

How to Create Your Own WebPages: An Introduction to HTML

The internet has become an essential classroom tool for the acquisition, analysis, presentation, and communication of data in ways which allow you to become a more active participant in research and learning. A familiarity with how to use the internet can help you research and study topics across all areas of education. But how do people make all these data and information available on the World Wide Web? How do they create their WebPages? Follow us through the process of creating your own WebPages and find out for yourself the answers to these questions or others that have been troubling you!

Degree of Difficulty

Experimental: Moderate

Conceptual: Moderate

Prerequisite Knowledge

This project is suggested for students that are already familiar with basic computer skills (e.g., turn on the computer, use the keyboard, use the mouse), have some experience in basic computer functions (e.g., access programs, open programs, save data), and have knowledge of basic computer programs (e.g., word processing programs).

Useful Concepts

- WWW: World Wide Web.
- SGML: Standard Generalized Markup Language--a standard for describing markup languages.
- DTD: Document Type Definition--this is the formal specification of a markup language, written using SGML.
- HTML: Hypertext Markup Language. HTML is an SGML DTD. In practical terms, HTML is a collection of platform-independent styles (indicated by markup tags) that define the various components of a World Wide Web document. HTML was invented by Tim Berners-Lee while at CERN, the European Laboratory for Particle Physics in Geneva (NCSA, 2000).

- What an HTML Document Is: HTML documents are plain-text (also known as ASCII) files that can be created using any text editor (e.g., Emacs or vi on UNIX machines; SimpleText on a Macintosh; Notepad on a Windows machine).
- Tags: commands included within the brackets < ... >
- SimpleText or Notepad: These are text editors that are available on every computer (SimpleText on a Macintosh; Notepad on a Windows machine). Notepad can be found under “Programs” and then under “Accessories” and SimpleText can be find under “Apple” and then under “Recent Applications”. In case you have problems finding them, use the “Find” option on your computer to find it for you.
- Getting Your Files on a Server: If you have access to a Web server at school, contact the individual who maintains the server to see how you can get your files on the Web. For the purposes of this project we will focus on how to create WebPages and how to run them from your hard disk. In case you want to make them public ask your teacher or mentor for help.

Objectives

Completion of the activities should enable you:

- to learn how to use HTML for creating WebPages
- to use HTML as a tool to create complex tables and to include images in your WebPages
- to create links to other websites

Materials: computer, scanner (optional – in case you want to include some personal pictures in your WebPages) and HTML Document software (SimpleText on a Macintosh; Notepad on a Windows machine)

NOTE: When following the directions given below do not include in your HTML text the quotation marks used (e.g., if the text is written “<H1>Science is Fun</H1>” – you must use <H1>Science is Fun</H1> - The use of quotation marks is for separating the tags/commands from the rest of the text). However, there are cases where you have to use the quotation marks, but for these case the quotation marks must be included within the brackets < ... > (e.g., Back to Page 1).

Procedure

Every HTML document should contain certain standard HTML tags (e.g. <title>). Each document consists of head and body text. The head contains the title, and the body contains the actual text that is made up of paragraphs, lists, and other elements.

For creating your first simple HTML document and web page follow the next steps:

1. Open Notepad/SimpleText and type in the following required elements (the required elements are the <html>, <head>, <title>, and <body> tags):

```
<html>
<head>
<TITLE> My Science Project's Homepage</TITLE>
</head>
<body>
<H1> Welcome To My Science Projects Homepage </H1>
<P> A familiarity with how to use the internet can help you research
and study topics across all areas of education!</P>
<P>The purpose of my project is...</P>
</body>
</html>
```

This is the minimal HTML text you need to use for a simple web page to be created. The title element contains your document title and identifies its content in a global context. The title is typically displayed in the title bar at the top of the browser window, but not inside the window itself. The title is also what is displayed on someone's hotlist or bookmark list, so choose something descriptive, unique, and relatively short. A title is also used to identify your page for search engines. The second and largest part of your HTML document is the body, which contains the content of your document (displayed within the text area of your browser window). The tags explained below are used within the body of your HTML document (NCSA, 2000).

