

Links & Images

Users & Requirements

Essentials of Web Design

CSCI 1210

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Links

Links

What makes the Web the Web

One of the things that makes the web unique is hyperlinks, or 'links'

Changed the way consumers interact with content

No longer a linear, start-to-finish activity

Users can follow a 'breadcrumb trail,' jumping from site to site, or to different locations within a site, to find the content they want

The Anchor Element - `<a>`

The HTML element that we use to create hyperlinks is the 'anchor' element

`<a>`

This tells the browser that whatever appears as between the `<a>` and `` tags is a link to another resource

By default, links are displayed as underlined blue text

Links

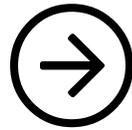
Let's think about this for a second

We use `<a>` to specify a link

That's great

Now what?

Well, if we're going to tell the browser to go somewhere when the user clicks on a link, it'd be nice if the browser knows where it is we want the user to go



Where to go? - href

This is one of the places we need to add an attribute to the opening tag

```
<a  
href="https://csci1210.com">CSCI  
1210</a>
```

Will display like this:



[CSCI 1210](https://csci1210.com)

Where to go? - **href**

href == 'hypertext reference'

This is an HTML-speak way of saying 'address'

Tells the browser where to go when the user clicks the link

Remember, we talked about attributes a couple of lectures ago

They provide the browser with additional information to make the page behave the way we want

href - Two Types

An important aspect of hrefs is the type we're using

There are two:

absolute

relative

Which one we choose to use has an important effect of the behavior of a web page / website

href - Absolute

An absolute reference provides the entire URL to the browser

Remember what 'URL' means?

The address is a unique 'point' on the web that doesn't change (often)

Easy to distinguish from relative URLs because of 'https://' (or 'http://')



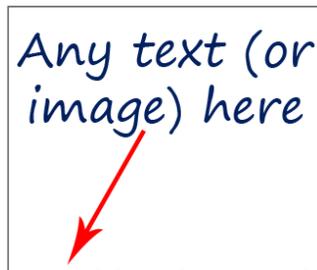
```
<a href="https://csci1210.com/index.php">CSCI 1210 Website</a>
```

href - Relative

A relative reference provides the location of a resource with respect to the location of the current page

The browser starts 'looking' for the requested resource at the location that the page is stored

In this example, the browser will look in a subfolder named 'examples' for a file named 'example1.html'



```
<a href="https://csci1210.com/index.php">CSCI 1210 Website</a>
```

Navigating the File Tree

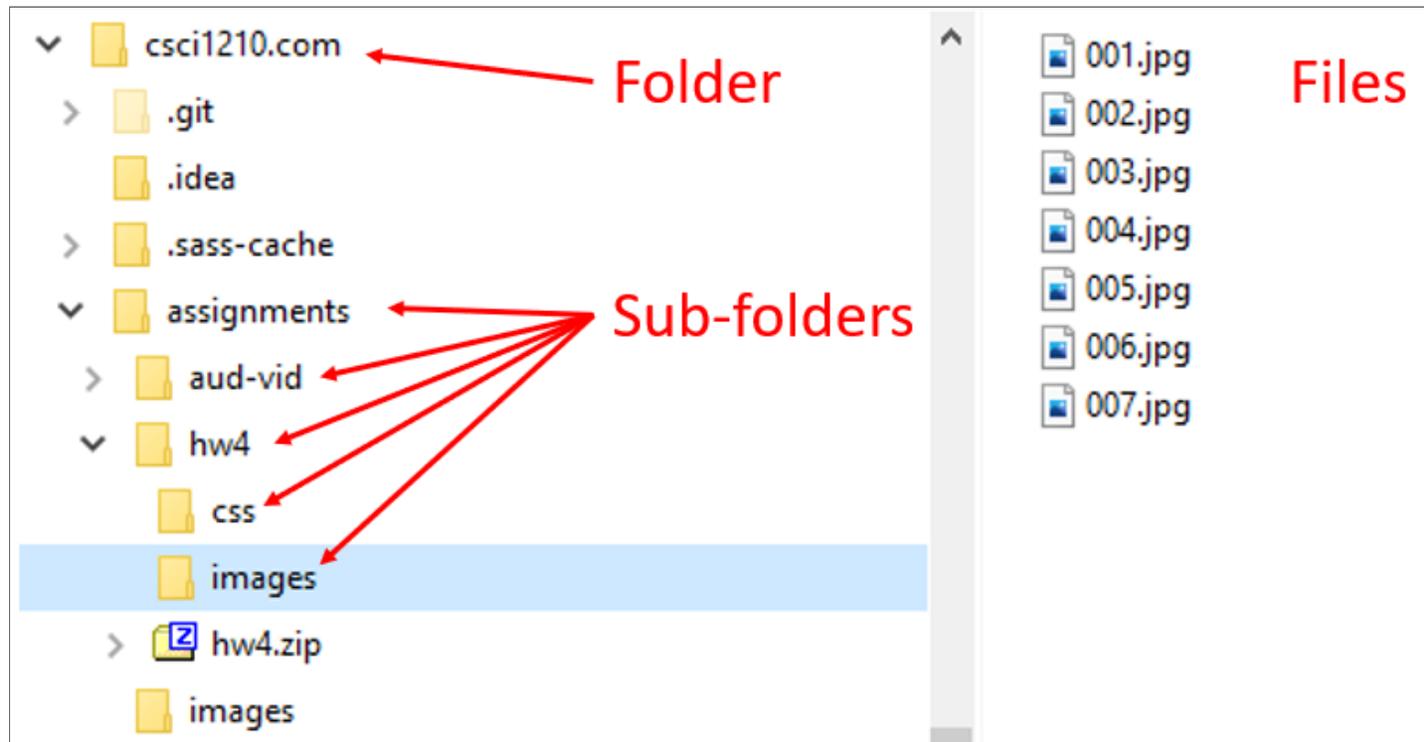
If you think of your computer's file system as a tree, you'll see that there are several big branches (main folders)

