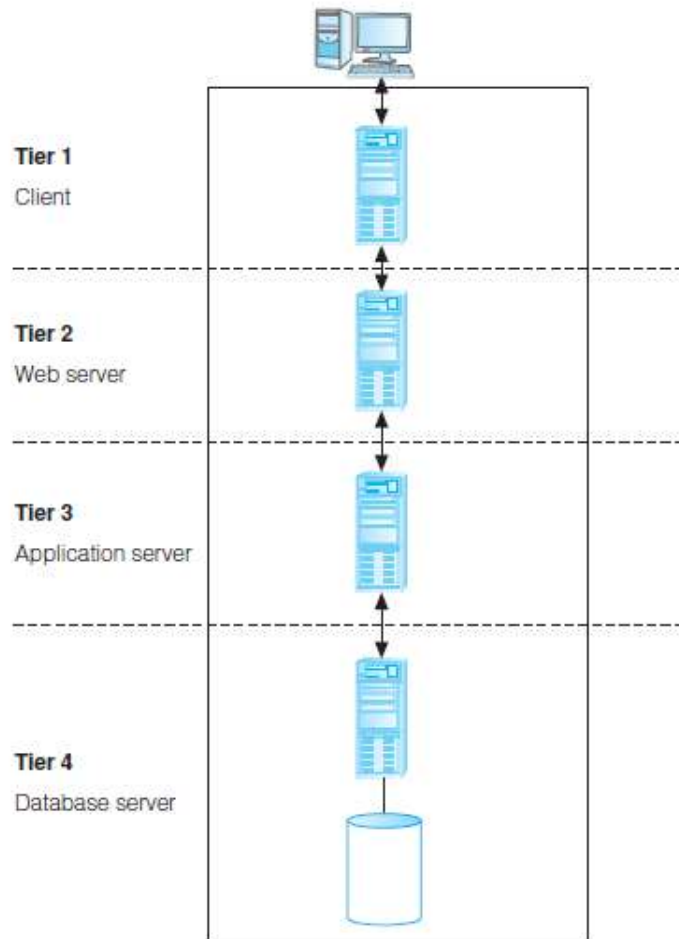# Lab Review - SA

Why do we do it? Comprehensive High Level Review.

(We'll drill down next week for more detail.

Here, we have to explain why?

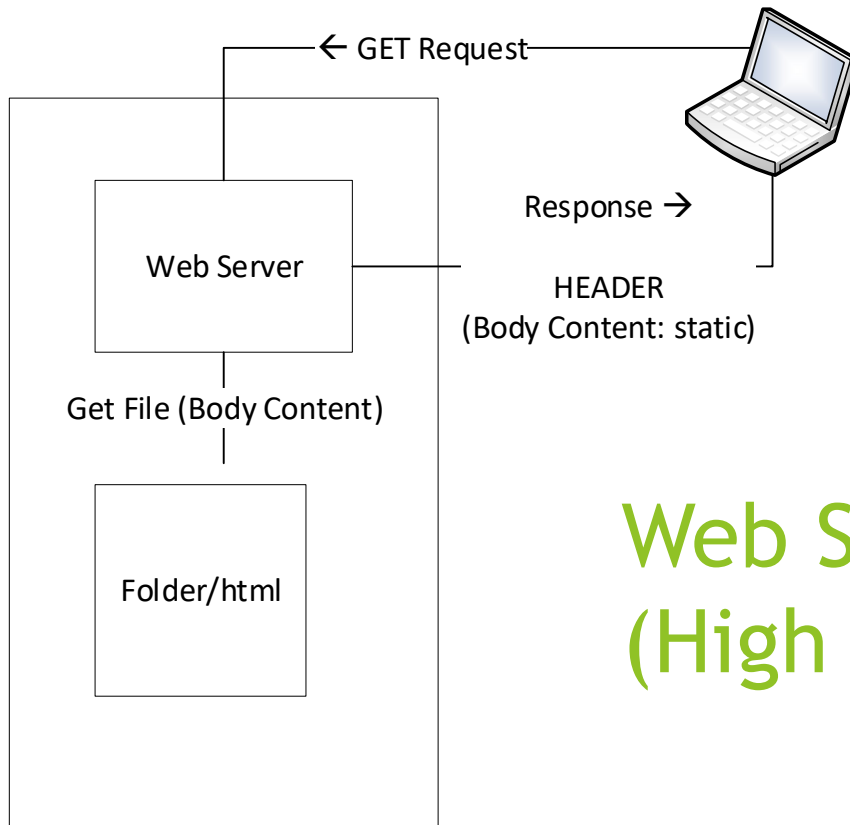# Lab Deployment and Architectural Environment

Tier 1
Client

Tier 2
Web server

Tier 3
Application server

Tier 4
Database server

User Agent (Browsers)

Apache Server (Request Response)

Request, Execute, Dynamic Response
(Business Logic)

	Web Server	Application Server
General	Limited to handling HTTP requests.	Executes programs, routines, or scripts that support application construction.
Content	Limited to sent static HTML content for display in a Web Browser.	Provides access to server-side logic (Server Applications)
Visual Display	Adding content extensions are technically possible, but time-consuming, difficult to use, and maintain.	Includes web server within a complete integrated application server framework.
Scope	May be used alone in certain limited circumstances, or as a component in an application server.	May be utilized as a GUI engine for remote displays where server applications dynamically create the UI in a browser.
Limitation	Content creation is time consuming and lack-luster for server-side applications.	Supports any web application, including Dynamic Content and a Modern UI.

