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# COMPUTER INSTRUCTOR GRADE-I

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## TO CONTACT: 8072230063

## PG-TRB: COMPUTER INSTRUCTOR GRADE-I

## NEW SYLLABUS-2021-22

## UNIT-IX-WEB SCRIPTING

## INTRODUCTION TO MULTIMEDIA

### Definition:

Multimedia is the media that uses multiple forms of information content and information processing (e.g. text, audio, graphics, animation, and video, interactivity) to inform or entertain the user.

Multimedia also refers to the use of electronic media to store and experience multimedia content. Multimedia is similar to traditional mixed media in fine art, but with a broader scope. The term "rich media" is synonymous for interactive Multimedia.

### Multimedia System:

**Medium:** An intervening substance through which something is transmitted or carried on.

### Computer System medium:

1. Text
2. Image
3. Sound
4. Video

## Representation Dimension of media:

Media are divided into two types in respect to time in their representation space:

1. Time independent (discrete): Information is expressed only in its individual value. E.g.:text, image, etc.

2. Time dependent (continuous): Information is expressed not only it's individual value, but also by the time of its occurrences. E.g.: sound and video.

Multimedia system is defined by computer controlled, integrated production, manipulation, presentation, storage and communication of independent information, which is encoded atleast through a continuous and discrete media.

## Classification of Media:

1. The perception media
2. The representation MediaMonolithic Programming (Assembly language and BASIC):
3. The Presentation Media
4. The storage media
5. The transmission media
6. The information Exchange media

## Perception media:

Perception media help human to sense their environment. The central question is how human perceive information in a computer environment. The answer is through seeing and hearing.

## Seeing:

For the perception of information through seeing the usual such as text, image and video are used.

## Hearing:

For the perception of information through hearing media such as music noise and speech are used.

## Representation media:

Representation media are defined by internal computer representation of information. The central question is how the computer information is coded? The answer is that various format are used to represent media information in computer.

- **Text, character is coded in ASCII code**
- **Graphics are coded according to CEPT or CAPTAIN video text standard.**
- **Image can be coded as JPEG format**
- **Audio video sequence can be coded in different TV standard format (PAL, NTSC,SECAM and stored in the computer in MPEG format)**

## Presentation Media:

Presentation media refer to the tools and devices for the input and output of the information. The central question is, through which the information is delivered by the computer and is introduced to the computer.

## Output media:

Paper, screen and speaker are the output media.

## Input Media:

Keyboard, mouse, camera, microphone are the input media.

## Storage media:

Storage Media refer to the data carrier which enables storage of information.
The central question is, how will information be stored? The answer is hard disk, CD-ROM,

etc.

## Transmission media:

Transmission Media are the different information carrier that enables continuous data

transmission. The central question is, over which information will be transmitted? The answer is co-axial cable, fiber optics as well as free air.

## Information exchange media:

Information exchange media includes all information carrier for transmission, i.e. all storage and transmission media. The central question is, which information carrier will be used for information exchange between different places? The answer is combine uses of storage and transmission media. E.g. Electronic mailing system.

## Multimedia system architecture:

Multimedia operating system is the system software that handles multimedia data and multimedia devices.

## Important issues in Multimedia System:

1. Appropriate scheduling method should be applied: In contrast to the traditional real time operating system, multimedia operating systems also have to consider task without hard timing restriction under the aspects of fairness.

2. Communication and synchronization between processes must meet the restriction of the real-time requirement and timing relations between different Medias.

3. In multimedia system, memory management has to provide access to data within a guaranteed timing delay and efficient data manipulation function.

4. Data management is a important component in multimedia system, however database management system abstracts the details of storing data on the secondary media storage. Therefore database management should depend on file management services provided by multimedia operating system.

## Real-time system:

Real time process is the process which delivers the result of processing in a given time. Main characteristics of real time system are the correctness of computation and fixed response time. Deadline represent the latest acceptable time for the presentation of the processing result. Real time system has both hard and soft deadline.

Soft deadline is the type of deadline which in some cases is missed and may be tolerated as long as. Hard deadline should never be violated. Hard deadline violation is the system failure.

## Characteristics of Real time system:

1. Predictably fast response to time critical event and accurate timing information.

2. High degree of schedulability:

Schedulability refers to the degree of resource utilization at which or below which deadline of each time critical task can be taken into account. Under system overload, processing of the critical task most be done.

