CMPSC 2323 Internet Programming

Creating a Web Page: Have you ever wanted to create your own web page? Maybe you have already. There are many software tools to create a web page and post it on the Internet to make it available for the world to see. Some are free and others are not. Here is a list of five software tools to create a web page.

1. web.com
2. weebly
3. iPage
4. network solutions
5. WiX

Creating a web page and posting it on the Internet are two separate procedures. Here we will see how you can create a web page. Once you know how to create a web page, you can choose to make it available for the world to see.

Probably the most basic way to create a web page is to write it in a language called HTML using a text editor. Like the high level languages Java, C++, C, *etc*., HTML instructs the computer to do something. HTML is just another language used to write the instructions.

HTML: HTML is an abbreviation for *Hypertext Markup Language*. HTML is the language of the Worldwide Web. You will learn some HTML by writing a simple web page and gradually building on what you learn to write more ambitious web pages.

Like any language written for a computer, HTML must be translated into a form that the computer understands. A so-called w*eb browser* translates or interprets HTML into a form that enables something to be displayed on the screen based on the HTML code that you write.

A so-called w*eb server* actually displays web pages so that they can be viewed by anyone with an Internet connection and a web browser. For the first few web pages we create you do not need to be connected to the Internet. The pages can be viewed with the web browser.

To create a web page you only need a text editor and Web browser. Popular web browsers include Internet Explorer, Mozilla Firefox, Google Chrome, Opera, Web Freer, *etc*. As long as you have one of these Web browsers (or perhaps another one) and a text editor you can create the web pages we will discuss.

Without further ado, let's get started by writing a simple web page and display it with the Mozilla Firefox web browser.

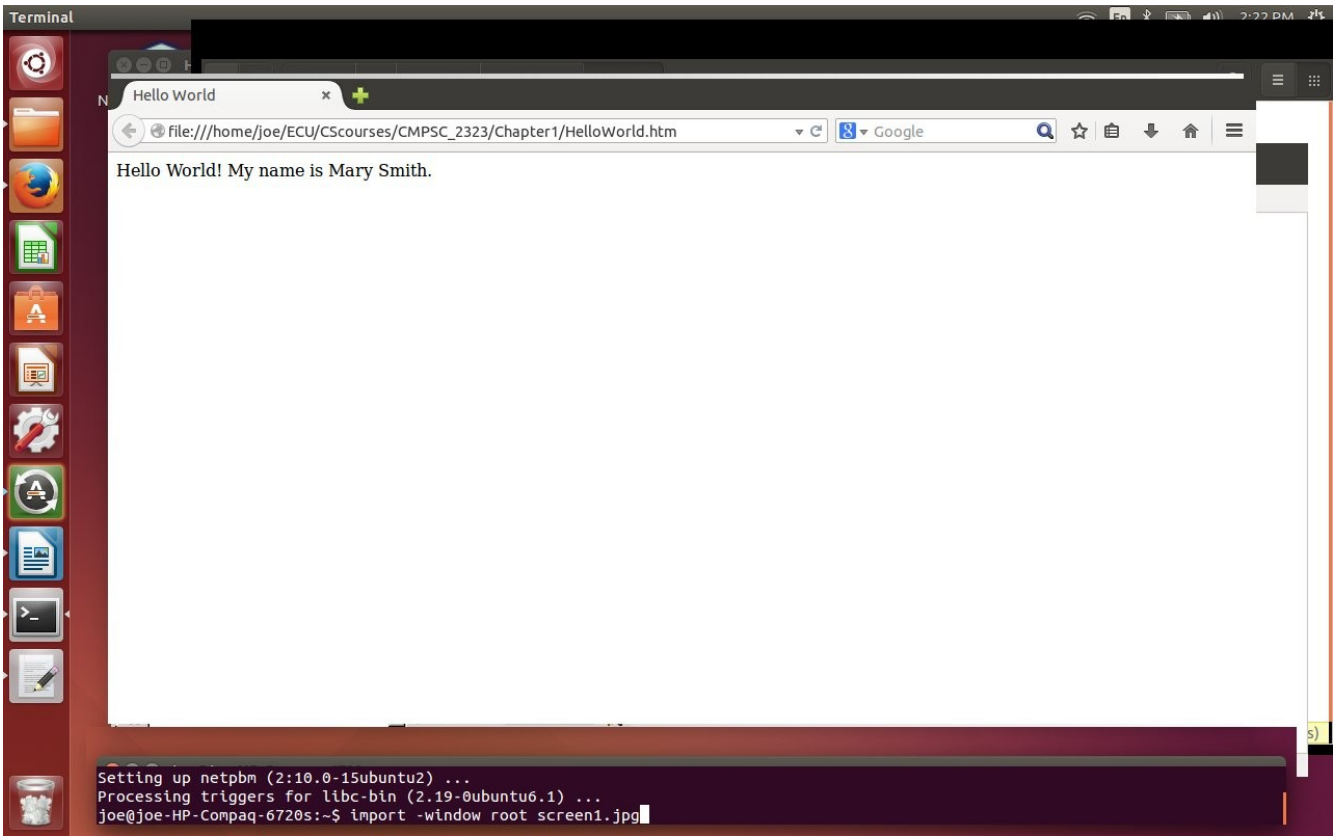
A Simple Web Page: Open a text editor. Now type the following information, shown on the next page, beginning with `<html>` and ending with `</html>` *exactly* as shown. Type the text shown below starting at the *beginning* of each line. What you type will be explained shortly. After you are done typing what is shown on the next page, save your file with the following file name.

```
HelloWorld.htm
```

