

CMPSCI 105: Lecture #8.1 Graphics File Formats

©2014-2018 Dr. William T. Verts

Common Graphics Files

- **.BMP**
- **.JPG / .JPEG**
- **.GIF**
- **.PNG**
- **.SVG**
- One of these things is not like the others...

©2014 Dr. William T. Verts

.BMP

- Bitmap (Native to Microsoft Windows)
- Uncompressed, all pixels stored
- Four color modes:
 - 24-Bit (16,777,216 colors) 3 bytes/pixel
 - 256 Color 1 byte/"pixel"
 - 16 Color ½ byte/"pixel"
 - 2 Color (Monochrome) 1 bit/"pixel"
 - First stores colors directly, last three use a Palette
- Not a good choice for the Web due to size

©2014 Dr. William T. Verts

.JPG / .JPEG

- Joint Photographic Experts Group (pronounced "J-Peg")
- 16,777,216 possible colors (24-bit color)
- Compressed, uses "lossy" compression
 - Converting a **.BMP** to **.JPG** changes some pixels
 - Increases overall compression by doing so
 - Changes won't be noticed in "noisy" images
- Great for photographs
- Terrible for text, cartoons, line art

©2014 Dr. William T. Verts

.GIF

- Graphics Interchange Format (CompuServe 1987, 1989), pronounced "JIFF"
- Up to 256 maximum colors, but uses a palette
- Compressed, uses "lossless" compression
- Supports transparency, simple loop animations
- OK but not great for photographs
- Great for text, cartoons, line art
- Patent entanglements diminished use 1995-2010

©2014 Dr. William T. Verts

.PNG

- Portable Network Graphics (1996, pronounced "P-N-G")
- "Zillions" of colors: supports up to 48-bit color
- Supports both lossy & lossless compression
- Supports transparency (no animations, sorry)
- Great for photographs, text, cartoons, line art
- Free from patent entanglements
- Increasing support by graphics packages

©2014 Dr. William T. Verts

What's Common About These?

- All formats so far (**.BMP**, **.JPG**, **.GIF**, **.PNG**) are pixel-based formats.
- Creatable by painting programs:
 - Windows Paint (comes with Windows)
 - Mac Paintbrush (free download)
 - Photoshop (not free)
- Painting new object over old changes the old
- Scaling up shows a bad case of “jaggies”

©2014 Dr. William T. Verts

.SVG

- Scalable Vector Graphics
- NOT a pixel based graphics format
- IS a vector based graphics format
- Objects have separate existence from images
- Created by drawing programs, not painting
- Looks good when scaled up or down in size
- Text Coding similar to HTML (actually XML)
- Not all browsers fully support **.SVG** (e.g., I.E.)

©2014 Dr. William T. Verts