RANI CHANNAMMA UNIVERSITY

B.Com – 6th Semester   **Multimedia**

Unit-5 Multimedia

Multimedia:
 '**Mult**i' – means many and '**media'** – means medium.
We need a suitable medium to exchange our thoughts and express our feelings. The term multimedia refers to combination of more than one such medium for communication and conveying of information.

Definition
Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics drawings, images).

Multimedia is content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content. Multimedia contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material.

Multimedi**a** can be recorded and played, displayed, interacted with or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices are electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; for example, by including audio it has a broader scope. In the early years of multimedia the term "rich media" was synonymous with interactive multimedia, and "hypermedia" was an application of multimedia.

Multimedia *i*s the field concerned with the computer-controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

Applications 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 used in making movies and games, which increase the growth of multimedia.

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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. Few of them are :

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..

Advantages of Multimedia

➢ Increases learning effectiveness
➢ Gains and holds attention
➢ More appealing
➢ Reduces training cost
➢ Easy to use
➢ Give information to individuals
➢ Provides high quality of presentations
➢ Multi-sensorial
➢ Integrated and interactive
➢ Can be used as a wide variety of audience
➢ Entertaining and educational

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 used 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 component of multimedia because this component increase the understandability and improves the clarity of the concept. audio includes speech, music etc.

Different types of sound files are :

▪ Waveform Files
▪ MIDI Files
▪ MP3 Files

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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 make the information more presentable and it saves large amount of time. Video is formed of a set of sequentially arranged clips that are shot with the help of a video camera along with related audio. Eg: Windows Media Player, Real Player, Quick Time Player, 3GP Player etc.

5) Animation: Animation is a technique of creating an illusion of motion by streaming a predefined set of still images. Animation industry has been developed from simple 2-D cartoons to 3-D animation movies. It is used in the fields of movie making, advertisement, documentary creation etc.
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 animation types or processes are:
- Object Animation
- Frame Animation
- Morphing
- Stop Motion Animation or Stop Frame Animation
- Three Dimensional Animation

Animation software:
 GIF Animator, Toonboom's Animator Pro, AutoDesk's Maya Animation, Video for windows of Microsoft Windows, Adobe Flash Player, Macromedia Director, Antics 2D Animation etc.
Some of the commonly used software for viewing animation are:
i) Internet Explorer
ii) Windows Pictures
iii) Fax Viewer

 <u>**Multimedia system**</u>
Multimedia system is a computer equipped with all necessary hardware and software facilities that are required to create, edit, and run multimedia files efficiently.
Central Processing Unit (CPU) is an essential part in any computer. It is considered as the brain of computer, where processing and synchronization of all activities takes place. The efficiency of a computer is judged by the speed of the CPU in processing of data. For a multimedia computer a Pentium processor is preferred because of higher efficiency. More than 80 GB Storage capacity Hard Disk (HDD).

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Video Grabbing Card

We need to convert the analog video signal to digital signal for processing in a computer. Normal computer will not be able to do it alone. It requires special equipment called video grabbing card and software to this conversion process. This card translates the analog signal it receives from conventional sources such as a VCR or a video camera, and converts them into digital format.

Sound Card

A **sound card** (**audio card**) is an internal expansion card that provides input and output of audio signals to and from a computer under control of computer programs. The term sound card is also applied to external audio interfaces used for professional audio applications. Sound cards use a digital-to-analog converter (DAC), which converts recorded or generated digital signal data into an analog format.

Hardware Requirements:

- Processor
- Motherboard
- Primary Memory
- Graphics card
- Sound card
- Hard disk
- DVD – RW/Blu Ray Disc
- VDU
- Input devices
- Speakers
- Modem
- Up-gradation

Software Requirements:

- Operating System
- DirectX
- Sound Drivers
- Graphic Drivers
- Game Controllers
- Application Software
- Internet Connection

Input devices :

Keyboard:

Keyboards are the most common type of input device. A user can feed data and instructions to the computer. A multimedia keyboard which is designed to create a simple touch for users to access frequently used programs. keyboard functions, There are special keys that are used to access the Internet, music, and other frequently used programs such as email. A typical multimedia keyboard

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that contains buttons that control the various computers, such as turning on the computer, put the CPU to sleep, and wake it up again.

Mouse:
A computer mouse is a handheld hardware input device that controls a cursor in a GUI (graphical user interface) and can move and select text, icons, files, and folders on your computer.

Scanner :
A scanner is an input device that uses optical technology to transfer images (or sometimes text) into a computer, where the signal is converted into a digital image. The digital image can then be viewed on a monitor screen, saved, edited, emailed, or printed.