Make sure the file name has the *file extension* `htm` after it, including the period.

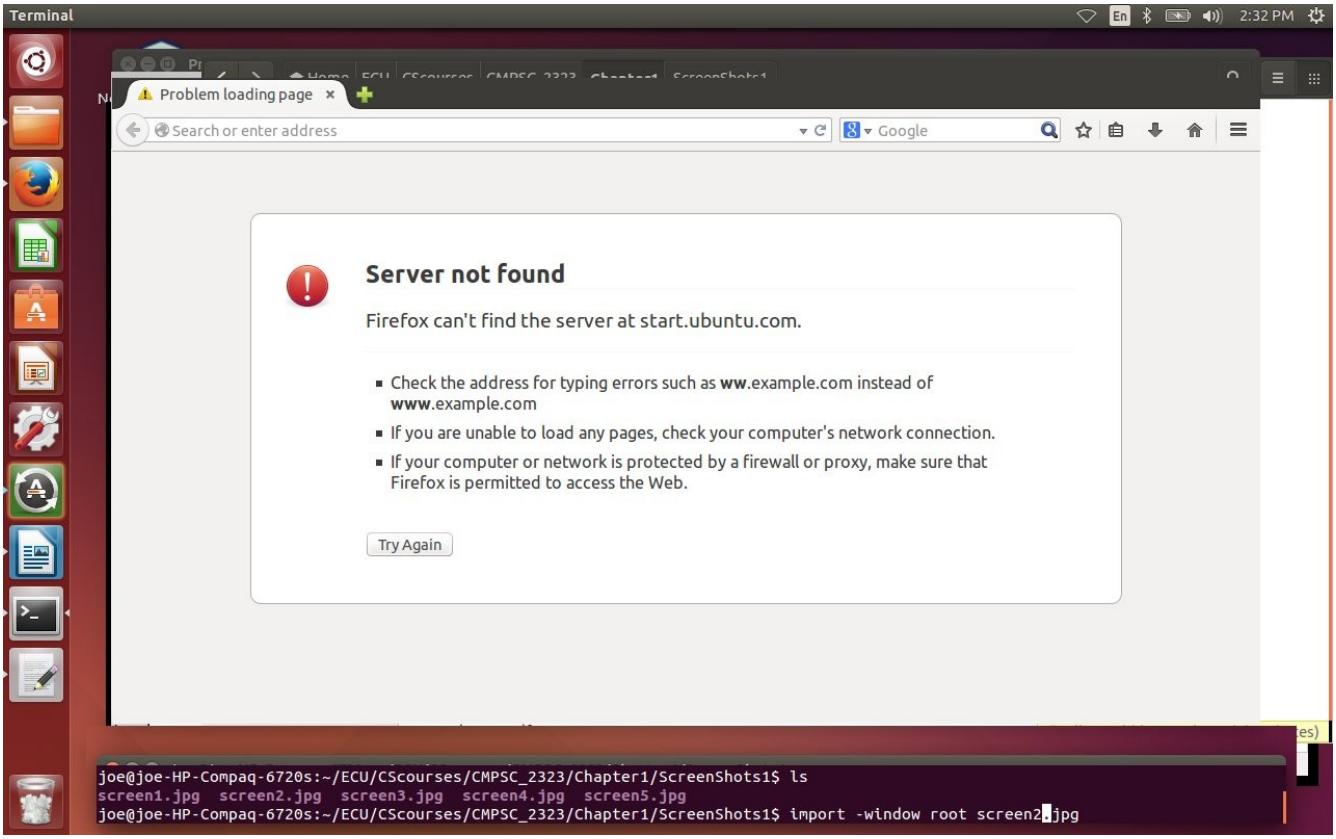
```
<html>
<head>
<title> Hello World </title>
</head>
<body>
Hello World!
My name is Mary Smith.
</body>
</html>
```

