Hypertext Markup Language HTML Chapter 2

Supporting Material for "Using Google App Engine" - O'Reilly and Associates www.appenginelearn.com

open.michigan

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Internet



HTML JavaScript
AJAX CSS

HTTP Request
Response GET
POST

Python Data Store
Templates memcache

The big picture...

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML I.0 Strict//EN" "http://www.w3.org/TR/xhtml I/DTD/xhtml I-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
<head>
<title>University of Michigan</title>



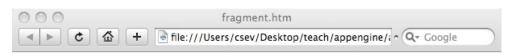


A web server produces HTML which is handed to a browser which needs to lay it out in a blink of an eye and have it pixel perfect as god as a print brochure.

HTML

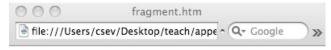
- A way of marking up text to indicate that some text is different than other text
- We "tag" portions of the text to communicate meaning
 - <h I > Google App Engine: About </h I >
 <Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful. </p>

<h I > Google App Engine: About </h I > Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.



Google AppEngine: About

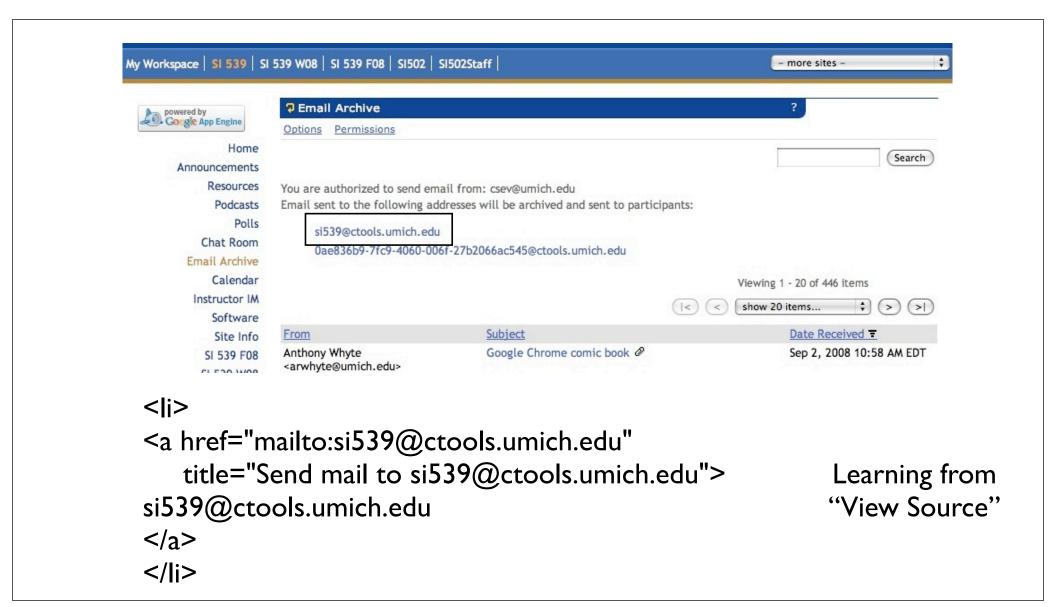
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Google AppEngine: About

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Whitespace and line wrapping.





The Web is a Young Technology

- Invented in early 1990's
- Popular in 1994
- Robert Cailliau coFounder of the World-Wide-Web



http://www.dr-chuck.com/media.php?id=70



An Iterative Process

- Designers want to do something
- They figure out how to do it with current generation browsers
- We figure out requirements but HMTL gets uglier and quirkier then the HTML starts to break
- We develop new standards that handle new requirements in an elegant manner
- New Browsers arrive in the marketplace with the new standard

History of HTML / CSS

- HTML 1.0 1993 The Good Old Days life was simple
- HTML 2.0 1995 Some interesting layout features abused
- CSS I 1996
- HTML 3.2 1997
- HTML 4.0 1997 Layout moving toward CSS
- CSS Level 2 1998
- HTML 4.01 1999 What we use today

HTML has evolved a *lot* over the years - as computers and networks have gotten faster.

The Good Old Days

```
<hI>Hello World</hI>
Hi there.
<img src="x.gif">
A Paragraph

List one
List 2
```

In the good old days you wrote HTML and browsers displayed it - since we wrote it by hand - and modems were slow - it was never too long and never too complex. The browser was never the rate limiting factor.

