Introduction to Multimedia

Lecture 01

Reading Files with Python

Writing to a File in python

Multimedia definition

❖ Multimedia can have many dentitions these include:

A computer system perspective dentition

Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics/drawings, images).

Multimedia definition

A good general working dentition for this module is

Multimedia: is the field concerned with the computer controlled integration of text, graphics, drawings and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

Multimedia: Past and Present

I.   Early History of Multimedia

II.   Hypermedia, WWW, and Internet

III. Multimedia in the New Millennium

Early History of Multimedia

- begin with newspapers

- Alphonse Giroux built the first commercial camera with a double-box design

- Thomas Alva Edison's phonograph, invented in 1877,was the first device that was able to record and reproduce sound

- Phonographs were later improved by Alexander Graham Bell.

A vintage dry-plate camera. E&H T

An Edison phonograph

Early History of Multimedia

❖ The gramophone record was one of the dominant audio recording formats throughout the twentieth century.

❖ From the mid-1980s, gramophone use declined sharply because of the rise of audio tapes, and later the compact disc (CD) and other digital recording formats

Early History of Multimedia

⬡ Motion pictures were originally conceived of in the 1830s.

⬡ Silent feature films appeared from 1910.

⬡ In 1895, Guglielmo Marconi conducted the first wireless radio transmission at Italy.

⬡ TV, was the new medium for the twentieth century.

⬡ All these media mentioned above are in the analog format

Hypermedia, WWW, and Internet

- ❖ book is a linear medium.

- ❖ In contrast, a hypertext system is meant to be read nonlinearly

- ❖ Douglas Engelbart at 1968 produce an early hypertext program {On-Line System (NLS)}.

