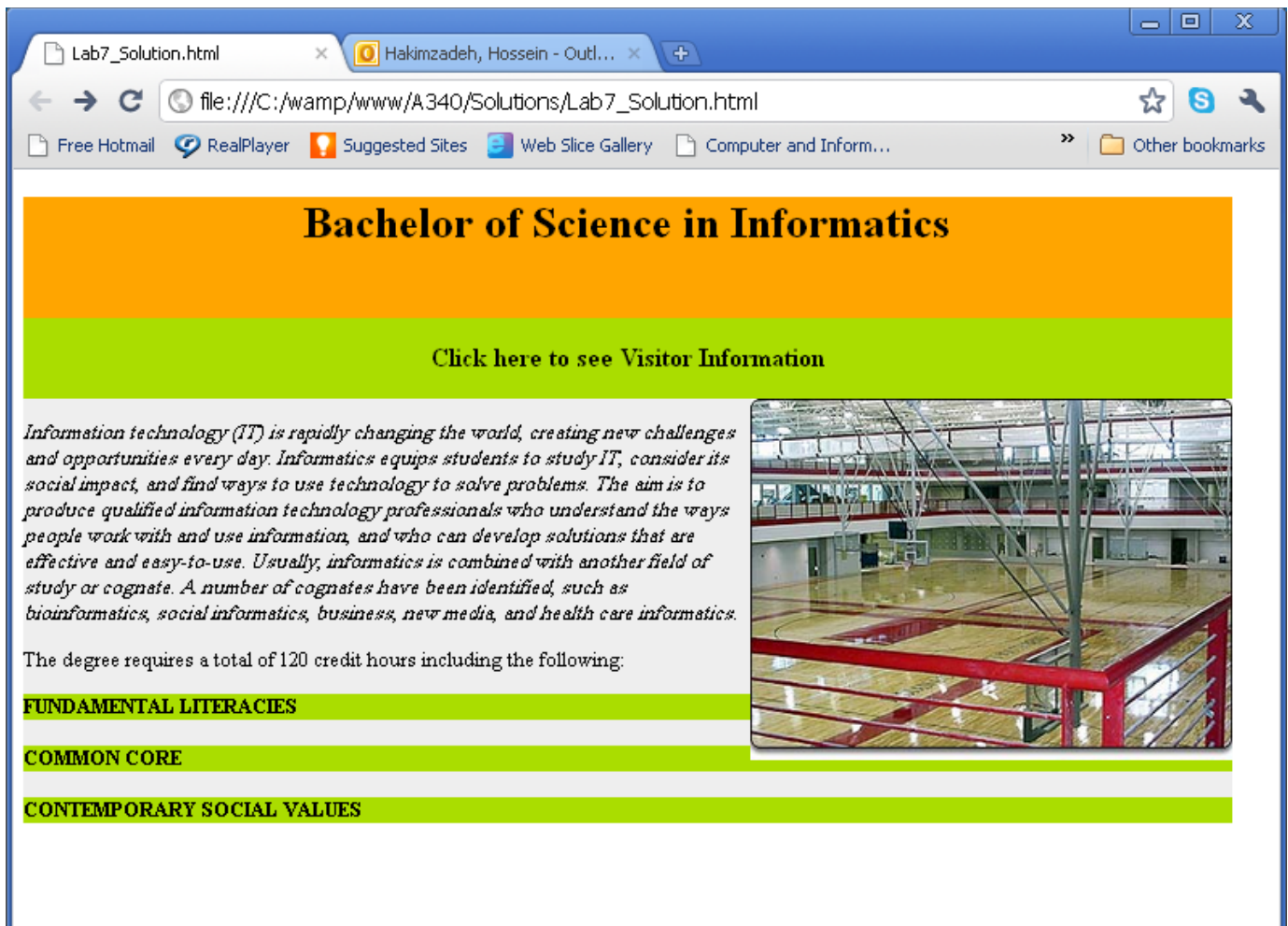


Laboratory Session #7

LAB GOALS

- BOM manipulation
 - Creating a new window, writing to it, resizing it, etc.
 - Extracting Screen size (client's monitor)
- DOM manipulation
 - Dynamically changing the content of an ELEMENT
- Event handling
 - onmouseover, onmouseout, onclick, ondblclick

Using your text editor (Notepad++ / TextWrangler) create a web page similar to the picture shown below. Note that this is very similar to what we had in Lab3, but as you continue to work with this lab, you will note that there are some important differences!



