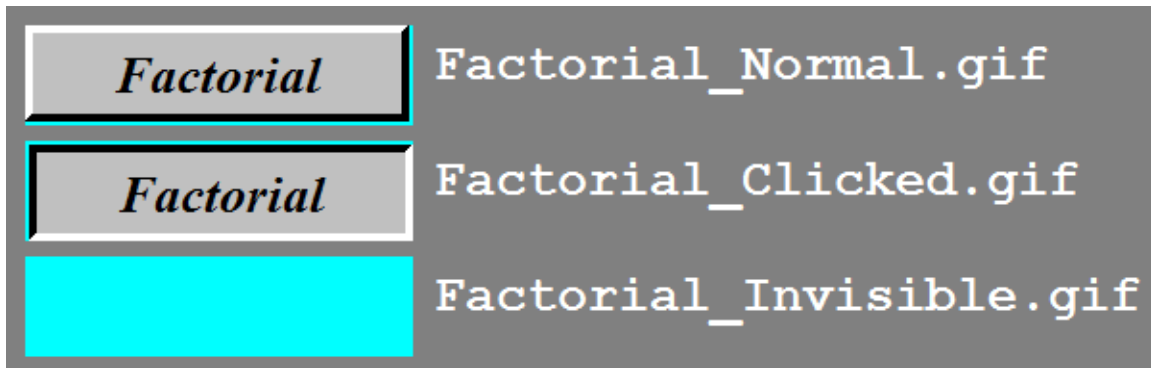


**CMPSCI 120 Fall 2016**  
**Lab #2**  
**Professor William T. Verts**

**Setting Up**

Go to the class site and download to a folder on your computer the file called `Factorial_Buttons.zip`, and then unpack its contents into the same folder. There are three tiny `.GIF` image files (all three are transparent `.GIF` images where the cyan color that you see here is invisible):



**First Steps – Moving the Buttons**

Using WinSCP or Fugu as you did in the previous assignment, copy these three files (in binary mode) into the `public_html/cmpsci120` folder of your UNIX account on the `elsrv3` server.

**Logging in and Renaming Files**

Using PuTTY (PC) or `ssh` from terminal (Mac) as you did in the previous assignments, log in to the UNIX server. Change into the correct directory as follows:

1. `cd public_html` (Change into the Web nest)
2. `cd cmpsci120` (Change into the inner folder)
3. `ls -al` (See what files are there)

You should see `index.html` and `Button_Dr_Bill.png` from the previous assignment, and the three new `.GIF` files. Do not proceed unless you see all these files.

**Editing index.html**

We are going to make some modifications to `index.html` so that it contains new HTML, new CSS, and new JavaScript. Start up the emacs text editor on the `index.html` file:

**emacs index.html**

If you see a blank screen, you are in the wrong folder: get out of emacs, change into the correct folder, and try again.

Remove the entire `<STYLE>...</STYLE>` block from `index.html` (we'll do something else shortly)

In the appropriate part of the `<HEAD>` section, type in the following new code exactly as you see here, paying particular attention to indentation, capitalization, and punctuation:

```
<LINK REL="stylesheet"
      TYPE="text/css"
      HREF="https://people.cs.umass.edu/~verts/Default.css">

<SCRIPT TYPE="text/javascript"
        SRC="https://people.cs.umass.edu/~verts/Factorial.js">
</SCRIPT>

<SCRIPT TYPE="text/javascript">
  <!--
    function Show ()
    {
      document.MyForm.MyButton.src = "Factorial_Normal.gif" ;
    }

    function Hide ()
    {
      document.MyForm.MyButton.src = "Factorial_Invisible.gif" ;
    }

    function Click()
    {
      document.MyForm.MyButton.src = "Factorial_Clicked.gif" ;
      var N = parseFloat(document.MyForm.Input1.value) ;
      document.MyForm.Answer.value = String(Factorial(N)) ;
    }

    function Clear()
    {
      document.MyForm.Answer.value = ""
    }
  //-->
</SCRIPT>
```

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In the <BODY> section, **after** your HTML code for the button, enter the following code, again paying close attention to indentation, capitalization, etc.:

```
<FORM NAME="MyForm">

  <BR><BR>

  <INPUT TYPE="text"
        NAME="Input1"
        SIZE="5"
        STYLE="font-size:24pt"
        onKeyPress="Clear ();">

  <SPAN STYLE="font-size:24pt">! =</SPAN>

  <INPUT TYPE="text"
        NAME="Answer"
        SIZE="30"
        STYLE="font-size:24pt">

  <BR><BR>

  <IMG SRC="Factorial_Invisible.gif"
        NAME="MyButton"
        onMouseOver="Show ();"
        onMouseOut="Hide ();"
        onMouseDown="Click ();"
        onMouseUp="Show ();">

</FORM>
```

Save your page and exit emacs with `Ctrl`⌘`Ctrl`c (and answer Y when it asks if you wish to save the changes).

### **Make Sure Everything is Visible**

Set the permissions to `rw-r--r--` on all files in the `public_html/cmpsci120` folder to make them visible on the Web (including those you've already set):

```
chmod 644 *.*
```

List all the files in the current directory:

```
ls -al
```

Do not proceed until all files have `rw-r--r--` permissions.

**Testing**

Load in and test your `index.html` page. Make sure to hit the refresh button. Here's how the new part of the page should look when you first view it:



A screenshot of a web form with a light blue background. It features a white input field on the left, followed by a black factorial symbol (!) and an equals sign (=), and then another white input field on the right. The input fields are currently empty.