Then smaller branches (sub-folders)

...and leaves (files)

Any of the branches can have 0, 1, or many leaves

Navigating the File Tree



Navigating the File Tree

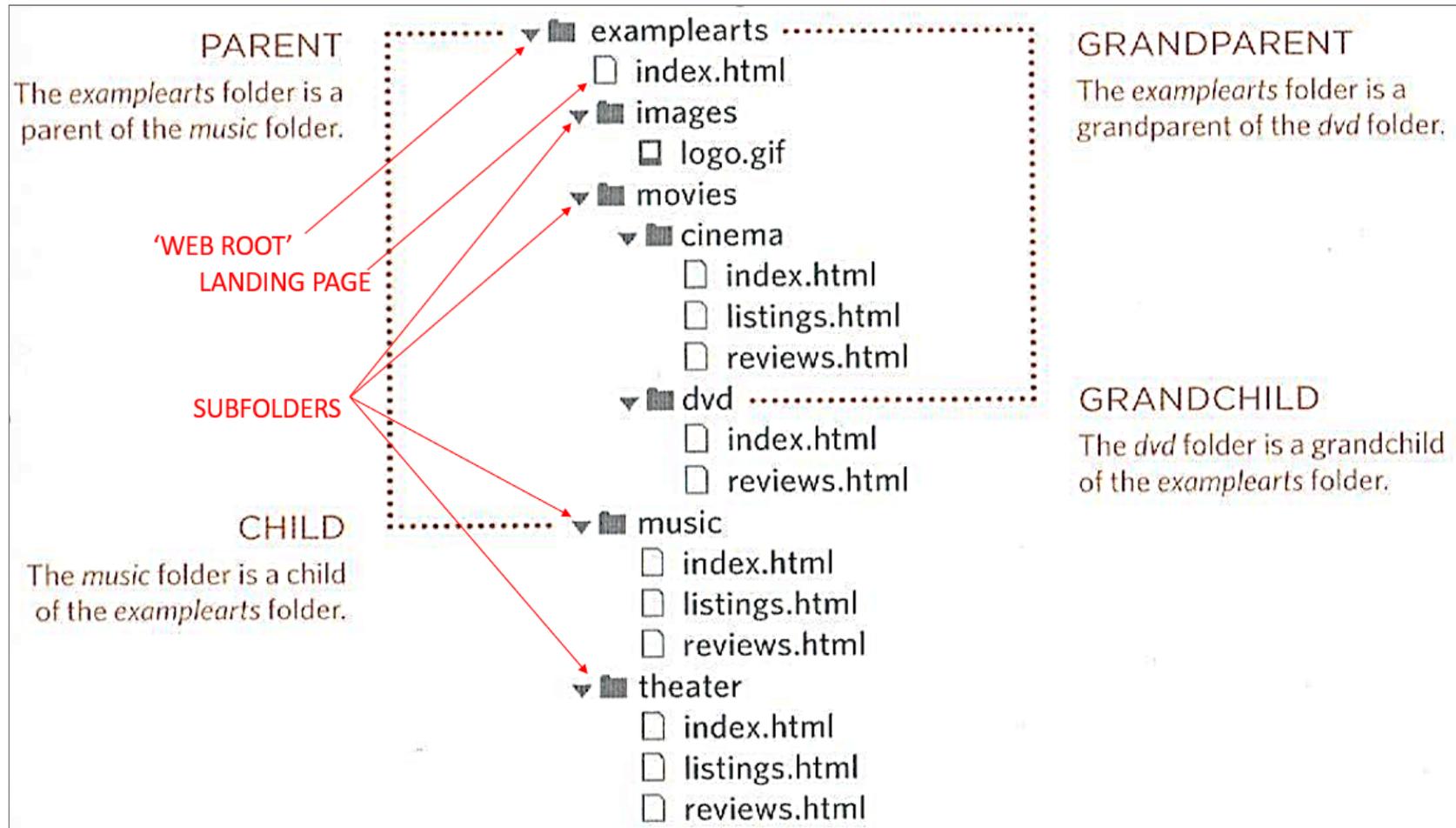
```
+ csci1210.com
|
+---assignments
|
+---hw4
|   hw4.html
|   hw4.zip
|   hw4template.html
|
+---css
|   hw4.css
|
\---images
    001.jpg
    002.jpg
    003.jpg
    004.jpg
    005.jpg
    006.jpg
    007.jpg
```



This is the output from the DOS 'tree' command, which shows a listing of folders, subfolders, and files in each folder for a given directory

It also illustrates how files and folders are arranged in relationship with one another

Navigating the File Tree





If absolute URLs always work, why not use them everywhere?