Step 1: Start with a simple HTML web site similar to figure below, just make sure you put in a `<script>` tag in it:

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript">
</script>
</head>
<body>
</body>
</html>
```

Step 2: Place the following documentation lines in the HTML file, right below the <!DOCTYPE html>. Make sure these are placed in the HTML documentation tag.

Your name
Web Programming
Lab: 7 (JavaScript, BOM and DOM manipulation, Event handling)
Semester, Year

Step 3: Set the title of the web page to "JavaScript Arrays, input tag, event handling". Then set the keywords for the page to JavaScript, Web Programming, BOM and DOM Manipulation, and Event Handling. Finally make sure the character set for the web page is set to UTF-8.

Step 4: In the body of the HTML document include the following text:

```
<div id="container" style="width:900px">

<!-- ----- Header ----- -->
<div id="header"
      style="background-color:#FFA500;
      text-align:center;
      height:90px;
      width:900px;">
    <h1>Bachelor of Science in Informatics</h1>
</div>

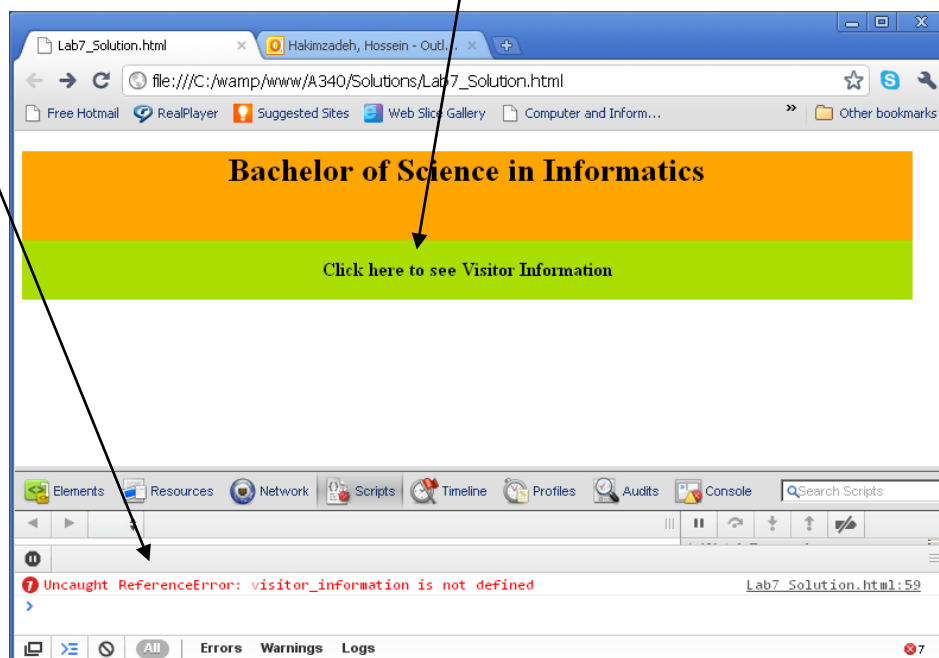
<!-- ----- Top Nav ----- -->
<div id="topnav";
      style="background-color:#AADD00;
      height:60px;
      width:900px;
      float:left;
      text-align:center">

    <h3 id="visitor" onclick="visitor_information()" > Click here to see Visitor Information </h3>

</div>
```

You should see the following: Try clicking the text in the GREEN section. Note that clicking this text will attempt to call an event handler called "visitor_information()" however, at this point there are no such event handlers!

You can see the error message if you open up your JavaScript console (Google chrome).



Step 5: Let's add the event handler for the above section. Enter the following code in the <script></script> section of your document.

