



## Chapter 19

# Multimedia

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## Learning Objectives

**In this chapter you will learn about:**

- § Multimedia
- § Multimedia computer system
- § Main components of multimedia and their associated technologies
- § Common multimedia applications

## Multimedia

- § Media is something that can be used for presentation of information.
- § Two basic ways to present some information are:
  - § **Unimedia presentation:** Single media is used to present information
  - § **Multimedia presentation:** More than one media is used to present information
- § Multimedia presentation of any information greatly enhances the comprehension capability of the user as it involves use of more of our senses

## Common Media

- § Common media for storage, access, and transmission of information are:
  - § Text (alphanumeric characters)
  - § Graphics (line drawings and images)
  - § Animation (moving images)
  - § Audio (sound)
  - § Video (Videographed real-life events)
- § Multimedia in information technology refers to use of more than one of these media for information presentation to users

## Multimedia Computer System

- § Multimedia computer system is a computer having capability to integrate two or more types of media (text, graphics, animation, audio, and video)
- § In general, size for multimedia information is much larger than plain text information
- § Multimedia computer systems require:
  - § Faster CPU
  - § Larger storage devices (for storing large data files)
  - § Larger main memory (for large data size)
  - § Good graphics terminals
  - § I/O devices to play any multimedia

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## Text Media

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- § Alphanumeric characters are used to present information in text form. Computers are widely used for text processing
- § Keyboards, OCRs, computer screens, and printers are some commonly used hardware devices for processing text media
- § Text editing, text searching, hypertext, and text importing/exporting are some highly desirable features of a multimedia computer system for better presentation and use of text information

## Graphics Media

- § *Computer graphics* deals with generation, representation, manipulation, and display of pictures (line drawings and images) with a computer
- § Locating devices (such as a mouse, a joystick, or a stylus), digitizers, scanners, digital cameras, computer screens with graphics display capability, laser printers, and plotters are some common hardware devices for processing graphics media
- § Some desirable features of a multimedia computer system are painting or drawing software, screen capture software, clip art, graphics importing, and software support for high resolution

## Animation Media

- § *Computer animation* deals with generation, sequencing, and display (at a specified rate) of a set of images (called frames) to create an effect of visual change or motion, similar to a movie film (video)
- § Animation is commonly used in those instances where videography is not possible or animation can better illustrate the concept than video
- § Animation deals with displaying a sequence of images at a reasonable speed to create an impression of movement. For a jerk-free full motion animation, 25 to 30 frames per second is required

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## Animation Media

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- § Scanners, digital cameras, video capture board interfaced to a video camera or VCR, computer monitors with image display capability, and graphics accelerator board are some common hardware devices for processing animation media
- § Some desirable features of a multimedia computer system with animation facility are animation creation software, screen capture software, animation clips, animation file importing, software support for high resolution, recording and playback capabilities, and transition effects

## Virtual Reality

- § Virtual reality is a relatively new technology using which the user can put a pair of goggles and a glove and tour a three-dimensional world that exists only in the computer, but appears realistic to the user

## Audio Media

- § *Computer audio* deals with synthesizing, recording, and playback of audio or sound with a computer
- § Sound board, microphone, speaker, MIDI devices, sound synthesizer, sound editor and audio mixer are some commonly used hardware devices for processing audio media
- § Some desirable features of a multimedia computer system are audio clips, audio file importing, software support for high quality sound, recording and playback capabilities, text-to-speech conversion software, speech-to-text conversion software, and voice recognition software

## Video Media

- § *Computer video* deals with recording and display of a sequence of images at a reasonable speed to create an impression of movement. Each individual image of such a sequence is called a frame
- § Video camera, video monitor, video board, and video editor are some of the commonly used hardware devices for processing video media
- § Some desirable features of a multimedia computer system with video facility are video clips and recording and playback capabilities

## Multimedia Applications

- § Multimedia presentation
- § Foreign language learning
- § Video games
- § Special effects in films
- § Multimedia kiosks as help desks
- § Animated advertisements
- § Multimedia conferencing

## Media Center Computer

- § There is a growing trend of owning a personal computer (PC) at home like other electronic equipment
- § New terminologies like "infotainment" and "edutainment" have evolved to refer to computers as versatile tools
- § Media center PC provides following functionalities:
  - § Server as PC, TV, radio, and music system
  - § Serve as digital photo album and digital library
  - § Server as Game station and DVD/CD Player
  - § Allows play, pause, and record of TV programs
  - § Provides Electronic Programming Guide (EPG)



## Media Center Computer



## Keywords/Phrases

- § Animation
- § Audio
- § Clip art
- § Cognitive graphics
- § Computer Aided Design (CAD)
- § Computer Aided Manufacturing (CAM)
- § Frames
- § Generative graphics
- § Graphics
- § Multimedia
- § Media Center Computer
- § Pixel
- § Refresh rate
- § Text
- § Transducer
- § Transition effects
- § Video
- § Virtual reality