Writing HTML was like using a simple, weak word processor. The tags acted as formatting commands to the browser.

The Ugly Middle Ages

- Web Designers designed to browser capabilities down to particular minor versions of browsers.
- Extensive testing was needed on lots of browsers
- Designers used tables, nested tables, and chopped up graphics to gain control of the look and feel or web pages to produce a "print-like" experience.
- HTML was UGLY, Hard to develop, and brittle what looked superb on one browser - often was broken on another browser - even a later release of the same brower.

The Modern Era

- HTML is clean and simple
- There is no presentation in HTML font, color, spacing, etc etc
- No use of tables except for tabular data
- CSS controls all layout, and look and feel
- Still a bit challenging but converging

1990-1994	HTML was simple and pages looked pretty ugly.
1995-1999	HTML became more complex and each browser was different.
2000-2005	Browsers slowly supported CSS to varying levels. HTML was still ugly to support multiple browsers.
2005-2008	New browsers supported CSS. Old browsers were still pretty pervasive but diminishing.
2009+	The last "pre-CSS" browser (IE5) is < 0.1%

http://www.w3schools.com/browsers/browsers_stats.asp

What does this mean for us?

- Don't bother with the intermediate steps:)
- Either keep it simple or do it well simple does work
- If you want a professional site use all of the best practices
 - Presentation in CSS + Semantic markup in HTML
 - http://validator.w3.org/
 - http://jigsaw.w3.org/css-validator/

<h I > Google App Engine: About </h I > Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.



Google AppEngine: About

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Google AppEngine: About

Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.

Whitespace and line wrapping.

Tags have a beginning and end...

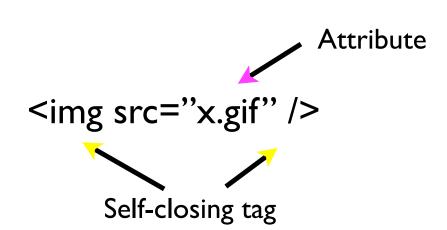
<h I > Google App Engine: About </h I > Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.

HTML Tag Basics



Tags "mark up" the HTML document. The tags are read and interpreted by the browser - but now shown.

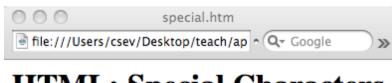
A self closing tag does not need a corresponding end tag.



What about < 's in HTML?

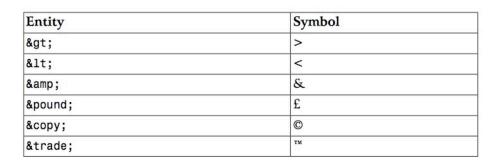
<hI>HTML: Special Characters</hI>

Special characters are indicated by
the & Daracter. We can use this
to display & Daracter. W



HTML: Special Characters

Special characters are indicated by the & character. We can use this to display < and >.



HTML Links

- One of the key things about HTML is making a set of pages and making "hypertext" links amongst those pages
- Links are what make the "web" a "web" it is a web of interlinked documents.
- The interlinked nature of the web leads to the "knowledge" the search engines like Google appear to have

<h1>The First Page</h1>
If you like, you can switch to the
Second Page.

A link is a "hot spot" on the page. It can be text or an image. Often it is visually marked to make it easier to "notice" so as to engouage users to click!

"a" is short for "anchor" and "href" is short for "hypertext reference"



The First Page

If you like, you can switch to the Second Page.

<hI>The Second Page</hI>
If you like, you can switch back to the
First Page.