← GET Request

Web Server

Get File (Body Content)

Folder/html

Response →

HEADER
(Body Content: static)

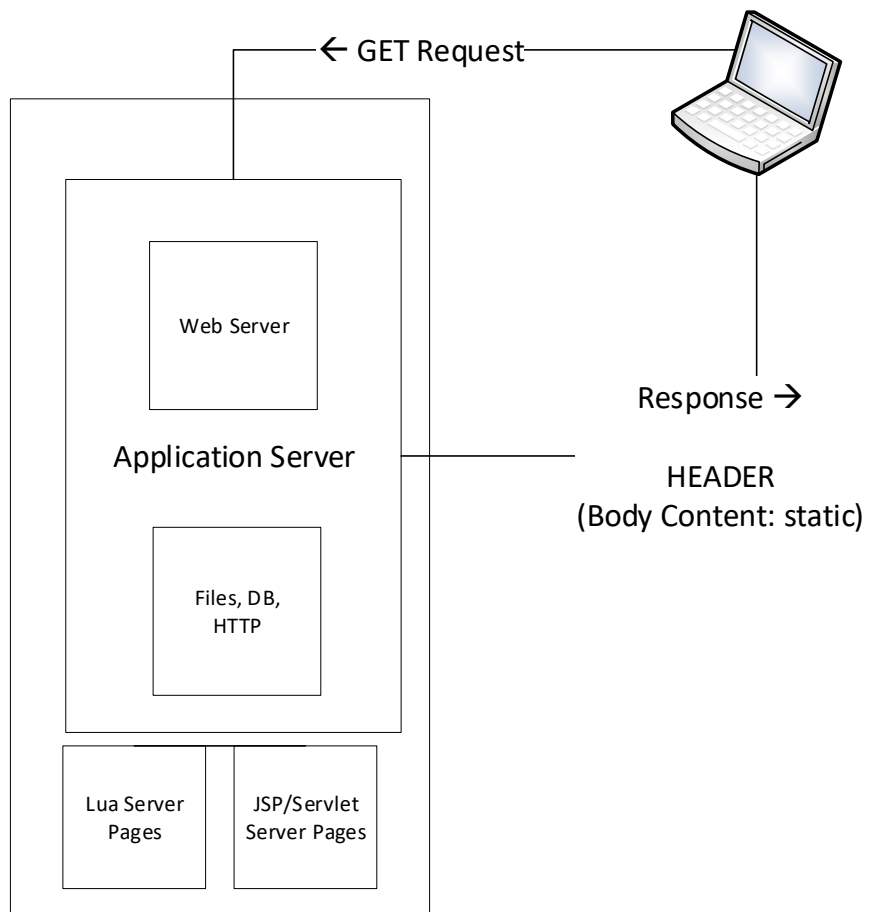Web Server (Role) – HTTP Protocol
HTTP – stateless
No concept of Dynamic page creation
HTTP – has 9 operations, mostly (GET/POST)N\

Note: GET is simply a return a static file return.

Web Server
(High Level)

Application Server

```
          ← GET Request ─────────────┐ [laptop]
┌──────────────────────────┐         │
│  ┌────────────────────┐  │         │
│  │                    │  │         │
│  │    Web Server      │  │         │
│  │                    │  │         │
│  └────────────────────┘  │         │
│                          │     Response →
│  Application Server ─────────────┘
│                          │    HEADER
│  ┌────────────────────┐  │  (Body Content: static)
│  │                    │  │
│  │   Files, DB,       │  │
│  │   HTTP             │  │
│  │                    │  │
│  └────────────────────┘  │
│                          │
│ ┌─────────┐ ┌──────────┐ │
│ │Lua Server│ │JSP/Servlet│ │
│ │Pages    │ │Server Pages│ │
│ └─────────┘ └──────────┘ │
└──────────────────────────┘
```

▶ The framework accompanying an application server will typically have a library that includes request and response objects.

▶ Provides access to server side

▶ Integrated with web server

▶ Dynamic content

Project Plan - SA (Design document)

Project plan for Lakeland Reeds Bed and Breakfast

Objectives:
- Make general info about the facility and contact info available online
- Enable prospective guests to view the accommodations and grounds
- Allow prospective guests to book a stay online

Target audience:
- 35+
- Live in southern Canada and the upper Midwest U.S.
- Want to "get away from it all"
- Not sure about technical details of users, but it's assumed most will have some web experience

Site type:
- Billboard (while the client wants some e-commerce functionality, they will accomplish this by linking to another site that takes reservations; thus, no advanced functionality is required for this site)

