Study Notes

1.1 Introduction to Multimedia

Multimedia is the field of computer science that integrates different forms of information and represents in the form of audio, video, and animation along with traditional media i.e., text, graphics/drawings, images, etc.

Meaning of multimedia

Multi – It means more than one.
Medium- It is singular and it means intermediary
Media- It is plural and it means conveying the information.

The advanced computer system is a great example of modern multimedia.
The information presented through multimedia has better quality and capability, as it can be understood easily.
In other words, multimedia computer system stores, represents, processes, manipulates, and makes available to users.

Features of Multimedia:

- Its CPU is very fast, as it need to process large amount of data.
- It has huge storage capacity.
  It has huge memory power that helps in running heavy data programs.
- It has high capacity graphic card that helps in displaying graphics, animation, video, etc.
- The sound system makes it easy to listen to audio.

With all the features (discussed above), a computer system is also known as high end multimedia computer system.

1.2 History of Multimedia

- Is the integration of Arts, Media, and Technology
- Requires a narrative sequence: linear or nonlinear.
- Allows the interaction between content according to personal needs.
- May involve the concept of immersion –virtual reality.

Advantages of using Multimedia

- It is very user-friendly. It doesn't take much energy out of the user, in the sense that you can sit and watch the presentation, you can read the text and hear the audio.
- It is multi sensorial. It uses a lot of the user's senses while making use of multimedia, for example hearing, seeing and talking.

- It is integrated and interactive. All the different mediums are integrated through the digitization process. Interactivity is heightened by the possibility of easy feedback.
- It is flexible. Being digital, this media can easily be changed to fit different situations and audiences.
- It can be used for a wide variety of audiences, ranging from one person to a whole group.

Disadvantages of using Multimedia

- Information Overload: Because it is so easy to use, it can contain too much information at once.
- It takes time to compile. Even though it is flexible, it takes time to put the original draft together.
- IT can be expensive. Multimedia makes use of a wide range of resources, which can cost you a large amount of money.
- Too much makes it unpractical. Large files like video and audio has an effect of the time it takes for your presentation to load. Adding too much can mean that you have to use a larger computer to store files.

Multimedia Components

Text: It contains alphanumeric and some other special characters. Keyboard is usually used for input of text.

Graphics: It is a technology to generate, represent, process, manipulate, and display pictures. It is one of the most important components of multimedia application.

Animation: Computer animation is a modern technology, which helps in creating, developing, sequencing, and displaying a set of images (technically known as frames). Animation gives visual effects or motion very similar to that of a video file.

Audio: This technology records, synthesizes, and plays audio (sound). There are many learning courses and different instructions that can be delivered through this mediun appropriately.

Video: This technology records, synthesizes, and display images (known as frames) in such sequences (at a fixed speed) that makes the creation appear as moving; this is how we see a completely developed video. In order to watch a video without any interruption, video device must display 25 to 30 frames/second.

1.3 Steps for Developing Multimedia presentation

- Determine the purpose.
- Identify the Target Audience

- Storyboard the content.

The Stages of a Multimedia project

Planning and Costing: Before you begin developing, plan out the writing skills, graphics, art, music, video and other multimedia expertise that you will require. Develop a creative "look and feel" (what a user sees on a screen and how he or she interacts with it), as well as a structure and a navigational system that will allow the viewer to visit the messages and content. Estimate the time you'll need to do all the elements, and then prepare a budget. Work up a short prototype or proof of concept, a simple, working example to demonstrate whether or not your idea is feasible.

Designing and Producing: Perform each of the planned tasks to create a finished product. During this stage, there may be many feedback cycles with a client until the client is happy.

Testing: Test your program to make sure that they meet the objectives of your project, work properly on the intended delivery platforms, and meet the needs of your client or end user.

Delivery: Package and deliver the project to the end user. Be prepared to follow up over time with tweaks, repairs, and upgrades.

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Medium

Describes medium as a means for distribution and presentation of information. Examples of a medium are text, graphics, speech and music.

1. Perception Medium: Perception media help humans to sense their environment.

Question: How do humans perceive information in a computer environment?

Answer: The perception of information occurs mostly through seeing or hearing the information, although tactile perception increases its presence in a computer environment. For the perception of information through seeing, the visual media such as text, image and video are used. For the perception of information through hearing, auditory media such as music, noise and speech are relevant.

2. The Representation Medium: Representation media are characterized by internal computer representation of information.

Question: How is the computer information coded?

Answer: Various formats are used to represent media information in a computer.