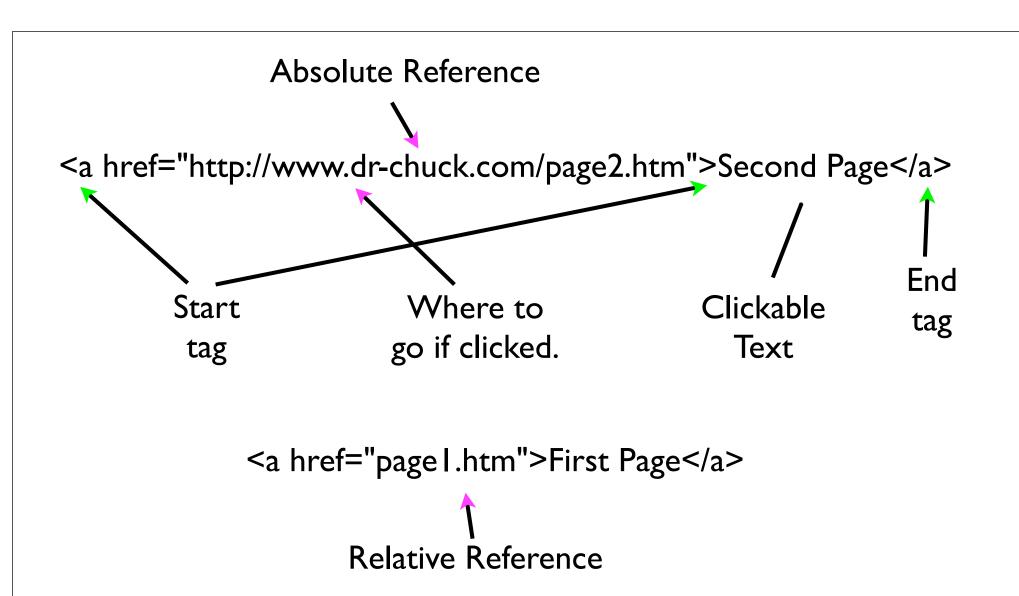
A link is a "hot spot" on the page. It can be text or an image. Often it is visually marked to make it easier to "notice" so as to engouage users to click!

"a" is short for "anchor" and "href" is short for "hypertext reference"



The Second Page

If you like, you can switch back to the First Page.



Absolute .vs. Relative

Second Page

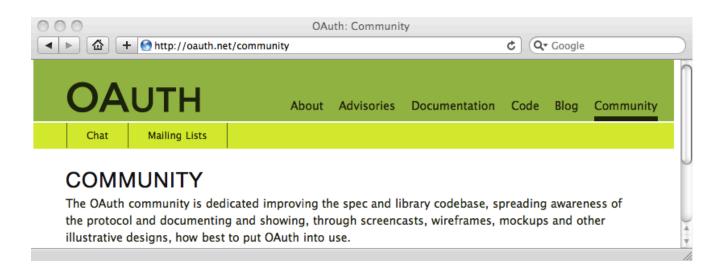
Hypertext references can be a full URL - and refer to some other page on anywhere on the Internet.

First Page

Or the reference can be a file name that is assumed to be in the same folder as the current document (relative reference).

Navigation With Anchor Tags

• Sometimes we want to make a menu that provides our users consistent navigation across page.



A List ...

```
<h | ><a href="index.htm">AppEngineLearn</a></h | >
<l
 <a href="sites.htm">Sites</a>
 <a href="topics.htm" >Topics</a>
<hI>Google App Engine: About</hI>
>
Welcome to the site dedicated to
learning the Google Application Engine.
We hope you find www.appenginelearn.com
useful.
```



AppEngineLearn

- Sites Topics
- **Bulleted List**

Google App Engine: About

Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.

A List of Links...

```
<hl><a href="index.htm">AppEngineLearn</a></hl>

<a href="sites.htm">Sites</a>
<a href="topics.htm">Topics</a>

<hl><a href="topics.htm">Topics</a>

<hl><a href="topics.htm">Topics</a>

<hl><a href="topics.htm">AppI</a>
<hl><a href="topics.htm">AppI</a>
<hl><a href="topics.htm">Topics</a></a>
Ul>
<a href="topics.htm">AppI</a>
<a href="topics.htm">AppI</a>
<a href="topics.htm">AppI</a>
<a href="topics.htm">AppI</a></a></a></a></a>
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Welcome to the site dedicated to learning the Google Application Engine.
Welcome to the site dedicated to learning the Google Application Engine.
Welcome to the site dedicated to learning the Google Application Engine.
```



Engine. We hope you find www.appenginelearn.com useful.