Budget:
- Hien is preparing a few detailed options for the client; this section will be updated when the budget is finalized and the contract is signed
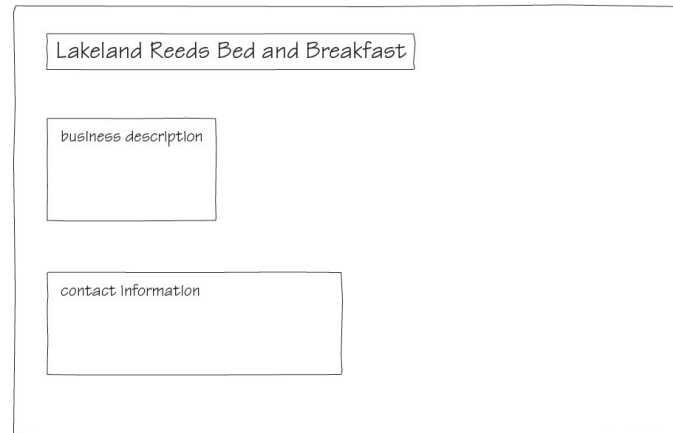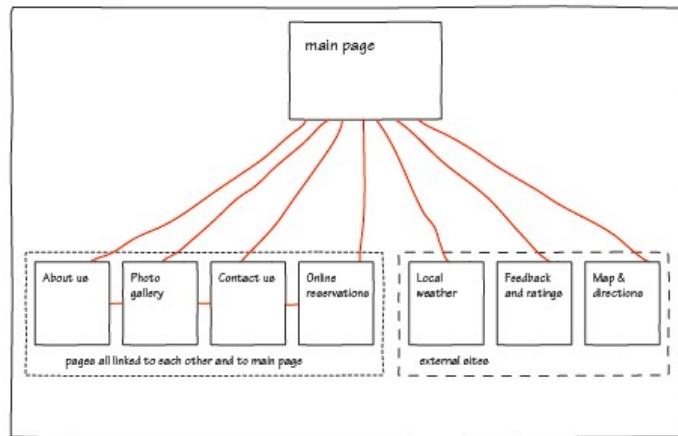
Timeline:

Milestone	Date	Who's responsible
Design mockup submitted for approval	April 1, 2018	Project manager
Draft site published to testing server	April 15, 2018	Project manager
Feedback received from client	April 22, 2018	Phillip Blaine
Client feedback incorporated	May 1, 2018	Project manager
Final feedback from client	May 8, 2018	Phillip Blaine
Final feedback incorporated	May 22, 2018	Project manager
Final signoff from client	June 5, 2018	Phillip Blaine
Site goes live	June 5, 2018	Project manager

Client contact info:

Phillip Blaine

Lakeland Reeds Bed and Breakfast

45 Marsh Grass Ln.

Marble, MN 55764

(218) 555-5253

Wireframes/Storyboard(Links among pages)

Semantic Elements are not supported in all browsers ✓

Semantic Elements Lab

element	Intended use
article	stand-alone piece of work, such as a single entry in a blog
aside	part of a page that's tangential to the main page content, such as a sidebar or pull quote
footer	information about a section or document that usually appears at the end, such as contact information, attributions, and/or footnotes
header	information about a section or document that usually appears at the beginning, such as a heading, logo, and/or table of contents
nav	main elements of site and page navigation
section	section of content focused on a common theme, such as a chapter of a larger work

Special Characters
- formatted codes that represent characters.
- begins with & (ampersand)

character	character name	numeric character reference	named character reference
&	ampersand	&	&
'	apostrophe	'	' (does not work in older versions of Internet Explorer)
>	greater-than sign	>	>
<	less-than sign	<	<
"	quotation mark	"	"

Why do they exist?
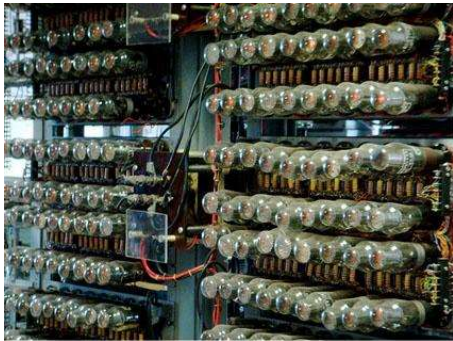
HTML Bug?
Computer Glitch

bug	common causes
Element appearance different than expected	Missing tags around content
	Element enclosed by tags for a different element
	Opening tag missing
	Closing > omitted from a tag
Special character not displayed correctly	Invalid character code specified
	& omitted from start of character code
	Code for a different character specified

▶ "U.S. Navy Rear Admiral Grace Hopper, coined the terms *bug* and *debug* after an

▶incident involving Harvard University's Mark II calculator. " Ref: www.computerworld.com

Why is it important to know? Debugging VS Troubleshooting

Debugging Tool (F12)

Code Validation (CSS/HTML)

"The Markup Validation Service is a validator by the World Wide Web Consortium that allows Internet users to check HTML and XHTML documents for well-formed markup." Wikipedia

```
<!DOCTYPE html>
```
OR
```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/**
```

CSS Style rule and properties/values

1. Consistency
2. Bandwidth Reduction - CSS access only once.
3. Search Engines – clean Coding technique
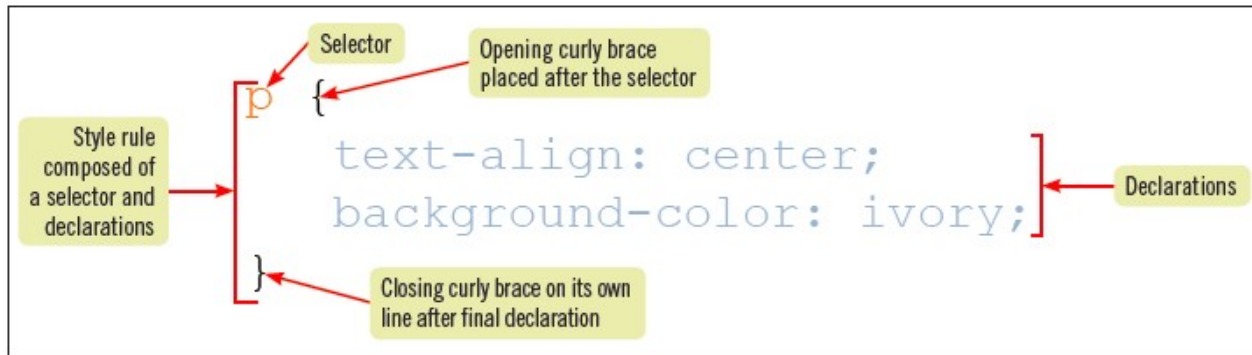4. More Browser Compatibility
5. Vewing Options – make websites available to media.

