Graphic Design

Module Code- K72T001M03

NVQ-05 in ICT

Ministry of Youth Affairs & Skills Development

Vocational Training Authority of Sri lanka

NITC NATIONAL IT CENTER

Topic

01- Introduction to graphics

- Raster graphics
- Vector graphics

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Objectives

- Introduction of What is computer graphics and explain main category of computer graphic,
- Identify main difference between Raster and vector graphics
- Advantages and disadvantage of using Raster and Vector graphics

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Introduction

Graphic design: Graphic design is a creative profession that has become vital to business and media all over the world. Art directors and graphic designers, who must have hands-on abilities in the fine art sdrawing, painting or sculpture and strong computer expertise, use advanced hardware and software to create advertisements, packaging, promotional materials, Internet projects and other vehicles that allow businesses and manufacturers to visually display their products and services.

Computer Graphics: Computer graphics is an exciting creative profession that has transformed the fields of television, film, animation and the Internet. Computer graphics specialists produce new and traditional media content that reflects the emergence of developing technologies such as universal broadband access. Computer Graphics professionals combine expertise in advanced computer hardware and software with a strong sense of aesthetic vision, creativity and artistic skill.

Mainly Computer Graphic divided in to two main categories as **Raster Graphics** and **Vector graphics**

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- Raster graphics

Raster graphics, also called bit-map graphics, a type of digital image that uses tiny rectangular pixels, or picture elements, arranged in a grid formation to represent an image. Because the format can support a wide range of colours and depict subtle graduated tones, it is well-suited for displaying continuous-tone images such as photographs or shaded drawings, along with other detailed images.

Bitmap images are *resolution dependent*. Resolution refers to the number of pixels in an image and is usually stated as dpi (dots per inch) or ppi (pixels per inch).

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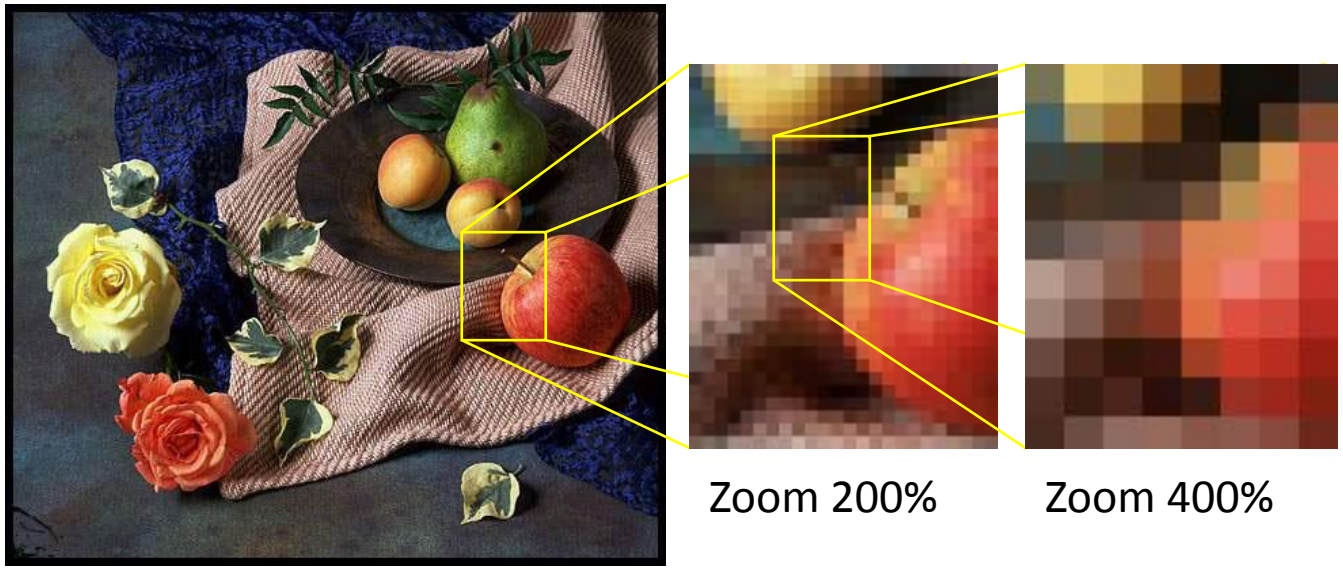
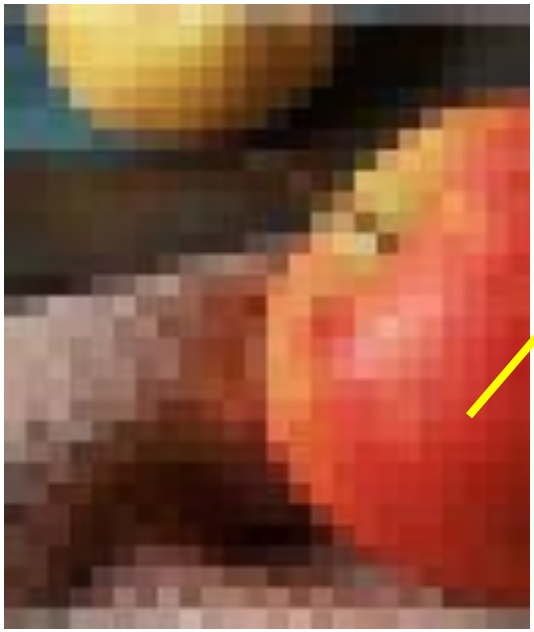
- Raster graphics

