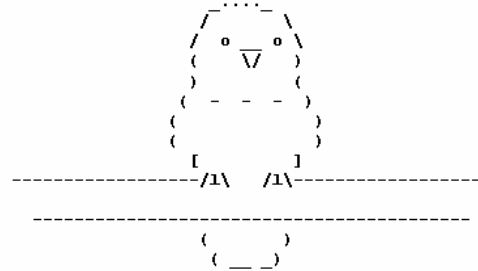## Computer Graphics

❖ **Character Graphics**
- ◆ **In the beginning...**
  Computers could only display text

❖ **Vector Graphics**
- ◆ **Image created from a mathematical coordinate description**

❖ **Raster Graphics**
- ◆ **Image created from a description of the color of each individual pixel**

Character Graphics

❖ **ASCII Art Requires use of fixed width font**

❖ **Very small file size**

❖ **Use code and preformatted elements <code><pre>;o)</pre></code>**

Vector Graphics

❖ **Image created from a mathematical coordinate description**

❖ **Requires significant processing power, however very small file size**

❖ **Examples include PowerPoint, CAD software, and Visio**

❖ **Macromedia Flash has become the standard for Web Vector Graphics**

Raster Graphics

❖ **Most popular for computer graphics when memory became inexpensive**

❖ **Large file size, but very little processing power required to render**

❖ **Image is a rectangular group of pixels**
- ◆ **Color Description for each pixel**
- ◆ **Usually, 8, 16, or 24 bit color for each pixel**
- ◆ **Corresponds with 256, 64K, or 16M colors**

❖ **Also called Bitmapped graphics**

Web Graphics

❖ **Web Graphics are usually Raster Graphics**
❖ **Use compression to reduce file size for faster download through network**
❖ **Requires processing to uncompress and properly display within browser window**
❖ **Supported compressed graphics file formats**
  ◆ **JPEG = Joint Photographic Experts Group**
  ◆ **GIF = Graphics Interchange format**
  ◆ **PNG = Portable Network Graphic** (ver. 5 IE)

JPEG Format

❖ *filename.jpg* **(note the extension)**
❖ **Best for photographs (24 bit RGB color)**
❖ **Excellent Compression (10:1 to 100:1)**
❖ **Lossy Process (Not for Archive)**
❖ **File Size Reduction**
  ◆ **Reduce image size**
  ◆ **Reduce quality**
  ◆ **Gaussian Blur image**
  ◆ **Do NOT reduce colors (Keep 24-bit color)**
❖ **Properties:**
  ◆ **Loading: Progressive or Standard**
  ◆ **No Transparency and No Animation**

GIF Format

❖ *filename.gif* **(note the extension)**
❖ **Best for graphics with**
  ◆ **Long runs of same color (i.e. Cartoons)**
  ◆ **Maximum palette size of 256 colors**
❖ **Lossless LZW Compression**
❖ **File Size Reduction**
  ◆ **Reduce image size**
  ◆ **Reduce palette colors (128,64,32,16,8,4,2)**
  ◆ **Do NOT Anti-alias or Blur**
❖ **Properties:**
  ◆ **Loading: Interlaced or Standard**
  ◆ **Transparency**
  ◆ **Animation**

Image Sources

❖ **Acquire on Web (Right click and Save)**
  ◆ http://www.iconbazaar.com/
  ◆ http://www.freebuttons.com
  ◆ http://www.google.com
❖ **Digitize Photo or Drawing**
  ◆ **Scanner**
  ◆ **Digital Camera**
❖ **Create using Graphics Software**
  ◆ **PhotoFiltre – www.photofiltre.com (freeware)**
  ◆ **Paint.NET – (freeware) http://www.eecs.wsu.edu/paint.net/pdnabout.html**
  ◆ **Adobe Photoshop**
  ◆ **Macromedia Fireworks**

XHTML: Image Element

❖ **The Image Element is an Inline Element**

❖ ****
  - ◆ Source file in same folder as html file = "bob.gif"
  - ◆ Source file in sub-folder photo = "photo/bob.gif"
  - ◆ Source file in parent-folder = "../bob.gif"
  - ◆ Source file at another URL
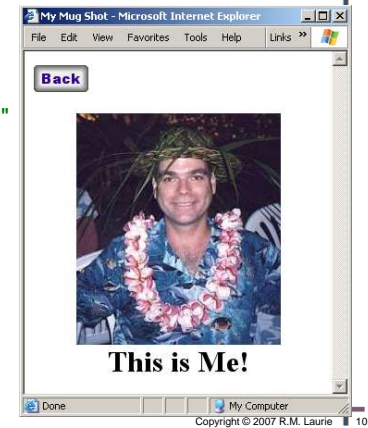   "http://www.bob.com/photos/bob.gif"

❖ **Optional Attributes:**
  - ◆ **alt="Bob's Mug"** Alternate text label
  - ◆ **width="200" height="150"** Image dimensions

Copyright © 2007 R.M. Laurie   9

HTML: Image Tag Example

```
<head>
  <title>My Mug Shot</title>
</head>
<body>
  <img src="btBack.gif" alt="Back"
    width="59" height="29" />
  <h1 style="text-align:center">
    <img src="Me.jpg"
      alt="My Photo"
      width="221" height="250" />
    <br />
    This is Me!
  </h1>
</body>
</html>
```

My Mug Shot - Microsoft Internet Explorer
File Edit View Favorites Tools Help Links »
Back
This is Me!
Done   My Computer

Copyright © 2007 R.M. Laurie   10

Tips: Image Usage

❖ Don't contribute to the world wide wait…
    Use reduced size images! (< 50kbytes)
❖ Specify the height and width of your images to load text and layout first.
❖ Try to reduce image byte size by
  - ◆ Reducing size for all images
  - ◆ Reducing colors for GIF image
  - ◆ Reducing quality for JPEG image
❖ Do not use images located on other sites unless there is a good reason
❖ Only use GIF and JPG images on your web site
❖ Limit Animated GIF to one per web page

Copyright © 2007 R.M. Laurie   11

Creating an Icon for your webpage

❖ Icons are small 16x16 pixel images that will can be displayed in the title bar of a web site
❖ The icon image should be saved as a filename.ico file and located in the root folder of the web site
❖ For cross browser compatibility place the following two lines in the head

**<link rel="icon" href="_filename.ico_"
    type="image/x-icon" />**

**<link rel="shortcut icon" href="_filename.ico_"
    type="image/x-icon" />**

Copyright © 2007 R.M. Laurie   12