

Web Design Study Guide 1

Moore's Law and Basic HTML

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Moore's Law

[Moore's Law](#) is an observation attributed to Gordon Moore in a paper circa 1965 that the complexity of complexity of [integrated circuits](#) (computer chips) doubles every 18-24 months. The complexity that Moore was talking about is actually [transistor density](#). Put in another way, this means that the number of transistors in an integrated circuit (a computer chip) doubles every 18-24 months. Transistors are the fundamental building blocks of computer chips.

So what result does this have? Actually it has at least three results:

1. A new computer chip is generally twice as fast as a chip manufactured 18-24 months ago.
2. A new computer is generally twice as powerful as a computer manufactured 18-24 months ago.
3. Generally chips and memory cost about half of what they did 18-24 months ago.

Another way of looking at this is to consider that in 18-24 months computer systems will be twice as fast, twice as powerful and have about twice as much memory as a computer system does today. Additionally, the cost of the same kind of computer will be about half of what it would cost today.

Moore's Law is good news for computer systems. Every 18-24 months new computer systems are twice as good as the old systems!

Basic HTML

[HTML](#) is the main language of the World Wide Web. HTML is a language of "tags". HTML stands for [HyperText Markup Language](#). The "markup language" is just the tags. [Hypertext](#) means that a user can click on a link and jump to another document or jump to another part of the document or can run other media (music, audio, video, etc.) that the author thinks is relevant to the document (this study guide is an example of a hypertext document because I have included links to other documents on the World Wide Web that you can follow to get more information on specific topics).

The Internet is a vast network of networks all using standard rules for transmitting data from one point to another. Nowadays people talk about the Internet and the World Wide Web as if they were identical. Technically this isn't true. [The Internet](#) was the outgrowth of an experiment to see if computer scientists could create a robust, survivable network. The Internet actually dates back to late 1969 (back then it was called [Arpanet](#)) and started with 4 computers. The Internet slowly grew over the next 25 years, eventually adding millions of computers and millions of other networks. By the time

[Tim Berners-Lee](#) created the [World Wide Web](#) (the Web) in 1990 there were 313,000 computers that made up the Internet and fewer than several million people at most who had ever used the Internet. By 1990 almost everyone who had used the Internet had done so in a college setting (starting around 1982) or in a specific government, research or military setting. There were other networks (and there still are) but only the Internet had a standard means of connecting lots of machines and networks enabling people to use email and other electronic services easily.

The Web eventually caused an explosive growth in Internet. It is estimated today that 350 million computers¹ make up the Internet with about 1 billion users worldwide, most of whole are accessing the Internet though a [web browser](#) (a web browser is a computer program used to take the tag based HTML language and display text, pictures and other content according to the layout described by the tags).. But in the beginning the Web began as an attempt to use “light-weight” [hypertext](#) so that researchers at a European physics project ([CERN](#)) could easily share and link their documents.

Basic HTML Document Structure

So, since the Web is based on a simple form of hypertext using HTML, how do we go about creating HTML documents? We have to create a document according to rules that define the HTML document structure. As long as we follow the rules for an HTML document, we can display any kind of content we want.