Now that the file is saved with file name `HelloWorld.htm`, open the file by browsing to the folder where file `HelloWorld.htm` is located and double click on the file name. You should see something similar to the screen shot below (the only difference might be the web browser you are using). If so, then congratulations! You just created your first web page. A file with a `htm` file extension is often *automatically* opened by a web browser like Mozilla Firefox, Internet Explorer, *etc*.



Simple Web Page

As you can see, the text `Hello World! My name is Mary Smith.` was all put on a single line. We will see how to position text, and do more, as we explore additional HTML.



Opening a Web Page from a Web Browser

Another way to display a web page is to first open the web browser and locate your file. For example, if you open the Mozilla Firefox browser and get the screen shot shown above page, you can enter the location of the file near the top of the browser where it reads `Search or enter address`.

Note that in the screen shot above, you see the message **Server not found**. Although the Mozilla Firefox web browser was opened without being connected to a web server you can still view the web page we created because it is stored in a local file, not at a remote web site. If you locate the file in a local folder by entering something like

`/home/joe/ECU/CScourses/CMPSC_2323/Chapter1/HelloWorld.htm`

(if this happens to be where the file is located) near the top of the browser where it reads `Search or enter address`, it can be displayed with the Mozilla Firefox web browser.

HTML Code: Now what about the HTML that you use to *produce* a web page? Let's examine it. The HTML began with `<html>` and ended with `</html>`. In the HTML language, text enclosed in the

symbols < and > is called a *tag*. Both `<html>` and `</html>` are examples of tags.

Many tags come in *pairs*, a start tag and a matching end tag. For example, `<html>` is a start tag and `</html>` is the matching end tag. The text `html` is the *name* of the tag. The matching end tag has the slash symbol `/` immediately before the tag name as in `</html>`. Matching begin and end tags act like matching (and) in arithmetic expressions such as ((a + 7) ÷ b + c) × 4. For every begin tag you need a matching end tag to *balance* the tags, just like (and) in the above arithmetic expression need to be balanced. Many, but not all, tags have a begin tag and matching end tag.

In the example HTML code *every* begin tag happens to have a matching end tag. The sample HTML code contains

- `<head>` and `</head>`
- `<title>` and `</title>`
- `<body>` and `</body>`

in addition to `<html>` and `</html>`.

Page Content: In addition to tags, HTML for a web page contains *content*. The content is the text, characters, symbols, *etc*., between matching `<body>` and `</body>` tags. The text `Hello World! My name is Mary Smith.` is content between the matching tags `<body>` and `</body>`. Note that if you look at what the web browser displayed above, it was the *content* that was displayed, not the tags.