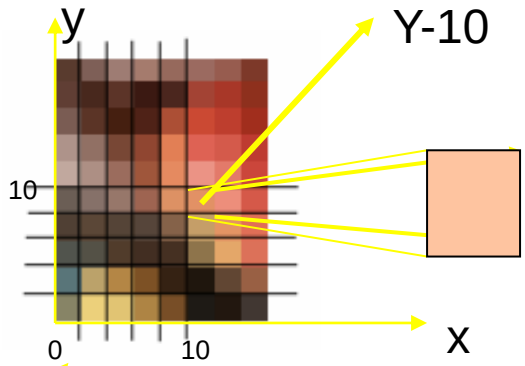
Pixel



Pixel

It has specific color value and Location

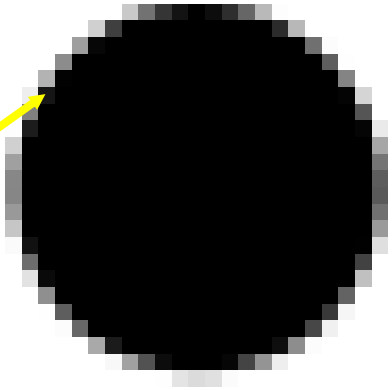




Location
X-10
Y-10

color value
R= 80
B=110
G=10

Pixel



- Raster graphics

Because bitmaps are resolution dependent, it's difficult to increase or decrease their size without sacrificing a degree of image quality. When you reduce the size of a bitmap image through your software's resample or resize command, you must throw away pixels. When you increase the size of a bitmap image through your software's resample or resize command, the software has to create new pixels. When creating pixels, the software must estimate the color values of the new pixels based on the surrounding pixels. This process is called *interpolation*.

Raster Graphic Programs

- Adobe Photoshop
- Corel Photo Paint
- Ms Paint
- Photo Studio

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• Raster graphics

Advantage of Raster Graphics

- Bitmaps are very easy to create. Take a picture with a digital camera, or scan something in, and you've got one.
- Bitmaps are fairly simple to output, as long as your RIP or printer has sufficient memory.
- They are very cost effective. You can take a picture or scan in a drawing, and easily show it on the Internet or send in an email.
- A bitmap image uses solid color pixels, which can be identified and recolored easily.
- The geographic location of each cell is implied by its position in the cell matrix. Accordingly, other than an origin point, e.g. bottom left corner, no geographic coordinates are stored.

