ARTWORK ON YOUR PC : GRAPHICS

Computer graphics means drawing pictures on a computer screen. What's so good about that? Sketch something on paper— a man or a house—and what you have is a piece of analog information: the thing you draw is a likeness or analogy of something in the real world. Depending on the materials you use, changing what you draw can be easy or hard: you can erase pencil or charcoal marks easily enough, and you can scrape off oil paints and redo them with no trouble; but altering watercolors or permanent markers is an awful lot more tricky.

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But where everyday graphics is concerned, the immediacy of art is also a huge drawback. As every sketching child knows too well, if you draw the first part of your picture too big, you'll struggle to squeeze everything else on the page…. and what if you change your mind about where to put something or you want to swap red for orange or green for blue? Ever had one of those days where you rip up sheet after sheet of spoiled paper and toss it in the trash?

That's why many artists, designers, and architects have fallen in love with computer graphics. Draw a picture on a computer screen and what you have is a piece of digital information. It probably looks similar to what you'd have drawn on paper—the ghostly idea that was hovering in your mind's eye to begin with—but inside the computer your picture is stored as a series of numbers. Change the numbers and you can change the picture, in the blink of an eye or even quicker. It's easy to shift your picture around the screen, scale it up or down, rotate it, swap the colors, and transform it in all kinds of other ways.

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The Basic Elements Of Computer Graphics :

1. **Modeling**-representation choices, geometric processing.
2. **Rendering**—geometric transformation, visibility, simulation of light.
3. **Interaction**-Input/output devices, tools.
4. **Animation-**Lifelike characters, natural phenomena, their interactions, surrounding environments.

Types of Computer Graphics :

1. **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 image is into smaller pixels. Basically

a bitmap indicates a large number of pixels together.

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

Image Types :

1. **2 D Computer graphics:** These are the computer-based generation of digital images—mostly from models, such as digital image, and by techniques specific to them. 2D computer graphics are mainly used in applications that were originally developed upon traditional printing and drawing technologies such as typography. In those applications, the two-dimensional image is not just a representation of a real-world object, but an independent artifact with added semantic value; two-dimensional models are therefore preferred because they give more direct control of the image than 3D computer graphics, whose approach is more akin to photography than to typography.

2. **3D Computer graphics:** Compared to 2D graphics, are graphics that use a 3D representation of geometric data. For the purpose of performance, this is stored in the computer. This includes images that may be for later display or for real-time viewing. Despite these differences, 3D computer graphics rely on similar algorithms as 2D computer graphics do in the frame and raster graphics (like in 2D) in the final rendered display. In computer graphics software, the distinction between 2D and 3D is occasionally blurred; 2D applications may use 3D techniques to achieve effects such as lighting, and primarily 3D may use 2D rendering techniques.

3. **Pixel art** is a form of digital art , created through the use of software , where images are edited on the pixel level. The aesthetic for this kind of graphics comes from 8-bit and 16-bit computers and video game consoles , in addition to other limited systems such as fraphing calculators . In most pixel art, the color palette used is extremely limited in size, with some pixel art using only two colors. Creating or modifying pixel art characters or objects for video games is sometimes called sprinting.

4. **Sprite Graphics :**A sprite is a two-dimensional image or animation that is integrated into a larger scene. Initially including just graphical objects handled separately from the memory bitmap of a video display, this now includes various manners of graphical overlays.

The Graphic Design Tools You Need :

Whether you're a professional-level user or hobbyist, personal computing and graphics software have forever changed the way designers and fine artists work. The selections span a

variety of needs, from raster and vector image editing to typography to page layout (with In Design being the primary exponent of the latter). We'll add to this with an even greater variety of additional specialized graphics programs, utilities, and apps.

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Software features aside, one of your first decisions in choosing graphics software is how you want to pay: The two Adobe products included here are only available as part of the enormous Creative Cloud subscription suite, while you can get the Corel products for a one-time charge. (That's why the pricing in the table above looks odd.) Inkscape is completely free and open-source, but it forces you to do without some major creature comforts, like easy installation on mac OS.

