

**Lynch & Horton Discussion Questions
Chapter 7 – Web Graphics**

- 1. What imposes limits on the size of files and number of colors that you will include in graphics used on the web?**

The user's display monitor and bandwidth capacity both impose limits on the size of files and number of colors in graphics.

- 2. What are the maximum numbers of colors that can be seen on an 8-bit screen? A 24-bit screen?**

On an 8-bit screen 256 colors can be seen. Although the exact colors that an 8-bit screen can display are not fixed, there can never be more than 256 unique colors on the screen at once. Millions of unique colors can be simultaneously displayed on a 24-bit screen.

- 3. What is the color depth of your own computer?**

The color depth of my own computer is 32-bit.

- 4. How might dithering influence what your readers will see on their 256 monitors?**

If the reader's display monitor is set to 256 colors, the web browser will display images using the 216-color browser-safe color palette. There is no way to force the browser to display a color outside of the browser-safe palette. If any graphic elements use hues outside of the browser-safe palette, the web browser will automatically dither these images into browser safe colors. Dithering, the process of juxtaposing two colors of pixels to create the illusion of a third color, is the most common way to reduce the color range of images down to the 256 (or fewer) colors seen in 8-bit GIF images. Dithering results in loss of image detail, reduces the overall sharpness and/or clarity, and introduces a noticeable grainy pattern on the images. If basic navigation buttons and background graphics are dithered, parts of the page will be hard to read and it will produce an amateurish effect.

- 5. What are the two primary graphic web file formats?**

The two primary graphic web file formats are JPEG (Joint Photographic Experts Group) and GIF (Graphics Interchange Format).

6. Which of these formats is limited to 8-bit color? How does this influence the size and download time?

GIF file formats incorporate a compression scheme to keep files at a minimum, and they are limited to 8-bit color. Virtually all web browsers can display GIF files, and they have a fast download rate because they compress efficiently and are small in size.

7. What is the advantage of using an interlaced GIF? Can you identify one on the web?

Because it downloads one line of pixels at a time from top to bottom, an interlaced GIF provides the viewer with a preview of the image in its entirety as it is downloading. Rather than load one line of pixels at a time, browsers that support GIF files that are interlaced will load layers of the image (moving from low to higher resolutions). Interlacing is best for large GIF images (such as illustrations and photographs), but it is a poor choice for smaller GIF graphics (navigation bars, buttons, icons) because they will load faster in conventional GIF format.

An example of an interlaced GIF can be found on this website:

<http://www.cof.orst.edu/net/software/present/graphics/interla2.htm>

8. What is the advantage of creating a transparent GIF for your webpage? Find a gif and make it transparent using an image editing format. Insert the before and after images.

Transparent GIF images can be placed on any color and type of background, and they blend in without noticeable borders.

9. Animated GIFs are commonly used on web pages. What is the major drawback to you including an animated GIF in your website?

Animation can be created by combining multiple GIF images into a single file, but there are drawbacks to using such animated GIFs. They apply no compression between frames, which slows the download time, and the frames load and play even before the entire file is downloaded. Users cannot turn off animated GIFs because they do not contain interface controls. They will play whether the user wants them too or not, and because GIF animations are seldom used in a meaningful way they generally distract the reader from the page content.

10. It would be reasonable for you to have small navigation graphics, buttons, balls, and other elements on your web pages. What graphic web file format will you save these in and why?

I would use non-interlaced GIF files for these small graphics because they are small in size and have a fast download rate. PNG files can also be used, but they are not yet fully supported by all browsers.

11. Normally photographs are JPEG files, why?

JPEG images are normally used for photographs, complex photographic illustrations, medical images, and other types of images in which the compression artifacts of the JPEG process do not severely compromise image quality. Unlike GIF files, which only consist of 256 colors, JPEG images are full-color images (24-bit, or “true color”). Dithering will not compromise the color integrity of the original image, and the quality of JPEG files tends to be superior for these types of photographic images.

12. List the advantages of GIF and JPEG files.

GIF image files are the most widely supported graphic format on the web, are relatively small in size, provide the ability to set transparent regions, support interlacing, and offer basic animation functionality. They look better than JPEGs when used in diagrams, and can be resized without changes in resolution or clarity.

JPEG files support full-color (24-bit, “true color”) images, their large compression ratios mean fast download speeds, and they produce excellent results for most photographs and complex images.

13. What must you keep in mind if using a background image?

When considering background images, the designer must keep in mind the access speeds that are typical for their target audience, the goals of the website, and whether or not a graphic background will match the aesthetic goals of the site. Bandwidth speed must be kept in mind because large background images may take longer to load. Background images can be annoying to the user and may make the webpage difficult to read if they’re not used carefully.

14. What is an image map? Can you identify one on the web? Create a small image map that is active.

An image map is a web graphic that contains active links to other web pages. Image maps can be identified by moving your mouse over the image and viewing the alt tags of the links. Image maps are found on many websites, and <http://www.geocities.com/Athens/Acropolis/6985/lab6.html>. My own image

map can be found at:

<http://web.utk.edu/~jenscag/IT578/discussions/imagemap.html>

15. Explain the advantages and limitations of PNG files

The PNG file format is an alternative to GIF files. PNG files maintain all color information and use a compression algorithm that does not degrade the quality of the image. Advantages include a full range color depths, support of sophisticated image transparency, superior interlacing, and automatic corrections for display monitor gamma. PNGs can hold short text descriptions of the image content which allows search engines to look for images based on this embedded text. The major disadvantage of PNG files is that they are not supported by all browsers, and those that do may not support all of their features.