Graphic Formats

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WHAT'S COVERED

In this lesson, you will learn about the concept of computer graphics and the concepts that surround them. You will learn about the different aspects and characteristics of digital graphics that control how images appear on a computer.

Specifically, this lesson will cover the following:

1. Graphics
2. Graphic Characteristics

1. Graphics

The term **graphics** refers to digitized visual elements such as photography, drawings, paintings, charts, diagrams, and more. The idea is that a "graphic" is a visual form of communication and can be meaningful, informational, or simply decorative. Graphics combine colors, lines, shapes, illustrations, and captured images to create a complete image and can be created using a variety of methods. Graphics provide a powerful tool for developers, particularly web developers, to convey more than just visual appeal but also improve organization, visual hierarchy, accessibility, and search engine optimization (SEO); guide users; and much more. Graphics are also a faster method of communicating complex concepts, ideas, or data to your visitors. Let's take a look at the different types of graphic elements, their characteristics, and their uses.

TERM TO KNOW

Graphics
Any visual representations of data.

2. Graphic Characteristics

Graphic images possess different characteristics that play a part in either how they are implemented or used or even what they are capable of. Let's review some of these characteristics and how they impact graphic assets.

Characteristic	Description
Height and width	Also referred to as the graphic's dimensions or resolution. This refers to the height (top to bottom) or width (left to right) of the graphic in pixels (individual picture elements). In most cases, it is important to maintain the ratio of the two measurements. This is referred to as the aspect ratio, and depending on the contents of the graphic, changing the ratio of height to width could stretch or skew the image. All graphics are displayed using height and width in pixels, but they can also be presented as a percentage of the graphic file's original dimensions.
File size	The **file size** refers to the number of **kilobytes (KB)** or **megabytes (MB)** the image takes up within a computer's storage. The file size is usually dictated by the format of the image, the height and width, the level of detail, and the algorithm used to convert the image into a digital file. While the contents of the image play a role in the file size, the format of the file used to store the image has a larger impact on file size. This matters because larger graphic files take longer to download and can greatly reduce performance for the user. As a general rule, we want to reduce the file size as much as possible without negatively affecting the quality of the image.
Transparency/opacity/alpha	These three terms refer to the ability to look through an image, much like we look through a stained glass window. The window is a large physical graphic but is made of glass so you can actually see through the graphic. **Opacity** refers to how much of the image you can see or how "solid" the image appears. An opacity of 100% means the image is solid, whereas 0% means you cannot see the image. **Transparency** is the exact opposite of opacity, so 100% transparency means you cannot see the image. Alpha, also called the **alpha channel**, is different from general opacity in that it is a hidden layer of an image that determines which portions of the image are transparent and which are opaque. This way, you can have an image wherein the background is completely transparent and the foreground is opaque, making the foreground appear by itself. The alpha channel is also sometimes referred to as a **transparency mask**. Not all graphic file formats support transparency.
Animation	**Animation** is the ability of a graphic to either show different "frames" of the graphic or for elements of the graphic to move or change shape within the graphic's boundaries. Most graphic file formats do not support animation.

Interactivity	Certain image types contain interactive areas for the user. Graphic interactivity in web development usually refers to adding clickable hyperlinks over an otherwise static image. Very few graphic file types support interactivity. **Flash animations** were created by Adobe Systems and were one of the graphic formats that did include interactivity. Flash animations stopped being supported in December 2020. Scalable vector graphics (SVGs) is another type of graphic format that supports interactivity and is still supported. As such, hyperlinks can be embedded, prompts can ask the user to make a choice, and so on.
Compatibility/browser support	The compatibility of a graphic is directly related to the file format used to store the image. There are common graphic file formats that are automatically supported by web browsers and can be easily used and displayed. However, others require that specialized software be installed to view the graphic.

Graphic characteristics should be carefully considered when preparing graphic assets for a website as they can have a large impact on the website's performance and functionality. We will discuss these characteristics and their impact on development in the next tutorials.

WATCH

View the following video for more on UX design for web developers:

TERMS TO KNOW

File Size
Referring to a digital computer file, the file size is how much computer storage is consumed by the file.

Kilobytes (KB)
A measurement of digital computer storage that consists of 1,024 bytes of data, each byte consisting of eight individual bits.

Megabytes (MB)
A measurement of digital computer storage that consists of 1,024 kilobytes of data.

Opacity
How solid something appears, that is, the opposite of see-through (transparent).

Transparency
How see-through something appears, that is, the opposite of solid (opaque).

Alpha Channel
A layer of graphic data that determines what portions of an image are transparent and to what degree.

Transparency Mask
Part of the alpha channel, the transparency mask is a layer of a single color (greyscale) with the color ranging from 0% (no color) to 100% (full color), indicating which portions of the image will be transparent or opaque.

Animation
Motion added to elements on the screen.

Flash Animations
A now-defunct system of graphics, animation, and programming that created interactive, animated objects using the Adobe Flash system.

SUMMARY

In this lesson, you learned about **graphics** and you gained an understanding of the different aspects and **characteristics of graphics** that play a role in how they are displayed and their features and capabilities.

Source: This Tutorial has been adapted from "The Missing Link: An Introduction to Web Development and Programming " by Michael Mendez. Access for free at https://open.umn.edu/opentextbooks/textbooks/the-missing-link-an-introduction-to-web-development-and-programming. License: Creative Commons attribution: CC BY-NC-SA.

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