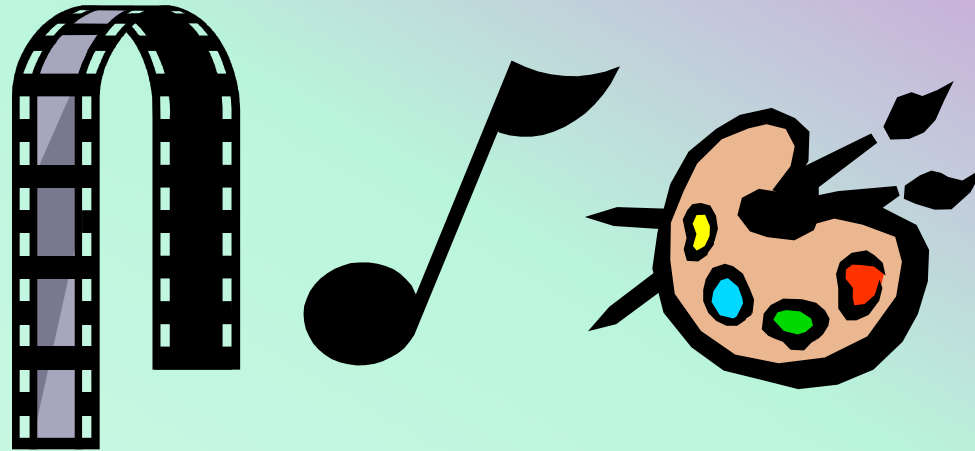


Pengantar Pemrograman Multimedia



Dosen : Nuraini Purwandari

OVERVIEW DOSEN

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Peraturan & Nilai

1. Absensi Kehadiran min 75%
2. Tugas Presentasi Kelompok
3. Quiz min. 2x
4. UTS (PG+Essai)



Note :

Catatan, softcopy slide, fotocopyan,
download materi selama perkuliahan .

SAP Pengantar P.MULTIMEDIA

1. DASAR-DASAR MULTIMEDIA
2. KONTEN MULTIMEDIA
3. PROSES PRODUKSI KONTEN MULTIMEDIA
4. KOMPRESI DATA
5. BASIS DATA MULTIMEDIA
6. MULTIMEDIA DEVELOPING TOOLS
7. PENYIMPANAN & PENGAMBILAN DATA MULTIMEDIA
8. SCRIPTING LANGUAGE (3D GRAFIK, J2ME, JAVA APPLET)
9. XML, XHTML

Download di <http://sap.gunadarma.ac.id>

DEFINISI MULTIMEDIA

Multimedia

MULTI [latin nouns] : banyak; bermacam-macam

MEDIUM [latin] : sesuatu yang dipakai untuk menyampaikan atau membawa sesuatu

MEDIUM [American Heritage Electronic Dictionary, 1991] : alat untuk mendistribusikan dan mempresentasikan informasi

Multimedia dapat diartikan sebagai penggunaan beberapa media yang berbeda untuk menggabungkan dan menyampaikan informasi dalam bentuk text, audio, grafik, animasi, dan video.



DEFINISI MULTIMEDIA

Beberapa definisi menurut beberapa ahli :

1. Kombinasi dari komputer dan video (*Rosch, 1996*)
2. Kombinasi dari tiga elemen: suara, gambar, dan teks (*McComick, 1996*)
3. Kombinasi dari paling sedikit dua media input atau output. Media ini dapat berupa audio (suara, musik), animasi, video, teks, grafik dan gambar (*Turban dan kawan-kawan, 2002*)
4. Alat yang dapat menciptakan presentasi yang dinamis dan interaktif yang mengkombinasikan teks, grafik, animasi, audio dan video (*Robin dan Linda, 2001*)
5. Multimedia dalam konteks komputer menurut Hofstetter 2001 adalah : pemanfaatan komputer untuk membuat dan menggabungkan teks, grafik, audio, video, dengan menggunakan tool yang memungkinkan pemakai berinteraksi, berkreasi, dan berkomunikasi.