property	affects	allowable values	example
background-color	an element's fill color, behind any content such as text	name from a list of supported colors, or code using one of several systems for specifying color using numeric values	background-color: ivory;
color	an element's foreground color; for elements containing text, this is the text color	name from a list of supported colors, or code using one of several systems for specifying color using numeric values	color: wheat;
text-align	the horizontal alignment of text within the element that contains it	left, right, center, justify, inherit (same value as enclosing element)	text-align: center;

CSS (Internal/External *.css)

```
1   <!DOCTYPE html>
2   <html lang="en">
3      <head>
4         <title>Lakeland Reeds Bed &amp; Breakfast</title>
5         <!--
6            Lakeland Reeds Bed and Breakfast main web page
7            Filename: index.html
8
9            Author:    your first and last name
10           Date:      today's date
11           HTML5 and CSS3 Illustrated Unit C, Lessons
12        -->
13        <meta charset="utf-8">
14        <meta name="viewport" content="width=device-width">
15        <script src="modernizr.custom.62074.js"></script>
16        <link rel="stylesheet" href="styles.css">
17     </head>
18     <body>
```

link element
loads contents
of external CSS
document

Filename of external style sheet

Why do we prefer
external stylesheet?

What is the benefits of inline-style sheet?

```
<h1 style="text-align: center;">Lakeland Reeds Bed and Breakfast</h1>
```
© 2016 Cengage Learning

NOTE: CSS is inserted into the opening tag?

What are the benefits?

Why do we need comments in our code?

What is a Box Model (Text/Images)?

Margin is always transparent

Color and thickness of border determined by values of **border** property

Value of element's width property

Background color for element applies to both content and padding

content

padding
border
margin

© 2016 Cengage Learning
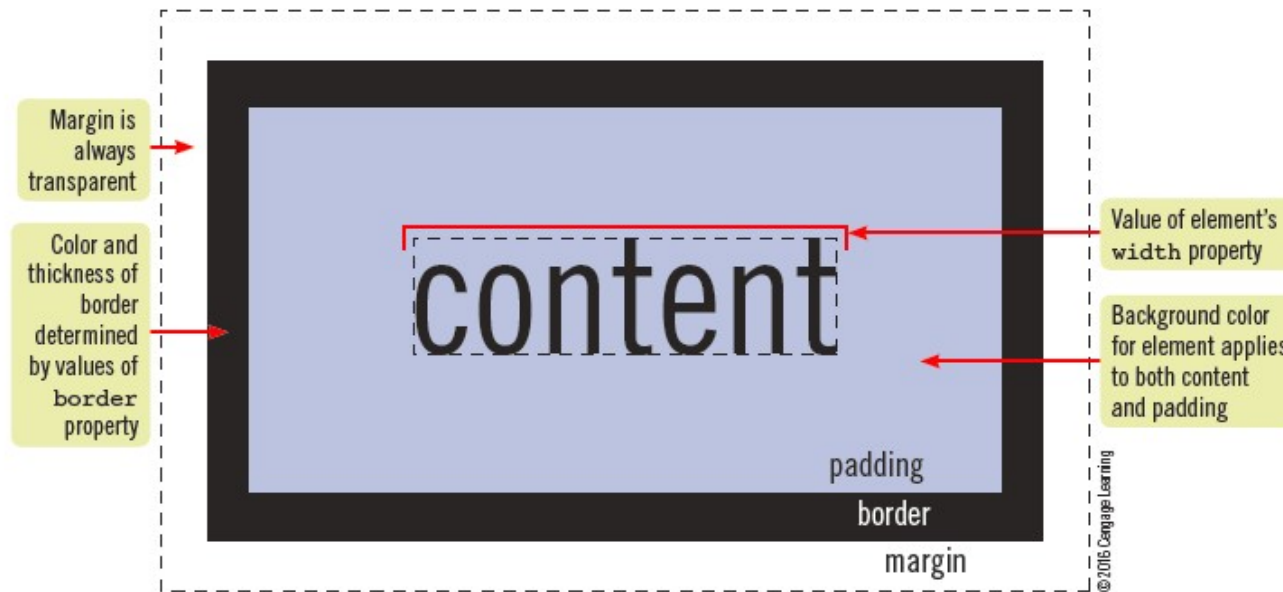
NOTE: All elements are considered as boxes.
A box that wraps around every HTML element.
You need to understand the box model before using CSS layouts.

