ICS 2303
Multimedia Systems

Chapter 2.3 Text Representation

Introduction

- Text is a vital element of multimedia presentations.

- Words and symbols in any form, spoken or written, are the most common system of communication.

- They deliver the most widely understood meaning to the greatest number of people— *accurately and in detail*.

Introduction

- It is very important to choose the suitable words and symbols in your multimedia presentation.

- A multimedia application developer will reward him/herself and their users if they take the time to choose the right words.

Introduction

- However, the concern in this unit is another aspect of text, namely its appearance in multimedia presentation.

- Text is a visual representation of language, as well as a graphic element in its own right.

Introduction

- The study of how to display text is known as typography.

- It concerns the precise shape of characters, their spacing, the layout of the lines and paragraphs, and so on.

Types of Text: Unformatted

- There are 3 types of text that are used to produce pages of a document:

  - Unformatted text

  - Formatted.

  - Hypertext.

Types of Text: Unformatted

- Also known as plaintext.

- Enables pages to be created which comprise strings of fixed-sized characters from a limited character set.

Types of Text: Formatted

- Also called richtext.

- Enables pages and complete documents to be created which comprise of strings of characters of different styles, size, and shape with tables, graphics, and images inserted at appropriate points.

Types of Text: Hypertext

- Enables an integrated set of documents (each comprising formatted text) to be created which have defined linkages between them.

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Character Sets

- The visual appearance of a piece of text can be in many different forms, the basic meaning of the text will not change.

- Fundamentally, a piece of text consists of *letters, digits, punctuations* and other symbols.

Character Sets

- These can be considered as abstract characters.

- Abstract characters in a particular language are grouped into alphabets.

Character sets

- For example, The alphabet of English contains the upper case letters A to Z, the lower case letters a to z, the digits and a number of punctuations.

Character Sets

- To represent text digitally, it is necessary to define a mapping between (abstract) characters and the values that are stored in a computer system.

- This mapping is called a character set.

Character Sets

- The domain of this mapping, i.e., the abstract characters are called character repertoire and the values to be stored are called the code values or code points.

Standardization

- If any systems want to communicated with each other, they have to have a common language.

- Text is the most widely used means of communication among computer systems and therefore, a common character set is essential.

Standardization

- The earliest widely accepted character set is *ASCII* which stands for American Standard Code for Information Interchange.

- The code range of ASCII is 7-bit, meaning that the code value can be store in 7 bits.

- Therefore, at most 127 characters can be coded.

Standardization

- However, the character repertoire of ASCII only comprises 95 printable characters.

- The values 0 to 31 and 127 are assigned to *control characters*. Later, ISO adopted ASCII as an standard (ISO 646).

- Obviously, 127 values are not enough to code many of the world's languages.

Standardization

- ISO produced a new standard ISO 8859 with 8-bit characters.

- ISO 8859 has many parts and each part specifies a number of character sets.

- The lower 127 characters in all parts are identical to ASCII.

Encoding

- An encoding is another level of mapping.

- It transforms a code value into a sequence of bytes for storage and transmission.

Using Text in Multimedia Applications

- Picking the fonts to use in a multimedia presentation may be difficult.

- The following are some suggestions:

    – For small type, use the most legible font available, decorative fonts are useless.

Using text in Multimedia Applications

◦ Use as few different font faces as possible in the same work, but vary the weight and the size and using italic or bold styles.

◦ In text block, adjust for the most pleasing line spacing. Lines too tightly packed are difficult to read.

Using Text in Multimedia Applications

– Vary the size of a font in proportion to the importance of the message.

– In large size headline, do proper formatting so that the spacing feels right.

– Explore the effects of different colours and of placing the text on various backgrounds.

Cross platform issues

- When a multimedia project is built on Windows platform, and play it back on another operating system platform , there will be some differences.

- Fonts are perhaps the greatest cross-platform concern.

- If a specified font does not exist in the target machine, a substitute must be provided.

Cross platform issues

- Some cross-platform applications, e.g., Director, allow the developer to specify the mapping of fonts.

- Different encodings on different platform is also a big problem.

Cross platform issues

▶ Special characters may need to be converted to bitmaps in order to be display correctly on different platforms.

▶ Different systems and font manufacturers encode different symbols in the extended character set.

▶ For example, the code 165 may be a bullet (°) on the Macintosh, the character for Japanese yen in Windows.

Hardware Requirements for Text

▶ Keyboards.

▶ Optical Character Readers used for direct input of printed text to computers.

▶ Computer screens are used to display text information.

▶ Printers are most commonly used to output text in hard copy form.

Software Requirements for Text

▶ The following text capabilities are highly desirable in a multimedia computer system for better presentation and use of textual information:

- ◦ Text editing.

- ◦ Text style.

- ◦ Text searching.

- ◦ Hypertext.

- ◦ Text importing and exporting.

Text Editing

- Text editors and word processing packages are used to :

  - Generate.

  - Edit and

  - Properly layout a text document.

Text Style

- Presentation of text information can be made more effective by using text of various size, fonts and styles (bold, italics, shadow, etc).

- E.g. newspapers use a good combination of all these styles to better highlight more important news than less important ones.

Text Style

- Similarly, in a book, a combination of various text styles are used to put more emphasis on certain words or phrases than the remaining text.

Text Searching

▸ Usage of text information can be greatly enhanced by text searching feature.

▸ This feature allows the user to enter a word or phrase, and the computer quickly finds and displays that part of the text where the word or phrase appears in the textual information, with the word or phrase highlighted.

Hypertext

- Both presentation and use of textual information can

  be greatly enhanced by using hypertext feature.

- This feature provides great flexibility for structuring

  and accessing computer-based text information.)

Hypertext

- It generalizes the concepts of "footnote" and "cross reference" of traditional information (or document) organization, and allows users to obtain information by clicking on an anchor (a word or phrase linked to another document within a document.

- An anchor is often called a "hotword".

Hypertext

- This means, if the user wants more information about a particular hotword, he/she can select that hotword (usually with a mouse pointer), and open a window with additional text explaining that word or phrase.

Text importing and Exporting

- The task of creating a textual document can often be greatly simplified, if the document preparation software has text-importing feature.

- This is because some of the text you want to incorporate in your document may already exist as a file created by a word processor or a database file.

Text importing and exporting

- The file (partly or fully) can be simply imported into the new document at the desired location, instead of retyping the entire text again.

- If the imported file is large, it will result in enormous saving of time and effort required to prepare the new document.

Text importing and exporting

- Similarly, text exporting feature is very useful in allowing other packages to use an existing document (partly or fully).

The End