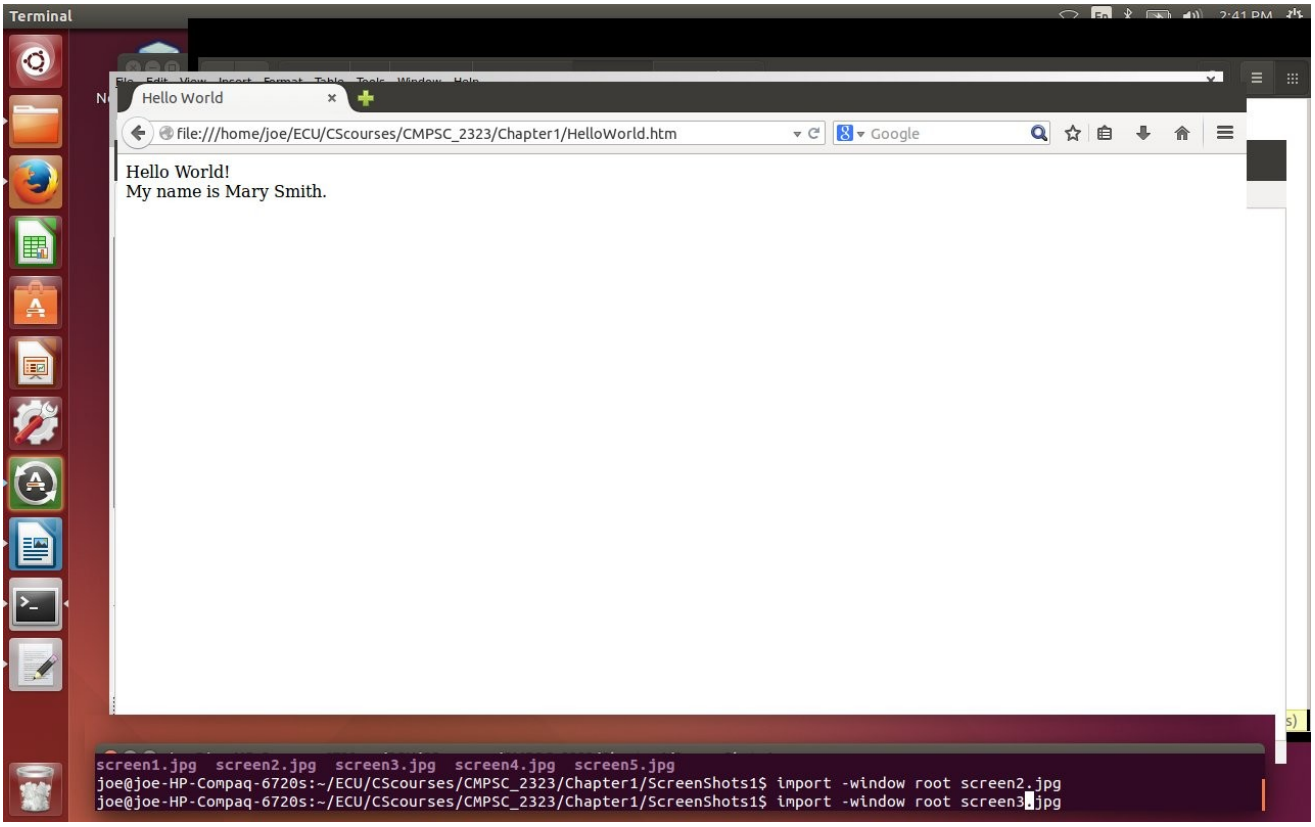
Some tags do not having a matching end tag. An example of such a tag is `<br>` which is used as a line break. Let's use the `<br>` tag in our HTML code. Add it between `Hello World!` and `My name is Mary Smith.` so that the code now looks as follows.

```
<html>
<head>
<title> Hello World </title>
</head>
<body>
Hello World!
<br>
My name is Mary Smith.
</body>
</html>
```

The web page in the screen shot on the next page shows the result of adding the `<br>` tag to the HTML code. The text `Hello World!` and `My name is Mary Smith.` are now on two separate lines. The `<br>` tag forced a line break between `Hello World!` and `My name is Mary Smith.` so that they are now on two separate lines in the web page.

Although the `<br>` tag is not displayed on the web page, its *affect*, namely, a line break, has changed the appearance of the web page. Some tags such as `<br>` are considered part of the web page content because, although the tag itself is not displayed on the web page, the *affect* of the tag appears on the page.

Now change `Mary Smith` to *your* first and last name in the HTML code and display the web page again to see a more personalized web page adapted to you.



**Web Page with
 in HTML Code**

Required HTML Tags: There are certain tags that are required in HTML for a web page. Let's see what they are.

html tag: The HTML for a web page must start with a tag named `html`, the `<html>` tag, and end with its matching `</html>` tag. All other tags and page content are contained within these two tags.

head tag: Immediately after the `<html>` tag you put the `<head>` tag. The `<head>` tag contains information about the web page but doesn't appear on the web page. The only required information between the `<head>` tag and its matching `</head>` tag is the `<title>` tag.

title tag: The `<title>` tag, followed by a title you give to your web page, followed by the matching end tag `</title>` is the only required information between the `<head>` tag and its matching `</head>` tag. The title you provide gives an official *title* to your web page.