2. Go under "File" and choose "Save As". Choose the place/folder you want to save this file in and then type the name of the file followed by ".htm". Make sure that you include the term **.htm** after your filename, otherwise it will not be readable by a web browser (e.g., Science Project Page1.htm –always use titles that characterize the content of your web page). After typing the name, click on "Save" of the dialogue box.
3. Open your web browser (e.g., Netscape or Internet Explorer) and select "Open Page" under "File". At this point you must have a dialogue box on your screen that asks you to "choose the file" you want to open. Click on "choose file" and select the filename you gave to your saved HTML document (e.g., Science Project Page1.htm – save your files in folders which are easily found). After you select your HTML document click on "Open" of the dialogue box. What do you observe?
4. HTML has six levels of headings, numbered 1 through 6, with 1 being the largest. Headings are typically displayed in larger and/or bolder fonts than normal body text (NCSA, 2000). The first heading in each document should be tagged <H1>. The

syntax of the heading element is: <Hy>Text of heading </Hy>, where y is a number between 1 and 6 specifying the level of the heading. Repeat step 1 for all possible y numbers (1-6) by changing the syntax of the heading element “<H1>Science is Fun</H1>” (e.g. “<H2>Science is Fun</H2>”, “<H3>Science is Fun</H3>” etc.). What do you observe? What happens if you use different numbers (e.g., “<H1>Science is Fun</H6>”)?

5. Unlike documents in most word processors, carriage returns in HTML files aren't significant. In fact, any amount of whitespace - including spaces, linefeeds, and carriage returns - are automatically compressed into a single space when your HTML document is displayed in a browser (NCSA, 2000). Repeat steps 1-3 but this time instead of writing the paragraph content as in step 1 (<P> A familiarity with how to use the internet can help you research and study topics across all areas of education!</P>), write it as:

**<P> A familiarity with how
to use the internet can help
you research and study topics
across all areas of education!</P>**

And then as,

**<P> A familiarity with how to use the internet can
help you research and study topics across all areas of
education! </P>**

What do you observe? Compare all cases among them. Do you see the same differences as in the word document? Is it possible to present the paragraph as,

**“A familiarity with how
to use the internet can help
you research and study topics
across all areas of education!”**

on your web page by using what you have learned so far?

6. Repeat steps 1-3 but this time instead of writing the paragraph content as in step 1 (<P> A familiarity with how to use the internet can help you research and study topics across all areas of education!</P>), write it as <P ALIGN=CENTER> A familiarity with how to use the internet can help you research and study topics across all areas of education!</P>. What do you observe? How about if you use the words RIGHT or LEFT, instead of CENTER.
7. Open Notepad/SimpleText and type in the following:

<html>

```
<head>
<TITLE> My Science Project's Homepage</TITLE>
</head>
<body>
<H1> Welcome To My Science Project's Homepage </H1>
<P> A familiarity with how to use the internet can help you research
and study topics across all areas of education!</P>
<UL>
<LI> Science is fun
<LI> Science is exciting
<LI> Science is interesting
</UL>
</body>
</html>
```

What do you observe? Explain.

8. Repeat step 7, but instead of using the and tags, use and respectively. What are the differences between step 7 and 8?
9. Open Notepad/SimpleText and type in the following:

```
<html>
<head>
<TITLE> My Science Project's Homepage</TITLE>
</head>
<body>
<H1> Welcome To My Science Projects Homepage </H1>
<P> A familiarity with how to use the internet can help you research
and study topics across all areas of education!</P>
<DL>
<DT> Science is fun
<DD> Science is exciting.
</DL>
</body>
</html>
```

What do you observe? Explain.

10. Include the following commands in your HTML body text of step 9 (one at a time) and describe their use (write a report where you name the tag and then explain its corresponding function).
 - A. <DL COMPACT>
<DT> WWW:
<DD> World Wide Web

- <DT> WWW:
<DD> World Wide Web
</DL>**
- B. **
 What is Science?