What's the point of even having relative URLs?

Absolute vs. Relative URLs

There are two primary reasons to use relative URLs in place of absolute URLs:

1. Absolute URLs can take longer (DNS lookups)
2. What if you have to move your site to a new provider, server, or domain?

The rule is: If you're linking to any resource on your site, use relative URLs; Any other site, use absolute URLs

Links Within Pages

We can create links within pages to navigate to other parts of the page

Use an **id** to identify the part of the page you want to link to (creating an 'anchor,' if you will)

```
<h1 id="top">Top of  
Page</h1>
```

Create a link on the page that points to the 'anchor'

```
<a href="#top">Top</a>
```



Notice the
'#'

Internal Links

This is useful for long pages when you want users to be able to 'jump' to different parts of the page

 **Example (internal link.html)**

Mailto:

Another type of link is the **mailto:** link

Makes the browser launch user's default email application and inserts the given email address into the 'to' field

```
<a  
href="mailto:ramseyjw@etsu.edu">E  
mail Jack</a>
```

This used to be a real popular way to get in touch with users, but it's largely fallen into disuse

We've never used it in labs because of the requirement for the computer to have a default email application designated

There are better solutions using scripting languages available

Links Summary

Provide a way for users to navigate to resources within and outside a site

HTML anchor element

```
<a  
  href="https://csci1210.com">CSCI  
1210</a>
```

href is the location you're navigating to - hypertext reference

Within a site, use relative links

Outside a site, use absolute links

Understanding the path to a resource is important

Images

Images

Obviously, images are an important part of the Web experience

The old saying, "A picture is worth a thousand words" is still true, as much for the Web as anywhere else

Knowing how to make a raw image suitable for use on the Web is a critical skill for a developer



First, let's look at how to add an image to a web page

Then, we'll see how we can take raw images from the camera to the web page

The `` Element

``

This is the element we use to embed an image on a web page

Like the `<a>` element, we have to provide the browser with a little additional information to make it work

`` is a standalone (void) inline element

 Images

So an image element will look like this:

```

```

src & **alt** are required for the image to work

title displays text when the user hovers the mouse over the image

src may be either an absolute URL or a relative URL (for the most part, linking to someone else's image (absolute) is considered kind of rude)

 Images

So an image element will look like this:

```

```

alt is important for users with visual impairment

Allows them to experience the page more fully, even if they can't see the image

Required for page validation (we'll talk about that later)

Modern browsers will display the alternative text when the image is hovered over, if no title is specified

Image Formats

GIF

Graphics Interchange
Format

Smaller file sizes

256 colors - not good for
photographs

Used mostly for logos,
icons, cartoons, etc

Support transparent backgrounds

Support animation (can be annoying)



Image Formats

JPG / JPEG

Joint Photographic
Experts Group

Lossy compression

Compression == smaller
file sizes

Supports 16+ million
colors

👍 No transparent
backgrounds / animation



Image Formats

JPG / JPEG - 'Lossy Compression'

The image on the left will be a bigger file, but with more detail than the image on the right



