**UNIT-II**

**TEXT**

* Text is a component of multimedia.
* The text consists of alphanumeric characters, which are used to create information.
* Text is the simplest data type that requires the least storage. We can design the text accordingly. You can set font, text size, color, etc. according to you.
* The design includes both qualitative and quantitative aspects of a multimedia text.

**Hardware requirement for text:-**

The following hardware is required to do text processing using a computer. We need a keyboard for text data entry on the computer.

* OCR (optical character recognition) is another input device that is used to input different types of documents such as pictures, graphics, typed text, or handwritten text.
* A monitor is an output device used to display information on a computer screen.
* A printer is also an output device used to extract hard copies in printed form.

**Software required to take text:-**

* **Text processing: –** A multimedia computer system must have the capability of test processing for better use and presentation of text information.
* **Text Editing: –** Text editors and word processing packages are used to create, edit, and layout a text document.

**Text consists of two structures:**

* **linear**
* **Non-linear**

**Linear:**

* A single way to progress through the text, starting at the beginning and reading to the end.

**Non-linear:**

* Information is represented in a semantic network in which multiple related sections of the next are connected to each other.
* A user may then browser trough the section of the next, jumping from one text section to another

**Why text is important?**

1. **Size:** the size of the text
2. **Background and foreground color:** The color in which the text is written in / on
3. **Style:** Also known as typeface and font.

**Text technology**

1. Based on creating letters, numbers and special characters.
2. May also include special icon or drawing symbols, mathematical symbol, Greek letter etc[©™≈ƒ]
3. Text elements can be categories into:
* Alphabet characters: A-Z
* Numbers: 0-9
* special characters: Punctuation [. , ; ‘ …..] , Sign or symbols [\*&^%$#@!…..]
* Also known Character Sets.

**FONT VS TYPEFACE
Font**

1. A ‘font’ is a collection of characters of a particular size and style belonging to a particular typeface family.
2. Usually vary by type sizes and styles.
3. The sizes are measure in points
4. This includes the letter set, the number set, and all of the special character and diacritical marks you get by pressing the shift, option, or command /control keys.

**Typeface**

1. A ‘typeface’ is a family of graphic characters that usually includes many type sizes and styles.
2. A typeface contains a series of fonts. For instance, Arial, Arial Black, Arial Narrow and Arial Unicode MS are actually 4 fonts under the same family.
* Arial
* Arial Black
* Arial Narrow
* Arial Unicode MS

**FONT EFFECTS**

* Case : UPPER and lower cased letter
* Bold, Italic, Underline, Superscript and Subscript
* Embossed or Shadow
* colours
* Strikethrough

**LEADING OF TEXT**

* Spacing  above and below a font or line spacing

**TYPES OF FONTS**

:Two classes of fonts



SERIF TEXT

* Decorative strokes added to the end of a letter’s
* Serifs improve readability by leading the eye along the line of type
* Serifs are the best suited for body text
* Serif faces are more difficult to read in small scale (smaller than 8pt) and in very large sizes.

SANS SERIF TEXT

* Sans serif faces doesn’t have decorative strokes
* A sans serif text has to be read letter by letter.
* Use sans serif faces for small (smaller than 8pt) and very large sizes
* Used for footnotes and headlines

HOW TEXT CAN BE USED EFFECTIVELY

communicating data

* Customer names and address
* Pricing information of products

Explaining concepts and ideas

* A company mission statement
* A comparison of medical procedures

Clarifying other media

* Labels on button, icons and screens
* captions and callouts for graphics

**ADVANTAGES**

* Is relatively inexpensive to produce
* Present abstract ideas effectively
* Clarifies other media
* Provides confidentiality (password)
* Is easily changed or updated

**IMAGE & GRAPHICS**

**What is an image?**

An image can be defined as a visual representation of something. A digital image can be created and stores in electronic form. A digital image is formed with pixels; technically an image comprises a grid of dots called pixels. This grid is a combination of rows and columns made up of pixels. The size of the images measured in inches or centimeter which depends on the device resolution in which image supposed to display. The resolution is typically estimated in DPI (Dots per Inch).

An image is stored as a file on a computer. It means, there are different image file formats which are known as image extension like JPEG, GIF, PNG, BMP, TIFF, etc

Digital Image Representation

For computer representation, function (e.g. intensity) must be sampled at discrete

intervals.

Sampling quantizes the intensity values into discrete intervals.

 Point at which an image is sampled are called picture elements or pixels.

 Resolution specifies the distance between points accuracy.

A digital image is represented by a matrix of numeric values each representing a

quantized intensity value.

A digital image is a numeric representation (normal binary) of two dimensional images.

When I is a two-dimensional matrix, then I (r, c) is the intensity value at the position

corresponding to row r and column c of the matrix.

Intensity value can be represented by bits for black and white images (binary valued

images), 8 bits for monochrome imagery to encode color or grayscale levels, 24 bit

(RGB).

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Types of images

**a) JPEG (or JPG) - Joint Photographic Experts Group**

JPEGs may be the most widely common type of image which runs on the web and more likely used in organizations, project work. JPEG image files are bitmap images that can store information as 24-bit color. JPEGs are known for their "lossy" compression, implying that the image quality decreases when its size got reduces.

