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# Tools

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#### How do we create websites?

There are several 'software tools' that we'll need this semester to create our web pages/sites

None of them are particularly special, but all are needed

Later in this lecture, we'll show you a website that will let you pick the applications you want (all we need, except one) and download/install them all at once

...which is nice

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#### How do we create websites?

So what do you need to make a web page?

A text editor

That's it

After all, as we'll soon see, an HTML page is just a text file

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#### How do we create websites?

A text editor:



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#### Visual Studio Code

This semester we'll be using Microsoft's Visual Studio Code for our work

Arguably the best Integrated Development Environment

Free

Lots of nice features

Available from <a href="https://code.visualstudio.com/download">https://code.visualstudio.com/download</a>

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## But you said we need several tools? What gives?

Well, yeah

But to make a simple page, we just need an editor

What if we want to view the page?

What if we want to add pictures?

What if we want other people to see our page?

What if we want to share our source code with others?

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### To view a page

We'll need a browser

As you know, a web browser is an application used to, well, browse the web

- There are many flavors
- Microsoft Edge (meh) ... basically "Microsoft Chrome" 🚱
- All of the development for this site was done using Google Chrome 🚳

Much of it was tested with Firefox as well 🚯







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#### What about pictures?

Though Photoshop is probably the best photo editor, we'll be using GIMP Gnu Image Manipulation Program Open source photo editor (free) Almost as good as PS (some argue better) Plenty good enough for our needs, as we'll see

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# What about sharing (publishing)?

This is where it sometimes gets a little confusing for students

To 'publish' our finished pages, we have to upload them to a server account

You all (should!) already have accounts on the class web server

We will be using an application called FileZilla to transfer/upload our work to the server

FileZilla uses an Internet technology called the File Transfer Protocol to move files from one computer

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# What about sharing source code and files?

A lot of times, we want to be able to conveniently share and distribute projects

To do so, we typically create a compressed archive of the files, called a .zip file

A lot of your lab activities are going to start with one or several files that are partially completed

You'll download the archive to your working directory and extract (or 'unzip') the files from the archive



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#### Ninite

Now, you could go to the websites for all of these applications, download their respective install files, and run each

That would work. But there's an easier way

There's a site named <u>ninite.com</u>. On <u>ninite.com</u>, you can select any number of open-source applications, download them as an executable bundle, and install them all with one double-click

On <u>ninite.com</u>, find and select Chrome (if you don't already have it), FileZilla, GIMP, 7-Zip, and any other application you think you might find useful. Click 'Get Your Ninite' to download the bundle

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# File Explorer

We'll also use File Explorer a lot to organize our files and folders/subfolders



Understanding file systems is a critical component of computing, in general, and web development in particular

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#### That's it!

So that's it for the software applications we will need this semester

You may have found some others that you'll find useful in the future

If, at the end of the semester, you decide you won't be using them anymore (I doubt it!), you can always uninstall them

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There're a bunch that I use all the time

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Wait...isn't that another class?

Well, yes

But we have to understand that we're using two operating systems this semester

What is an operating system, you ask?

Well, for now, it's enough to know that an operating system is a group of software applications that provide an interface between the user and the computer's underlying hardware

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#### Here's where it matters:

Our personal computers run on the Windows operating

The class web server, however, runs on the Linux operating system

Both are similar in some respects, but very different in a couple of key ways

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- The most important difference for us is case sensitivity
- Windows doesn't care
- Linux very much does -
  - On a Windows machine, index.html and INDEX.HTML refer to the same file

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- On a Linux machine, they are treated as different files
- So when you upload your work to the web server, it is **very important** that the file and folder names obey Linux's constraints

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The easiest way to deal with this disparity is to adopt a convention

An agreement at the beginning of things to do the same things the same way, every time

Our convention, for this class, is to name everything in **all lower-case letters** 

lab1.html NOT Lab1.html OR LAB1.HTML OR lab1.HTML

Or ANY uppercase character

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Also, we only want to use non-space characters in file/folder names
NO SPACES!
EVER!
lab1.html
NOT
lab 1.html

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Also, also ... '/' means something to Linux

It's sort of the same thing as `C:\' in Windows

So, '/' is your root directory. It's your home

You'll have a couple of subdirectories - directories that are nested inside '/'

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There's **/homework** And /labs And /images And /scripts

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Don't mess with anything in

#### /js or/images

Those files are there to help you troubleshoot your files and help me grade your work

You'll be adding subdirectories to **/homework** and **/labs** 

One each for each assignment

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This may sound kind of trivial

But, trust me, you'll dodge a lot of errors if you follow these conventions

If you're interested in learning more about the nuances of Linux... join us for CSCI 2200 (Intro to Unix) and CSCI 4417 (Intro to System Administration)

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# HTML

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# What is HTML again?