A web browser can display the title somewhere in the browser's window. For example, the title of our web page is `Hello World`, and you will see the title displayed on a tab at the top of the web page in Mozilla Firefox. It is also displayed (sometimes in **boldface**, it depends on the web browser) in the title bar at the very top of the Mozilla Firefox window. As an experiment, change the title to `Hello Worldwide Web` in the HTML code and display the web page again. What do you see in the tab at the top of the web page and in the title bar of the window in Mozilla Firefox?

body tag: All web page content is contained between the `<body>` tag and its matching `</body>` tag.

Template HTML Web Page: Since the above tags are always required for the web pages we will create, it is helpful to create a *template* web page and use it as a starting point for future web pages. Use a text editor to create a file that contains the following HTML code.

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

Now save the file with the following file name.

```
template.htm
```

The file `template.htm` can be used as a starting point for other web pages.

Text Formatting: Let's add some text formatting such as **boldface**, *italics*, underline, different font sizes and different colors to the HTML code in file `HelloWorld.htm`. After adding this text formatting, you can submit the file `HelloWorld.htm` to Blackboard for grading.

Boldface: To display text in **boldface** surround your text with the matching begin and end tags `<b>` and `</b>`.

Italics: To display text in *italics* surround your text with the matching begin and end tags `<i>` and `</i>`.

Underline: To display text in underline surround your text with the matching begin and end tags `<u>` and `</u>`.

Boldface, **Italics**: To display text in **boldface** and *italics* surround your text with the matching begin and end tags `<b> <i>` and `</i> </b>`.

Boldface, **Underline**: To display text in **boldface** and underline surround your text with the matching begin and end tags `<b> <u>` and `</u> </b>`.

Italics, **Underline**: To display text in *italics* and underline surround your text with the matching begin and end tags `<i> <u>` and `</u> </i>`.

Boldface, **Italics**, **Underline**: To display text in **boldface**, *italics* and underline surround your text with the matching begin and end tags `<b> <i> <u>` and `</u> </i> </b>`.

The above matching begin and end tags for **boldface**, *italics* and underline are placed inside the `<body>` and `</body>` tags. That is, they become part of the content of the page since they affect the appearance of the page. For example, the HTML code

```
<body>
<b> The cat is on the mat. </b>
</body>
```

would display

The cat is on the mat.

on the web page. The HTML code

```
<body>
<b> <i> The cat is on the mat. </i> </b>
</body>
```

would display

The cat is on the mat.

on the web page. The HTML code

```
<body>
<b> <i> <u> The cat is on the mat. </u> </i> </b>
</body>
```

would display

The cat is on the mat.

on the web page. The HTML code

```
<body>
<b> <i> The cat is on the mat. </i> </b>
<br> <br>
<i> <u> The cat is on the mat. </u> </i>
</body>
```