No compression



High compression

Image Formats

PNG

Portable Network
Graphics

Lossless compression /
larger file sizes

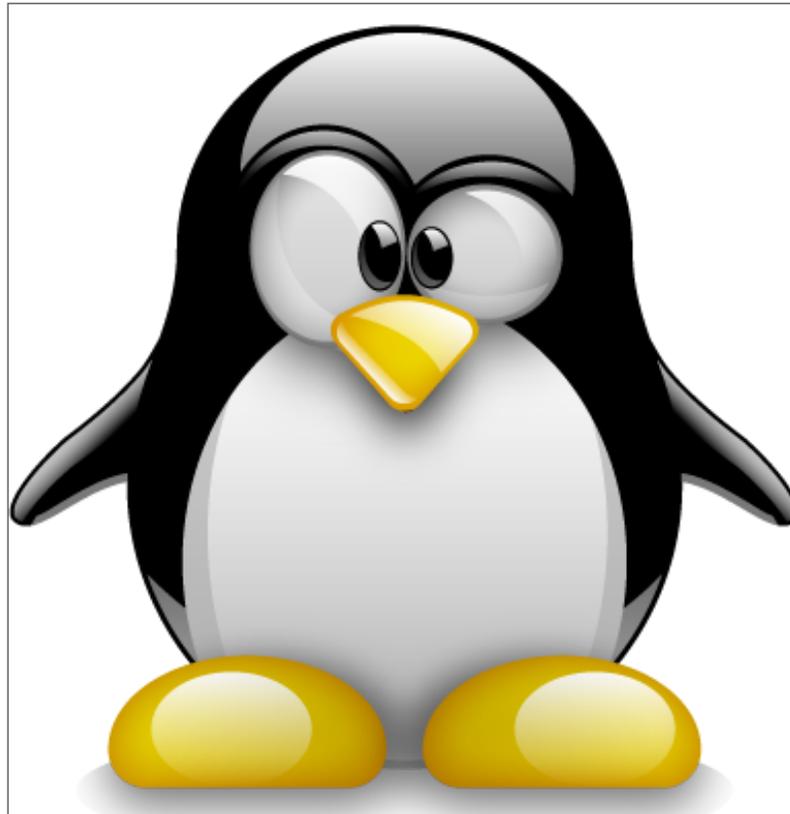
16+ million colors

Good for photos

Good for logos, icons,
cartoons, etc

Supports transparency

Doesn't support
animation



Captions

<figure>

Sometimes we want to include captions with our images

The **<figure>** element couples an image element with a **<figcaption>** element to provide a captioned image

Captions

```
<figure>  
    
  <figcaption>Glass Globe</figcaption>  
</figure>
```



Glass Globe

Image Links

Instead of using text for a link's display, we can use an image

```
<a href="https://csci1210.com/index.php"
target="_blank">
    
</a>
```



(<https://csci1210.com>)

 Note: target='_blank'

Resolution

Resolution refers to the number of pixels per inch the image contains

Standard resolution for the Web is 72ppi (pixels per inch)

A photo print of a digital image is much larger - 300ppi (or dpi - 'dots per inch') or more

So, if 300dpi is better than 72dpi, why not use it for Web images?

Two words:

FILE SIZE

Resolution

Many users still connect through dial-up

2G/3G/4G cellular

'Slower' broadband (cough, cough) - Satellite

Larger files take longer to download

Resolution

One way browser makers compensate for this is caching

A 'cache' is a [temporary] copy of a downloaded file

Browsers will cache files for a while

When a user re-visits a page, the file can be loaded from the local copy instead of having to download it all over again

Resolution

As a developer, it's important to know this

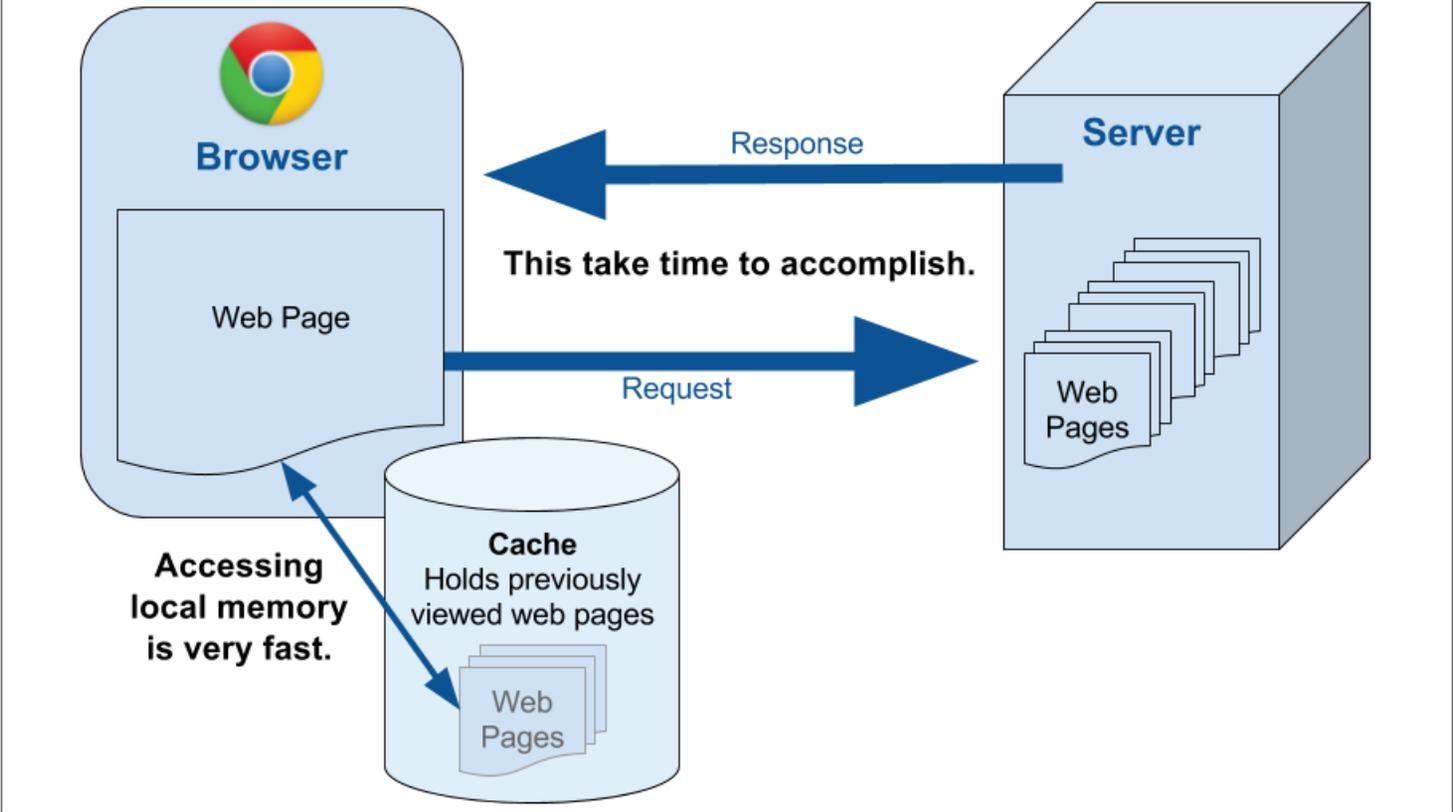
You can optimize your site's speed by taking advantage of the browser cache