Multiple Files

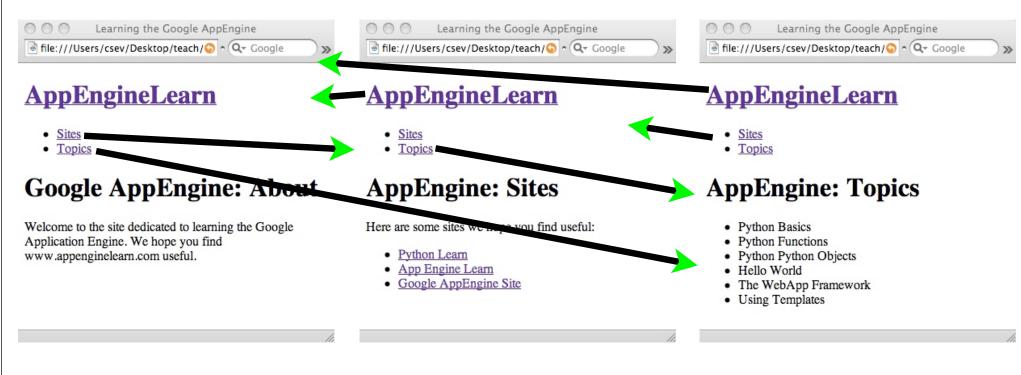
 We can put multiple files in the same directory and then use them in relative links.

```
<h l><a href="index.htm">AppEngineLearn</a></h l><al><a href="sites.htm">Sites</a><a href="topics.htm">Topics</a>
```



Google App Engine: About

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csev\$ ls -l

-rw-r--r-- I csev staff 618 Dec 18 22:56 index.htm -rw-r--r-- I csev staff 883 Dec 18 22:57 sites.htm -rw-r--r-- I csev staff 679 Dec 18 22:57 topics.htm csev\$ We create the appearance of a fixed "menu" by including the navigation at the same place in each page.

Special File Names

- When a URL points to a directory in your web server, it looks for a file with a special name:
 - index.html, index.htm, index.php, default.htm, etc...
- While there is a convention, the "default file" is configurable so nothing is "sure"
- Usually index.htm or index.html is a safe bet
- This only works when viewing through a web server when viewing from disk, you must view the file.

```
<body>
   <!-- Make sure to style the h I -->
   <h I > App Engine: Topics </h I >
   <l
    Python Basics
    Python Functions
    Python Python Objects
<!-- Leave these two out for a while
    Hello World
    The WebApp Framework
__>
    Using Templates
   </body>
```



AppEngineLearn

- Sites
- Topics

App Engine: Topics

- · Python Basics
- · Python Functions
- Python Python Objects
- Using Templates

HTML Comments

1

Images



Google App Engine: About

Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.



Images

Which image to display

Begin Tag

<img src="appengine.jpg"</pre>

width="142" height="109"

alt="Google App Engine Logo"

style="float:right" />

Optional - makes display quicker. Will resize to fit.

End Tag

Put the image on the right and wrap text around it.

Show this when hovering, images are off, or for screen readers.

All information is communicated through the attributes of the img tag.

Images

```
<hl>
<img src="appengine.jpg" width="142" height="109"
    alt="Google App Engine Logo"
    style="float:right"/>
    Google App Engine:About</hl>

Welcome to the site dedicated to
learning the Google Application Engine.
We hope you find www.appenginelearn.com useful.
```

In this case, the file appengine.jpg needs to be in the same directory as the file index.html.

```
<h!>
<img src="appengine.jpg" width="!42" height="!09"
    alt="Google App Engine Logo"
    style="float:right"/>
    Google App Engine:About</h!>

Welcome to the site dedicated to
learning the Google Application Engine.
We hope you find
    www.appenginelearn.com useful.
```

Google App Engine: About

Learning the Google App Engine

file:///Users/csev/Desktop/teach/app ~ Q Google

Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.



<hl>
<ing src="appengine.jpg" width="142" height="109"
 alt="Google App Engine Logo" />
 Google App Engine:About</hl>

Welcome to the site dedicated to
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<hl>
<ing src="appengine.jpg" width="142" height="109"
 alt="Google App Engine Logo"
 style="float:right"/>
 Google App Engine: About</hl>

Welcome to the site dedicated to
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Google App Engine: About

Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.