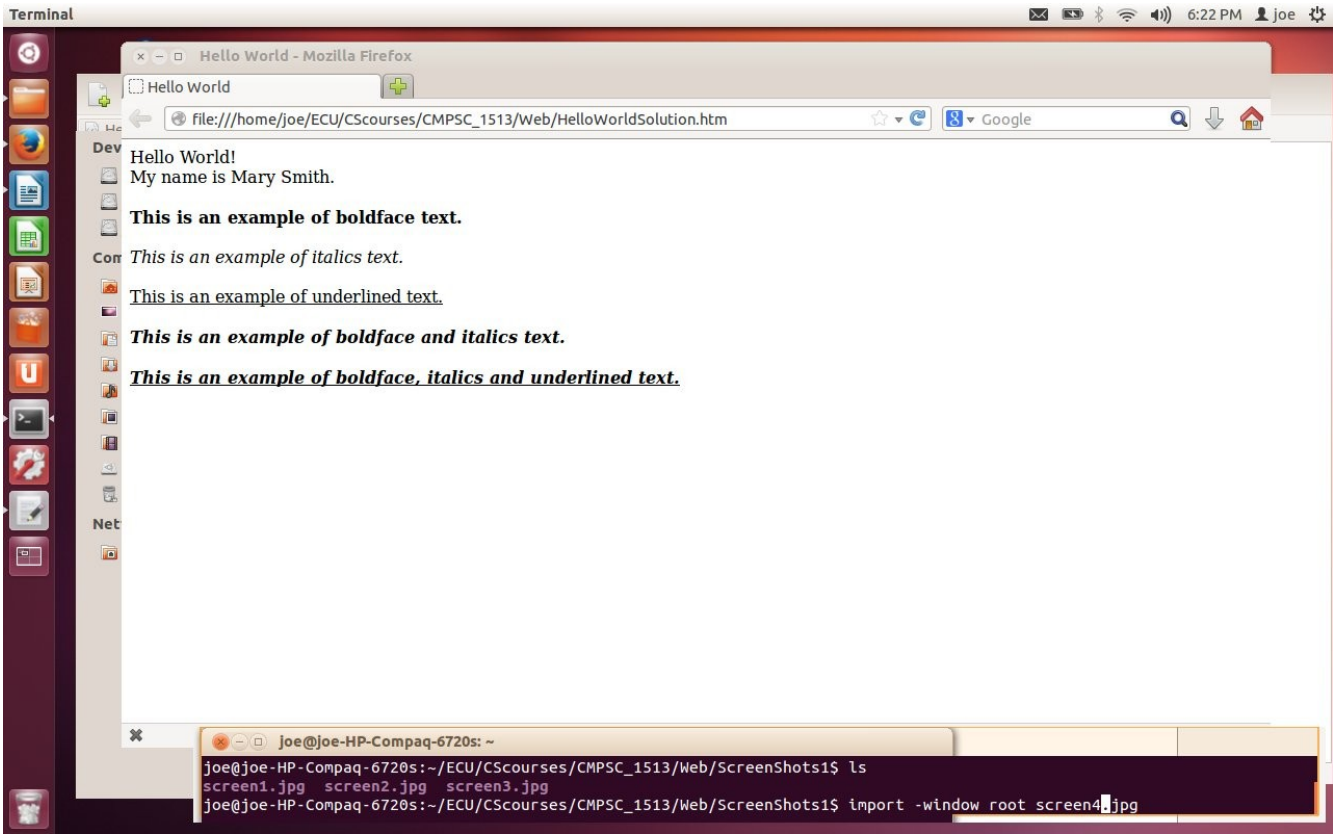
would display

The cat is on the mat.

<u>The cat is on the mat.</u>

on the web page.

Add HTML code to file `HelloWorld.htm` so that it appears as shown in the screen shot below (but with `Mary Smith` replaced by *your* first and last name). As you add HTML code, it is a good idea to display the web page periodically by using a web browser's *reload* button to <u>see</u> your changes.



Web Page with Boldface, Italics and Underline

Note the *double spacing* in the above web page. This is achieved by using two break line tags as illustrated in the example above before the screen shot.

Font Size, **Color and Style**: Now let's add more text to the web page to illustrate how you specify font size, color and style in HTML. The `font` tag is used to change font size, color and style.

Font Size: Most browsers have a limited set of font sizes. There is usually seven different font sizes ranging from 1, which is the smallest to 7, which is the largest. For example, here is how the `font` tag is used in HTML to display the text `The cat is on the mat.` with a font size of 3.

```
<font size=3> The cat is on the mat. </font>
```

Size is referred to as a font *attribute*.

Font Color: The font *color* attribute is used to change the font color in HTML. For example, here is how the `font` tag is used in HTML to display the text `The cat is on the mat.` with a font color of red using the default font size (which appears to be 3).

```
<font color=red> The cat is on the mat. </font>
```

In this case the default font size is used. To change the font size to 5 and the color to blue use the following HTML code.

```
<font size=5 color=blue> The cat is on the mat. </font>
```

Font Type: The font *face* attribute is used to change the font type in HTML. For example, here is how the `font` tag is used in HTML to display the text `The cat is on the mat.` with a font type of arial.

```
<font face=arial> The cat is on the mat. </font>
```