 Science is fun
 Science is exciting
 Science is interesting

 What is Science?

 Science is exciting
 Science is interesting

**
- C. **<P> Toward More Democratic Education for All</P>
<BLOCKQUOTE>
<P>“Most governments have been based on the denial of equal rights; ours began by affirming those rights. They said, some men are too ignorant and vicious, to share in government. Possibly so, said we; and, by your system, you would always keep them ignorant and vicious. We propose to give all a chance; and we expected the weak to grow stronger, the ignorant, wiser; and all better, and happier together.”
</P>
<P>-- Abraham Lincoln, 1858 </P>
</BLOCKQUOTE>**
- D. **Bell Labs Science Grant Program

Commitment to High School

Science Education
**
- E. **<HR SIZE=4 WIDTH="50%">
Substitute 4 with numbers 1-6, what to you observe? How about a number bigger than 6? How about a double-digit number?**
- F. **Science is fun
Science is fun
<I> Science is fun </I>
<U> Science is fun </U>
<TT> Science is fun </TT>**

11. The chief power of HTML comes from its ability to link text and/or an image to another document or section of a document. A browser highlights the identified text or image with color and/or underlines to indicate that it is a hypertext link. HTML's single hypertext-related tag is <A>, which stands for anchor (NCSA, 2000). To include an anchor in your document:

- start the anchor with <A (include a space after the A)
- specify the document you're linking to by entering the parameter HREF="filename" followed by a closing right angle bracket (>)
- enter the text that will serve as the hypertext link in the current document
- enter the ending anchor tag: (no space is needed before the end anchor tag)

An example of a hypertext reference in a file could be "Science Project Page1.htm" or "Science Project Page1.html":

Back to Page 1

To understand this better, repeat steps 1-3 and save your file as "Science Project Page1.htm" and then repeat step 7, but this time before you close your body text (the body text closes when you use the tag </body>) type in <P>Back to Page 1</P>. After you finish step 7, continue with steps 2 and 3, but make sure you will save this file with a different name (e.g. Science Project Page2.htm). As soon as you open your second file (the one you created by repeating step 7) you will see at the end of your web page "Back to Page 1". Click on "Back to Page 1" and explain what you observe.

Make sure that you save all your files in the same folder. Otherwise you will have to specify in your hypertext reference the relative path from the current document to the linked document. In other words, you have to specify in which folder the specific file, you want to make the link to, is. For example, a link to the file Science Project Page1.htm located in the folder "Project", which is saved on your desktop, would be: Back to Page 1.

12. Repeat step 11, but this time add the following hypertext reference in your Science Project Page2 text after the hypertext reference you used in step 11: <P>Lucent</P>. What do you observe when you click on "Lucent"? (Note: Make sure that you are on-line at the time you perform this step. In case you do not have internet access skip this step).

13. You can make it easy for a reader to send electronic mail to you or any other e-mail address you want by including the mailto attribute in a hyperlink. The format is: Name (e.g. Zach). Repeat step 12 and include the tag given in this step, as well. Do not forget to use your e-mail address and your name in the Name tag. Describe what do you

observe (Note: Make sure that you are on-line at the time you perform this step. In case you do not have internet access skip this step) (NCSA, 2000).

14. Most Web browsers can display inline images (that is, images next to text) that are in X Bitmap (XBM), GIF, or JPEG format. Each image takes additional time to download and slows down the initial display of a document. Carefully select your images and the number of images in a document. To include an inline image, enter: ``, where ImageName is the URL of the image file. The syntax for `` URLs is identical to that used in an anchor HREF. If the image file is a GIF file, then the filename part of ImageName must end with `.gif`. Filenames of X Bitmap images must end with `.xbm`; JPEG image files must end with `.jpg` or `.jpeg` (NCSA, 2000).