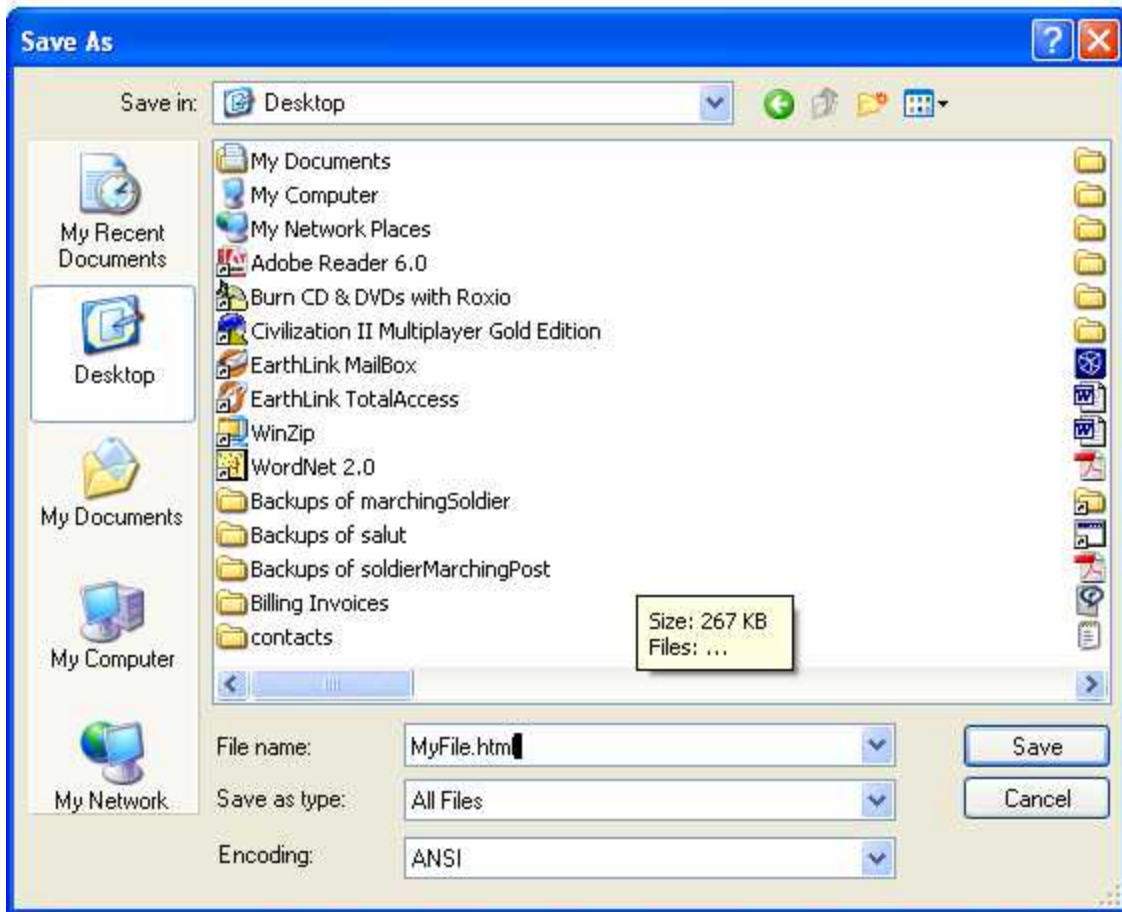
So what does the most basic HTML document look like? The most basic HTML document looks like this:

```
<html>
  <head> <title> My Page</title> </head>
  <body> </body>
</html>
```

That’s the whole document. Go ahead and type this into a text file (using Notepad for example) and save it with a file name of your choice but with an .HTML extension (i.e. save it to a file named **MyFile.html**). It’s best to save it to your computer’s desktop so you can easily find it.

¹ This means that about 350 million computers work together to run the Internet itself. This figure doesn’t include the computers that we use to connect to the Internet with, send email or browse the Web.

Example:



But what does all that stuff mean? Well anything inside the left-angle and a right-angle bracket characters (< and >) is called a tag. HTML is a language of tags and tags are used to create the structure of an HTML document.

Tags come in pairs and have a start tag (i.e. <tag>) and an end tag (i.e. </tag>) (start and end tags are also called begin and end tags or open and close tags). The main difference between a start tag and an end tag is that an end tag has a / just in front of the tag name like this: </tag>.

Every HTML document starts with an <html> tag and ends with a </html> tag. All the other tags go between the html start and end tags.

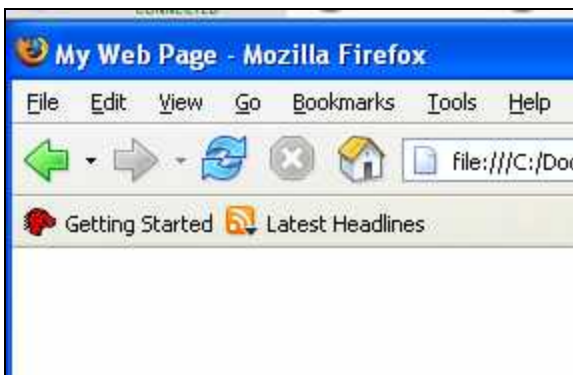
Every HTML document also has one pair of **head** tags and one pair of **body** tags following each other sequentially:

```
<html>
  <head> </head>
  <body> </body>
</html>
```

Head tags are mostly used to hold information used by other Web resources, like search engines. However, according to the HTML standard, title tags are required inside a head tag pair (by the way, a tag pair, meaning a start tag and an end tag and anything in between is called an element) like this:

```
<head>
  <title> My Web Page </title>
</head>
```

What the title actually displays is a title in the upper right hand side of a web browser like this:



Ok so what about the body element? The body element is where all the actual web page content (everything you have to say or display to your readers) goes. So take a look at this basic HTML document:

```
<html>
  <head>
    <title> Hello World </title>
  </head>

  <body>
    Hello World!
  </body>
</html>
```

This results in the following HTML document:



Should tag names be upper case or lower case?

