classify a system as belonging uniquely to one specific application program. Organizations increasingly are consolidating their information needs into a single, integrated information system. Management Information System (MIS), with the Chief Information Officer (CIO) at its head, is a whole, new branch of enterprise management.

Education: The advent of Information Technology has changed the meaning of the term “literate”, with computer literacy being almost as important as basic literacy in many cases. Computer education is an essential course at the primary level in most schools across the world. With more information getting digitized every day, and the internet making it accessible to anyone across the world, students are increasingly relying on electronic sources of information rather than physical libraries for their needs. Instructional methodology has also undergone a sea change with use of images, animations, videos, presentations and e-learning to complement traditional techniques.

Governance: The concept of e-governance is one of the most novel applications of Information Technology whereby it is changing the lives of millions across the globe. Computerization of Government activities makes it easier to supervise and audit, and makes the administration more responsive to the needs of society. It also bridges the divide between the Government and the people. Technologies like touch-screen kiosks help disseminate information on land records, photo identity cards, pending bills etc. and enable even illiterate people to take more informed decisions. India is leading the world in the effective use of IT for elections.

Medicine: Information Technology plays an important role in medicine. For example, a scanner takes a series of pictures of the body by means of computerized axial tomography (CAT) or magnetic resonance imaging (MRI). A computer then combines the pictures to produce detailed three-dimensional images of the body's organs. In addition, the MRI produces images that show changes in body chemistry and blood flow. Most critical life support equipment are programmed to respond to changes in the patient's status in split-seconds, thereby reducing the response time and risk of human error. Newer concepts like robotic surgery enable specialists to perform surgeries from remote locations. Genomic studies greatly depend on supercomputing power to develop technologies for the future.

Entertainment: IT has changed the lifestyle of most people. The convergence of various technologies has created various options for entertainment like games, streaming music and video, digital television broadcasts, satellite radio, animated movies etc. which can be accessed with the help of mobile phones, PDAs, notebook computers or on television either with a cable connection or wirelessly using newer-generation WiFi, CDMA or GPRS technologies.

Information Technology plays a vital role in most of our daily activities. There is hardly anyone who has not been affected or influenced by IT. With each passing day, newer applications of IT are being developed which increase our interaction with and dependence on IT-enabled devices. Therefore, understanding this technology and using it creatively is imperative to human progress.

Multimedia

The word '**Multimedia**' is a combination of two words, '**Multi**' and '**Media**'. Multi means many and media means material through which something can be transmitted or send. Multimedia combined all the media elements like text and graphics to make the information more effective and attractive. Now I am going to write about its components.

Components of Multimedia

The various components of multimedia are **Text, Audio, Graphics, Video and Animation**. All these components work together to represent information in an effective and easy manner.

1)Text: Text is the most common medium of representing the information. In multimedia, text is mostly use for titles, headlines,menu etc. The most commonly used software for viewing text files are *Microsoft Word, Notepad, Word pad etc*. Mostly the text files are formatted with ,DOC, TXT etc extension.

2)Audio: In multimedia audio means related with recording, playing etc. Audio is an important components of multimedia because this component increase the understandability and improves the clarity of the concept. audio includes speech, music etc. The commonly used software for playing audio files are:

- i) *Quick Time*
- ii) *Real player*
- iii) *Windows Media Player*

3)Graphics: Every multimedia presentation is based on graphics. The used of graphics in multimedia makes the concept more effective and presentable.the commonly used software for viewing graphics are *windows Picture, Internet Explorer etc*. The commonly used graphics editing software is Adobe Photoshop through which graphics can be edited easily and can be make effective and attractive.

4)Video: Video means moving pictures with sound. It is the best way to communicate with each other. In multimedia it is used to makes the information more presentable and it saves a large amount of time. The commonly used software for viewing videos are:

- i) *Quick Time*
- ii) *Window Media Player*
- iii) *Real Player*

5)Animation: In computer animation is used to make changes to the images so that the sequence of the images appears to be moving pictures. An animated sequence shows a number of frames per second to produce an effect of motion in the user's eye. Some of the commonly used software for viewing animation are:

- i) *Internet Explorer*
- ii) *Windows Pictures*
- iii) *Fax Viewer*

These are the components of Multimedia. Now I am going to talk about its applications.