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• Raster graphics

Disadvantages of Raster Graphics

- They are not upward scalable. You can make a bitmap smaller without to much loss, but you cannot make it larger without loosing quality. If you ever see a bitmap image blown up, you'll notice it has little individual squares or dots that make up the image. When you see it at its optimal size you don't notice the individual dots, but if you try to make it bigger, the image become fuzzy, jaggy or pixelated.

- Another disadvantage of bitmap images is that they require higher resolutions and anti-aliasing for a smooth appearance.

- The bmp file has been created by Microsoft and ibm and is therefor very strictly bound to the architecture of the main hardware platform that both companies support.
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• Vector graphics

Vector Graphics are quite different from the bitmaps. Vector graphics are made of pixels, instead mathematical formulas called “lines and curves” form shapes that in turn make up a vector graphics. In this case the computer therefore does not read a list of coloured dots but it look up at the mathematical formula that creates these shapes.
Vector graphics are the graphical representation of geometrical entities such as circles, rectangles or segments. You can enlarge the vector images as much as you want, you will never see a single pixel.

Vector images are represented by mathematical formulae. A few examples are as follows:

- A rectangle is represented by two dots.
- A circle by a centre and a radius
- A curve by several points and an equation

The computer processor will translate these mathematical calculations into such an information that a can be interpreted by the graphics card.

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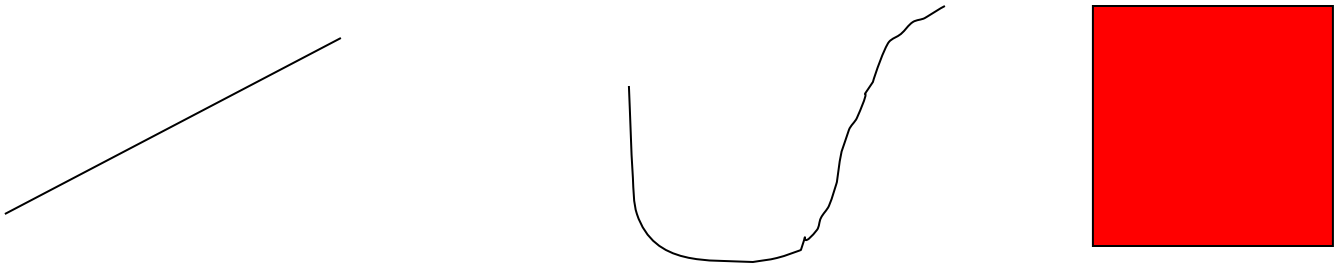
- Vector graphics



Vector Graphic Programs

- Adobe Illustrator
- Corel Draw
- Free hand
- Flash

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- # Vector graphics

Advantage of Vector Graphics

- The most important and obvious plus point of vector graphic is their power of scalability. If you try to enlarge a bitmap image, your computer can only enlarge the size of the squares making up the image area. On the other hand the vector images remain smooth because your computer merely re-computes the coordinates of the points and adjusts the vector equation constants.

- Each set of lines in a vector image represent separate and distinct objects. therefore every object can be re-edited at any time.

- Vector graphics are much smaller in size than the bitmap image format.

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- Vector graphics

Disadvantage of Vector Graphics

- Drawings containing trapping information can only be scaled up to 20 percent larger or smaller.
- Thin lines may disappear if a vector drawing is reduced too much.
- Small errors in a drawing may become visible as soon as it is enlarged too much.

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Keywords

- Bitmap
- Raster
- Vector
- Pixel
- Resolution
- Interpolation
- trapping

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Summary

Raster	Vector
•Pixel Base Image	•Mathematical define Line, Curves ,Fills
•Resolution Depend	•Resolution In depend
•Jagged edged	•Sharpe edged
•When enlarged quality will lose	•When enlarged quality will not lose

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Questions

- To edit a photo what will be the best

  I. Corel Draw
  II. Photoshop
  III. Illustrator
  IV. Ms Paint

- To edit design a logo what are the software to choose
  I. Photoshop
  II. Illustrator
  III. Ms Paint

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Reference

- http://graphicssoft.about.com/od/aboutgraphics/a/bitmapvector_2.htm
- http://www.zicara.com/techbytes/web-design/vector-images

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