#### HTML (Hypertext Markup Language)

"language of the web"

set of "tags" or "elements" designed to create the structure of a web page

#### HTML documents

"plain text" documents with the elements embedded for formatting

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# What is HTML again?

Basic HTML pages require no compiling What is this 'compiling' of which you speak?

Basic HTML documents end in either .htm or .html file extensions

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#### .htm vs .html

So what is the difference between index.htm and index.html?

Basically, just the letter 'l' :-)

The reason for the .htm extension dates back to when certain (\*cough, cough...MS-DOS\*) Operating Systems only allowed for 3 character extensions

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#### .htm vs .html

In modern times, both .htm and .html behave, display, and act the exact same way

- It is best practice to choose one or the other and stick with it
- For this class we will use .html

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# History of HTML

Originally, HTML was based on a language called Standard Generalized Mark-up Language (SGML). SGML is a standard that is defined for a markup language for documents

SGML helps to define elements that indicate which portion of the document is a paragraph, sentence, bolded, etc

It is also hideously complicated

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# History of HTML

HTML 1 was first released in 1991

Current accepted standard of HTML is HTML 5

The final revision and adoption of the standard was in October of 2014 (yes, that means we've had to revise all of our lecture materials)

The <u>World Wide Web Consortium (W3C)</u> is the governing body that determines standards for items such as HTML

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History of HTML

All current browsers (latest versions of Internet Explorer, Chrome, Opera, Firefox, Safari, etc) support HTML5



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## History of HTML

All current browsers (latest versions of Internet Explorer, Chrome, Opera, Firefox, Safari, and, god help us, Edge, etc) support HTML5



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### **HTML** Tags

HTML documents are made up of various tags that define how the document will be structured

Tags are contained inside of the < > (angle brackets, lt/gt)

The beginning tag: <tagname>

The ending tag: </tagname>

'Forward Slash' ... the one under the question mark key on standard keyboards

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# HTML Tags

Example: Take the text, "Welcome to Class"

If, in the source document, we wrap that with the bold (<strong></strong>) tags, thus: <strong>Welcome to Class</strong>, this is what the browser displays:



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# **HTML** Tags

Some tags exist in pairs and are called **container tags** 

I read <em>To Kill A Mockingbird</em>

This is the equivalent to "turning on" and "turning off" formatting

If you forget the ending tag, the formatting will continue



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Some tags do not exist in pairs and are called **standalone tags (or void tags)** 

#### Hi <br> there

This is the equivalent to inserting something into the document

Does not require an ending tag

Note: <br /> is also valid, but now discouraged



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To italicize "Have a Great Day" -Use the <em></em> (emphasis) tag pair: <em>Have a Great Day</em> displays



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#### <strong> vs. <b>; <em> vs. <i>

Appearance-wise, <strong> and <b> make text bold; <em> vs. <i> italicize text

The difference lies in adaptive technology

<strong> and <em> modify the playback voices for screen readers

Sometimes, you may just want to modify text's appearance without the emphasis on the reader's 'voice'

When we talk about CSS, we'll learn that we can (should) use CSS when all we want to do is modify the appearance of text content

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#### HTML Tags Tags can be nested:

<strong><em>I'm running out of example text.</em></strong>
looks like this
(in a browser):



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Must use the last on, first off method. This is the last tag you have open should be the first tag closed

This would be incorrect:

<strong>this is bold <em>this is bold and italic</strong></em>

The reason, the last tag "on" or "open" is the <em> tag

Correct <strong>this is bold <em>this is bold and italic</em></strong>

this is bold this is bold and italic

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While HTML5 tags are not case sensitive (i.e. <HTML> is the same as <html> and <hTmL>), conventional and best practice states that all HTML tags and attributes should be in <u>lowercase</u>

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- Many HTML tags have **attributes**
- Attributes provide additional information about the tag
- The attribute(s) are listed inside of the opening tag
- With each attribute, you can assign a value with the equals sign followed by the value in quotation marks

<tag attribute="value" attribute2="value2">..</tag>

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## HTML Tags For example:

#### <a href="http://www.cs.etsu.edu">Dept of Computing</a>

The <a>...</a> tag is used to create a link in a document. The attribute **href** identifies where a user will go when they click on the link. The `a' in the <a></a> tag stands for `anchor'

('href' = 'hypertext reference')

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# HTML Tags? Or Elements?