MENGAPA MULTIMEDIA ?

Multimedia dapat digunakan dalam:

1. Bidang periklanan yang efektif dan interaktif
2. Bidang pendidikan dalam penyampaian bahan pengajaran secara interaktif dan dapat mempermudah pembelajaran karena didukung oleh berbagai aspek: suara, video, animasi, teks, dan grafik
3. Bidang jaringan dan internet yang membantu dalam pembuatan website yang menarik, informatif, dan interaktif

BAGAIMANA SISTEM BISA DISEBUT SEBAGAI SISTEM MULTIMEDIA?

1. Kombinasi Media

Sistem disebut sistem multimedia jika kedua jenis media (continuous/discrete) dipakai. Contoh media diskrit : teks dan gambar, dan media kontinu adalah audio dan video.

2. Independence

Aspek utama dari jenis media yang berbeda adalah keterkaitan antar media tersebut. Sistem disebut sistem multimedia jika tingkat ketergantungan/ keterkaitan antar media tersebut rendah.

3. Computer-supported Integration

Sistem harus dapat melakukan pemrosesan yang dikontrol oleh komputer. Sistem dapat diprogram oleh system programmer/ user.

Components of Multimedia

- Multimedia involves multiple modalities of text, audio, images, drawings, animation, and video. Examples of how these modalities are put to use:
 1. Video teleconferencing.
 2. Distributed lectures for higher education.
 3. Tele-medicine.
 4. Co-operative work environments.
 5. Searching in (very) large video and image databases for target visual objects.
 6. "Augmented" reality: placing real-appearing computer graphics and video objects into scenes.

Multimedia Research Topics and Projects

- To the computer science researcher, multimedia consists of a wide variety of topics:
 1. **Multimedia processing and coding:** multimedia content analysis, content-based multimedia retrieval, multimedia security, audio/image/video processing, compression, etc.
 2. **Multimedia system support and networking:** network protocols, Internet, operating systems, servers and clients, quality of service (QoS), and databases.
 3. **Multimedia tools, end-systems and applications:** hypermedia systems, user interfaces, authoring systems.
 4. **Multi-modal interaction and integration:** “ubiquity” — web-everywhere devices, multimedia education including Computer Supported Collaborative Learning, and design and applications of virtual environments.

Current Multimedia Projects

- Many exciting research projects are currently underway. Here are a few of them:
 1. **Camera-based object tracking technology:** tracking of the control objects provides user control of the process.
 2. **3D motion capture:** used for multiple actor capture so that multiple *real* actors in a *virtual* studio can be used to automatically produce realistic *animated* models with natural movement.
 3. **Multiple views:** allowing photo-realistic (video-quality) synthesis of virtual actors from several cameras or from a single camera under differing lighting.
 4. **3D capture technology:** allow synthesis of highly realistic facial animation from speech.



5. **Specific multimedia applications:** aimed at handicapped persons with low vision capability and the elderly — a rich field of endeavor.
6. **Digital fashion:** aims to develop smart clothing that can communicate with other such enhanced clothing using wireless communication, so as to artificially enhance human interaction in a social setting.
7. **Electronic Housecall system:** an initiative for providing interactive health monitoring services to patients in their homes
8. **Augmented Interaction applications:** used to develop interfaces between real and virtual humans for tasks such as augmented storytelling.

1.2 Multimedia and Hypermedia

- History of Multimedia:

1. **Newspaper:** perhaps the *first* mass communication medium, uses text, graphics, and images.
2. **Motion pictures:** conceived of in 1830's in order to observe motion too rapid for perception by the human eye.
3. **Wireless radio transmission:** Guglielmo Marconi, at Pontecchio, Italy, in 1895.
4. **Television:** the new medium for the 20th century, established video as a commonly available medium and has since changed the world of mass communications.