Upper Case Tags	Low case tags
<pre><HTML> <HEAD> <TITLE> </TITLE> </HEAD> <BODY> </BODY> </HTML></pre>	<pre><html> <head> <title> </title> </head> <body> </body> </html></pre>

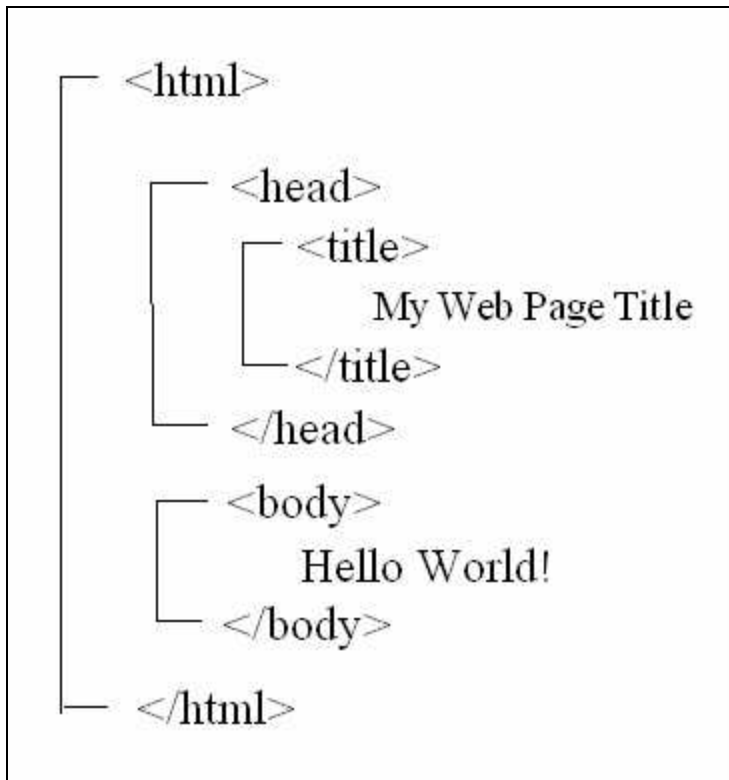
In the old days (before 1999) most web pages used upper case tags. You can still find pages written like this. But the actual HTML standard now says that we need to use lower case tags.

Also you'll note that I have indented every element. This makes the HTML code easier to read than if it wasn't indented. After all, which of the following is easier to read?

Upper Case Tags	Low case tags
<pre><html> <head> <title> Sam's Page</title> </head> <body> Hello my name is Sam. Welcome to my page! </body> </html></pre>	<pre><html> <head> <title> Sam's Page</title> </head> <body> Hello my name is Sam. Welcome to my page! </body> </html></pre>

Just imagine how it would look with hundreds or thousands of tags if we didn't indent! Indentation makes it easier for a human being to read. The web browser doesn't care one way or the other.

One more thing – HTML tags are nested (like [Russian dolls](#) or buckets inside one another); they never overlap. Look at this:



The head, title and body elements are all nested. The head and body elements are nested inside the html element and the title element is nested inside the head element. The content in this example is the “Hello World!” phrase nested inside the body element. The “My Web Page Title” phrase nested inside the title element isn't considered web page content although that title will be displayed in the upper left hand of a web browser's title bar.

Other Basic Tags

<center>: Center tags center their content in the browser display area. For example:

```
<html>
  <head>
    <title> Hello World </title>
  </head>

  <body>
    <center> Hello World! </center>
  </body>
</html>
```