Digital Camera
Digital cameras are used to capture photographs and videos independently. Later, these photo and video files can be transferred to a computer by connecting the camera directly with a cable, removing the memory card and slotting it into the computer, or through wireless data transfer methods such as Bluetooth. Once the photos are on the computer, they can be saved, edited, emailed, or printed.

Webcam
Webcams are different from digital cameras in two ways. Firstly, they cannot operate independently from a computer and second, they have no inbuilt memory. Although webcams can capture photographs and videos, they are more often used to live-stream videos or facilitate video chats.

Microphone
A microphone captures audio and sends it to a computer where it is converted to a digital format. Once the audio has been digitized, it can be played back, copied, edited, uploaded, or emailed. Microphones can also be used to record audio or to relay sounds live as part of a video chat or audio stream.

Output devices :
Monitor
The monitor is used to see the computer output. Generally, it displays 25 rows and 80 columns of text. The text or graphics in a monitor is created as a result of an arrangement of tiny dots, called pixels. Resolution is the amount of details the monitor can render. Resolution is defined in terms of horizontal and vertical pixel (picture elements) displayed on the screen. There are different types of Monitors in the market are :

> **CRT** (Cathode Ray Tube) monitors.
> **LCD** (Liquid Crystal Display) monitors.
> **TFT** (Thin Film Transistor) Monitor.
> **LED** (Light-Emitting Diodes) Monitors.
> **Touchscreens** Monitor.
> **Plasma Screen** Monitor.

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Projector:
A projector is a device to generate the image on exceptional surfaces, like by a projection screen or white walls, that have been used as a screen surface. Projectors are essential in showing the content, including the images, slides & videos to the people sitting in a group. The most common types are the LCD and digital light processing (DLP) projectors.

Speakers
Speakers are also common examples of output devices of computer. Also, you use them for listening to sounds and other audio materials from your computer. Furthermore, Laptops and monitors often have speakers inbuilt in them. In addition, you need sound cards on a computer for the speakers to function. Similarly, a speaker converts digital signals into analog sound waves that are audible to the human ear. Finally, speakers range from simple two speaker output devices to sound multi-channel units.

Headphones
Another common example of an output device is a headphone. Some computer headphones have both the speakers and microphones. Headphones aren't just for music; they also allow us to hear when communicating with others via voice calls. Headphones also ensure privacy and are perfect for gaming.

Printers
With a printer, you can convey pictures, text, and information directly from your computer into hard copy formats. Also, you can transmit image data in your computer into the printer, which then physically recreates the image, usually on paper. In addition, you can find Printers in homes, small offices, business, and photographic studios.

Types of Printers:
        1. **Impact printers**
             Dot-Matrix Printers
             Daisy-wheel printers
             Line printers
             Drum printer
             Chain printers

        2. **Non-impact printers**
             Ink-jet printers
             Laser printers

Plotters
Plotters are generally used with engineering applications, for generating a hard copy of a digitally created design. In addition, Plotters are also often used by graphic artists, architects, constructions engineers, etc. The user has to send a design to the plotter through a graphics card that then forms the design through a pen. Also, the Plotter draws pictures with the use of straight lines.

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Storage Devices :
A secondary storage device refers to any non-volatile storage device that is internal or external to the computer. It can be any storage device beyond the primary storage that enables permanent data storage. A secondary storage device is also known as an auxiliary storage device or external storage.

Hard Disk (HDD)
A hard disk drive (HDD**),** also known as a hard disk or hard drive, is a data storage device used in many types of electronic equipment including computers, digital music players, personal digital assistants, video game consoles, and digital video recorders. Capacity of a hard disk drive is usually quoted in gigabytes; however, tera bytes are now also being used due to increase in data storage capacity.

Floppy:
A floppy disk is a magnetic storage medium for computer systems. The floppy disk is composed of a thin, flexible magnetic disk sealed in a square plastic carrier. In order to read and write data from a floppy disk, a computer system must have a floppy disk drive (FDD). A floppy disk is also referred to simply as a floppy. Since the early days of personal computing, floppy disks were widely used to distribute software, transfer files, and create back-up copies of data.

Compact Disk-Read Only Memory (CD-ROM)
CD-ROMs, which use laser beam technology instead of magnetic technology for hard disks, have capabilities to store up to 600MB data. Being excellent multimedia storage devices due to their robustness and low costs, they are commonly used to store data and audio files.

Digital Versatile Disc (DVD) and High Density DVD (HD-DVD)
The Digital Versatile Disc (DVD) has a far better capacity than the CD for storing data. DVD is therefore a very feasible storage device if you need to store huge multimedia applications such as interactive movies or games. Double-sided dual layer DVD supports up to 17 Gigabytes of data. However dual layer High Density DVD (HD-DVD) supports much more -up to 30 Gigabytes of data.

