

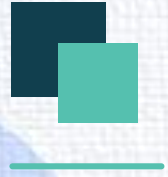


Multimedia Programming

Multimedia Software

Level 3

Lecture 3



Graphics in Multimedia Programming



Lecture Objectives:

- The student will understand the concept of graphics and its types.
- Distinguish between raster and vector graphics.
- Understand the role of graphics in multimedia applications.
- Practice a simple activity that links theory with practice.



What is graphics?

Anything drawn or designed visually to represent information or an idea.

Its connection to multimedia:

- Without graphics, applications would be text-only..



Definition of GRAPHICS:

The word “graphic” refers to any visual representation of data and includes a variety of forms including drawings, photographs, line art, graphs, diagrams, numbers, symbols, geometric designs, maps, and engineering drawings. Graphics may be images only or may also include text and they can be used for decorative or functional purposes, including educating, illustrating, or entertaining.



Definition of GRAPHICS:

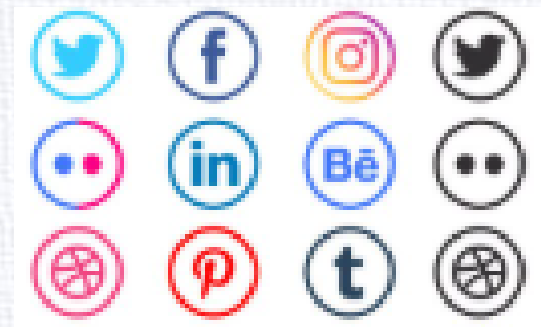
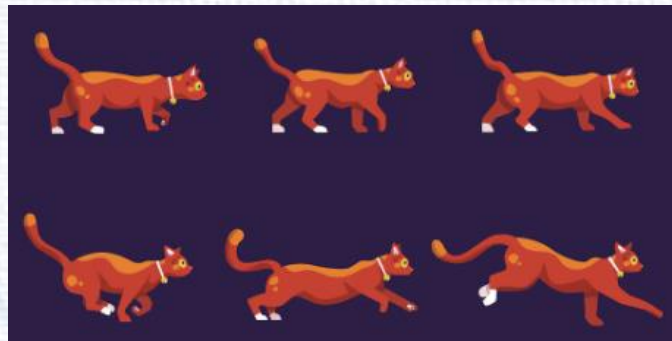
Examples:

- Graphic Design =
 - Graphic =
 - Computer Graphics =
-
- Logo
 - Mobile User Interface (UI)
 - Games Graphics



The Purpose of Graphic Design

1. Convey information visually rather than just text.
2. Grab attention and enhance the user experience.
3. Express an idea or visual identity.
4. Support interactivity in multimedia programs (such as buttons, icons, and animations).





The Purpose of Graphic Design

5. The main purpose of graphic design is to communicate and solve problems through visual content.
6. It involves using text, images, colors, and symbols to convey messages and ideas making it useful, effective and and attractive form.
7. Graphic design is used across various industries for purposes such as branding, advertising, web design, editorial design, product packaging, and more.
8. The goal is to attract, engage, and inform audiences, often with the intent of prompting them to take a specific action or to create a strong brand recognition.



Key Objectives of Graphic Design:

1. Brand Recognition: **Establishing a unique and memorable brand identity (such as a name, logo, shape, or voice).**
2. User Engagement: **Creating designs that attract and hold attention.**
3. Information Clarity: **Presenting information in a clear and compelling way.**
4. Call to Action (CTA): **Encouraging desired responses, such as clicking a button or making a purchase.**



Key Objectives of Graphic Design:

- 5. Communication: **Clearly convey the idea**
- 6. Attractiveness: **Beautiful design that engages the user**
- 7. Usability: **Easy to use and understand**
- 8. Creativity: **Create new visual solutions**