Images (like, for example, a logo) that appear on many pages should be accessed from the same folder

The browser will then detect that it is the same file and won't download it again for subsequent page visits

Resolution

The Browser Cache



Resolution

While caching helps page load times, the files still have to be downloaded the first time the page is accessed

It's important, then, to optimize images for the Web

By 'optimize,' we mean edit the files so that their resulting file size is as small as possible without losing resolution

Page download times are the most important factor in overall user satisfaction with a site

Photo Editing Basics

Photo Editors

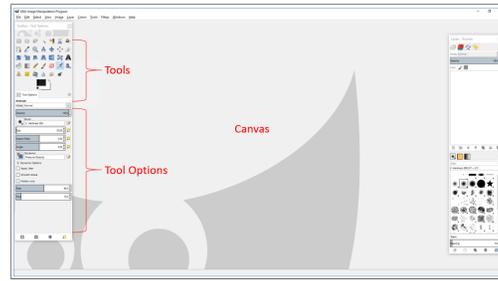
Adobe Photoshop is arguably the best photo editor around

However, it ain't cheap - we've had problems with licensing on lab computers in the past

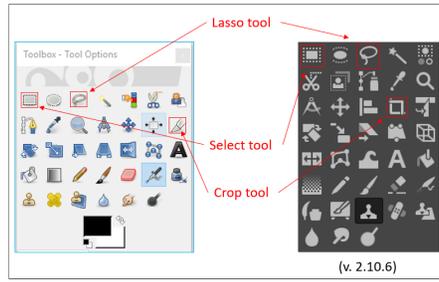
Another popular editor, that isn't as expensive, is GIMP



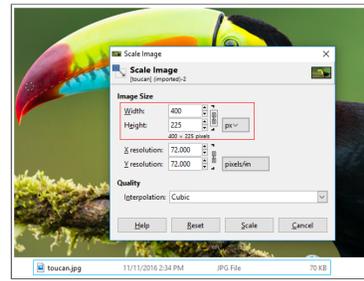
GIMP



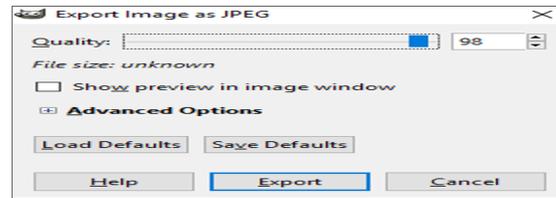
GIMP



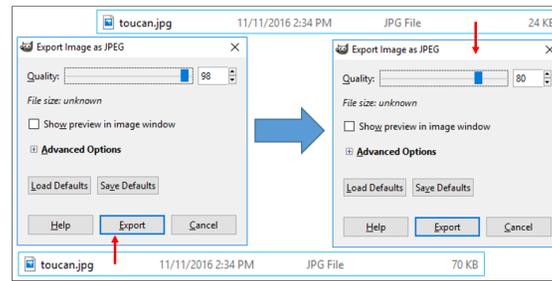
GIMP



GIMP



GIMP



GIMP

The original file size was 500KB (500,000 bytes)

By modifying the image's dimensions, resolution, and compression ratio, the optimized image is 24KB (24,000 bytes)

That's 4.3% of its original file size!

Smaller, faster to download And

...looks the same on when displayed in a browser!

Cropping

Another way to reduce an image's file size is cropping

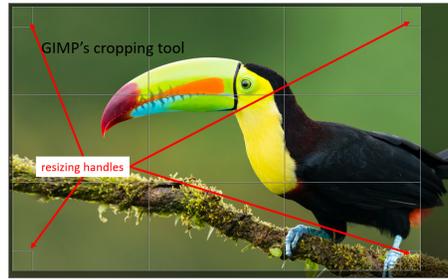
As the name implies, when we crop an image, we get rid of the part of the image that isn't important / that we don't need

Often used anyway to fine-tune images

Typically, when I frame a photo, I zoom out a little to give myself a little 'wiggle room' artistically