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The Right Tools for the Job :

Wherever you look, you see graphics of all kinds. The job titles of people who create them are similarly expansive: visual designer, user experience (UX) designer, user interface (UI) designer, information architect, web designer, illustrator, interaction designer, app designer, photo retoucher, animator, surface and pattern designer, type designer, and on and on.

For example, while Photoshop is the go-to photo-editing tool, it also creates awesome photo-realistic text effects. While CorelDRAW's forte is in the production and service bureau industry, you can produce astounding photo-realistic vector art and illustration using blends, gradients, and transparencies.

Applications of Computer Graphics :

1. **Computer Graphics are used for aided design for engineering and architectural system-** These are used in electrical automobile, electro-mechanical, mechanical, electronic devices. For example: gears and bolts.

2. **Computer Art**—MS Paint.

3. **Presentation Graphics**—It is used to summarize financial statistical scientific or economic data. For example- Bar chart, Line chart.

4. **Entertainment-** It is used in motion picture, music video, television gaming.

5. **Education and training-** It is used to understand operations of complete system. It is also used for specialized system such for framing for captains, pilots and so on.

6. **Visualization-** To study trends and patterns. For example- Analyzing satellite photo of earth.

Interactive and Passive Graphics :

1. **Non-Interactive or Passive Computer Graphics:**

   In non-interactive computer graphics, the picture is produced on the monitor, and the user does not have any controlled over the image, i.e., the user cannot make any change in the rendered image. One example of its Titles shown on T.V.

   Non-interactive Graphics involves only one-way communication between the computer and the user, User can see the produced image, and he cannot make any change in the image.

2. **Interactive Computer Graphics:**

   In interactive Computer Graphics user have some controls over the picture, i.e., the user can make any change in the produced image. One example of it is the ping-pong game.

   Interactive Computer Graphics require two-way communication between the computer and the user. A User can see the image and make any change by sending his command with an input device.

Graphic Systems :

1. **Display Processor:** It is interpreter or piece of hardware that converts display processor code into pictures. It is one of the four main Parts of Display Processor : Display File Memory , Display Processor , Display Generator , Display Console.

2. **Cathode ray Tube** : CRT stands for Cathode Ray Tube. CRT is a technology used in traditional computer monitors and televisions. The image on CRT display is created by firing electrons from the back of the tube of phosphorus located towards the front of the screen.

3. **Random Scan Display :** Random Scan System uses an electron beam which operates like a pencil to create a line image on the CRT screen. The picture is constructed out of a sequence of straight-line segments .

4. **Color CRT Monitors** : The CRT Monitor display by using a combination of phosphors. The phosphors are different colors.

5. **Direct view Storage Tubes :** DVST terminals also use the random scan approach to generate the image on the CRT screen. The term "storage tube" refers to the ability of the screen to retain the image which has been projected against it, thus avoiding the need to rewrite the image constantly.

6. **Flat Panel Display :** The Flat-Panel display refers to a class of video devices that have reduced volume, weight and power requirement compare to CRT.

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Graphic Software :

A Graphic Software is an intermediary between an application program and the graphic hardware . The output primitives and interaction devices that a graphic package supports can range from rudimentary to extremely rich .

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These are classified into two systems :

1. **General Programming packages :** Provides an extensive range of graphics functions that can be used in high level programming language .

2. **Special Purpose Applications packages** : Designed for non programmers , so that user can generate displays without worrying about how graphics operation work .

Where Are We Headed?

In our increasingly digital ecosystem, graphic designers can boost the value of their work if they diversify their skills and broaden their talents. Interface and experience design dominate the job market, and with the booming popularity of smart speakers and digital assistants like Amazon's Alexa, Microsoft's Cortana, Google's Assistant, and Apple's Siri, we should see a shift to auditory experience design as well.

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What's Not Here—Yet :

The waters are teeming with a spectrum of *other* graphics-producing software—from esoteric niche scripts that only do one thing and hybrids that require light coding, to more mainstream painting, photo-editing, sketching, CAD, and vector programs. Add to that a wave of apps developed specifically for touch-based tablets or mobile devices. There are so many novel design tools out on the horizon and we're looking forward to exploring more of them