Sometimes people will use the terms "tag" and "element" interchangeably

More correct: an element consists of both tags and the content between them



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DOCTYPE declaration – must be the first thing on the page! The <!DOCTYPE> declaration is not an HTML tag; it is an instruction to the web browser about what version of HTML the page is written in

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To begin an HTML document we start with the <!DOCTYPE html> declaration

This declaration is not a tag

Rather it is an indication to the browser that this document is a specific type of HTML

In this case <!DOCTYPE html> signifies that this is an HTML5 document

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- HTML 5: <!DOCTYPE html>
- XHTML (The old standard):

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">

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The <html> container open tag. The lang="en" attribute/value pair tells browsers loading this page that the language on this page is English.

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After the Document Type Declaration, we enter in our first tag – the <html>...</html> tags

This tag is used to signify to the browser that everything between the opening and closing of this tag is contained within the HTML element

You can think of it as the "html container"

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The <head> tag. Interestingly, the HTML5 specification now makes this tag optional. Since the vast majority of existing web pages use a head section, in this class, we will also

```
<!DOCTYPE html>
<html lang="en">
   head>
        <meta charset="utf-8">
        <title>Title of the document</title>
    </head>
    <body>
        CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN
    </body>
</html>
```

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Inside of the <html>...</html> element there are two sections

The first section is <head>...</head>

Identifies descriptors for the document

This can include scripts, stylesheets, meta information, and the title of the document

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Meta tag(s). Contain information about the document, but don't display when the page loads

```
<!DOCTYPE html>
<html lang="en">
    <head>
       →<meta charset="utf-8">
        <title>Title of the document</title>
    </head>
    <body>
        CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN
    </body>
</html>
```

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<meta> tags: provide metadata about the HTML document

Does not display on the page, but can be parsed by other applications, for example, search engines

'meta' means information about the document that's contained within the document

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# HTML5 Document Structure <head>

<title>Title of the document</title>

</head>

In the above example, meta is using the attribute charset with the value utf-8 It is the character encoding of the document UTF-8 is the web standard\*

> \*utf-8 (Universal Character Set + Transformation Format—8-byte 1,112,064 "characters" can be potentially coded by UTF-8)

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#### HTML5 Document Structure Other meta tags:

<meta name="author" content="Joe Dokes"> <meta name="description" content="template page"> <meta name="keywords" content="template, starting page"> <meta name="last modified" content="1/21/2016"> <meta http-equiv="refresh" content="30">

The title tag. All of the pages we create in this class will have titles.

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The <title> element: title of the document

Not necessarily the file name or any titles that are used in the document

<head>

<meta charset="UTF-8">

<title>Title of the document</title>

</head>

Always nested inside of the head element Displays in the browser's tab or top bar



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Closing head tag. The head element is a container element, so it has to have a closing tag

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The body tag. This is where the displayed content will be located

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <title>Title of the document</title>
    </head>
    <body>
        CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN
    </body>
</html>
```

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The second section of the document is the <body>...</body>

This section is where various elements, images, tables, forms, text, etc. can be placed to be displayed on the screen

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<body>

CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN Can include text, pictures, video, tables, styling code, Javascript, etc.

</body>

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The closing body and html tag. Again, <body> and <html> are container tags, and so they have to be paired with closing tags.

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Text that is not inside of html tags is rendered as "default format" by the browser

Spacing:

Multiple spaces, soft and hard returns, and tabs are ignored by the browser

Whitespace makes the code easier to read, but is ignored by browsers

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#### 

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Parent/child relationship:

The indentation causes the elements of the document to take the form of what is referred to as a parent/child <!DOCTYPE html> <html lang="en"> relationship. Indented elements are the <head> children of elements that are not <meta charset="utf-8" indented, or are indented less <title>Title of the document</tite> </head> <body> CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN </body>

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/html>

Parent/child relationship:

Thus, in this example, the <head> and <body> elements are children of the <!DOCTYPE html> <html> element, while the <head> tag is <html lang="en"> the parent of the <meta> and <title> <head> elements <meta charset="utf-8"> <title>Title of the document</title> </head> <body> CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN </body>

</html>

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Comments:

<!-- this is an example of a comment -->
Please note there is a space between after the opening tag and
a space before the closing tag

Comments begin with the <!-- opening tag and end with the --> closing tag

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# About the HTML Document Comments:

- Not displayed to the screen (generally speaking)
- Comments are sent to the browser

#### DO NOT STORE SECURE INFORMATION IN COMMENTS

- Passwords, credit card numbers, etc
- Can be seen by viewing the page's source
- Useful for noting design information and future support of the page

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- Comments What good are they?
  - Noting design information
  - Future support of the page
  - Page's author may not be the next person who has to modify it

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Comments:

For the purposes of this class, every document you submit should have the following comments in the <head> section of your document:

lab1.html</th		
-	Author:	Joe Dokes
-	Date:	2023-06-11
-	Last revised:	2023-06-11
-	Description:	Gain a basic understanding
-		of HTML
<b>&gt;</b>		

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ALL OF OUR ASSIGNMENTS WILL INCLUDE THE APPROPRIATE INFORMATION IN THEIR HEAD ELEMENTS