But it also reduces the image's file size

GIMP



GIMP

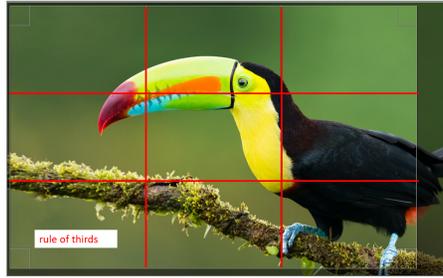


Photo Editing

We'll cover the mechanics of resizing, cropping, and compressing images in lab

It's much the same with Photoshop

Again, this is the bare basics of photo editing

Enough, though, for optimizing for the web

Web Design Lifecycle

Targeting Users & Requirements Gathering

Users

Every well designed site is based on a targeted set of site users

Cannot create a site that appeals to everyone

Define groups of targeted users to focus design

Once we know who to target, we can plan what content and design will (and won't) appeal to them

Will often create user personas to aid in planning

Users

Information can come from

Customer's company marketing department

Existing web site analysis

Surveys and research of existing customer base

Any other ideas?

Creating User Persona

Who will visit this site?

What do they have in com

Interests?

Goals?

Likes / dislikes?

Developers often create 'personas' - hypothetical u to identify these character in a less abstract way



Joan Perez

age: 26

residence: Columbus, OH

education: Bachelors Degree

occupation: Teacher

marital status: Single | No children



My students come first in everything I do.

Joan is a new teacher, having recently gotten her certification from a teacher placement agency. She is in her second year of teaching now, starting to get the hang of things more, but also now realizing how much she needs to improve. She wants to get better, but also wants to be smart about it.

Comfort With Technology

INTERNET



SOFTWARE



MOBILE APPS



SOCIAL NETWORK



Needs

- Meseurable impact
- To have project self manage

Values

- Student growth
- Time savings
- Products that easily fit into her current workflow

Criteria For Success:

To see all of her students grow 1.5 grade levels.

Wants

- Something that doesn't take long to setup
- Products that integrate with other existing technology

Fears

- Cutting into already sparse free time
- Starting something that isn't sustainable
- Doesn't actually improve student achievement
- Someone else has already built what she needs

Sean Perkins

age: 33

residence: Washington, DC

education: Bachelors Degree (BA)

occupation: Business Owner

marital status: Single | No children



I think this idea could work, I just need to put more energy into it.

Sean is juggling many projects and priorities. He appreciates help from his vendors and employees. When tackling something new he prefers to do some research then consult an expert.

Comfort With Technology

INTERNET



SOFTWARE



MOBILE APPS



SOCIAL NETWORK



Criteria For Success:

When a project achieves its goals on time and on budget while delighting users.

Needs

- Tangible results
- To have project self manage

Values

- Detailed planning
- Concrete expectations
- Decisions backed up by analytics or data

Wants

- Start small
- See results before spending more money

Fears

- Failure
- Wasting money
- Being too hasty

User Groups

Sites often exist for more than one type of user

We can group these users according to characteristics they have in common, but which distinguish them from other groups of users

Example - A university web site:

Faculty/staff

Students

Prospective students / parents

Alumni

Having identified specific groups of potential users, we can then partition the site into sections that will meet each group's needs

User Groups - Some Common Elements

Age

Gender

Education level

Occupation

Hobbies/interests

Technology experience

Personal goals

Primary access platform (mobile/desktop/tablet)

Activity

Scenario: Your firm has been employed by the owners of an auto parts store to develop a website

Consider: What distinct groups of customers that would use such a site can we identify?

For each group, identify one overall characteristic/concern that distinguishes that group from others

Parts Store - User Groups

Professional mechanics

Hobbyists / car enthusiasts

DIY repair

Suppliers/resellers of components

Parts Store - Mechanics

Use: Search inventory by part number and availability

Major concern: Delivery speed



Parts Store - Hobbyists

Use: Search by
make/model/year; getting the
right part

Major concern: Getting the
part(s) they want



Parts Store - Do It Yourself

Use: Finding parts by pictures /
tutorials

Major concern: Price



User Groups - Prioritizing

Oops! Did we forget one? What about resellers?

Having identified specific groups of potential users, your client may choose to downplay or ignore one or more of those groups for business reasons

In this example, our auto parts store owners have no interest in dealing with parts resellers