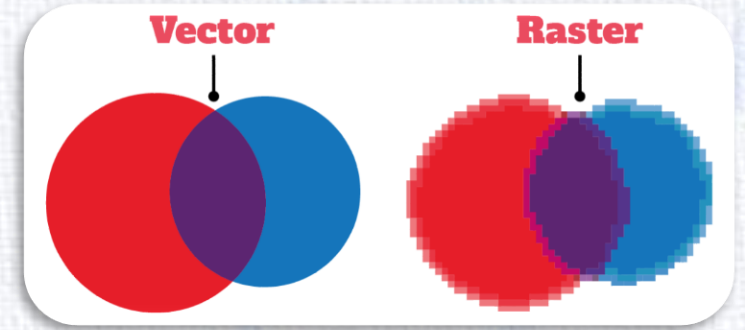


2. Types of Graphics:

1- Raster Graphics (bitmaps) :

- Composed of pixels (like photographs).
- Loss of quality when enlarged.

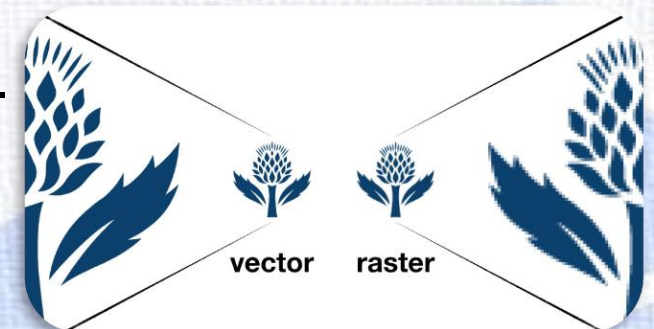
Examples: PNG, JPEG. (Camera Photos - Photos Online)



2- Vector Graphics:

- It consists of mathematical lines and paths.
- Does not lose quality when enlarged.

Examples: SVG, AI. (logos, drawing)- Adobe Illustrator.





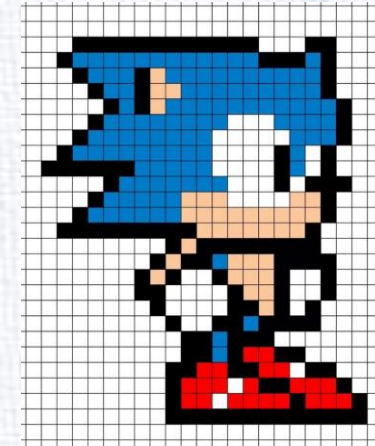
2. Types of Graphics:

Element	Raster	Vector
Formation	Pixels	Lines& Equations
Quality at Enlargement	Decrease	Unaffected
Size	Large	Small
Software Used	Photoshop	Illustrator

2. Types of Graphics:

. Pixel

- A pixel is the smallest unit of a digital image.
- Each pixel represents a color value (e.g., RGB or RGBA).
- When millions of pixels are combined, they form the complete image.