- A text character is coded in ASCII code.
- Graphics are coded according to CEPT video text standard. The graphics standard GKS can also serve as a basis for coding.
- An audio stream can be represented using a simple Pulse Coding Method (PCM) with a linear quantization of 16 bits per sample.
- An image can be coded in JPEG format.
- A combined audio/video sequence can be coded in different TV standards formats(PAL,SECAM, NTSC), and stored in the computer using a MPEG format.

3. The Presentation Medium: Presentation media refer to the tools and devices for the input and output of information.

Question: Through which medium is information delivered by the computer, or introduced into the computer?

Answer: The media, e.g., paper, screen and speakers are used to deliver the information by the computer (output media); keyboard, mouse, camera and microphone are theinput data.

4. The Storage Medium: Storage media refer to data carrier which enables storage of information. However, the storage of data is not limited only to the available components of a computer. Therefore, paper is also a storage medium.

Question: Where will the information be stored?

Answer: Microfilm, floppy disk, hard disk, and CD-ROM are examples of storage medium.

What is Multimedia in terms of computing?

Digitized: All media including audio/video are represented in digital format.

Distributed: The information conveyed is remote, either pre-produced and stored or produced in real-time, distributed over networks.

Interactive: It is possible to affect the information received and send own information in a non-trivial way beyond start, stop, and fast forward.

Integrated: The media are treated in a uniform way, presented in an orchestrated way, but are possible to manipulate independently.

1.4 Authoring Systems

Multimedia authoring tools provide the important framework you need for organizing and editing the elements of your multimedia project, including graphics, sound, animation, and video clips. Authoring tools are used for designing interactivity and the user interface, for presenting your project onscreen, and for assembling diverse multimedia elements into a single cohesive product.

Authoring software provides an integrated environment for binding together the content and functions of your project, and typically includes everything you need to create, edit, and import specific types of data; assemble raw data into a playback sequence or cue sheet; and provides a structured method or language for responding to user input. With multimedia authoring software, you can make:

Video productions

Animation

Games

Interactive web sites

Presentations

Interactive training, etc.

Helpful Ways to Get Started;

Use templates that people have already created to set up your production. These can include appropriate styles for all sorts of data, font sets, color arrangements, and particular page setups that will save your time.

Use Wizards when they are available- they may save you much time and pre-setup work.

Use named styles, because if you take the time to create your own it will really slow you down.

Create tables, which you can build with a few keystrokes in many programs, and it makes the production look credible.

Help readers find information with tables of content, running headers and footers, and indexes.

Improve document appearance with bulleted and numbered lists and symbols.

Types of Authoring Tools:

Each multimedia project you undertake will have its own underlying structure and purpose will require features and functions.

E-learning modules such as those seen on PDAs, MP3 players, and inta-college networks may include web-based teaching material, multimedia CD-ROMs or websites, blogs, games, etc.

The various multimedia authoring tools can be categorized into three groups, based on the method used for sequencing or organizing multimedia elements and events.

1.4.1 Card- or Page- Based Authoring Tools

Are authoring systems wherein the elements are organized as a stack of cards or pages of a book, respectively. These tools are best used when the bulk of your content consists of elements that can be viewed individually, letting the authoring system link these pages or cards into organized sequences.

Page-or Card-based authoring systems such as Live Code contain media objects: buttons, text fields, graphics, objects, background, and even the project itself. The characteristics of objects are defined by properties (highlighted, bold, red, hidden, active, and locked and so on). Each object may contain a programming script, usually a property of that object activated when an event (such as mouse click) related to that object occurs.

1.4.2 Icon- or Object- Based Authoring Tools

Are event-driven authoring systems where in multimedia elements and interaction cues (events) are organized as objects in a structural framework or process?

Icon- or object based, event-driven tools simplify the organization of your project and typically display flow diagrams of activities along branching paths.

In complicated navigational structures, this charting is particularly useful during development.

Icon-based, event driven tools provide a visual programming approach to organizing and presenting multimedia.

First, you build a structure or flowchart of events, tasks, and decisions by dragging appropriate icons from a library.

These icons can include menu choices, graphic images, sound, and computation. The flowchart graphically depicts the project logic.

When the structure is built, you can add your content: text, graphics, and animation, sound and video movies.

Then, to refine your project, you edit your logical structure by rearranging and fine-tuning the icons and their properties.

1.4.3 Time- Based Authoring Tools

Are authoring systems wherein elements and events are organized along a timeline, with resolutions as high as 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 (such as audio events) are triggered 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.

Flash is a time-based development environment.