Pen drive:
A pen drive is a portable Universal Serial Bus (USB) flash memory device for storing and transferring audio, video, and data files from a computer. As long as the desktop or laptop has a USB port, and the pen drive is compatible with the operating system, it should be easy to move the data from the hard drive to the device and to another computer. In the market different capacity pen drives are available from 1GB to 2TB.

External Hard Disks and SSDs
These portable devices that help you carry your world of entertainment and memories come in capacities that range from 250 GB hard disk, a 1 TB external hard disk to a 2 TB hard disk it helps you store your digital files securely.

Multimedia Software:
Multimedia software tells the hardware what to do. For example, multimedia software tells the hardware to display the color blue, play the sound of cymbals crashing etc. To produce these media elements(movies, sound, text, animation, graphics etc.) there are various software available in the

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market such as Paint Brush, Photo Finish, Animator, Photo Shop, 3D Studio, Corel Draw, Sound Blaster, IMAGINET, Apple Hyper Card, Photo Magic, Picture Publisher.

Media Players

A media player is a software application for playing back multimedia files, including audio and/or video. Most media players can play both audio only and video (with sound), although there are a small number of players that focus one type, known as audio players or video players. Most operating systems have a default multimedia player built in. For example, Windows includes Windows Media Player and Mac OS includes QuickTime and iTunes.

Audio Software

Software to record and edit audio is often referred to as a digital audio editor. High-end systems for professionals are also called digital audio workstations. Some of the most widely used audio software applications include Audacity by the Audacity Team, Audition by Adobe, Garage Band by Apple and ProTools by Avid - but there are many others.

Video Software

Video editing software consists of software for the post-production of video editing. The source material is collected by digital video cameras, and this is imported into the software for editing. Most modern video editing software uses a technique known as non-linear editing (NLE). Before digital video, traditional editing tools for celluloid film consisted of cutting and pasting film segments in the linear sequence in which the materials were recorded.

Presentation software

Presentation software contains some elements of a graphics software, but the rest of its capabilities and purpose are much different. This type of multimedia software is frequently used to create slide slows for presentations. It typically allows the user to at least add and edit text, insert and manipulate graphics, and create a slide show out of the finished project. MS Power Point.

Picasa :

Picasa is excellent multimedia related software for the viewing, organizing, and editing of the pictures in your laptop. While providing all these services, one of the service given provided by this software is that you can create an album of your own digital pictures and share them with your loved ones as well.

VLC media player :

The VLC media player as the name suggests is the platform where you can play your videos and audios for free. This was developed by a company named VideoLAN project. The VLC is not only limited to your laptops and desktops and MacBook but can also be used in your android phone, windows phone, iPad, iPhone, and iPod for free and can be downloaded easily from the app store of your respective device. The media player can support all kinds of formats of the audio and the video. So you don't have to worry if your video is not a particular format because you can, in any case, play it in the VLC media player without much of a hassle.

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Windows movie maker :
Windows movie maker is the software for the people who love to edit their videos. This was developed by the Microsoft Company under the name of Sundance. Being a part of the windows essential multimedia software, this software not only helps in making and editing the video but also allows you to publish those videos on OneDrive, Facebook, and YouTube etc.

Adobe Photoshop :
Adobe Photoshop was developed by the adobe systems for the raster graphics editing designed for the windows system and the Mac OS. The software has created a niche for itself in the editing world. The word Photoshop has created a place for itself and is now even used a verb many times. It is one of its kind software and is able to edit raster images using multiple layers. The multimedia software not only supports various graphics file formats but it also has its own file format under the name of PSB and PSD and also supports all the features mentioned above. Although the Photoshop itself supports many features besides the raster graphics such as the vector graphics, 3D graphics, and video if the editor wants then he can expand the purview of the features offered by the software by installing the Photoshop plug-ins.

Inkscape :
Inkscape is a software so as to be able create as well as edit the vector images including the illustrations, the logos, the complex paintings, the diagrams etc. one unique feature about Inkscape is that while it can support the images of various formats but the work of editing the images occur under the graphics format od Scalable Vector Graphics or better known as SVG.

Job Opportunities and skills required in Multimedia
Today multimedia is regarded as a challenging and enthusiastic career. As multimedia is a strong medium to integrate number of communication media into one single unit, it provides several job opportunities. The jobs require creativity, visualization and enthusiasm from a person.
A person can become a sound & movie editor, Image editor, multimedia programmer, graphic visualizer, CD/DVD author, content developer, product designer etc

Skills required:
Vector Graphics, 2-D, 3-D Animation, page making, audio editing, 3-D modeling, Animation video editing, script writing. Multimedia programming, composing, motion capture ,virtual reality,SFX, web designing theory, HTML(Hyper Text Markup Language),SQL(Structured Query Language), ASP (Application Server Program), PHP (Hypertext Preprocessor)etc.

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