So we can eliminate that group from the design process

Benefits of Understanding Site Users

Overall tone, personality, attitude of site

Organizational structure / navigation

Text, terminology/jargon, writing style

Appropriate pictures/graphics

Functional features

Requirements Gathering

Requirements

Designer

*Free from errors and
usable*

Site owner

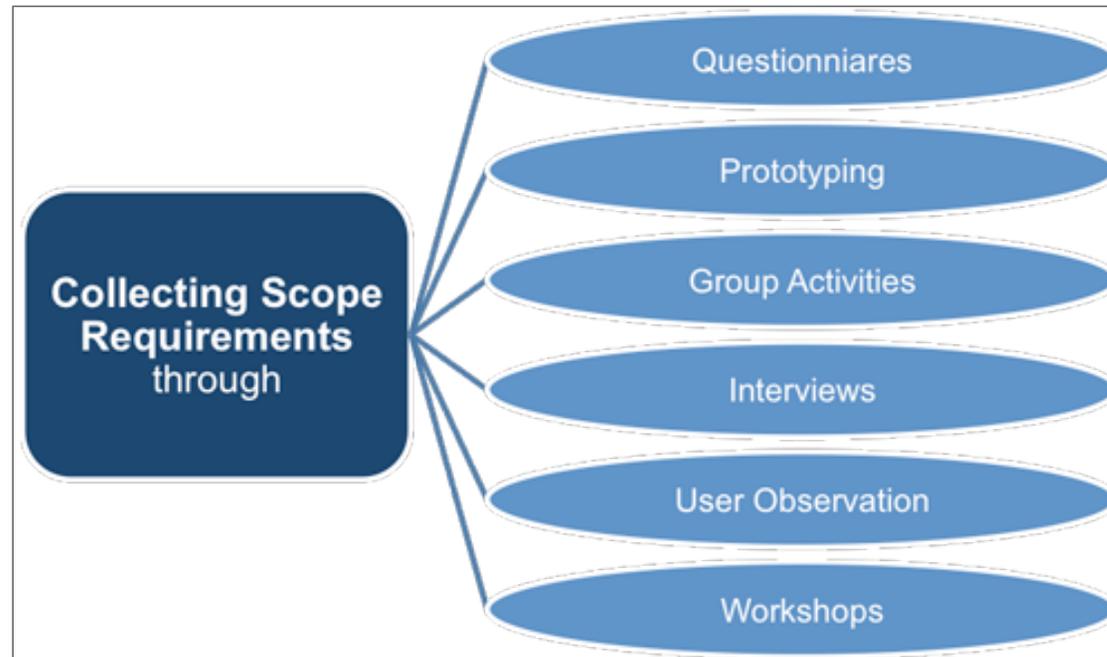
*Must meet
customers'/visitors'
needs & goals*

End user

Find needed information/conduct transactions quickly and efficiently



User Requirements Elicitation



Requirements Elicitation

Requirements Analysis: process used to learn and understand the needs of our targeted users

What do they need/want to do?

Requirements Elicitation: discovering requirements by communicating with end users and others

User Task Analysis: determining how requirements can best be implemented and supported in a design

Begin by determining what functionality needs to be supported

Then consider how it should be presented and accomplished

User Requirements Elicitation



Learning from Users

Designers do not determine site requirements, they gather requirements specified by others

Comes from meeting with clients and end users (when possible), and asking specific questions

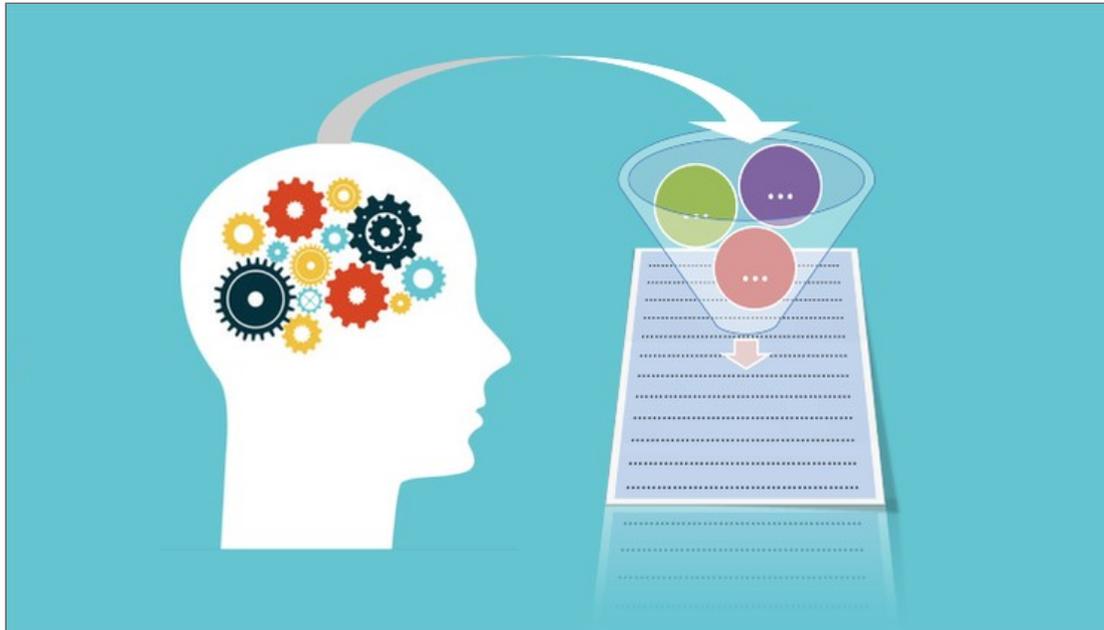
Requires effort on the designers' part to learn requirements through skillful use of questions

Customer may say "I want an online store" but there are many different kinds and design alternatives