**b) PNG - Portable Network Graphics**

PNGs are good for interactive files, for example, web pages. PNG is the widest image format that supports web browsers. PNG supports data that relies on 8, 24, 32, and 48 bits. An 8 bit PNG image is similar to the GIF image. PNG images are most appropriate than JPEG and GIF. However, PNG images are not appropriate to take the print. PNGs are "lossless" in nature it means ones it alters, its quality doesn't highly affect.

**c) GIF - Graphics Interchange Format**

GIFs are the most suitable images for animated form, which are extremely popular on Tumblr pages and in standard banner ads. Due to its compact size feature, this image format is popular on the internet. It is appropriate for small icons and simple diagrams. GIFs support up to 256 colors in the RGB colorspace. Due to limited colors, the file size can be reduced.

**d) TIFF- Tagged Image File**

A TIFF image file format was developed during the 1980s and then later supported by Microsoft. TIFF image formats most widely support bitmap format. TIFF is a larger raster file that doesn't lose quality. This file is well known for utilizing a lossless compression feature which means the original images information can be kept during copy, re-save, or compress the original file.

**GRAPHICS**

* A graphic is an image or visual representation of an object. Therefore, computer graphics are simply images displayed on a computer screen.
* Graphics are often contrasted with text, which is comprised of [characters](https://techterms.com/definition/character), such as numbers and letters, rather than images.

**Computer graphics can be either two or three-dimensional.**

* Early computers only supported 2D monochrome graphics, meaning they were black and white (or black and green, depending on the [monitor](https://techterms.com/definition/monitor)).
* Eventually, computers began to support color images. While the first machines only supported 16 or 256 colors, most computers can now display graphics in millions of colors.
* **2D graphics come in two flavors —** [**raster**](https://techterms.com/definition/rastergraphic) **and** [**vector**](https://techterms.com/definition/vectorgraphic)**.**
* Raster graphics are the most common and are used for digital photos, Web graphics, [icons](https://techterms.com/definition/icon), and other types of images. They are composed of a simple grid of [pixels](https://techterms.com/definition/pixel), which can each be a different color.
* Vector graphics, on the other hand are made up of paths, which may be lines, shapes, letters, or other scalable objects. They are often used for creating logos, signs, and other types of drawings. Unlike raster graphics, vector graphics can be scaled to a larger size without losing quality.
* **3D graphics** started to become popular in the 1990s, along with 3D rendering software such as [CAD](https://techterms.com/definition/cad) and 3D animation programs.
* By the year 2000, many video games had begun incorporating 3D graphics, since computers had enough processing power to support them. Now most computers now come with a 3D [video card](https://techterms.com/definition/videocard) that handles all the 3D processing. This allows even basic home systems to support advanced 3D games and applications.

 **COMPRESSION**

* Image compression is a process applied to a graphics file to minimize its size in bytes without degrading image quality below an acceptable threshold. By reducing the file size, more images can be stored in a given amount of disk or memory space.
* The image also requires less bandwidth when being transmitted over the internet or downloaded from a webpage, reducing network congestion and speeding up content delivery.

**There are two primary types of data compression:**

1. [**File Compression**](https://techterms.com/definition/file_compression)
2. [**Media Compression**](https://techterms.com/definition/media_compression)

File compression can be used to compress all types of data into a compressed archive. These archives must first be decompressed with a decompression [utility](https://techterms.com/definition/utility) in order to open the original file(s). Media compression is used to save compressed image, audio, and video files. Examples of compressed media formats include [JPEG](https://techterms.com/definition/jpeg) images, [MP3](https://techterms.com/definition/mp3) audio, and [MPEG](https://techterms.com/definition/mpeg) video files. Most image viewers and media playback programs can open standard compressed [file types](https://techterms.com/definition/file_type) directly.

File compression is always performed using a [lossless](https://techterms.com/definition/lossless) compression [algorithm](https://techterms.com/definition/algorithm), meaning no information is lost during the compression process. Therefore, a compressed archive can be fully restored to the original version when it is decompressed. While some [media](https://techterms.com/definition/media) is compressed using lossless compression, most image, audio, and video files are compressed using [lossy](https://techterms.com/definition/lossy) compression. This means some of the media's original quality is lost when the file is compressed. However, most modern compression algorithms can compress media with little to no loss in quality.

**There are two main types of compression: lossy and lossless.**

**Lossy compression**

* Lossy compression removes some of a file’s original data in order to reduce the file size. This might mean reducing the numbers of colours in an image or reducing the number of samples in a sound file. This can result in a small loss of quality of an image or sound file.
* A popular lossy compression method for images is the JPEG, which is why most images on the internet are JPEG images. A popular lossy compression method for sounds is MP3. **Once a file has been compressed using lossy compression, the discarded data cannot be retrieved again**.

## Lossless compression

* Lossless compression doesn’t reduce the quality of the file at all. No data is lost, so lossless compression allows a file to be recreated exactly as it was when originally created.
* There are various algorithms for doing this, usually by looking for patterns in the data that are repeated. Zip files are an example of lossless compression.
* The space savings of lossless compression are not as good as they are with lossy compression.