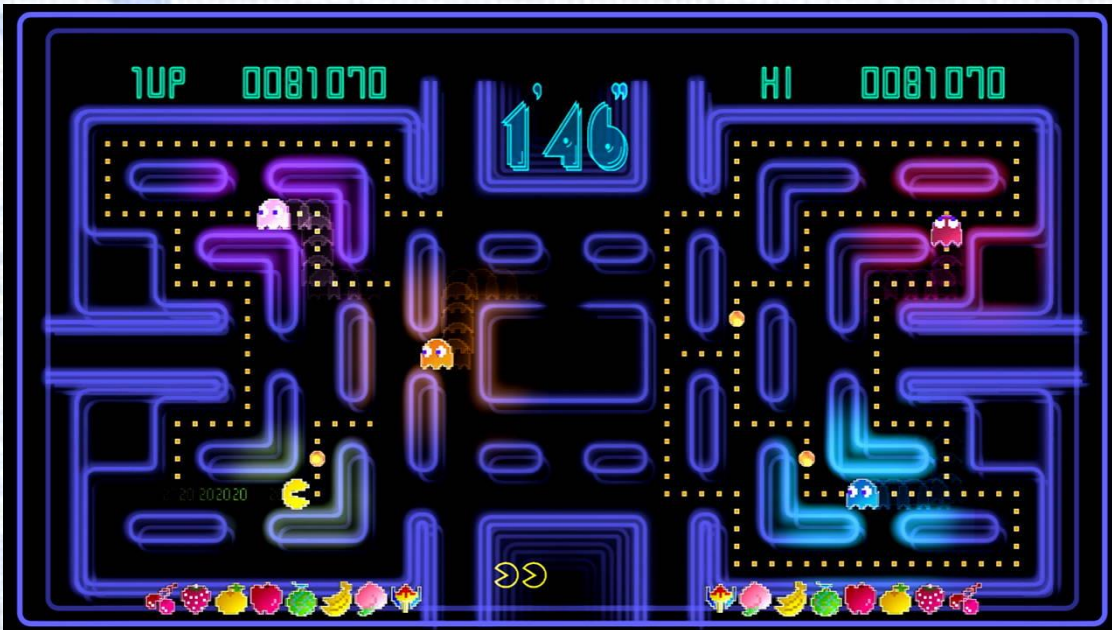


Example:

A screen with 1920×1080 resolution has 1920 pixels horizontally and 1080 pixels vertically