Normal Text

Linear

Hypertext

● Hot spots

Nonlinear
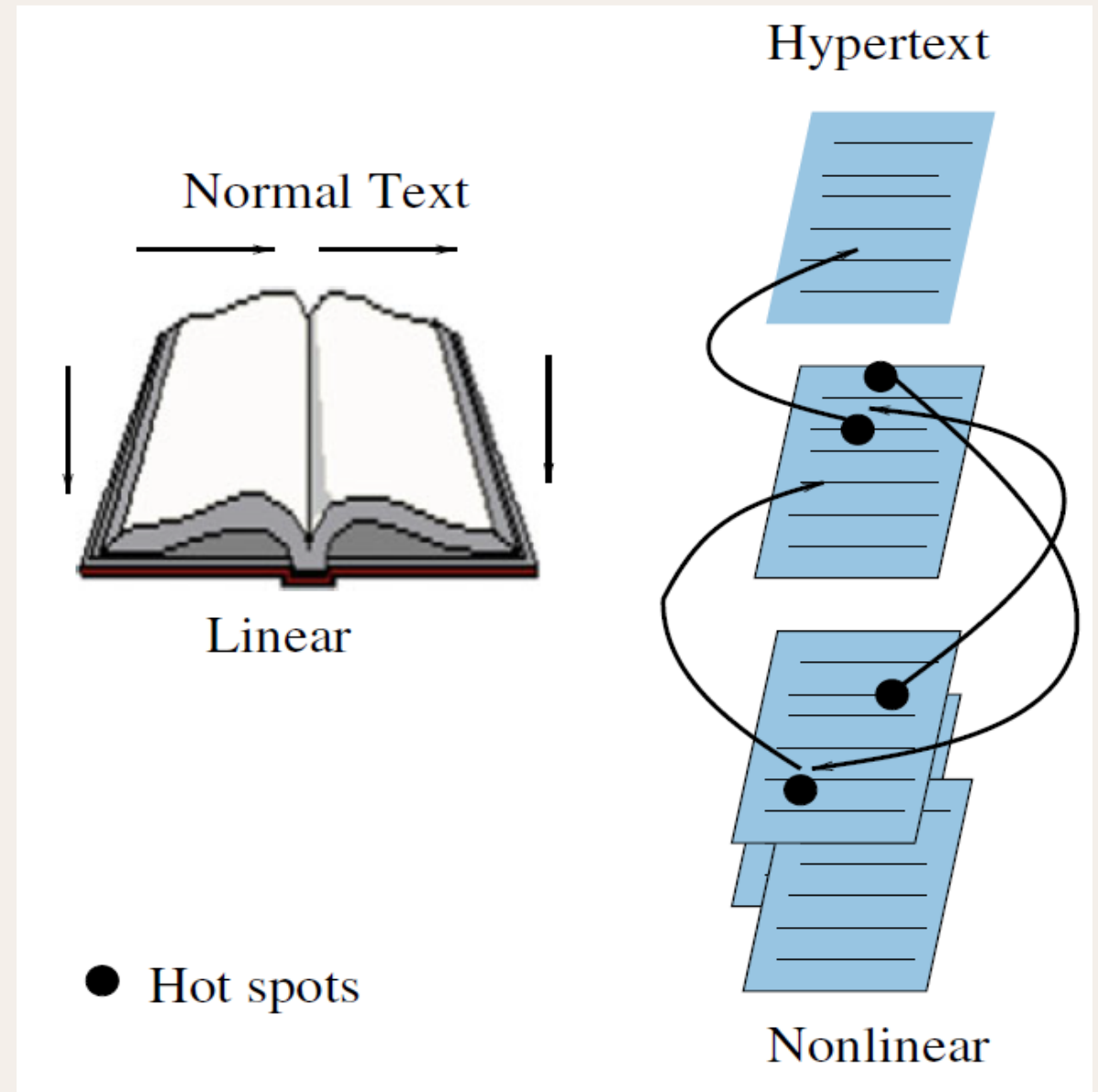
Hypermedia, WWW, and Internet

❖ **Hypermedia**, again first introduced by Ted Nelson around 1965, went beyond text-only. It includes a wide array of media, such as graphics, images, and especially the continuous media—sound and video, and links them together.

(HTML)

- **Hyper media**, Charles Goldfarb, Edward Mosher developed the **Generalized Markup Language** (**GML**) for IBM.

- In 1986, the ISO released a final version of the **Standard Generalized Markup Language** (**SGML**).

- **Hypertext Markup Languages** (**HTML**) a language for publishing hypermedia on the web, It is defined using SGML and some other elements that describe generic document structure and formatting.

(HTML)

- **Extensible Markup Language (XML)**: HTML's full form is Hypertext Markup Language, while XML is an Extensible Markup Language.

- The purpose of HTML is to display data and focus on how the data looks. Therefore, HTML describes a web page's structure and displays information, whereas XML structures, stores, and transfers information and describes what the data is.

Multimedia in the New Millennium

- **2000**, WWW size was estimated at over 1 billion pages
- **2003** Skype was released
- **2004** Web 2.0 was recognized
- **2005** YouTube was created
- **2006** Twitter was created
- **2007** Apple launched the first generation of iPhone
- **2010** Netflix, which used to be a DVD rental service provider
- **2012** HTML5 subsumes the previous version
- **2020** Due to the outbreak of corona virus (COVID-19)

Multimedia Software Tools

I. *Music Sequencing and Notation*

- Cakewalk by Bandlab
- Finale, Sibelius

II. *Digital Audio*

- Adobe Audition
- Sound Forge
- Avid Pro Tools

III. *Graphics and Image Editing*

- Adobe Illustrator
- Adobe Photoshop
- GIMP

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IV. *Video Editing*

- Adobe Premiere
- Video Editing
- CyberLink PowerDirector
- Adobe After Effects
- iMovie
- Final Cut Pro

V. *Animation*

- Multimedia APIs
  - ➢ Java3D
  - ➢ DirectX,
  - ➢ OpenGL

v. **Animation**

- Animation Software
  - ➢ Aut odesk 3ds Max
  - ➢ Autodesk Maya,
  - ➢ Blender
- GIF Animation Packages
  - ➢ Animate (Linux)
  - ➢ Filmora (windows)

VI.   *Multimedia Authoring*

- Adobe Animate

- Adobe Director

- Adobe Dreamweaver

VII.   *Multimedia Broadcasting*

- OBS, XSplit

Multimedia Software Tools

Multimedia: Past and Present

I.   Multimedia Presentation

II.   Data Compression

III. Multimedia producing, Sharing Distribution

IV.   Some Useful Editing and Authoring Tools

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Multimedia Presentation

✦ In this section, we briefly outline some effects to keep in mind for presenting multimedia content as well as some useful guidelines for content design

Graphics Styles

- Careful thought has gone into combinations of **color schemes** and **how lettering is perceived** in a presentation.

- Human visual dynamics are considered in regard to how such presentations must be constructed.

Color Principles and Guidelines

✤ Some color schemes and art styles are best combined with a certain theme or style.

➢ **Color scheme:** is used to describe the overall selection of colors in an artwork.

➢ **Art styles:** are oil paints, watercolors, colored pencils, and pastels.

