



Introduction to Computer Graphics

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Graphics are defined as any sketch or a drawing or a special network that pictorially represents some meaningful information. Computer Graphics is used where a set of images needs to be manipulated or the creation of the image in the form of pixels and is drawn on the computer. Computer Graphics can be used in digital photography, film, entertainment, electronic gadgets, and all other core technologies which are required. It is a vast subject and area in the field of computer science. Computer Graphics can be used in UI design, rendering, geometric objects, animation, and many more. In most areas, computer graphics is an abbreviation of CG. There are several tools used for the implementation of Computer Graphics. The basic is the `<graphics.h>` header file in Turbo-C, Unity for advanced and even OpenGL can be used for its Implementation.

The term 'Computer Graphics' was coined by Verne Hudson and William Fetter from Boeing who were pioneers in the field.

Computer Graphics refers to several things:

- The manipulation and the representation of the image or the data in a graphical manner.
- Various technology is required for the creation and manipulation.
- Digital synthesis and its manipulation.

Types of Computer Graphics

- **Raster Graphics:** In raster, graphics pixels are used for an image to be drawn. It is also known as a bitmap image in which a sequence of images is divided into smaller pixels. Basically, a bitmap indicates a large number of pixels together.



- **Vector Graphics:** In vector graphics, mathematical formulae are used to draw different types of shapes, lines, objects, and so on.

Applications

- **Computer Graphics are used for an aided design for engineering and architectural system-** These are used in electrical automobiles, electro-mechanical, mechanical, electronic devices. For example gears and bolts.
- **Computer Art** – MS Paint.
- **Presentation Graphics** – It is used to summarize financial statistical scientific or economic data. For example- Bar chart, Line chart.
- **Entertainment-** It is used in motion pictures, music videos, television gaming.
- **Education and training-** It is used to understand the operations of complex systems. It is also used for specialized system such for framing for captains, pilots and so on.
- **Visualization-** To study trends and patterns. For example- Analyzing satellite photo of earth.

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