Chapter 19

Multimedia

Computer Fundamentals - Pradeep K. Sinha & Priti Sinha
Learning Objectives

In this chapter you will learn about:

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

- System Unit
- High-resolution display screen
- Remote Control
- Keyboard
- Mouse

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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