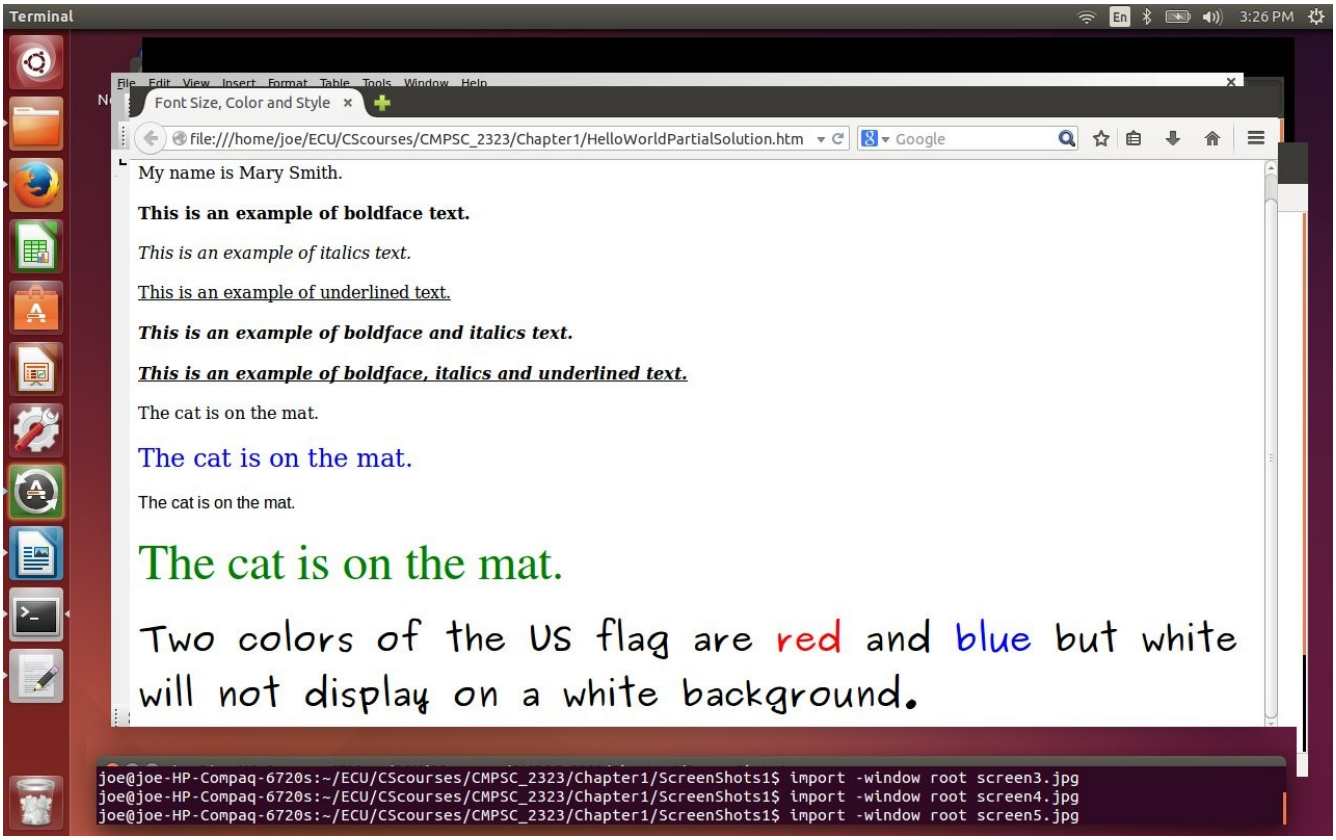
In this case the default font size is used. To change the font size to 7, the color to green and the font type to Times New Roman use the following HTML code.

```
<font size=7 color=green face=Times New Roman> The cat is on the mat. </font>
```

Here is how to display something in **boldface** colored black (default), red and blue with font size 6 and font type Purisa.

```
<b> <font size=6, face=Purisa>
Two colors of the US flag are <font color=red> red </font>
and <font color=blue> blue </font>
but white will not display on a white background.
</font> </b>
```

Below is a screen shot of what the HTML code above would display on a web page. The text is *double spaced*. Double spacing can be achieved by putting two break line tags before each line of HTML code that displays text. What is the title of the web page shown in the screen shot below?



Web Page with Different Font, Size, Color and Style

Web Exercise 1 (12 points)