Box Model Properties (Attributes/characteristics)

property	description	example*
border	a visible border around an element specified with a thickness value, a style keyword, and a color name or value	border: 1px solid black;
padding	the space inside a border between the border and the element content	padding: 5%;
margin	the space outside a border between the border and adjacent or parent elements	margin: 10px;
width	the horizontal size of an element's content, excluding border, padding, and margin	width: 25%;
min-width	the minimum horizontal size of an element's content, excluding border, padding, and margin	min-width: 320px;
max-width	the maximum horizontal size of an element's content, excluding border, padding, and margin	max-width: 1000px;
height	the vertical size of an element's content, excluding border, padding, and margin	height: 5rem;
min-height	the minimum vertical size of an element's content, excluding border, padding, and margin	min-height: 2em;
max-height	the maximum vertical size of an element's content, excluding border, padding, and margin	max-height: 5em;

Know these properties to manipulate box model….
Units – pixel, percent, rem, em? Which is preferable.

EM

```
<!DOCTYPE html>
<html>
<head>
<style>
p {
    font-size: 16px;
    line-height: 2em;
}

div {
    font-size: 30px;
    border: 1px solid black;
}

span {
    font-size: 0.5em;
}
</style>
</head>
<body>

<p>These paragraphs have a calculated line-height of:
2x16px = 32px.</p>
<p>These paragraphs have a calculated line-height of:
2x16px = 32px.</p>
<p>These paragraphs have a calculated line-height of:
2x16px = 32px.</p>
<div>The font-size of the div element is set to 30px.
<span>The span element inside the div element has a
font-size of 0.5em, which equals to 0.5x30 =
15px</span>.</div>

</body>
</html>
```

These paragraphs have a calculated line-height of: 2x16px = 32px.

These paragraphs have a calculated line-height of: 2x16px = 32px.

These paragraphs have a calculated line-height of: 2x16px = 32px.

The font-size of the div element is set to 30px. The span element inside the div element has a font-size of 0.5em, which equals to 0.5x30 = 15px.

REM

abbreviation	unit	description	example
em	em	A multiple of the computed font size for the current element, where 1em represents 100% of this size	`padding: 1.4em;`
%	percent	A percentage of another value for the current element or an ancestor element; each CSS property that takes a value in % specifies what value the % calculation is based on	`margin: 10%;`
px	pixel	A unit equal to approximately 1/96 inch or 0.26 millimeter	`padding: 10px;`
rem	rem	A multiple of the computed font size for the `html` element, where 1rem represents 100% of this size	`margin: 0.25rem;`
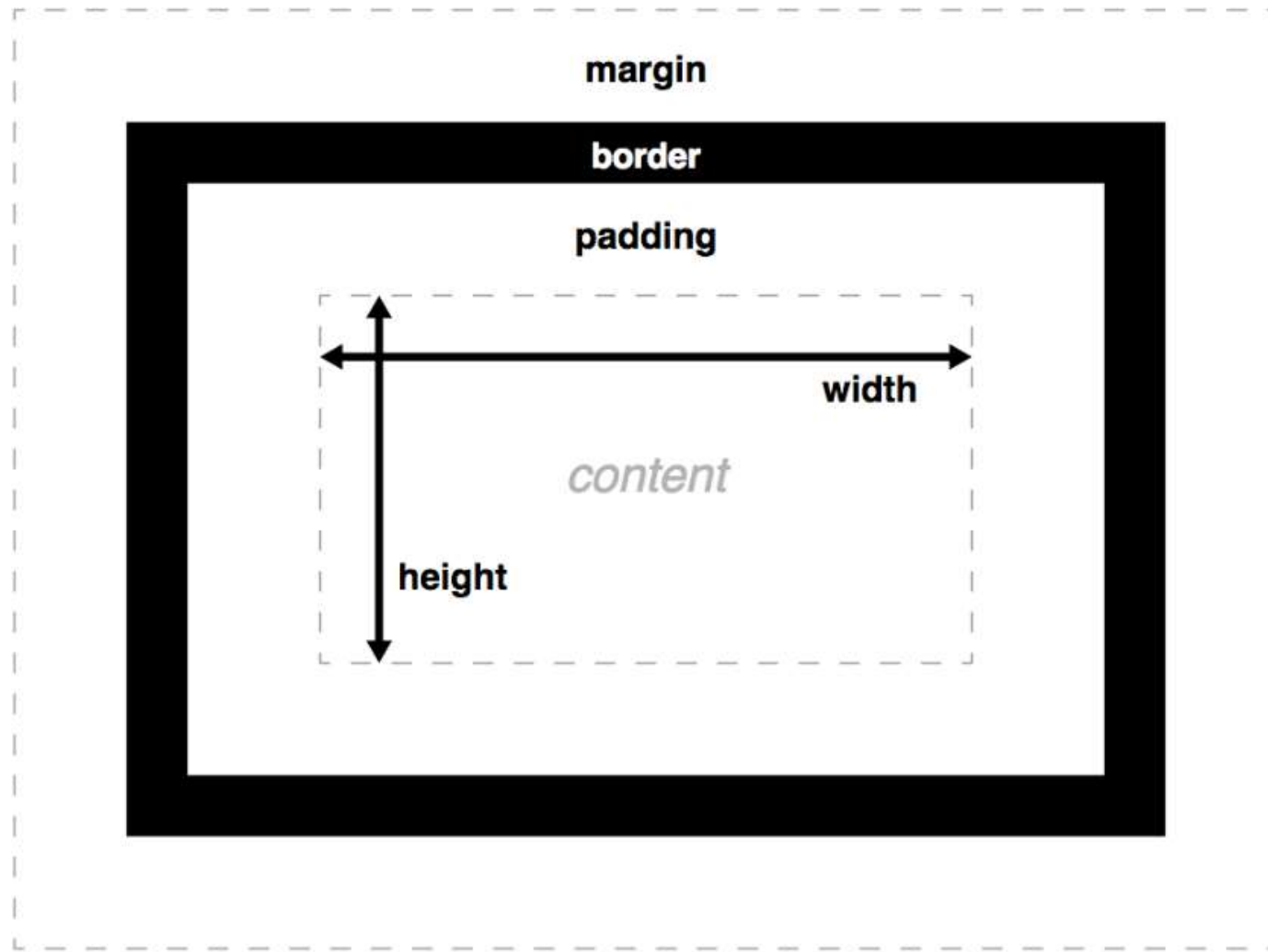
Box Model (Collapsible)