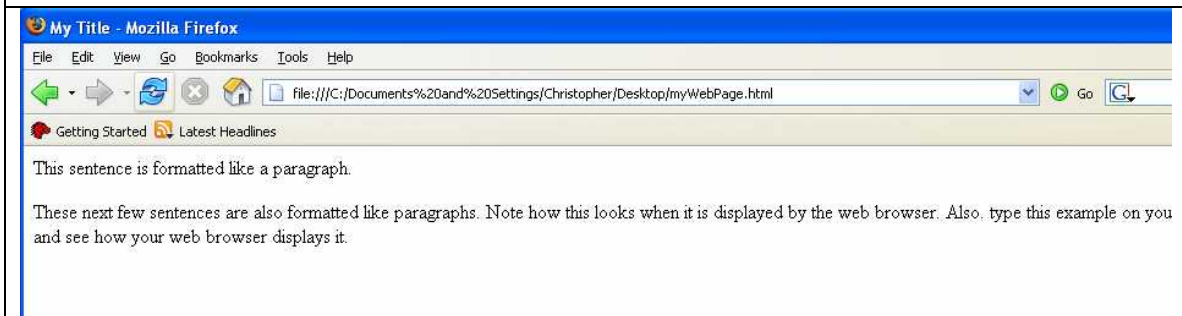
<p>: p stands for paragraph. A paragraph tag formats its content in paragraph form like this:

```
<html>
  <head>
    <title> My Title </title>
  </head>

  <body>
    <p> This sentence is formatted like a paragraph. </p>

    <p> These next few sentences are also formatted like
      paragraphs. Note how this looks when it is displayed
      by the web browser. Also. type this example on your
      computer and see how your web browser displays it.
    </p>

  </body>
</html>
```



Note what happened. Web browsers ignore line breaks. We have to explicitly insert line breaks in our HTML code.

`
`: and using the break tag is how we do it. Now remember that all tags come in start and end tag pairs. But there are some exceptions. These are called standalone tags and this is one of them. The reason we have standalone tags is because these tags force some action and it wouldn't make any sense to have an end tag. But the rules say we have to have an end tag. So standalone tags are a combination of a start tag and an end tag together. So we write a standalone tag like this: `<tag />` with a space between the tag name and the forward slash and with the forward slash just before the end angle bracket.

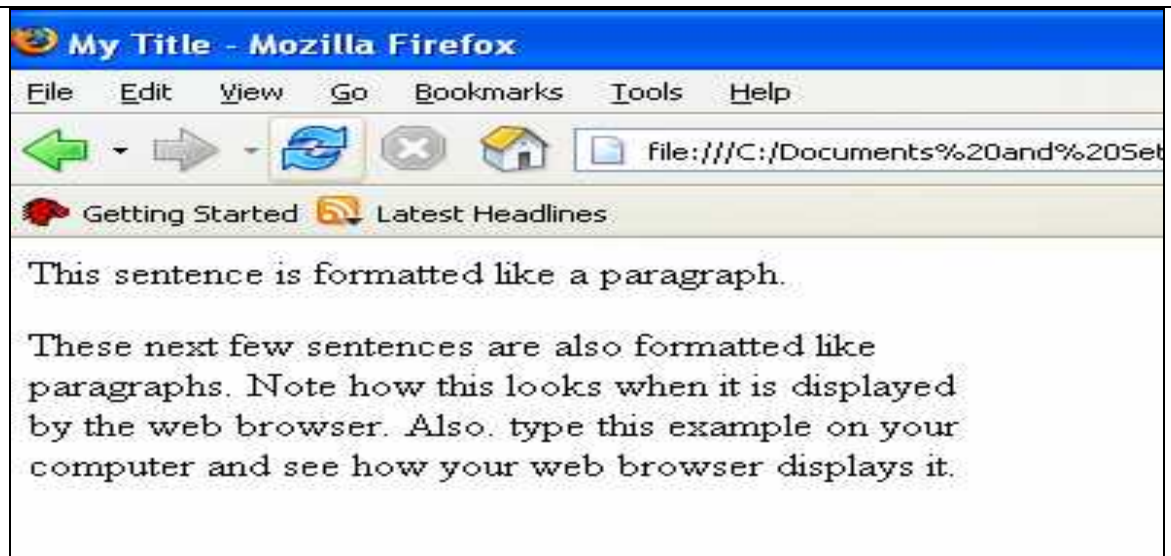
So the break tag is the first standalone tag we will study. And it creates line breaks. Let's change the current example and add line breaks to make the example more readable:

```
<html>
  <head>
    <title> My Title </title>
  </head>

  <body>
    <p> This sentence is formatted like a paragraph. </p>

    <p> These next few sentences are also formatted like paragraphs. Note how this looks when it is displayed by the web browser. Also. type this example on your computer and see how your web browser displays it.
    <br />
    <br />
    <br />
    <br />
  </p>

  </body>
</html>
```



We could also have put the `
` tags at the beginning of the sentence rather than the end (we could also have put them in the middle of the sentences but that wouldn't make too much sense).

heading tags: heading tags are used to create headings at various font sizes ranging from largest (`<h1>`) to smallest (`<h6>`).

```
<html>
  <head>
    <title> Heading Tag Examples</title>
  </head>

  <body>
    <h1> My name is Sam </h1>
    <h2> My name is Sam </h2>
    <h3> My name is Sam </h3>
    <h4> My name is Sam </h4>
    <h5> My name is Sam </h5>
    <h6> My name is Sam </h6>

  </body>
</html>
```



Note that each of the heading tags display the heading content in bold and they also create a line break.