✤ A general hint is to not use too many colors, as this can be distracting

Fonts

❖ For effective visual communication, large fonts (18–36 points) are best, with no more than six to eight lines per screen.
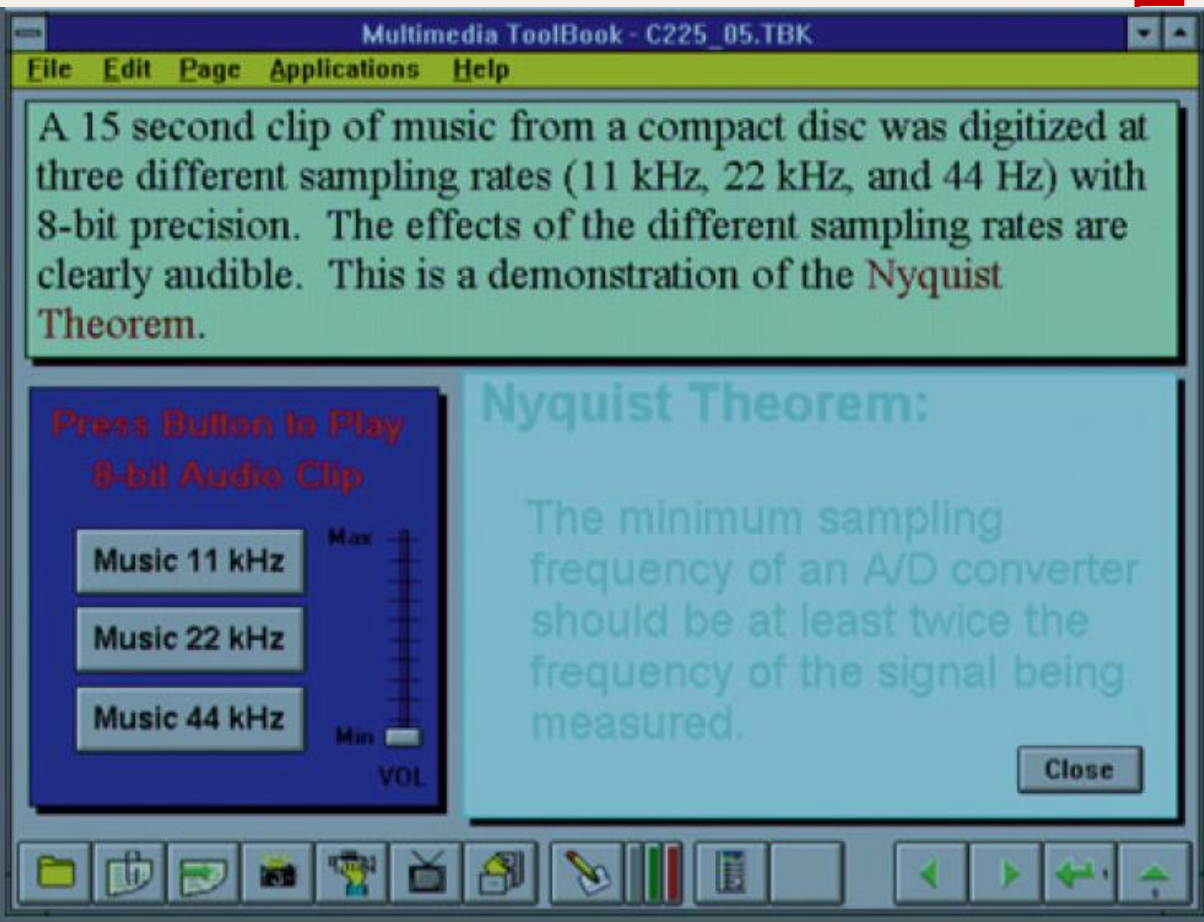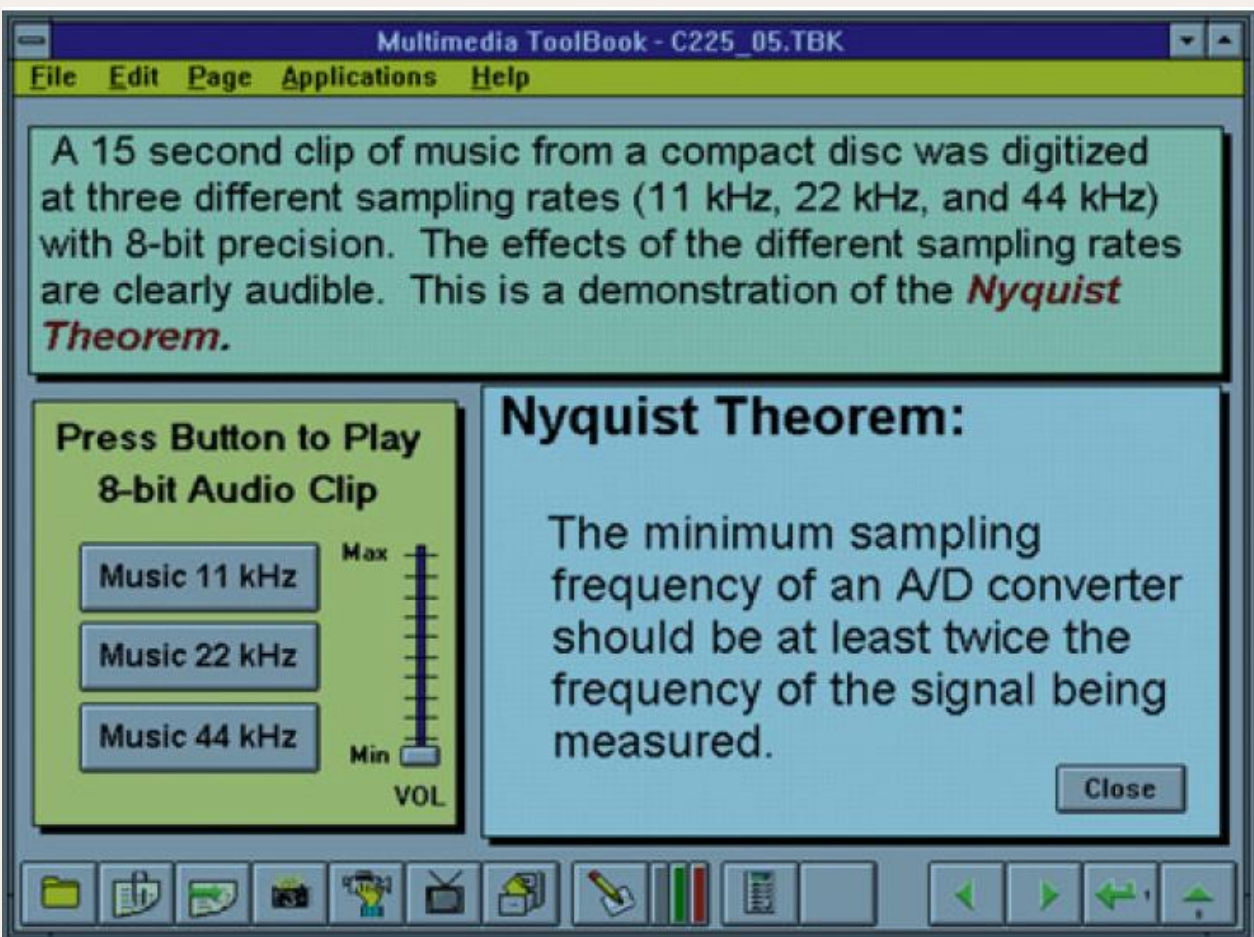
A Color Contrast Program