```
function visitor_information()
{
    var myPage = window.open("", "_blank", "width=500, height=400");           // Open a new window

    // Move the window
    myPage.moveTo(0,0); // Check to see if it works for all browsers!

    myPage.document.write("<html> <body style='background-color:#AADD00'>");

    myPage.document.write("Step 1-<b>Current URL:</b> " + window.location + "<br />");

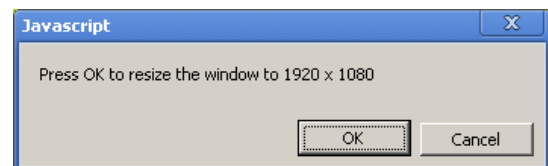
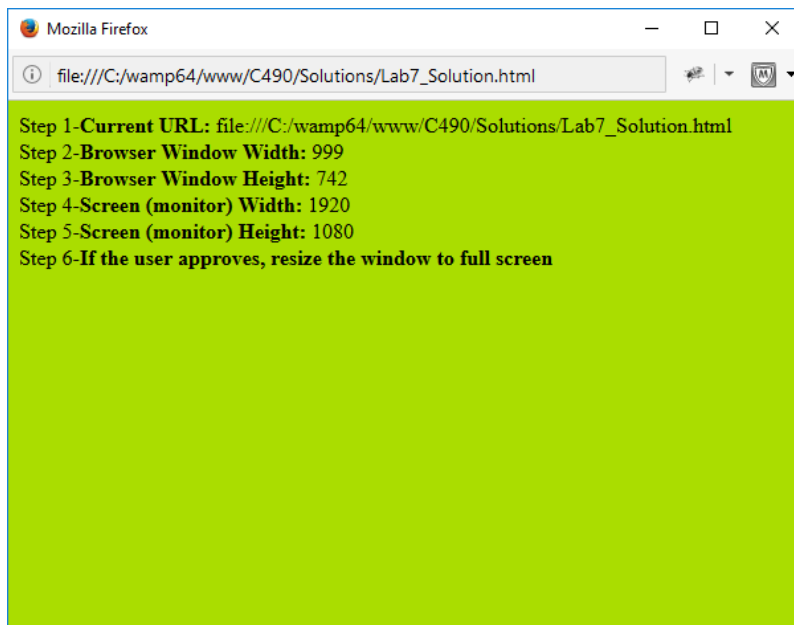
    myPage.document.write("Step 2-<b>Browser Window Width:</b> " + window.outerWidth + "<br />");
    myPage.document.write("Step 3-<b>Browser Window Height:</b> " + window.outerHeight + "<br />");

    myPage.document.write("Step 4-<b>Screen (monitor) Width:</b> " + screen.width + "<br />");
    myPage.document.write("Step 5-<b>Screen (monitor) Height:</b> " + screen.height + "<br />");

    myPage.document.write("Step 6-<b>If the user approves, resize the window to full screen</b>");
    myPage.document.write("</body> </html>");

    // If the user agrees, resize the window.
    var result = myPage.confirm("Press OK to resize the window to " + screen.width + " x " + screen.height);
    if (result == true)
        myPage.resizeTo(screen.width,screen.height);           // Check to see if it works for all browsers!
}
```

The above function shows how we can interact with the BOM and DOM object. We begin with opening a new window, moving it to the upper left hand corner of the screen, then display the current URL, window width, window height, screen width, screen height, and finally if the user agrees, we will attempt to resize the window to fit the entire screen.



Step 6: Let's build the rest of our web application. Include the following <div> tags in the body of your document (below the information in Step 4)

```
<!-- ----- Content ----- -->
<div id="content";
      style="background-color:#EEEEEE;
      height:100%;
      width:900px;
      float:left;">



<p> <i>
Information technology (IT) is rapidly changing the world, creating new challenges and opportunities every day.
Informatics equips students to study IT, consider its social impact, and find ways to use technology to solve
problems. The aim is to produce qualified information technology professionals who understand the ways people
work with and use information, and who can develop solutions that are effective and easy-to-use. Usually,
informatics is combined with another field of study or cognate. A number of cognates have been identified, such as
bioinformatics, social informatics, business, new media, and health care informatics.
</i> </p>

<p>
The degree requires a total of 120 credit hours including the following:
</p>
```

You should see the following:



Step 6: Now, we would like to create 3 (or more) place holders for the following categories:

- 1) FUNDAMENTAL LITERACIES
- 2) COMMON CORE
- 3) CONTEMPORARY SOCIAL VALUES
- 4) etc.