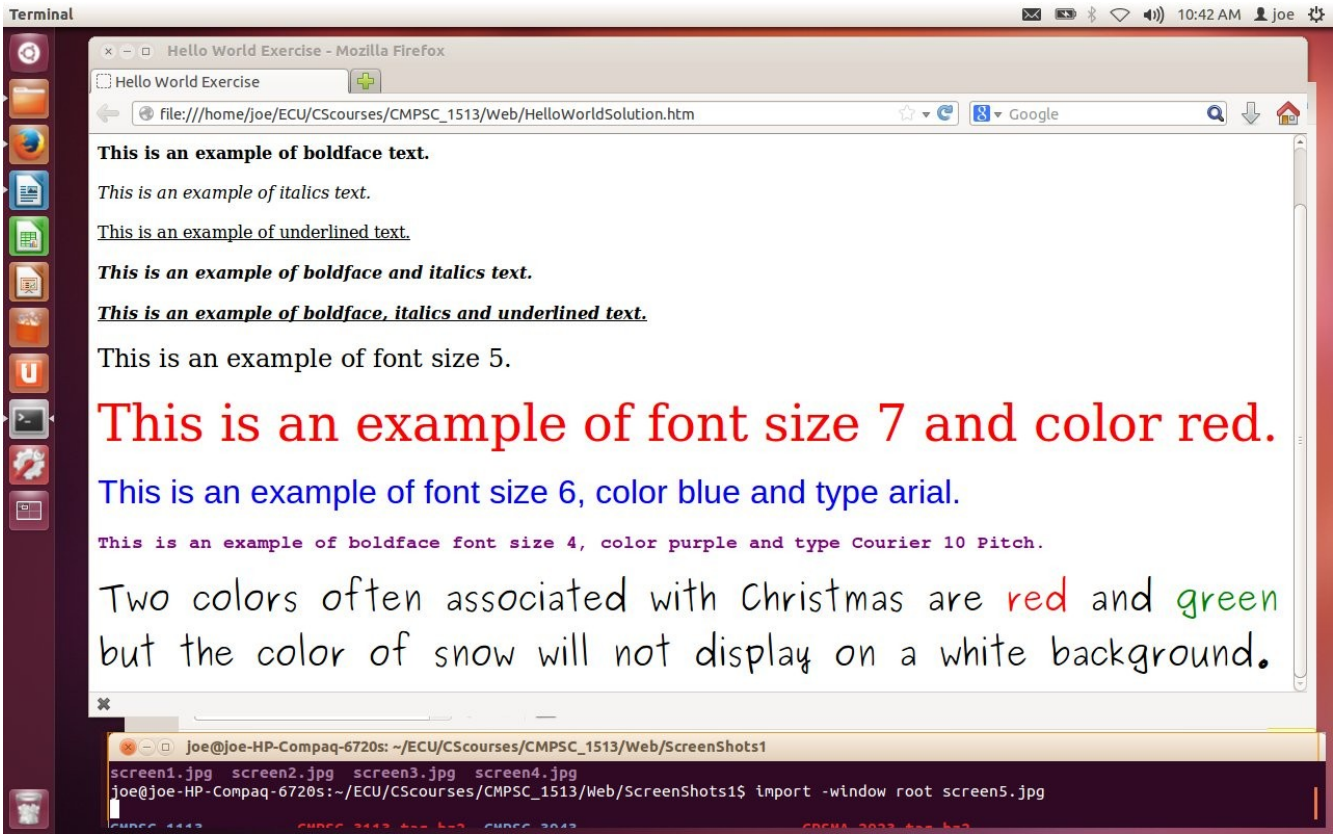
Add HTML code to file `HelloWorld.htm` so that it appears as shown in the screen shot below on the next page (but with `Mary Smith` replaced by *your* first and last name). Note that the first two lines of the web page are not in the screen shot because they didn't fit. However, you have *already* added HTML code for these lines. The missing lines are (but *your* name replaces Mary Smith).

Hello World!
My name is Mary Smith.

Change the title of the web page from `Hello World` to `Hello World Exercise`. The lines of text to be added should be *double spaced*. Use the font size, color and style that the text on the line indicates. The only text that doesn't explicitly indicate the font size and style is the text displayed in the *last two* lines of the web page, namely, the following lines of text shown on the next page.

Two colors often associated with Christmas are red and green but the color of snow will not display on a white background.

The font size of the two lines of text above is 6 and the font type is Purisa. Use the font type Purisa if your web page displays the above text as shown here. Otherwise, if you are using the CS lab replace Purisa with "URW Chancery L". Be sure to include the double quotes. I tested this on the CS computer lab and the font style "URW Chancery L" does show up as it should. If neither Purisa nor "URW Chancery L" work and you get the default font style, that's OK. Just use the Purisa style when you hand in your solution. You will not have points deducted.



Web Page for Exercise to Hand in for Grading

As mentioned above, note the *double spacing* in the above web page. This is achieved by using two break line tags.

Submit to Blackboard (12 points): When you complete the exercise *submit* your HTML file named `HelloWorld.htm` to Blackboard. The assignment on Blackboard is named `Web Exercise 1` and is in the `Chapter 1` folder. The exercise is worth 12 points. The due date of the exercise will be announced in class and posted on Blackboard.