- The simplest approach to making readable colors on a screen is to use the principal complementary color as the background for text.

- if the text color is some triple (red, green, blue), or (R, G, B), a legible color for the background is likely given by that color subtracted from the maximum $$(R, G, B) \Rightarrow (1-R, 1-G, 1-B)$$

A Color Contrast Program
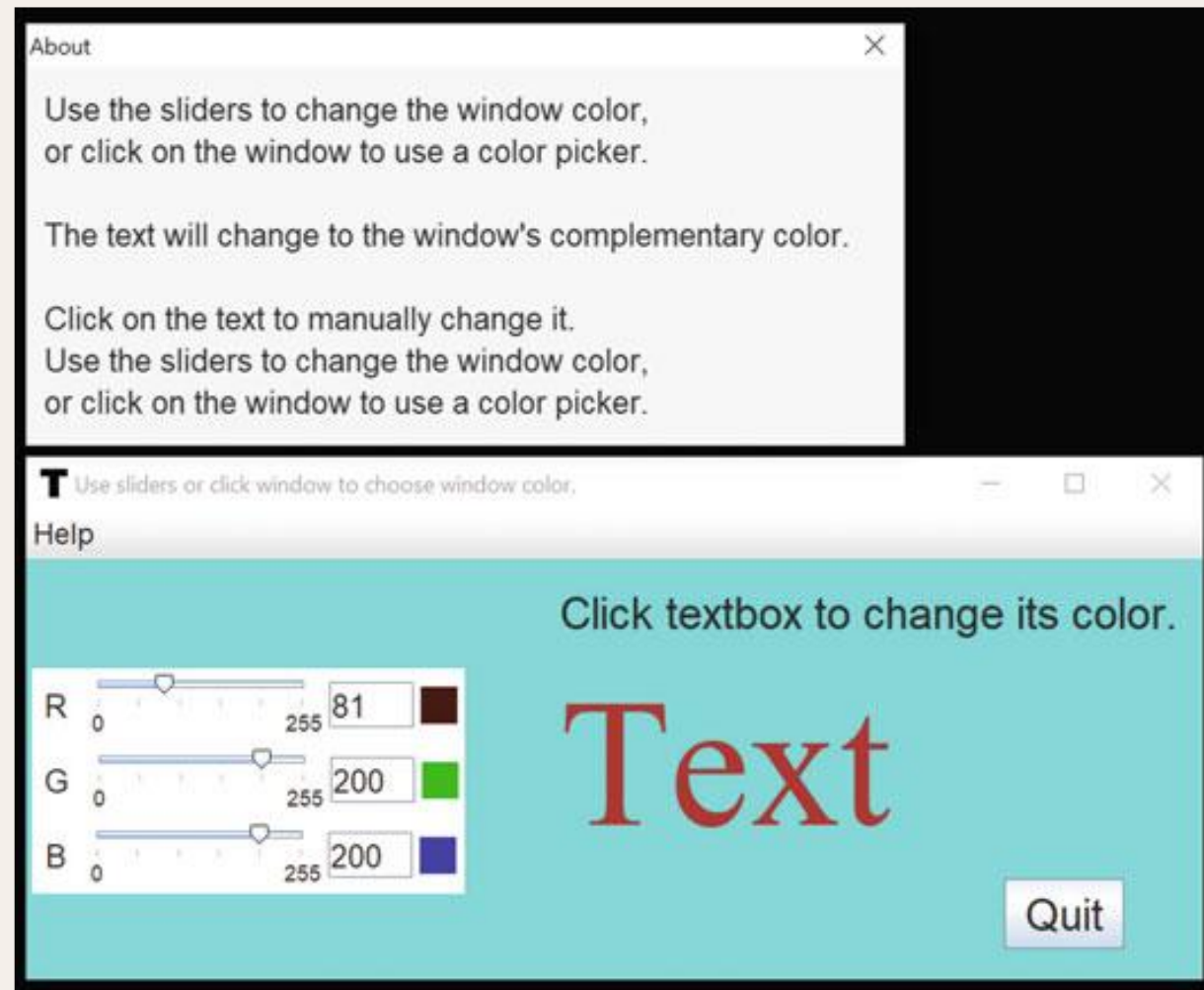
Sprite Animation

- Sprite Animations are animation clips that are created for 2D assets.
- Sprites are often used in animation.

Video Transitions

- **A cut**, as the name suggests, carries out an abrupt change of image contents in two consecutive video frames from their respective clips

- It is the simplest and most frequently used video transition.

Video Transitions

- **A fade** is when the scene gradually turns to a single color — usually black or white — or when a scene gradually appears on screen.

- Fade-ins occur at the beginning of a film or scene, while fade-outs are at the end.

- During a Fade In transition the shot gradually becomes visible.

Video Transitions

- **A dissolve** overlaps two shots or scenes, gradually transitioning from one to the other

- **Match Dissolves**: where a similarly-shaped and object will dissolve to another, such as slowly fading from a soccer ball to the moon

Video Transitions

- **wipe:** is when a shot travels from one side of the frame to the other.
- Wipes are often used to transition between storylines taking place in different locations,
- **Whip Pan**: is when the camera quickly pans creating a blur effect between scenes
- **zoom**, Like a whip pan, can be utilized to share an unbalanced rate, changing swiftly from one scene to the next.

Data Compression

❖ One of the most evident and important challenges of using multimedia is the necessity to compress data.

Multimedia producing, Sharing Distribution

⬨ Multimedia content, once produced, needs to be published and then shared among users.

⬨ In recent years, traditional storage and distribution media, such as optical discs, USB flash drives or solid-state drives (SSD), that have been largely replaced the Internet.

⬨ YouTube, the most popular video sharing site over the Internet.

⬨ The link to this video can be fed into such other social networking sites such as Facebook or Twitter as well.

Some Useful Editing and Authoring Tools

❖ Premiere,

❖ HTML5 canvas,

❖ Director, and

❖ XD.

THANKS!