

CT4510: Computer Graphics

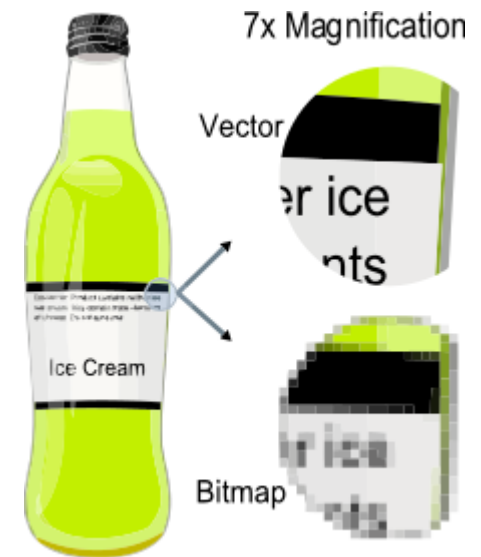
Raster Images

BOCHANG MOON

A solid orange horizontal bar at the bottom of the slide.

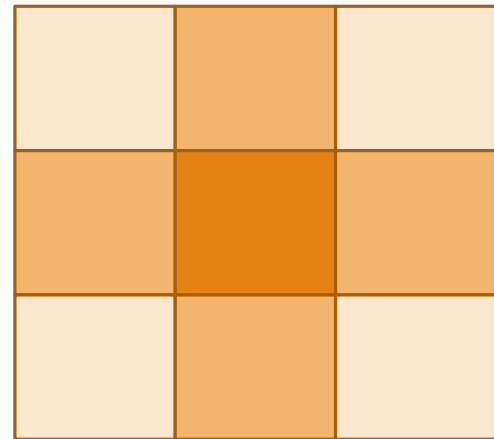
Raster Images

- Raster display
 - Show images as rectangular arrays of pixels
 - e.g., computer display or TV
- Raster image
 - 2D array that stores the *pixel value* at each pixel
 - *Pixel value?*
 - Color = [red, green, blue]
- Other ways to define an image?
 - Vector image
 - Store descriptions of shape rather than pixels



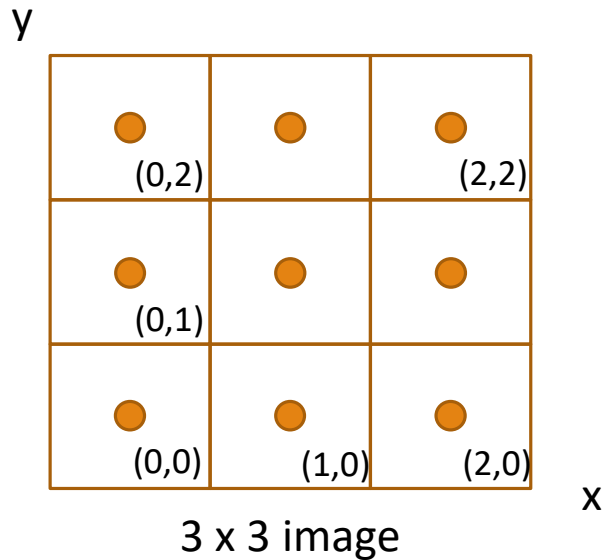
Raster Images

- Approximation of real image (continuous)
 - $I(x, y): R \rightarrow V$
 - $R \subset \mathbb{R}^2$: rectangular area
 - $V = (\mathbb{R}^+)^3$



3 x 3 image

Raster Images



- Pixel: point sample
 - Local average of colors in the image
- Q. How do we average the colors?

Pixel Values

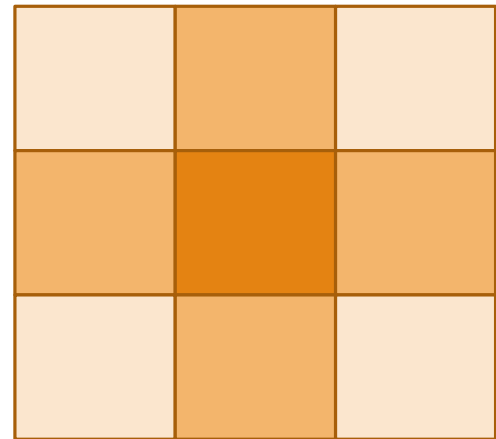
- Pixel values are stored in computer memory
- Pixel formats
 - 1-bit grayscale
 - 8-bit RGB (24 bits total)
 - 16-bit RGB
 - 32-bit RGB
- Q. low vs. high precision?

In this course,

- We will study how to generate raster images from virtual objects



Graphics Techniques



3 x 3 image