2. Types of Graphics:

. Pac-Man



2. Types of Graphics:

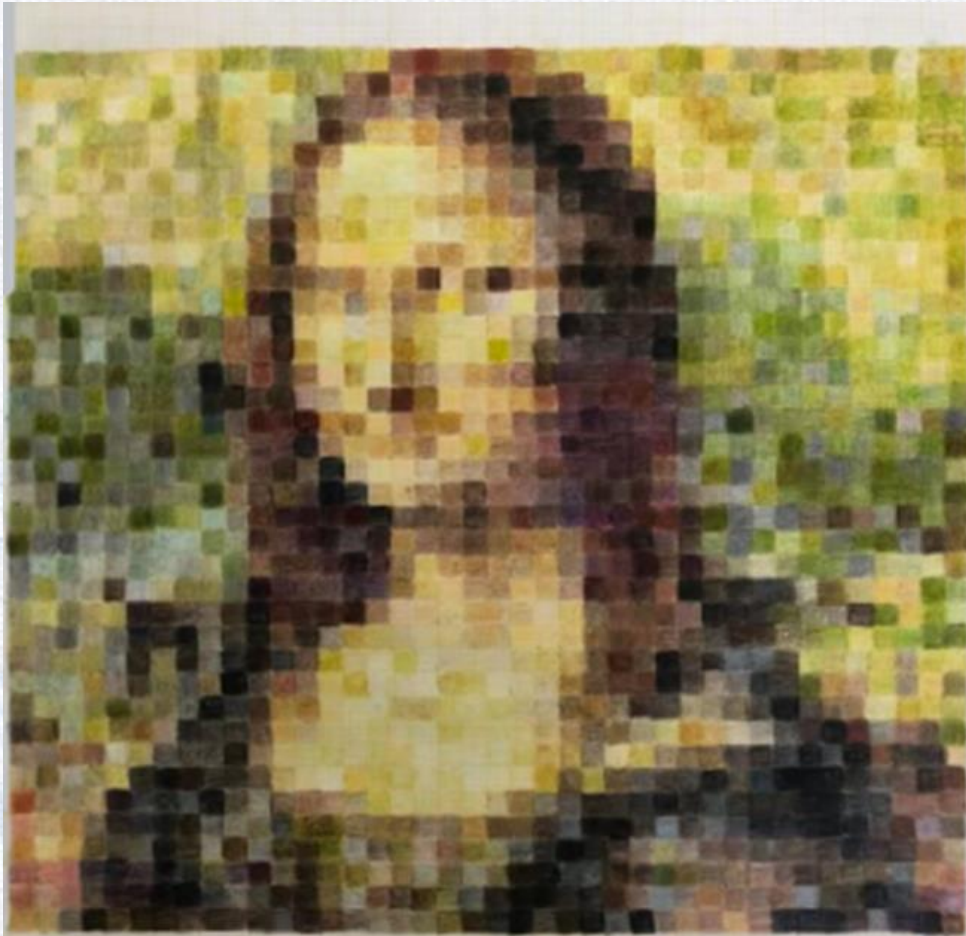
Super Mario





2. Types of Graphics:

Pixel Art



2. Types of Graphics:

Leonardo's Last Supper



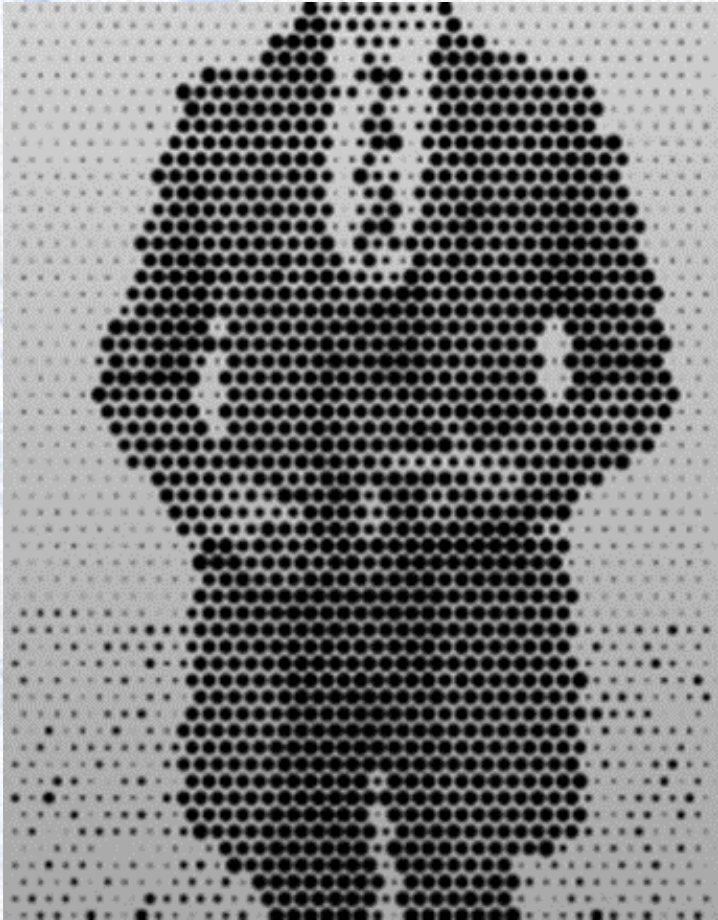
Some contemporary artists have used the concept of pixels as a symbol of disintegration or reconstruction.

2. Types of Graphics:

Vincent van Gogh's Sunflowers



2. Types of Graphics:





2. Types of Graphics:

. Bitmap

- A bitmap is an image file or representation made up of many pixels arranged in a grid.
- Each pixel's color is stored as a numeric value.
- The .bmp format is a common example of bitmap images.

• Difference:

- Pixel = one point.
- Bitmap = collection of many pixels forming the image.

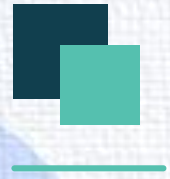


2. Types of Graphics:

A raster image (also known as a bitmap) is made up of a grid of pixels, where each pixel holds a specific color value. When viewed at normal size, these pixels blend together to form the image.

◆ Key characteristics of raster images:

- Composed of pixels (tiny dots of color).
- Common raster formats: .bmp, .png, .jpg, .gif
- Resolution-dependent — when you zoom in or scale up, the image becomes blurry.



Raster Graphics (bitmaps) :



Figure 1 This image is made up of 1200 x 800 pixels and looks to the eye like a scene might look in reality.

Figure 2 This image is made up of only 120 x 80 pixels, which is called 'pixelation.'

Both resolution and image size need to be used together.