In the example above, the h1 element has a bottom margin of 50px.
The h2 element has a top margin set to 10px. Looking at it, it would appear that the vertical margin between the h1 and the h2 would be a total of 30px (10px + 20px). Becaue of the margin collapse, the actual margin ends up being 10px.

NOTE: Margin is invisible.

Fundamentals of Web page design and creation (top)

Fundamentals of Web page design and creation (bottom)

How do you prevent collapsing?

Heading Content

40px gap

Paragraph content

What is the cause of the collapse?

Layouts – Control (Table/CSS)

Header
Navigation Menu

Content	Main Content	Content

Footer
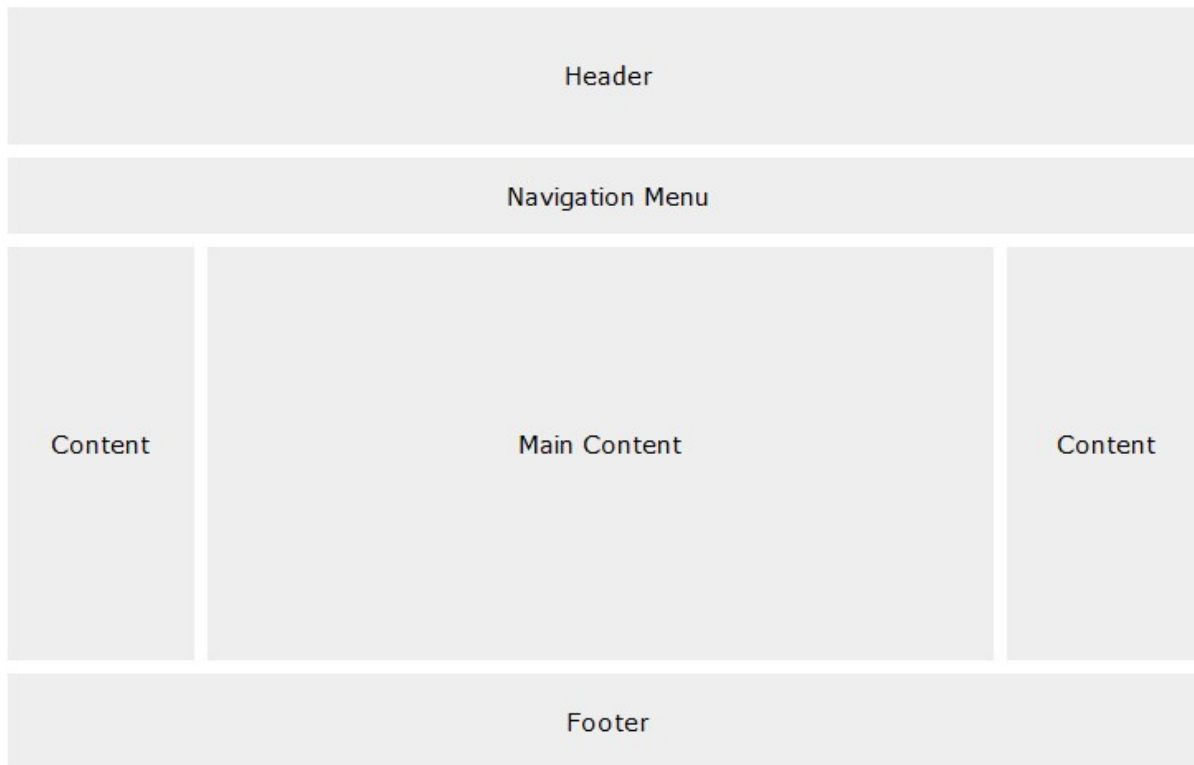
CSS float gives control over layout.

Each of the layouts can be achieved using tables. Do you think you can achieve the same layout using floating elements.