Hypermedia and Multimedia

- A **hypertext** system: meant to be read nonlinearly, by following links that point to other parts of the document, or to other documents (Fig. 1.1)
- **HyperMedia**: not constrained to be text-based, can include other media, e.g., graphics, images, and especially the continuous media — sound and video.
 - The World Wide Web (WWW) — the best example of a hypermedia application.
- **Multimedia** means that computer information can be represented through audio, graphics, images, video, and animation in addition to traditional media.

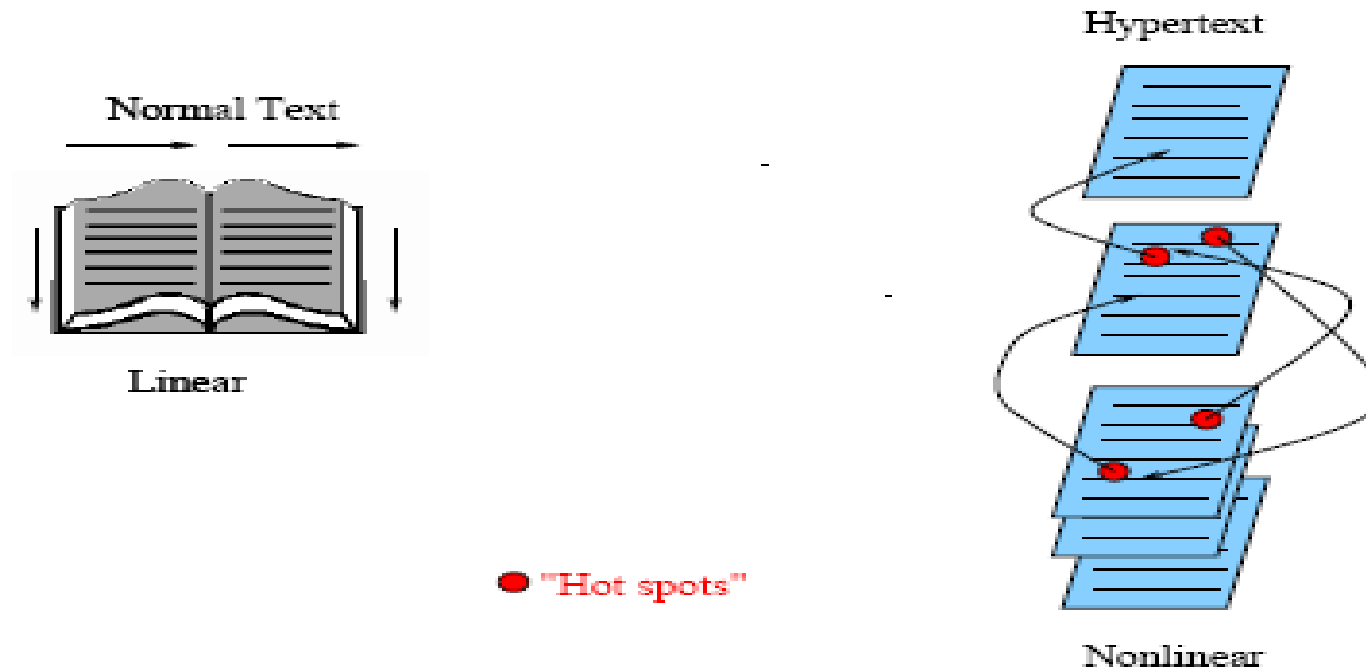


Fig 1.1: Hypertext is nonlinear



- Examples of typical present multimedia applications include:
 - Digital video editing and production systems.
 - Electronic newspapers/magazines.
 - World Wide Web.
 - On-line reference works: e.g. encyclopedias, games, etc.
 - Home shopping.
 - Interactive TV.
 - Multimedia courseware.
 - Video conferencing.
 - Video-on-demand.
 - Interactive movies.