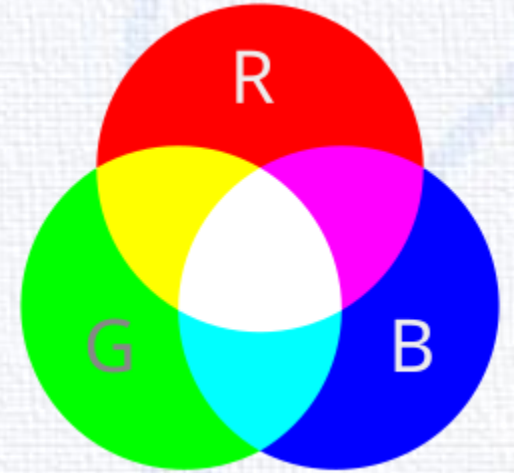
2. Types of Graphics:

RGB

- ◆ Abbreviation for Red – Green – Blue
- ◆ It is the basic color system upon which digital images are built
- ◆ Each color in an image consists of three numerical values representing the proportion of red, green, and blue.
- ◆ Each value ranges from 0 to 255.

Example:

RGB (255, 0, 0) ← It means pure red (maximum red, no green or blue).





2. Types of Graphics:

RGBA

2. RGBA

- ◆ Same principle as RGB, but with an additional channel called Alpha.
- ◆ The letter A = Alpha Channel, which is responsible for transparency.
- ◆ The Alpha value usually ranges from 0 to 1 (or sometimes from 0 to 255).

Example:

RGBA (255, 0, 0, 0.5) ← It means a semi-transparent red color (0.5 = 50% transparency).





2. Types of Graphics:

Summary:

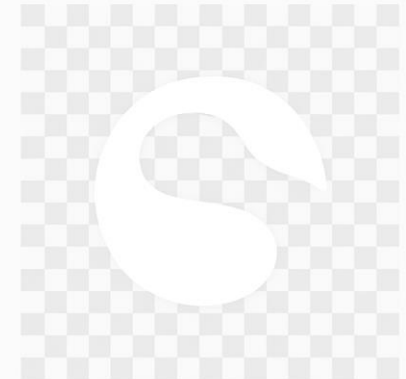
RGB = Color Only.

RGBA = Color + Transparency.

RGB



RGBA



2. Types of Graphics:



(JPG ...Ping ... PSD ... PDF)



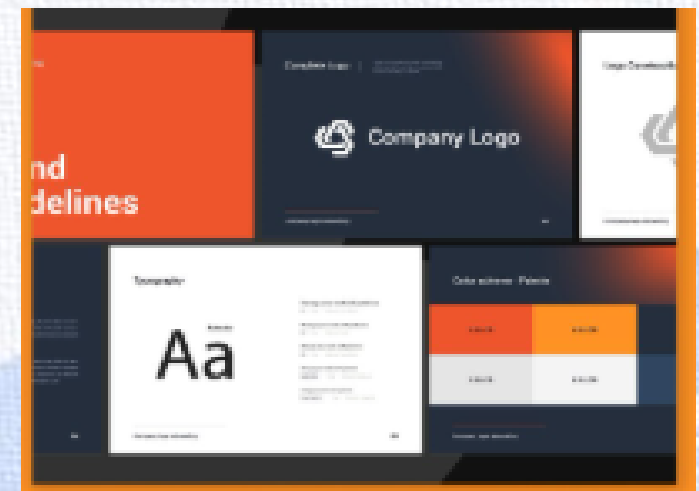
Types of Graphic Design

Graphic design is a broad field with various specializations, each serving different purposes:

1. Visual Identity Graphic Design

Visual identity design focuses on creating the visual elements that define a brand.

Designers in this field develop logos, typography, color schemes, and brand guidelines to ensure consistency across all brand materials.





Types of Graphic Design

2. Marketing & Advertising Graphic Design

This type of design is used to create promotional content that drives consumer engagement. Examples include print ads, social media graphics, and product packaging. The goal is to communicate marketing messages in a visually compelling way that motivates action.