Layout – Using Float

float: left;

float: left;

clear: left;

clear: left;
declaration
prevents floated
element (green
box) from being
displayed to the
left of this
element (yellow
box), moving this
element down the
page past the
floated element

Layout using float

Layout using float and clear
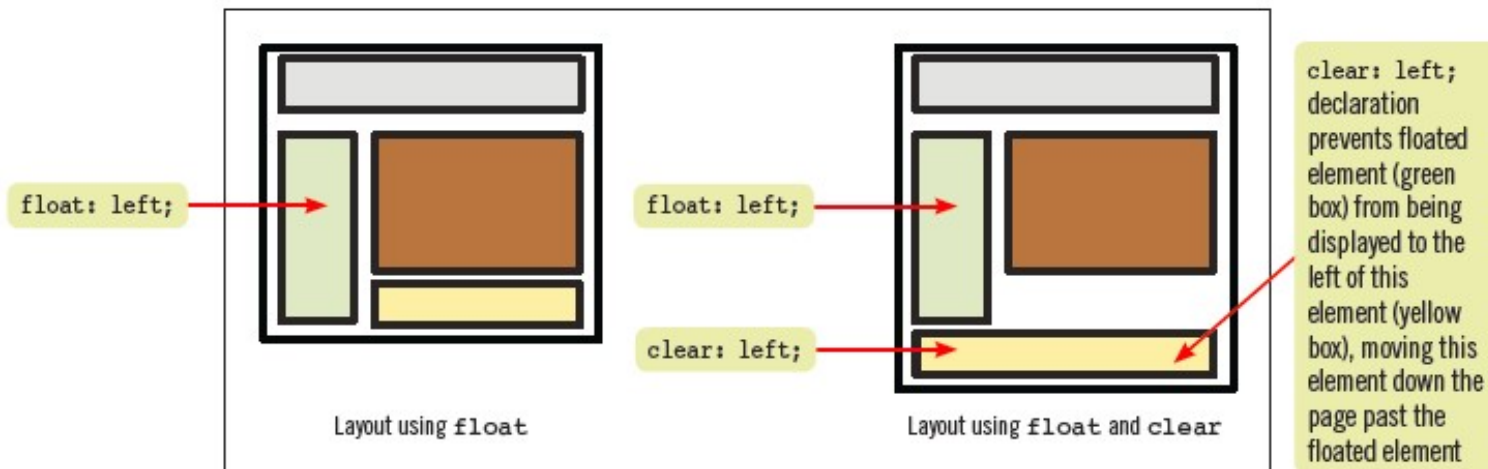
Layout – Using Position Property

position: fixed;
top: 1em;

Page elements following element using fixed positioning flow into space previously occupied by that element

Element with fixed positioning removed from normal flow and does not move as page is scrolled

Original position of elements

Default layout

Layout using fixed positioning
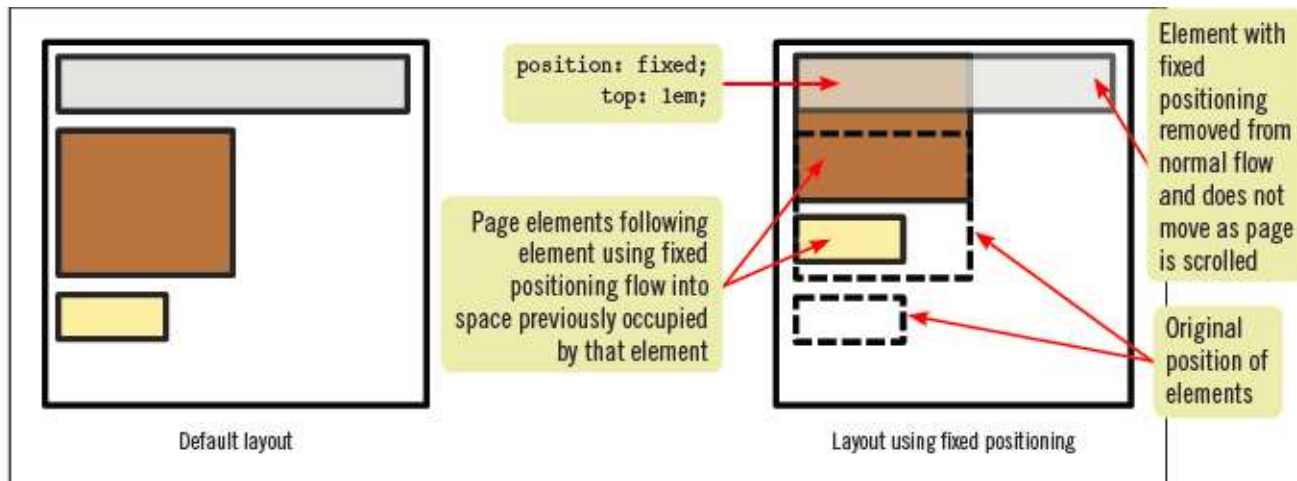
Static – normal flow.
relative
Fixed – stay there as instructed
Absolute – anything except static
Overlapping – elements (z-index)(

Why use Relative Link vs Absolute Link?

Suppose that you have a website that includes a home page, a contact page, and a picture gallery. The website includes 15 links between different pages in the site. All the documents for this website are located in the directory

C:\myfiles\WWW\mysite. You move the directory mysite including all the documents for your website to the directory

C:\myfiles\WWW\personal\mysite. How many links would you have to change if all the internal links are listed in the HTML code as relative links? Where would you make these changes?

Navigation – Which one to use -- Horizontal/Vertical Cons/Pros

REMOVE THE BULLETS (Vertical)

| Home |
| My Site |
| POC |
| About My Website |

Takes less space allowing to focus more on
The contents, but limits the # of links you can display.