3. Management of manufacturing process and control of the military system are the application area of real time system.

## Real-time and Multimedia System:

1. A piece of music most be played back at a constant speed.

2. To fulfil the timing requirement of the continuous media, the operating system most use real time scheduling techniques.

3. The real-time requirements of traditional real-time scheduling techniques and control system in application areas such as factory automation, air craft piloting have high demand of security and fault tolerance.

4. The requirement desire from this demand somehow differentiates real time scheduling efforts applied to continuous media.

5. Multimedia system uses the different scenario then traditional real time operating system in real time requirements.

## Digital Media

Digital media is a form of electronic media where data are stored in digital form. It can refer to the technical aspect of storage and transmission (e.g. hard disk drives or computer networking) of information or to the "end product", such as digital video, augmented reality, digital signage, digital audio, or digital art .

Definition of digital media is "the creative convergence of digital arts, science, technology and business for human expression, communication, social interaction and education". Examples of digital media types include:

Windows Media Audio (WMA), Windows Media Video (WMV), MP3, JPEG, and AVI. For information about the digital media types supported by Windows Media Player, see the article “Information about the Multimedia file types that Windows Media Player supports.

## Hypermedia

Hypermedia is used as a logical extension of the term hypertext in which graphics, audio, video, plain text and hyperlinks intertwine to create a generally non-linear medium of information. This contrasts with the broader term *multimedia*, which may be used to describe non-interactive linear presentations as well as hypermedia. It is also related to the field of electronic literature. The term was first used in a 1965 article by Ted Nelson.

The World Wide Web is a classic example of hypermedia, whereas a no interactive cinema presentation is an example of standard multimedia due to the absence of hyperlinks.

The first hypermedia work was, arguably, the Aspen Movie Map. Atkinson's HyperCard popularized hypermedia writing, while a variety of literary hypertext and hypertext works, fiction and nonfiction, demonstrated the promise of links.

Most modern hypermedia is delivered via electronic pages from a variety of systems including media players, web browsers, and stand-alone applications (i. e., software that does not require network access). Audio hypermedia is emerging with voice command devices and voice browsing.

## Image Authoring tools

Image Authoring tools is so known as *authorware*, a program that helps you write *hypertext* or *multimedia* applications. Authoring tools usually enable you to create a final application merely by

linking together objects, such as a paragraph of text, an illustration, or a song. By defining the objects' relationships to each other, and by sequencing them in an appropriate order, authors (those who use authoring tools) can produce attractive and useful graphics applications.

Most authoring systems also support a scripting language for more sophisticated applications. The distinction between authoring tools and programming tools is not clear-cut.

Typically, though, authoring tools require less technical knowledge to master and are used exclusively for applications that present a mixture of textual, graphical, and audio data.

## Multimedia Authoring Tools

Multimedia authoring tools provide the important framework you need for organizing and editing the elements of multimedia like graphics, sounds, animations and video clips. Authoring tools are used for designing interactivity and the user interface, for presentation your project on screen and assembling multimedia elements into a single cohesive project.

Authoring software provides an integrated environment for binding together the content and functions of your project. Authoring systems typically include the ability to create, edit and import specific types of data; assemble raw data into a playback sequence or cue sheet and provide structured method or language for responding to user input.

## Types of Authoring Tools

The various authoring tools can be classified in three categories based on the metaphor used for sequencing or organizing multimedia elements and events.

- Card or page based tools
- Icon base, event driven tools
- Time base and presentation tools

## Card or page based tools

In these authoring systems, elements are organized as pages of a book or a stack of cards. These tools are best used when the bulk of your content consists of elements that can be viewed individually, like the pages of a book or cards in a card file.

The authoring system lets you link these pages or cards into organized sequences. You can

jump, on command, to any page you wish in the structured navigation pattern. It allows you to play sound elements and launch animations and digital video.

## Icon based, event driven tools Multimedia Systems

In these authoring system, multimedia elements and interactions cues are organized as objects in a structural framework or process. Icon base, event-driven tools simplify the organization of your project and typically display flow diagrams of activities along branching paths. In complicate structures, thischarting is particularly useful during development.

## Time based tools

In these authoring systems, elements and events are organized along a timeline, with resolutions as high or higher than 1/30 second. Time based tools are best to use when you have a message with a beginning and an end.