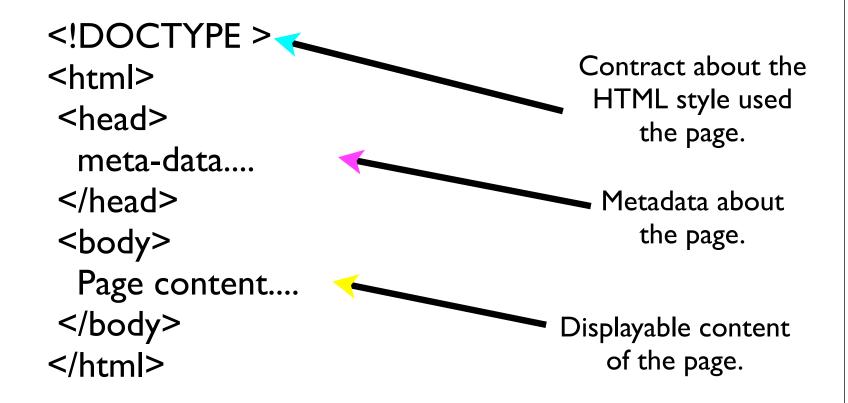


HTML Document Structure

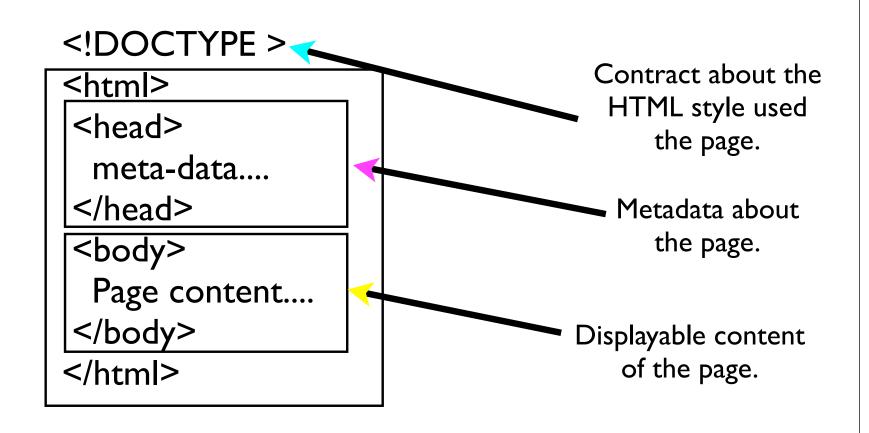
Well-Formed HTML Documents

- Browsers need to know what contract you are agreeing to (doctype)
- We need a section for meta-data about the HTML document (head)
- And then the displayable content of the HTML document (body)