When you click in the first box and type 15, it will appear like this:



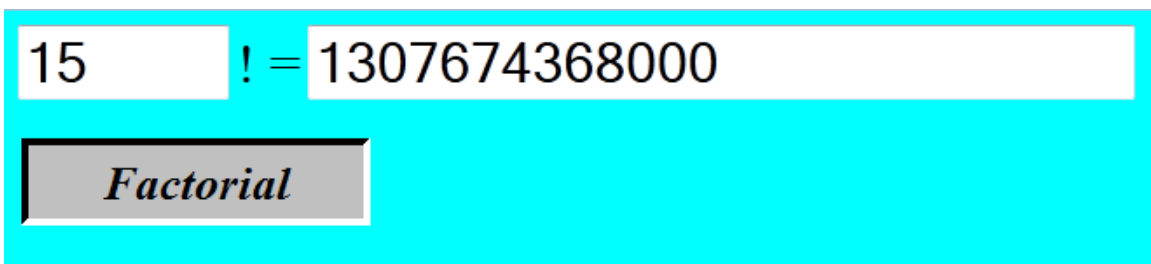
A screenshot of the same web form. The first white input field now contains the number "15". The rest of the form, including the factorial symbol and the second empty input field, remains the same.

As you roll the mouse over the area below the entry box, the Factorial button should suddenly appear (the mouse will be above the button):



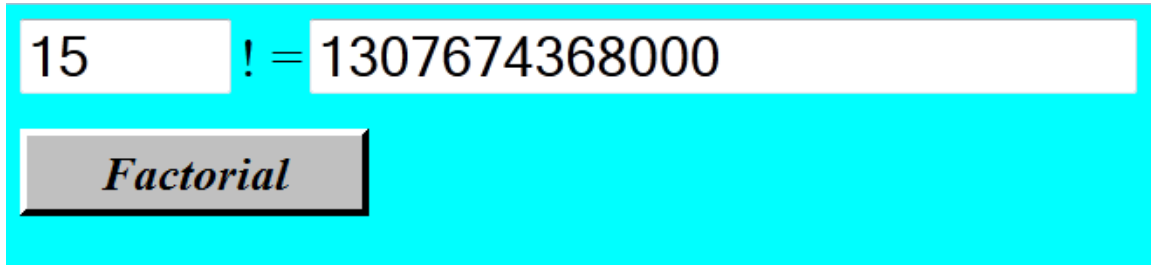
A screenshot of the web form. The first input field contains "15". Below the input fields, a grey button with a black border and the word "Factorial" in a black serif font has appeared.

Clicking the button (which will “depress” it inwards) will cause the computed factorial to appear in the answer box:

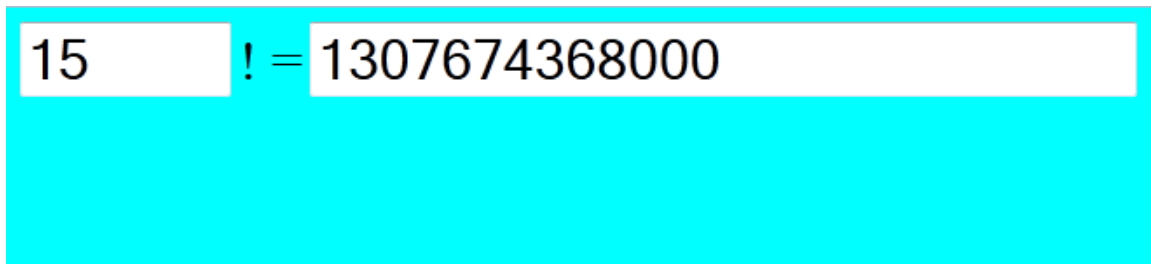


A screenshot of the web form. The first input field contains "15". The second input field now contains the number "1307674368000". The "Factorial" button is still present below the input fields.

Releasing the mouse button will cause the Factorial button to “pop out” back to its original view:



Finally, rolling the mouse off of the Factorial button will cause the button to disappear entirely:



Now, any time the mouse rolls over the Factorial button it will appear, only to disappear when the mouse rolls away. As you type new entries in the input box, the value in the answer box will vanish, until the next time the Factorial button is clicked.

### **If You Get Stuck**

If you miss any of the instructions, you may need to go back and fix certain things. Use emacs to correct any mistakes. Possible problems include misspelling the name of the .GIF files in index.html, setting or omitting certain file permissions, or copying files into the wrong place. Please email me or the TA if you need help.

### **After Lab #1**

You may get some notes from the grading of lab #1 about things that you need to clean up in your Web page. Please fix those errors at this time.

**Answering Some Final Questions**

When your pages work correctly, please type in answers to the following questions into a text editor or word processor:

0. What is your name? (Type your name into the editor document.)
1. Where is the body of the JavaScript `Factorial` function located?
2. Why did the background color of the Web page stay cyan after all the changes?
3. In many of the JavaScript functions there is a statement of the form:

```
document.MyForm.MyButton.src = "xxxxxx"
```

What is the purpose of that statement? What does it do?

4. What is the purpose behind the `<SPAN>...</SPAN>` tag as shown?
5. In `Factorial_Normal.gif` the transparent band of pixels (shown in cyan) is on the bottom and right sides of the button, but in `Factorial_Clicked.gif` they are on the left and top sides. Why? What effect does this cause?

**What To Turn In (Two Things)**

1. When your pages are correct and visible on the Web, **send an email** message to the **`literacy@cs.umass.edu`** account. The subject line must be set to the exact phrase **CMPSCI 120 ASSIGNMENT #2** and the body of the message must contain your name, your username, and your full Web address.
2. **Print out** the answers to your questions and hand that document into me in class. This will become paper homework #2.