

CT5510: Computer Graphics

# Raster Images

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BOCHANG MOON



# 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

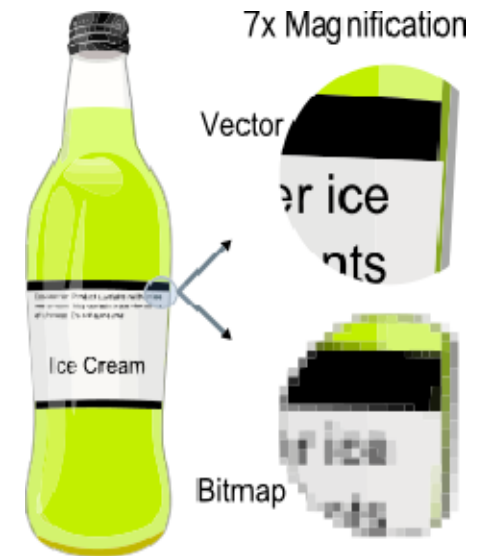
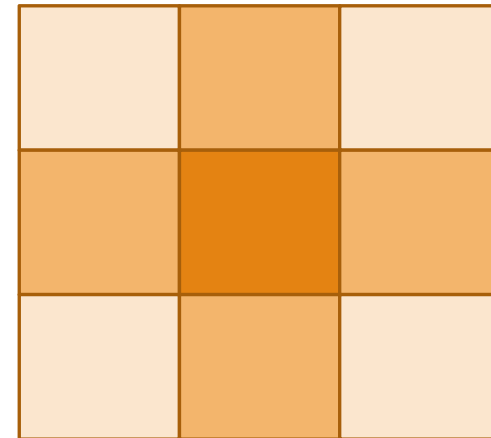


Image from wikipedia.org

# Raster Images

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

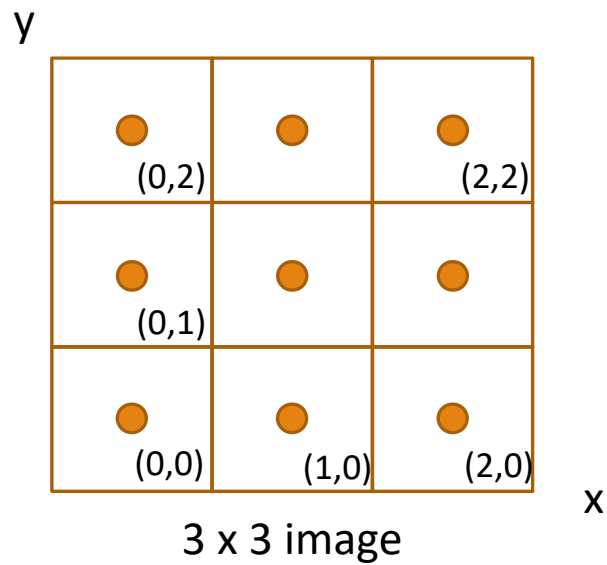


3 x 3 image



# Raster Images

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

# Pixel Values

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- 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?

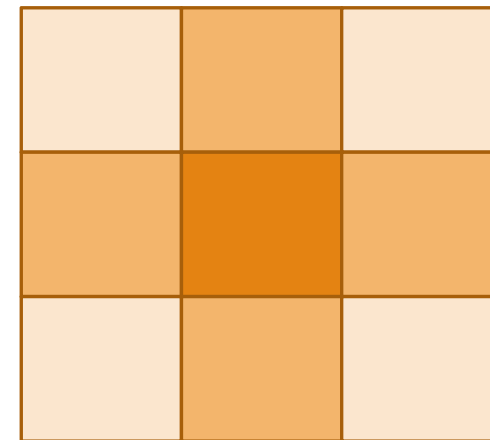
# In this course,

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



Graphics Techniques



3 x 3 image