Outline of an HTML Document



Outline of an HTML Document



A Simple but Modern Page

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
  "http://www.w3.org/TR/html4/strict.dtd">
<html>
<head>
 <title>Learning the Google App Engine</title>
</head>
<body>
 <h I > Google App Engine: About </h I >
 >
 Welcome to the site dedicated to
 learning the Google Application Engine.
 We hope you find www.appenginelearn.com useful.
 </body>
</html>
```

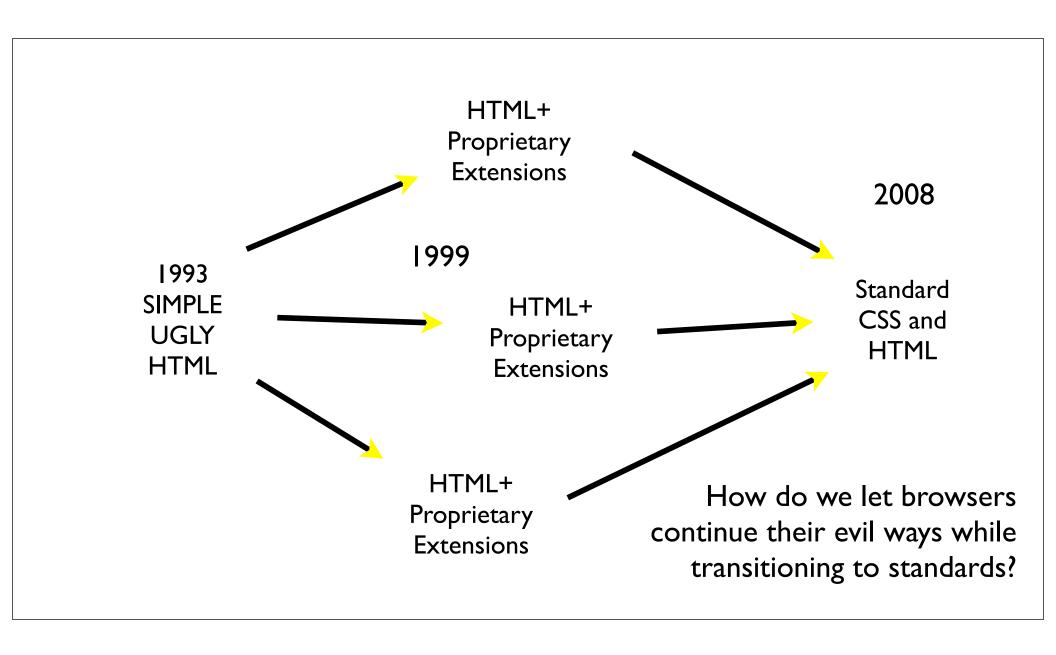


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Browsers: Lost in Transition

- Between 1995 and 2003 browsers were different often on purpose to attempt to make their market share "sticky"
- At some point we knew there needed to be a future where all browsers did *exactly* the same thing based on CSS and HTML standards
- How to get from "here" to "there" no one could "win"



Quirks Mode Inconsistency is OK

HTML+

Proprietary

Extensions

1993 SIMPLE

UGLY

HTML

HTML+

Proprietary

Extensions

1999

HTML+

Proprietary

Extensions

Mode

Standard

Standard CSS and

HTML

2008

Web developers and browsers are expected to be "perfect."
Responsibility goes both ways.

Designing for the Browsers out there...

Firefox Chrome

2.4%

2.2%

4.1%

4.4%

1.2%

1.3%

2009

March

January

36.7%

30.1%

49.4%

55.7%

3.0%

2.8%

							<u> </u>								
\ugu:	st 1	5.1%	13.6%	10.6%		47.4%	7.0%	3.39	6 2.19	6					
uly	1	5.9%	14.4%	9.1%		47.9%	6.5%	3.39	6 2.19	%					
uı 1a	2	009	IE7			IE6		IE8		Firefox	irefox Chrome Safari	Safari	Opera	pt On	
Ap Ma	August			15.1%			13.6%		10.6%		47.4%	7.0%	3.3%	2.1%	95%
e aı	July			15.9% 18.7%			14.4% 14.9%		9.1%		47.9% 47.3%	6.5%	3.3%	2.1%	94% 90% 89%
01	June														
٥v	May	21.3%			14.5%		5.2%		47.7%	5.5%	3.0%	2.2%	92%		
ıly	April	23.2%			15.4%		3.5%		47.1%	4.9%	3.0%	2.2%	89%		
lar lar an	March			24.9%			17.0%		1.4%		46.5%	4.2%	3.1%	2.3%	88%
	February			25.4%			17.4%		0.8%		46.4%	4.0%	3.0%	2.2%	80%
0	Janua	-		25.7%			18.5%		0.6%		45.5%	3.9%	3.0%	2.3%	
ov epte ily	emper	49.170		0.1% 3.59				.5%	2.2%	0.5%	1				
ay		40.79	-	6.0%	2.89			.7%	3.4%	0.7%		w3schools.co	om/browser	s/browsers	stats.as

0.7%

1.0%

You get to make a choice...

- (a) Do you want to be lazy and sloppy and hope that your pages look good across multiple browsers and multiple versions of the same browsers
- (b) Do you want to be professional and have your pages to render identically across all browsers?
- If you choose (b) you take on some additional responsibility.

DOCTYPE: Indicating your Choice

 Browsers look at the first line of your HTML file to see is you have agreed to comply to HTML standards

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
   "http://www.w3.org/TR/html4/strict.dtd">
   <html>
   <head>
        <title>Learning the Google App Engine</title>
   </head>
   <body>
        <hI>Google App Engine: About</hI>
```

Which DOCTYPE?

<!doctype HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">

<!doctype HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">

<!doctype HTML PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">

http://www.webmasterworld.com/html/3061635.htm

Which DOCTYPE?