Types of Graphic Design

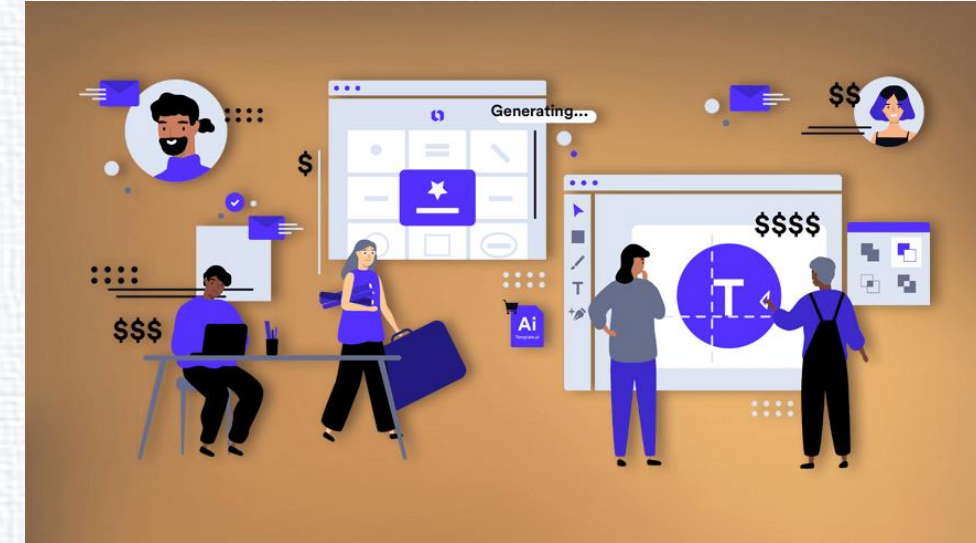
2. Marketing & Advertising Graphic Design





Types of Graphic Design

2. Marketing & Advertising Graphic Design





Types of Graphic Design

3. Web Design

Web design involves creating engaging and aesthetically pleasing online experiences for users. Designers focus on the layout, [color scheme](#), typography, and usability of websites. The aim is to make websites functional, easy to navigate, and visually appealing, enhancing the overall user experience.





Types of Graphic Design

4. Publication Graphic Design

Publication designers work with printed materials like books, magazines, and newspapers. They design layouts that are both visually appealing and easy to read, ensuring the content is well-organized and engaging.





Types of Graphic Design

5. Packaging Graphic Design

Packaging design is crucial for attracting customers and reinforcing brand identity. It's not just about aesthetics—packaging needs to be functional and convey key product information.





Types of Graphic Design

6. Motion Graphic Design

Motion graphics bring visual elements to life through animation and audio, which can be used in advertisements, animated logos, and explainer videos. This dynamic form of design can make complex ideas more accessible and engaging through movement.



Motion Graphic Design





Types of Graphic Design

7. Environmental Graphic Design

Also known as experiential design, this type combines elements from interior, architectural, and graphic design to enhance the way people interact with public spaces. This can include wayfinding systems, mural designs, branding, and informational displays that connect people to places.





Types of Graphic Design

8. Illustration for Graphic Design

Illustrators create original artwork that complements or acts as the primary visual representation in various applications.

Illustration can provide a more artistic and unique style to projects like children's books, editorial articles, and boutique packaging.





Types of Graphic Design

9. User Interface Graphic Design

UI design focuses on the aesthetics of user interfaces for software, websites, and apps. The goal is to create interfaces that are intuitive and easy to use, with careful consideration given to the placement of buttons, icons, typography, color schemes, and responsive design.