To understand this better, visit a website where copying images is permitted (do not forget that posted material on the Web can be copyrighted and for copying any images for those websites, special permission must be granted by the creators of the particular website) and position your mouse's cursor on the picture you want to copy. Click the right button of your mouse and select "save image as" from the appeared dialogue box. Usually a name is automatically given for each image, but in case you want to change it, you can by erasing the already given name and by writing the new name. After you give it a name, click on "Save" of the dialogue box (make sure you know in which folder you saved your image. The best way is to save them in the same folder you are saving your WebPages). Lets say, you have saved the image in your WebPages' folder and you named it "image1.gif". Repeat step 7, but this time, before you close your body text, type in ``. After you finish step 7, continue with steps 2 and 3. Once again, explain what do you observe.

15. You should include two other attributes on `` tags to tell your browser the size of the images it is downloading with the text. The HEIGHT and WIDTH attributes let your browser set aside the appropriate space (in pixels) for the images as it downloads the rest of the file (NCSA, 2000). For example, to include "image1.gif" along with the desired dimensions, enter: `< IMG SRC= image1.gif HEIGHT=100 WIDTH=65>`. Repeat step 14 by using this tag, instead of the one you used before in step 14.

Compare the two images. Repeat again by using different numbers for HEIGHT and WIDTH. Are all numbers allowed? How many digits can the HEIGHT and WIDTH numbers have? Which are the dimensions that give you the best image quality?

16. Repeat step 14 by using the following tags (one at a time) and describe your observations:

- ``
- ``
- `<p ALIGN=CENTER></p>`
- ``

- `< A HREF=" Science Project Page1.htm ">` (Repeat this tag for other BORDER values, besides zero, as well.)
- ``
- `<BODY BACKGROUND=" image1.gif ">`
- `link anchor`

17. By default, browsers display text in black on a gray background. However, you can change both elements if you want. Some HTML authors select a background color and coordinate it with a change in the color of the text. Always preview changes like this to make sure your pages are readable. You change the color of text, links, visited links, and active links using further attributes of the `<BODY>` tag. For example: `<BODY BGCOLOR="#000000" TEXT="#FFFFFF" LINK="#9690CC">`. This creates a window with a black background (BGCOLOR), white text (TEXT), and silvery hyperlinks (LINK). The six-digit number and letter combinations represent colors by giving their RGB (red, green, blue) value. The six digits are actually three two-digit numbers in sequence, representing the amount of red, green, or blue as a hexadecimal value in the range 00-FF (NCSA, 2000). Repeat steps 1-3, but using further attributes of the `<BODY>` tag, such as `<BODY BGCOLOR="#000000">`, and complete the following table:

Code	Color
000000	
F00000	
FF0000	
FFF000	
00FFFF	
0000FF	
00000F	
FFFFFF	
...	

Try to find particular color patterns. Remember to explain your reasoning for each particular pattern you identify. Is there a limit in terms of colors you can create? (To help you track down the combinations that map to specific colors, there is software available for you to do this on your workstation, visit the following website: www.visibone.com/colorlab/).

18. Tables are very useful for presenting tabular information. A table has headings where you explain what the columns include, rows for information, cells for each item. The following tags are of particular importance when creating a table (NCSA, 2000):

- `<TABLE> ... </TABLE>`: defines a table in HTML. If the BORDER attribute is present, your browser displays the table with a border.
- `<CAPTION> ...</CAPTION>`: defines the caption for the title of the table. The default position of the title is centered at the top of the table. The attribute

ALIGN=BOTTOM can be used to position the caption below the table.

NOTE: Any kind of markup tag can be used in the caption.

- `<TR> ... </TR>`: specifies a table row within a table. You may define default attributes for the entire row: ALIGN (LEFT, CENTER, RIGHT) and/or VALIGN (TOP, MIDDLE, BOTTOM). See Table Attributes at the end of this table for more information.
- `<TH> ... </TH>`: defines a table header cell. By default the text in this cell is bold and centered. Table header cells may contain other attributes to determine the characteristics of the cell and/or its contents. See Table Attributes at the end of this table for more information.
- `<TD> ... </TD>`: defines a table data cell. By default the text in this cell is aligned left and centered vertically. Table data cells may contain other attributes to determine the characteristics of the cell and/or its contents. See Table Attributes at the end of this table for more information.