1.4 Overview of Multimedia Software Tools

- The categories of software tools briefly examined here are:
 1. **Music Sequencing and Notation**
 2. **Digital Audio**
 3. **Graphics and Image Editing**
 4. **Video Editing**
 5. **Animation**
 6. **Multimedia Authoring**

Music Sequencing and Notation

- **Cakewalk:** now called Pro Audio.
 - The term **sequencer** comes from older devices that stored sequences of notes (“events”, in MIDI).
 - It is also possible to insert WAV files and Windows MCI commands (for animation and video) into music tracks (MCI is a ubiquitous component of the Windows API.)
- **Cubase:** another sequencing/editing program, with capabilities similar to those of Cakewalk. It includes some digital audio editing tools.
- **Macromedia Soundedit:** mature program for creating audio for multimedia projects and the web that integrates well with other Macromedia products such as Flash and Director.

Digital Audio

- **Digital Audio** tools deal with accessing and editing the actual sampled sounds that make up audio:
 - **Cool Edit:** a very powerful and popular digital audio toolkit; emulates a professional audio studio — multitrack productions and sound file editing including digital signal processing effects.
 - **Sound Forge:** a sophisticated PC-based program for editing audio WAV files.
 - **Pro Tools:** a high-end integrated audio production and editing environment — MIDI creation and manipulation; powerful audio mixing, recording, and editing software.

Graphics and Image Editing

- **Adobe Illustrator:** a powerful publishing tool from Adobe. Uses vector graphics; graphics can be exported to Web.
- **Adobe Photoshop:** the standard in a graphics, image processing and manipulation tool.
 - Allows layers of images, graphics, and text that can be separately manipulated for maximum flexibility.
 - **Filter factory** permits creation of sophisticated lighting-effects filters.
- **Macromedia Fireworks:** software for making graphics specifically for the web.
- **Macromedia Freehand:** a text and web graphics editing tool that supports many bitmap formats such as GIF, PNG, and JPEG.

Video Editing

- **Adobe Premiere:** an intuitive, simple video editing tool for **nonlinear** editing, i.e., putting video clips into any order:
 - Video and audio are arranged in “tracks” .
 - Provides a large number of video and audio tracks, superimpositions and virtual clips.
 - A large library of built-in transitions, filters and motions for clips ⇒ effective multimedia productions with little effort.
- **Adobe After Effects:** a powerful video editing tool that enables users to add and change existing movies. Can add many effects: lighting, shadows, motion blurring; layers.
- **Final Cut Pro:** a video editing tool by Apple; Macintosh only.

Animation

- **Multimedia APIs:**

- **Java3D:** API used by Java to construct and render 3D graphics, similar to the way in which the Java Media Framework is used for handling media files.
 1. Provides a basic set of object primitives (cube, splines, etc.) for building scenes.
 2. It is an abstraction layer built on top of OpenGL or DirectX (the user can select which).
- **DirectX :** Windows API that supports video, images, audio and 3-D animation
- **OpenGL:** the highly portable, most popular 3-D API.

- **Rendering Tools:**

- **3D Studio Max:** rendering tool that includes a number of very high-end professional tools for character animation, game development, and visual effects production.
 - **Softimage XSI:** a powerful modeling, animation, and rendering package used for animation and special effects in films and games.
 - **Maya:** competing product to Softimage; as well, it is a complete modeling package.
 - **RenderMan:** rendering package created by Pixar.
- **GIF Animation Packages:** a simpler approach to animation, allows very quick development of effective small animations for the web.

Multimedia Authoring

- **Macromedia Flash:** allows users to create interactive movies by using the score metaphor, i.e., a timeline arranged in parallel event sequences.
- **Macromedia Director:** uses a movie metaphor to create interactive presentations — very powerful and includes a built-in scripting language, **Lingo**, that allows creation of complex interactive movies.
- **Authorware:** a mature, well-supported authoring product based on the **Iconic/Flow-control** metaphor.
- **Quest:** similar to Authorware in many ways, uses a type of flowcharting metaphor. However, the flowchart nodes can encapsulate information in a more abstract way (called **frames**) than simply subroutine levels.



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