Application of multimedia

Nowadays the application of Multimedia are observed in various fields such as Education, Entertainment, Business and so on. To communicate the message in the form of picture, sound, video, animation is the primary role of multimedia. Some of the application of multimedia are as follows:

1) Multimedia in Education: Multimedia is becoming popular in the field of education. It is commonly used to prepare study material for the students and also provide them proper understanding of different subjects. Nowadays Edutainment, a combination of Education and Entertainment has become very popular. This system provides learning as well as provides entertainment to the user.

2) Multimedia in Entertainment: Computer graphics techniques are now commonly use in making movies and games. this increase the growth of multimedia.

i) Movies: Multimedia used in movies gives a special audio and video effect. Today multimedia has totally changed the art of making movies in the world. Difficult effect, action are only possible through multimedia.

ii) Games: Multimedia used in games by using computer graphics, animation, videos have changed the gaming experience. Presently, games provides fast action, 3-D effects and high quality sound effects which is only possible through multimedia.

3) Multimedia in Business: Today multimedia is used in every aspect of business. These are some of the applications:

i) Videoconferencing: This system enables to communicate using audio and video between two different locations through their computers. When the information is sent across the world, this technology provides cost benefits to the business which saves their time, energy and money.

ii) Marketing and advertisement: Nowadays different advertisement and marketing ideas about any product on television and internet is possible with multimedia.

The Internet One of the major reasons business, home, and other users purchase computers is for Internet access. The Internet is a widely used research tool, providing society with access to global information and instant communications. Further, access to the Internet can occur anytime from a computer anywhere: at home, at work, at school, in a restaurant, on an airplane, and at a park. The Internet, also called the Net, is a worldwide collection of networks that links millions of businesses, government agencies, educational institutions, and individuals. Each of the networks on the Internet

provides resources that add to the abundance of goods, services, and information accessible via the Internet. Today, more than one billion home and business users around the world access a variety of services on the Internet, some of which are shown in Figure 2-1. The World Wide Web, or simply the Web, and e-mail are two of the more widely used Internet services. Other services include chat rooms, instant messaging, and VoIP (Voice over Internet Protocol). To enhance your understanding of these Internet services, the chapter begins by discussing the history of the Internet and how the Internet works and then explains each of these services.

An ISP (Internet service provider) is a regional or national access provider. A regional ISP usually provides Internet access to a specific geographic area. A national ISP is a business that provides Internet access in cities and towns nationwide. For dial-up access, some national ISPs provide both local and toll-free telephone numbers. Due to their larger size, national ISPs usually offer more services and have a larger technical support staff than regional ISPs. Examples of national ISPs are AT&T and EarthLink. In addition to providing Internet access, an online service provider (OSP) also has many members-only features such as instant messaging or their own customized version of a Web browser. The two more popular OSPs are AOL (America Online) and MSN (Microsoft Network). AOL differs from many OSPs in that it provides gateway functionality to the Internet, meaning it regulates the Internet services to which members have access. AOL also provides free access to its services to any user with a broadband Internet connection. When selecting an ISP or OSP for dial-up access, ensure it provides at least one local telephone number. Otherwise, long-distance telephone charges will apply for the time you connect to the Internet. A wireless Internet service provider, sometimes called a wireless data provider, is a company that provides wireless Internet access to desktop and notebook computers and mobile devices, such as smart phones and portable media players, with built-in wireless capability (such as Wi-Fi) or to computers using wireless modems or wireless access devices. Wireless modems, which usually are in the form of a USB flash drive or a card that inserts in a slot in a computer or mobile device, generally dial a telephone number to establish a connection with the wireless Internet service provider. An antenna on or built into the computer or device, wireless modem, or wireless access device typically sends signals through the airwaves to communicate with a wireless Internet service provider. Some examples of wireless Internet service providers include AT&T, Boingo Wireless, Sprint Broadband Direct, T-Mobile, and Verizon Wireless. Wireless Modems For more information, visit scsite.com/dc2011/ch2/weblink and then click Wireless Modems. How Data and Information Travel the Internet Computers connected to the Internet work together to transfer data and information around the world using servers and clients and various wired and wireless transmission media. On the Internet, your computer is a client that can access data, information, and services on a variety of servers. The inner structure of the Internet works much like a transportation system. Just as interstate highways connect major cities and carry the bulk of the automotive traffic across the country, several main transmission media carry the heaviest amount of traffic on the Internet. These major carriers of network traffic are known collectively as the Internet backbone. In the United States, the transmission media that make up the Internet backbone exchange data and information at several different major cities across the country. That is, they transfer data and information from one network to another until reaching the final destination.