After you save the file to the desktop, it will display the file name you gave it as well as an icon indicating that it is an HTML file (this icon will change from system to system depending on what default browser you have installed).

`<hr />`: This is the horizontal rule tag. It created a line across the display content area. You can use this tag to divide the page horizontally with a line.

```
<html>
  <head>
    <title> Heading Tag Examples</title>
  </head>

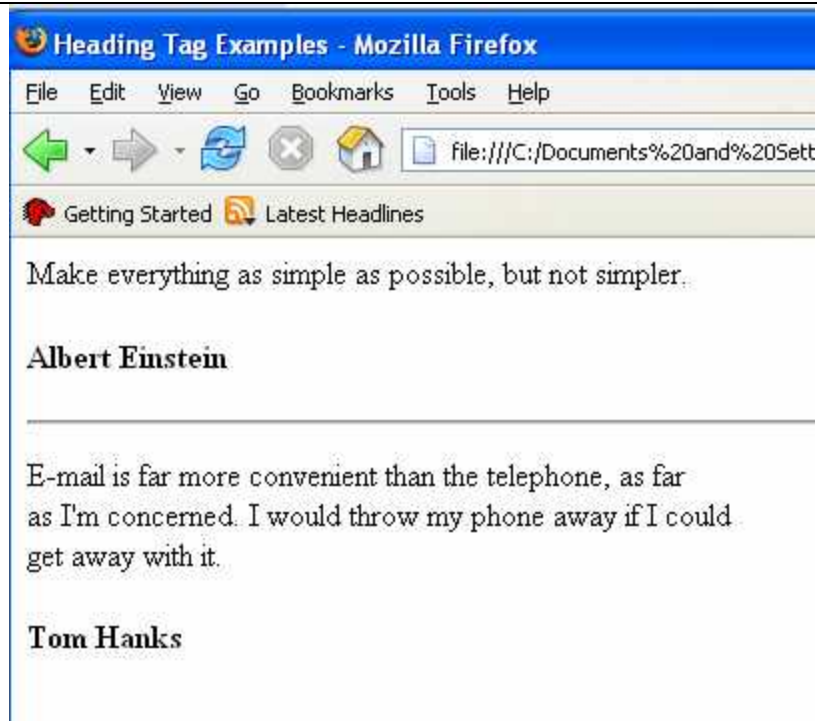
  <body>
    <p>Make everything as simple as possible, but not
simpler.

    <h4>Albert Einstein </h4>
    <p>
    <hr />

    <p> E-mail is far more convenient than the telephone, as
far <br />
    as I'm concerned. I would throw my phone away if I
could <br />
    get away with it.

    <h4>Tom Hanks</h4>
  </p>

</body>
</html>
```



Finally, you can take a look at the actual tags used to create most web pages. For example, if you go to the Google site and then click on the View option in your browser and then click on the Page Source (or the Source option in some browsers), this brings up the actual HTML code for the page:



```
<html><head><meta http-equiv="content-type" content="text/html; charset=UTF-8"
body,td,a,p,.h{font-family:arial,sans-serif)
.h{font-size:20px)
.q{color:#00c)
--></style>
<script>
<!--
function sf(){document.f.q.focus();)
function rwt(e1,oi,cad,ct,cd,sg_url,sg){var e = window.encodeURIComponent ? en
// -->
</script>
</head><body bgcolor=#ffffff text=#000000 link=#0000cc vlink=#551a8b alink=#ff
<form action=/search name=f><script><!--
function qs(e1) {if (window.RegExp && window.encodeURIComponent) {var ue=e1.hr
// -->
</script><table border=0 cellpadding=4><tr><td nowrap><font size
function togDisp(e){stopB(e);var elems=document.getElementsByName('more');for(
function stopB(e){if(!e)e=window.event;e.cancelBubble=true;}
document.onclick=function(event){var elems=document.getElementsByName('more');
//-->
</script><style><!--
.cb{margin:.5ex)
--></style>
<span name=more id=more style="display:none;position:absolute;background:#fff;
```