NOTE: Attributes defined within `<TH> ... </TH>` or `<TD> ... </TD>` cells override the default alignment set in a `<TR> ... </TR>`.

- ALIGN (LEFT, CENTER, RIGHT): Horizontal alignment of a cell.
- VALIGN (TOP, MIDDLE, BOTTOM): Vertical alignment of a cell.
- COLSPAN=n: The number (n) of columns a cell spans.
- ROWSPAN=n: The number (n) of rows a cell spans.
- NOWRAP: Turn off word wrapping within a cell.

For example, open Notepad/SimpleText and type in the following required elements:

```
<html>
<head>
<TITLE> My Science Project's Homepage</TITLE>
</head>
<body>
<H1> Welcome To My Science Projects Homepage </H1>
<P> A familiarity with how to use the internet can help you research
and study topics across all areas of education!</P>
<P>The purpose of my project was...</P>

<TABLE >
<!-- start of table definition -->
<CAPTION> Color Coding </CAPTION>
<!-- caption definition -->

<TR>
<!-- start of header row definition -->
<TH> Code </TH>
<TH> Color </TH>
</TR>
```

```

<!-- end of header row definition -->

<TR>
<!-- start of first row definition -->
<TD> 000000 </TD>
<TD> Black </TD>
</TR>
<!-- end of first row definition -->

<TR>
<!-- start of last row definition -->
<TD> FFFFFFFF </TD>
<TD> White </TD>
</TR>
<!-- end of last row definition -->

</TABLE>
<!-- end of table definition -->
</body>
</html>

```

Change the <TABLE> to <TABLE BORDER=2> (Try different numbers). What do you observe? Reproduce the table you created in step 17. Try to fill each cell with the corresponding color, as well. (Note that the <!-- ... --> brackets are used here for only explanatory reasons. You do not have to include them when you will be designing your own tables.)

Activities

1. Create your own personal WebPages. Include information about yourself, interests, school, extra curricula activities, personal projects, music preferences etc. Use a separate page for each topic, but make sure you link all pages among them (it will be a good idea to visit some other websites to get some ideas). Make your pages colorful and include pictures, tables, and links to other websites. Try to be as creative as possible.
2. Create the following tables in 3 different BORDER sizes. Fill each box with a different color and include both its name and its code within the box, as well.

A.

--	--	--	--

B.

C.

D.

<i>Colors</i>			
Light		Dark	
<i>Name</i>	<i>Code</i>	<i>Name</i>	<i>Code</i>
1. <u>White</u>	5.	9. <u>Black</u>	13.
2. <u>Yellow</u>	6.	10. <u>Brown</u>	14.
3. <u>Sky blue</u>	7.	11. <u>Dark blue</u>	15.
4. ...	8. ...	12. ...	16. ...

3. Create a reference book for someone who wants to learn HTML. Include all tags that were introduced in this project, along with their corresponding explanations. Visit the following websites in case you want to include more tags or if you want to get more in depth:

- <http://www.ology.org/tilt/cgh/>
- <http://www.ucc.ie/info/net/html/doc.html>
- http://members.aol.com/htmlguru/about_html.html
- http://www.cc.ukans.edu/~acs/docs/other/HTML_quick.shtml

4. Create a tutorial on a certain topic (e.g., create a table where you include laws and principles and create for each one of them a link to another web page or website where definitions, equations, and explanations are given).

Final Project/Report

Create a yearlong calendar by using strictly HTML coding. Devote it to something or someone and select pictures that represent each month based on your selection. Include holidays, memorial days, personal events, family and friends birthdays etc. Link some of those dates, particularly holidays and memorial days, to other websites.

Reference

NCSA (2000). *A Beginner's Guide to HTML*. URL: <http://www.ncsa.uiuc.edu/>