Users must be guided in the process of stating their requirements

They generally will not have thought through this in advance

User Requirements Elicitation



Learning from Users

Interviews and questionnaires

Ask specific questions to determine wants/needs

"What do you want?" may elicit general requirements, but detailed questions needed

Brain storming sessions

Meet with groups and discuss ideas and variations

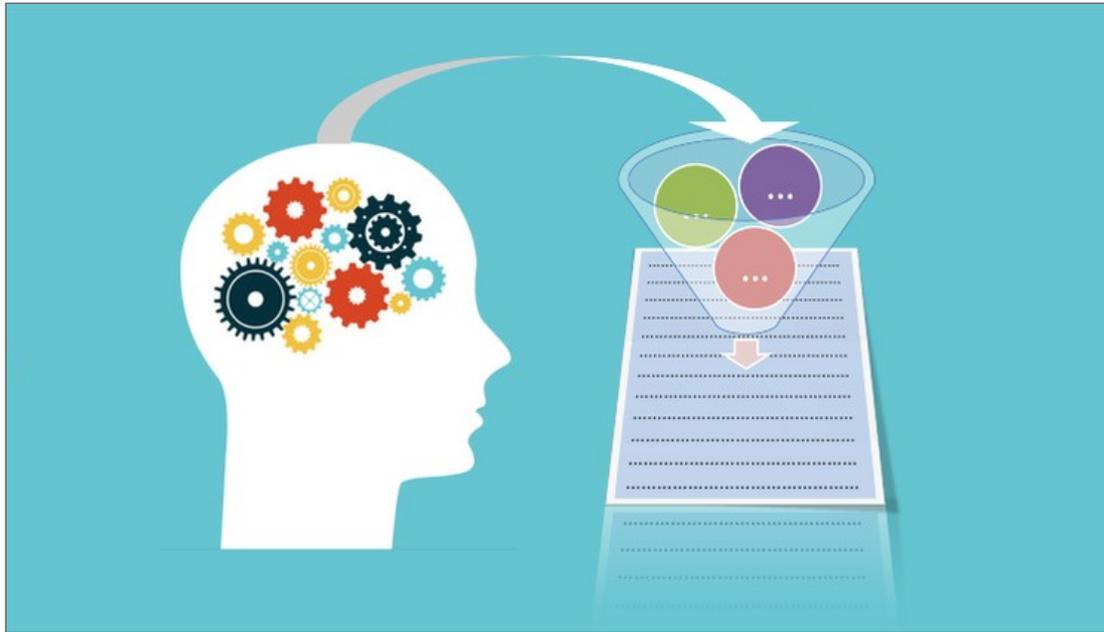
Storyboards

Diagram alternatives

Discuss pros/cons and changes

User Requirements Elicitation

Role
playing



Learning from Users

Walk through particular requirements

Prototyping

Produce rough drafts of potential "solutions" for examination

Types of Requirements

Specific requirements tie to functional demands or design attributes of our site

"Our company color is royal blue; we'd like that featured in the design"

"We'd like site visitors to be able to chat with technical support via our site"

General requirements can be derived from attributes of and knowledge of our targeted users

Since target of AARP site visitors are mostly older users, "flashy" presentation not valued

Color contrast important for readability, and information architecture (organization) is paramount

Requirements vs. Site Mission Statement

Sometimes, stated requirements obtained from users may conflict with site mission statement

Can the requirement be satisfied in a manner consistent with the mission statement?

Customer/site owner must be made aware of conflict so they can decide how conflict will be handled

This is referred to as 'Requirements Creep'



Questions?

Reading for this week

Chapters 4 & 5 & pp. 452-463

Lecture Quiz

What is the most important concern related to image files on the Web?

- A. Format
- B. Which photo editor to use
- C. File size
- D. Number of colors

Lecture Quiz

Which HTML element is used to create a hyperlink?

A. <a>

B. <h>

C. <hyper>

D. <anchor>

Lecture Quiz

What do we call additional information for the browser that is included in the opening tag of an element?

A. Value

B. Property

C. Key

D. Attribute

Lecture Quiz

Images can be made into links (True/False)

A. True

B. False

Lecture Quiz

What characteristics might we consider when developing a user persona? (select all that apply)

A. Age

B. Gender

C. Social Security Number

D. Education level

E. Phone number

F. Knowledge of Technology

Lecture Quiz

What are some techniques we can utilize to determine site requirements?

- A. Prototyping
- B. Storyboards
- C. User interviews / surveys
- D. All of the above

Lecture Quiz

Which of the following image formats can be animated?

A. JPG

B. GIF

C. PNG

D. BMP

Lecture Quiz

What is the standard browser resolution for images?

A. 72dpi

B. 75dpi

C. 112dpi

D. 300dpi

Lecture Quiz

A site created for a large number of different users can be made more efficient by

- A. Creating user groups
- B. Creating more user personas
- C. Putting all resources in one place
- D. Subnetting

Lecture Quiz

A link can be created that allows a user to send an email to the site's designated recipient by launching the user's default email application (True/False)

A. True

B. False