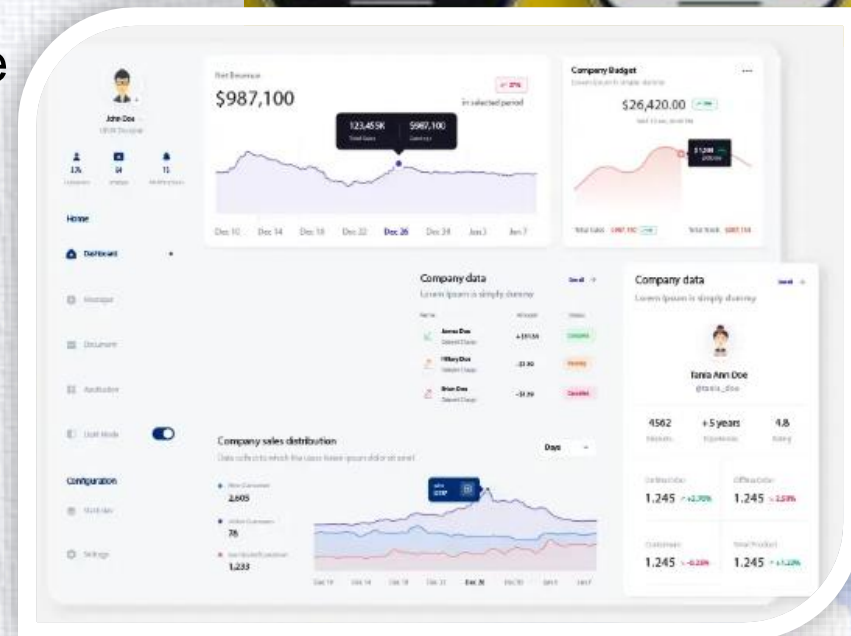
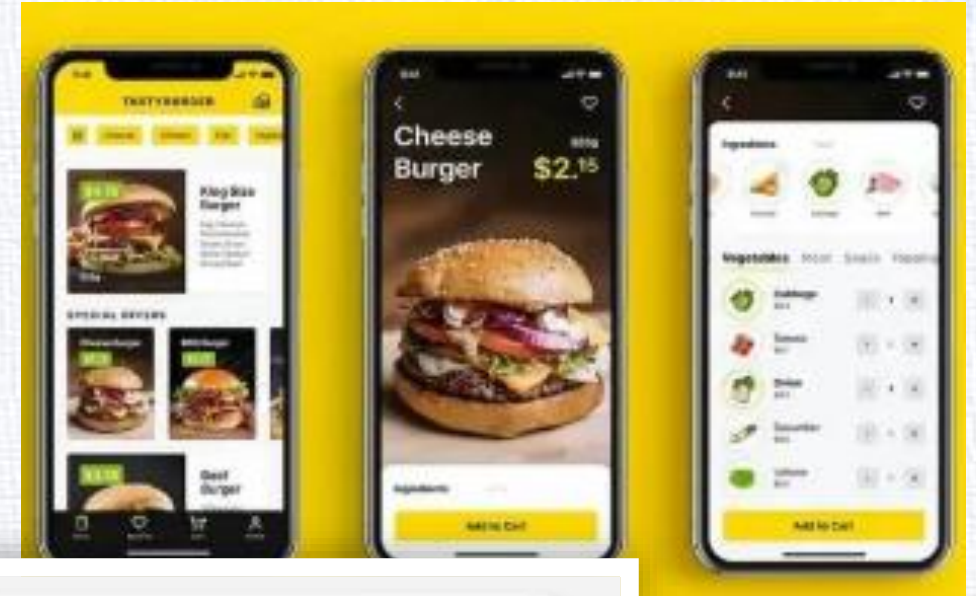




Types of Graphic Design

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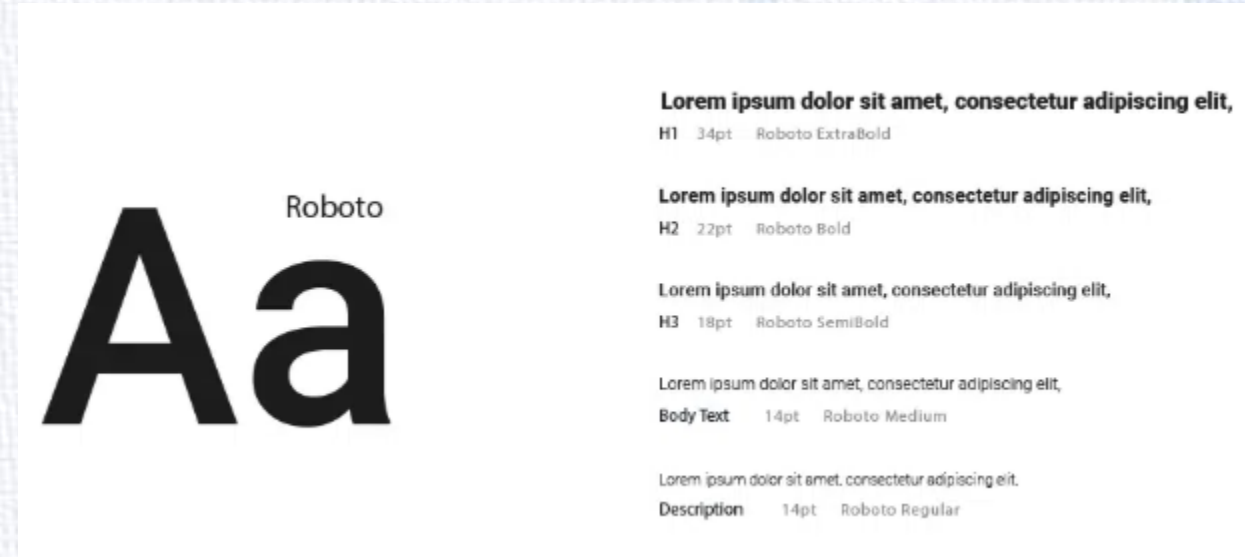