- Easy to start a fight just Google "what is the best doctype"
 - Loose legacy
 - Transitional Mix of Developers
 - Strict New Project which can enforce rules from the start
- http://www.webmasterworld.com/html/3061635.htm (and others)

Well-Formed HTML Documents

- Browsers need to know what contract you are agreeing to (doctype)
- We need a section for meta-data about the HTML document
- And then the displayable content of the HTML document

A Valid Web Document

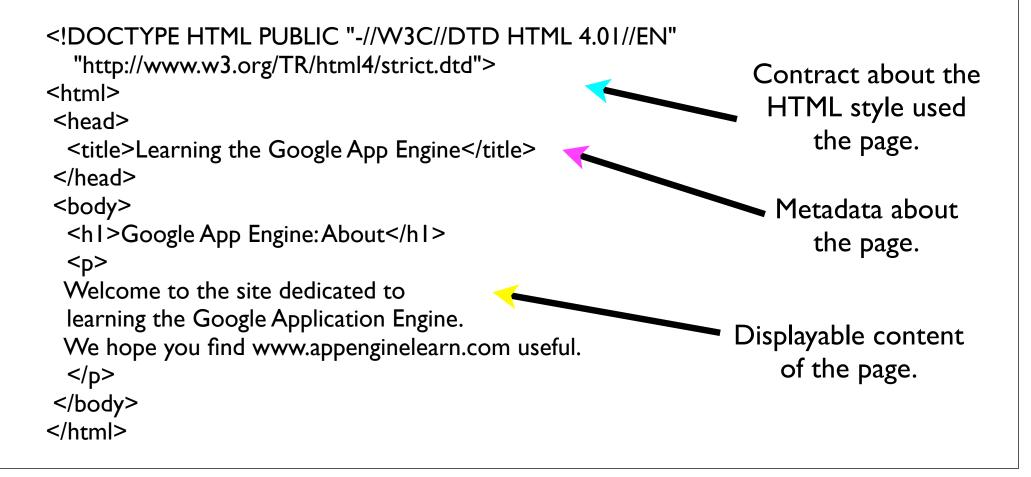
```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
 "http://www.w3.org/TR/html4/strict.dtd">
<html>
<head>
 <title>Learning the Google App Engine</title>
</head>
<body>
 <h I > Google App Engine: About </h I >
 >
 Welcome to the site dedicated to
 learning the Google Application Engine.
 We hope you find www.appenginelearn.com useful.
 </body>
</html>
```



Google App Engine: About

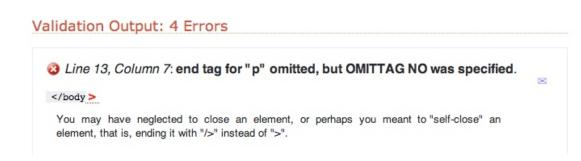
Welcome to the site dedicated to learning the Google Application Engine. We hope you find www.appenginelearn.com useful.

A Valid Web Document



Checking Validity

- We can check to see if a page "meets the rules" does it live up to its doctype?
- http://validator.w3.org
- Enter, HTML, upload a file, or enter a web-accessible URL



Less-than-successful

Note: When the validator fails, only look at the first message and fix that - and then re-run. One simple error will often cascade into 30-40 "The validator is lost and confused errors".

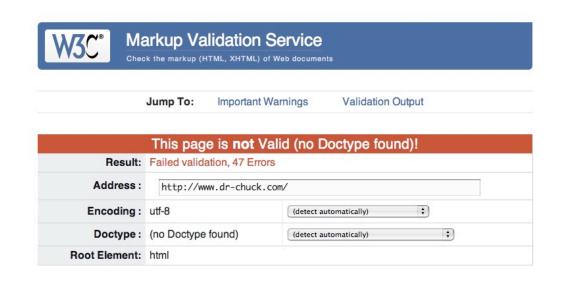
Success



```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
  "http://www.w3.org/TR/html4/strict.dtd">
<html>
<head>
 <title>Learning the Google App Engine</title>
 <meta http-equiv="Content-Type" content="text/html;charset=utf-8" >
</head>
<body>
 <h1>Google App Engine: About</h1>
 >
 Welcome to the site dedicated to
 learning the Google Application Engine.
 We hope you find www.appenginelearn.com useful.
 </body>
</html>
```

To fix the warning - we add a header to indicate the character set of our document.





•••





<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML I.0 Strict//EN" "http://www.w3.org/TR/xhtmlI/DTD/xhtmlI-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
<head>
<title>University of Michigan</title>

••••

Summary

- HTML has gone through many changes and evolutions
 - It started clean and simple then got ugly and nasty now we are back to a clean and simple approach
- HTML Markup needs to focus on meaning not formatting
- Formatting is handled using CSS Cascading Style Sheets