REMOVE THE BULLETS (Horizontal)

| Home | My Site | POC | About My Website | |

```
li {
    border-bottom: 1px solid red;
}
```
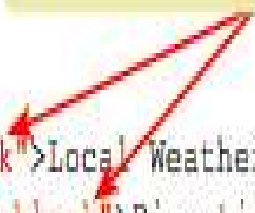
```
li {
    float: left; /*float to the left to make it horizontal*/
    border-right: 1px solid red;
}
```

Vertical: Organized manner down the left or right side of a web page or hidden inside a menu icon, but it can occupy valuable space.

Target Elements. Do you prefer opening a new tab?

```
26    <nav class="sitenavigation">
27        <p><a href="index.html">Home</a></p>
28        <p><a href="aboutus.html">About Us</a></p>
29        <p><a href="rooms.html">Rooms</a></p>
30        <p><a href="reserve.html">Reservations</a></p>
31        <p><a href="http://wxug.us/1hn14" target="_blank">Local Weather</a></p>
32        <p><a href="https://goo.gl/maps/bwf5R" target="_blank">Directions</a></p>
33    </nav>
```

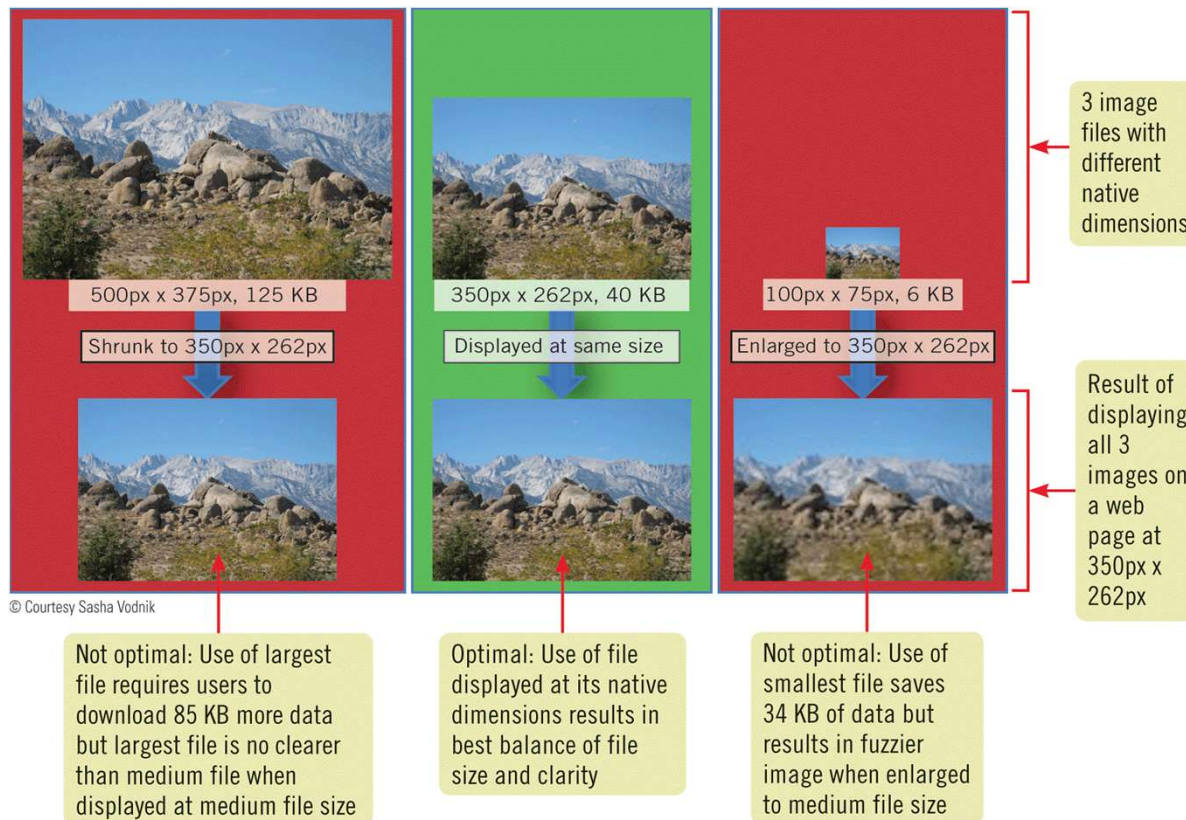target attribute value set to _blank for both links to external sites

value	description
_blank	Opens target document in a new tab
_self	Opens target document in same tab as source document (default value)

Which image size or format to use for the web? Choose your image wisely.

3 image files with different native dimensions

500px x 375px, 125 KB
Shrunk to 350px x 262px

350px x 262px, 40 KB
Displayed at same size

100px x 75px, 6 KB
Enlarged to 350px x 262px

Result of displaying all 3 images on a web page at 350px x 262px

© Courtesy Sasha Vodnik

Not optimal: Use of largest file requires users to download 85 KB more data but largest file is no clearer than medium file when displayed at medium file size

Optimal: Use of file displayed at its native dimensions results in best balance of file size and clarity

Not optimal: Use of smallest file saves 34 KB of data but results in fuzzier image when enlarged to medium file size

GIF – fixed # of colors to no more Than 256 unique colors…not suitable for photograph.

JPG – for photographs (millions of colors) with lots of natural colors.

PNG – replacement of GIF (w/ royalty free). It has range of transparency effect.

SVG – rendered any size with no Loss of quality of increase in file Size.

Note: Too-large images can cause a site to run slowly and impact overall performance.