```
<head>
```

-->

</head>

```
<meta charset="utf-8">
<meta name="author" content="Joe Dokes">
<meta name="date" content="2023-06-11">
<meta name="last revised" content="2023-06-11">
<meta name="last revised" content="2023-06-11">
<meta name="last revised" content="2023-06-11">
<meta name="last revised" content="2023-06-11">
```

content="Gain a basic understanding of HTML">
<title>Lab 1</title>



- Author:
- Date:
- Last revised:
- Description:

```
Joe Dokes
```

```
2023-06-11
```

```
2023-06-11
```

```
Gain a basic understanding of HTML
```

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```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <meta name="author" content="Joe Dokes">
        <meta name="date" content="2023-06-11">
        <meta name="last revised" content="2023-06-11">
        <meta name="description"
            content="Gain a basic understanding of HTML">
        <title>Lab 1</title>
```

<!-- lab1.html

Author: Joe Dokes

2023-06-11

- Date:
- Last revised: 2023-06-11

Content here

- -->
- </head>
- <body>

East Tennessee S </body> Department of ( </html>

Description: Gain a basic understanding of HTML

> CSCI 1210 s of Web Design

# HTML Terms

Attributes – provide additional information about the tag:

<a href="http://www.cs.etsu.edu">Dept of Computing</a>

Tags – define the structure of the document:

<a href="http://www.cs.etsu.edu">Dept of Computing</a>

Elements – includes everything from the opening tag to the closing tag:

<a href="http://www.cs.etsu.edu">Dept of Computing</a>

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1. What information is contained in an HTML document's <head> section?

- A. Meta information
- B. Comments
- C. Links to external resources
- D. Title
- E. All of the above

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2. What is the name of the editor we'll be using for this class?

- A. Notepad++
- B. Brackets
- C. Sublime
- D. Vim
- E. Nano
- F. Visual Studio Code

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3. Which Operating System will we be interacting with this semester?

- A. Mac OS
- B. Windows
- C. OS/2
- D. MINIX
- E. Linux
- F. B and E above
- G. A and B above

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4. Why is it important to use lower-case letters (only) in file & folder names?

- A. Windows is case sensitive
- B. Linux is case sensitive
- C. Mac OS is case sensitive
- D. It isn't important. Don't worry about it

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5. HTML documents have to be compiled before they can be viewed

- A. True
- B. False

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6. What is the current "official" version of HTML?

- A. 1
- B. 2
- C. 4
- D. 5

E. XHTML

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7. Which element could we use to italicize text?

- A. <em>
- B. <it>
- C. <i>
- D. <italic>
- E. A & C above

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- 8. In HTML, what is an attribute?
- A. Additional information about an element that is enclosed in its opening tag

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- B. href
- C. May be required for the element to work
- D. All of the above

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9. What's the first thing (line #1) that appears in an HTML document?

- A. <html lang="en">
- B. <!DOCTYPE html>
- C. <head>
- D. <body>

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10. In the following screen shot, which element is <title>'s parent?

- A. <html lang="en">
- B. <!DOCTYPE html>
- C. <head>
- D. <body>

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="utf-8">
        <title>Title of the document</title>
    </head>
    <body>
        CONTENT GOES HERE TO BE DISPLAYED ON THE SCREEN
    </body>
  html>
```

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11. In HTML, what symbols do we use to denote comments? A. // B. /\* \*/

- C. # D. <!--->

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