Sequentially organized graphic frames are played back at a speed that you can set. Other elements are triggered back at a given time or location in the sequence of events. The more powerful time based tools let you program jumps to any location in a sequence, thereby adding navigation and interactive control.

## Features of Authoring Tools

Features of multimedia authoring tools are as mention below:

- Editing features
- Organizing features
- Programming features
- Interactive features
- Performance tuning features
- Playback features
- Delivery features

- Cross-Platform features
- Internet Playability

Now let us discuss each of them in detail.

## Editing features:

The elements of multimedia – image, animation, text, digital audio and MIDI music and video clips –need to be created, edited and converted to standard file formats and the specialized applications provide these capabilities. Editing tools for these elements, particularly text and still images are often included in your authoring system.

## Organizing features

The organization, design and production process for multimedia involves storyboarding and flowcharting. Some authoring tools provide a visual flowcharting system or overview facility for illustrating your project's structure at a macro level.

Storyboards or navigation diagrams too can help organize a project. Because designing the interactivity and navigation flow of you project often requires a great deal of planning and programming effort, your story board should describe not just graphics of each screen but the interactive elements as well. Features that help organize your material, such as those provided by Super Edit, Authorware, IconAuthor and other authoring systems, are a plus.

## Programming features

- Authoring tools that offer a very high level language or interpreted scripting environment for navigation control and for enabling user inputs – such as Macromedia Director, Macromedia Flash, HyperCard, MetaCard and ToolBook are more powerful.
- The more commands and functions provided in the scripting language, the more powerful the authoring system.
- As with traditional programming tools looks for an authoring package with good debugging facilities, robust text editing and online syntax reference.
- Other scripting augmentation facilities are advantages as well.
- In complex projects you may need to program custom extensions of the scripting language for

direct access to the computer's operating system.

- Some authoring tools offer direct importing of preformatted text, including facilities, complex text search mechanisms and hyper linkage tools.

- These authoring systems are useful for development of CD-ROM information products online documentation products, online documentation and help systems and sophisticated multimedia enhanced publications With script you can perform computational tasks; sense and respond to user input; create character, icon and motion animation; launch other application; and control external multimedia devices.

## Interactivity features

- Interactivity empowers the end users of your project by letting them control the content and flow of information.

- Authoring tools should provide one or more levels of interactivity:

  Simple branching, which offers the ability to go to another section of the multimedia production. Conditional branching, which supports a go-to based on the result of IF-THEN decision or events.

- A structured language that supports complex programming logic, such as nested IF-THENs, subroutines, event tracking and message passing among objects and elements.

## Performance tuning features

Complex multimedia projects require extra synchronization of events. Accomplishing synchronization is difficult because performance varies widely among the different computers used for multimedia development and delivery. Some authoring tools allow you to lock a production's playback speed to specified computer platform, but other provides no ability what so ever to control performance on various systems.

## Playback features

When you are developing multimedia project, your will continually assembling elements and testing to see how the assembly looks and performs. Your authoring system should let you build a segment or part of your project and then quickly test it as if the user were actually using it.

## Delivery features

- Delivering your project may require building a run-time version of the project using the multimedia authoring software.
- A run-time version allows your project to play back without requiring the full authoring software and all its tools and editors.
- Many times the run time version does not allow user to access or change the content, structure and programming of the project.
- If you are going to distribute your project widely, you should distribute it in the run-time version.

## Cross-Platform features

- It is also increasingly important to use tools that make transfer across platforms easy.
- For many developers, the Macintosh remains the multimedia authoring platform of choice, but 80% of that developer's target market may be Windows platforms.
- If you develop on a Macintosh, look for tools that provide a compatible authoring system for Windows or offer a run-time player for the other platform.

### Internet Playability

- Due to the Web has become a significant delivery medium for multimedia, authoring systems typically provide a means to convert their output so that it can be delivered within the context of HTML or DHTML, either with special plug-in or embedding Java, JavaScript or other code structures in the HTML document.

## Image file formats

- Image file formats are standardized means of organizing and storing digital images. Image files are composed of digital data in one of these formats that can be rasterized for use on a computer display or printer.
- An image file format may store data in uncompressed,compressed, or vector formats. Once rasterized, an image becomes a grid of pixels, each of which has a number of bits to designate its color equal to the color depth of the device displaying it.

CONTINUATION OF THE BOOK.....

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