Types of Graphic Design

10. Typography Graphic Design

Typography is an art form that involves choosing typefaces, adjusting font size, and spacing letters to improve readability and visual appeal. Good typography can dramatically enhance the effectiveness of a design by ensuring the text is both readable and attractive.

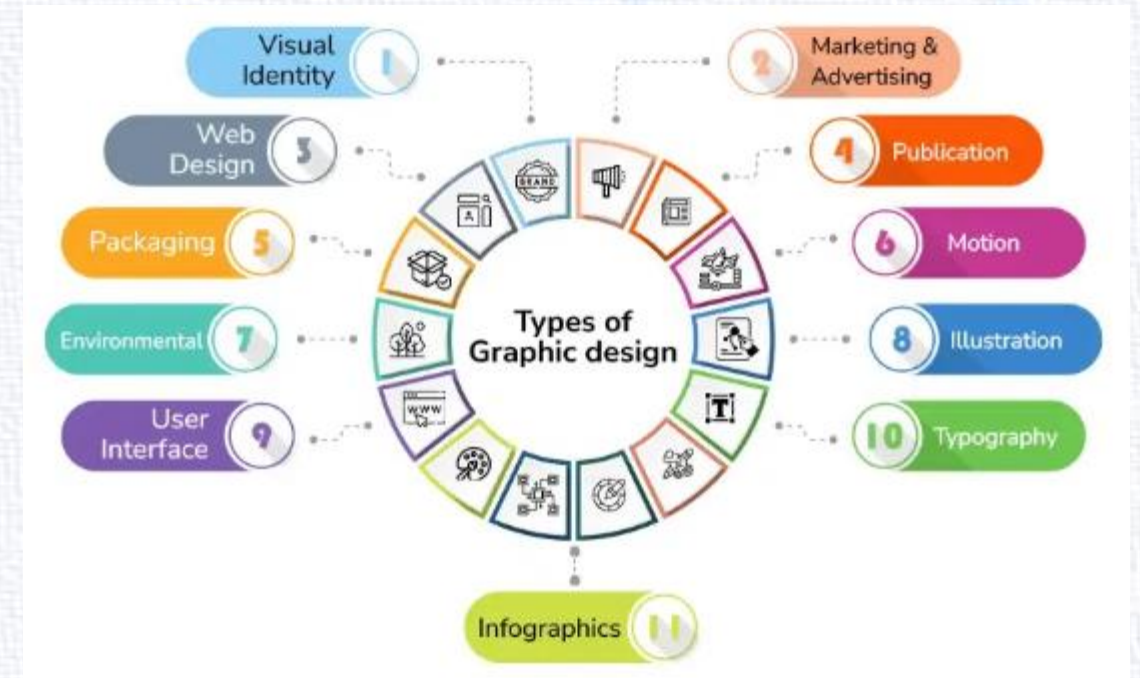




Types of Graphic Design

11. Infographics

Infographics are visual representations of information, data, or knowledge intended to present content quickly and clearly. Graphic designers in this field distill complex data into digestible, engaging graphics that communicate information at a glance.







Thank you