

Client-Side Web Development

Class 4.1

Today's Topics

- Image Optimization
- **Exercise:** Image Enhance

Announcements

CSS Zen Garden

Any Questions?

Image Optimization

**Images often account for most of the
downloaded bytes on a web page**

Image optimization is the process decrease the size of an image while still maintaining acceptable quality

Eliminate Images

**Does the image serve a purpose?
Is it required?**

**Can the image be replaced by HTML, CSS,
JavaScript or Web Font?**

Image Formats

Raster vs Vector

A *vector image* is created using lines, points and polygons to represent an image

Vector images are resolution-independent,
which means they can be scaled without any
lose of quality

Vector images are ideally suited for images that consist of simple geometric shapes like logos, text, and icons

Scalable Vector Graphics (SVG) is a widely used
vector image format

A *raster image* is a series of pixels placed in a rectangular grid

Raster images work best used with complex
images like photos

GIF, PNG, JPEG, and WebP are common raster image formats

SVG, GIF, PNG, and JPEG are universal image formats and compatible with all browsers

WebP is compatible with Chrome, Opera, Edge
and Firefox(soon).

Choosing an Image Format

**For simple illustrations, icons, logos, or images
composed of geometric shapes**

SVG or PNG

For images with transparent backgrounds
PNG, GIF, or WebP

For adding animation to images
GIF, WebP or SVG with CSS

**For photograph with no loss of quality and
finest details**

PNG

**For a photograph that is optimized with the best
ratio of file size and quality**

WebP or JPEG

Image Compressions

Vector Images

SVG export by an application may contain metadata and other unnecessary data

[**https://vecta.io/nano**](https://vecta.io/nano)

Raster Images

Lossless vs Lossy Compression

Lossless compression compresses the pixels in
such a way that no quality is lost

Lossy compression eliminate pixel so that the overall file size is smaller than before

***GIF*, *PNG*, and *WebP* using a lossless
compression.**

JPEG and ***WebP*** uses a lossy compression

<https://squooosh.app/>

Image Resolution

The more pixels an image has the larger the file size. So it is important to choose the correct resolution for each situation

High Density displays make things more complicated

On a 2x display (most laptops), an image will need to be 4 times the size to maintain the same quality

On 3x or 4x displays, (most mobile devices), will require image to be 9 to 16 times the size

1x	2x	3x	4x
300px	600px	900px	1200px
600px	1200px	1800px	2400px
900px	1800px	2700px	3600px
1200px	2400px	3600px	4800px

Exercise: Image Enhance

For next class...

- Responsive Images
- Review: Increase your Flexibility
- **Lab:** Image Response