```
<div id="FL"
    style="background-color:#AADD00">
    <b>FUNDAMENTAL LITERACIES</b>
</div>
<br />

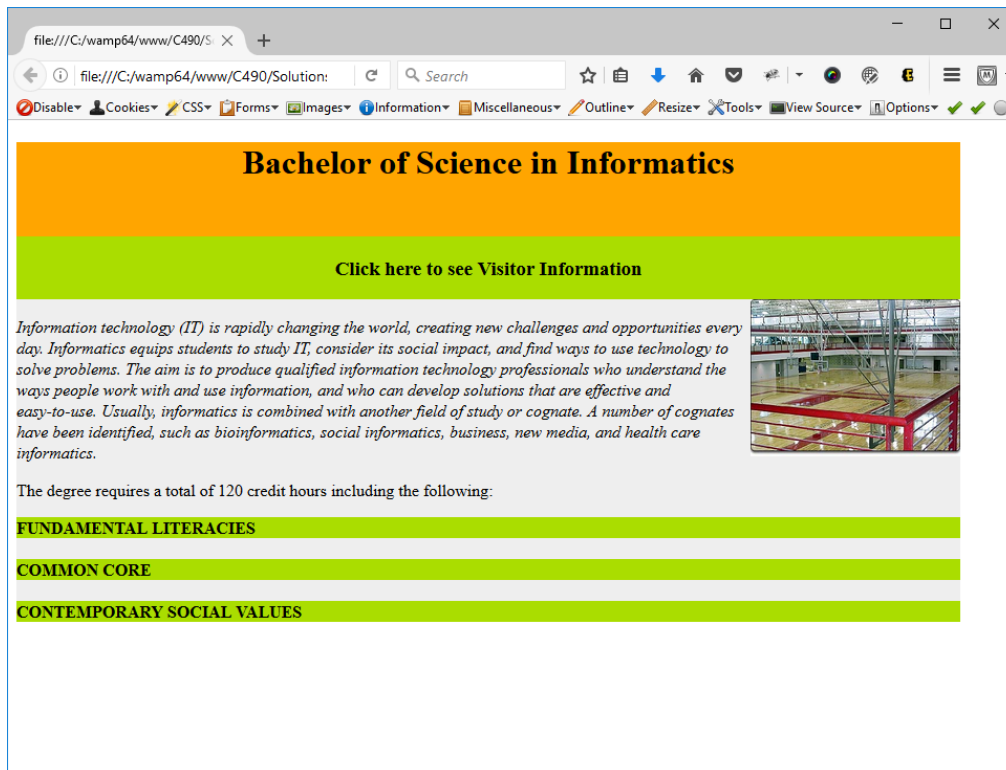
<div id="CC"
    style="background-color:#AADD00">
    <b>COMMON CORE</b>
</div>
<br />

<div id="CSV"
    style="background-color:#AADD00">
    <b>CONTEMPORARY SOCIAL VALUES</b>
</div>
```

You should see the screen that may seem complete! But it is not!

What we would like to do next is the ability for the to look at the details of each of the 3 categories based on some event.

To do this we need to create some event handlers (a couple per category) and connect the event handler to some event related to each category. (see next step)



Step 7: Let's modify the <div> tag associated with the "FUNDAMENTAL LITERACY" category so that when the user moves his or her mouse over that category, the category will expand to show additional details about that category:

```
<div id="FL"
  onmouseover="fundamental_literacies_on();"
  onmouseout="fundamental_literacies_off();"
  style="background-color:#AADD00">
  <b>FUNDAMENTAL LITERACIES</b>
</div>
```

The highlighted lines above will create two event listeners for the <div> object with the id="FL". Whenever the user moves his or her mouse over this tag the event listener for **onmouseover** will trigger and call the **fundamental_literacies_on()** event handler. Similarly, Whenever the user moves her mouse out of this tag the event listener for **onmouseout** will call the **fundamental_literacies_off()** event handler.

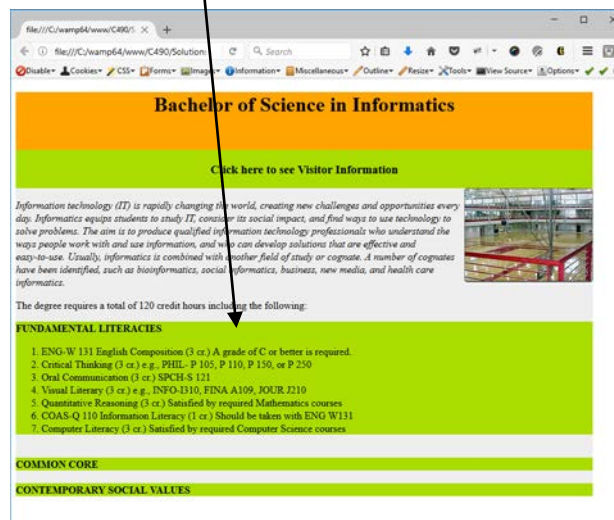
Of course these two event handlers should be written and placed in the JavaScript portion of our document. (See below)

```
//-----
function fundamental_literacies_on()
{
    var HTML_Text = "<b>FUNDAMENTAL LITERACIES</b>" +
        "<ol>" +
        "<li> ENG-W 131 English Composition (3 cr.) A grade of C or better is required.</li>" +
        "<li> Critical Thinking (3 cr.) e.g., PHIL- P 105, P 110, P 150, or P 250</li>" +
        "<li> Oral Communication (3 cr.) SPCH-S 121</li>" +
        "<li> Visual Literacy (3 cr.) e.g., INFO-I310, FINA A109, JOUR J210</li>" +
        "<li> Quantitative Reasoning (3 cr.) Satisfied by required Mathematics courses</li>" +
        "<li> COAS-Q 110 Information Literacy (1 cr.) Should be taken with ENG W131</li>" +
        "<li> Computer Literacy (3 cr.) Satisfied by required Computer Science courses</li>" +
        "</ol>";

    var theContent = document.getElementById("FL");
    theContent.innerHTML = HTML_Text;
}
//-----
function fundamental_literacies_off()
{
    var HTML_Text = "<b>FUNDAMENTAL LITERACIES</b>";

    var theContent = document.getElementById("FL");
    theContent.innerHTML = HTML_Text;
}
```

Now, try testing your document. You should be able to hover your mouse over the text "FUNDAMENTAL LITERACY" and have the tag expand to show the details listed **above**. By now you should be able to understand what is happening in the above two functions. These functions simply use DOM to retrieve the "FL" object (using the document.getElementById("FL"); method), then the function attempts to dynamically replace its HTML content using the (theContent.innerHTML = HTML_Text;) statement.



Step 7: Finishing up the lab! Add the remaining categories and corresponding event handlers.

Add these to the body. Notice that in addition to the onmouseover, we are using the **onclick** and **ondblclick** event listeners.

```
<div id="CC"
  onmouseover="common_core_on();"
  onclick="common_core_off()"
  style="background-color:#AADD00">
  <b>COMMON CORE</b>
</div>
<br />

<div id="CSV"
  onmouseover="contemporary_social_values_on();"
  ondblclick="contemporary_social_values_off();"
  style="background-color:#AADD00">
  <b>CONTEMPORARY SOCIAL VALUES</b>
</div>
```

Add these to the JavaScript Section:

```
//-----
function common_core_on()
{
    var HTML_Text = "<b>COMMON CORE (12 Credits). At least one of the following must be at the 300 level.</b>" +
        "<ol>" +
        "<li> The Natural World (3 cr.) e.g., N190 or N390</li>" +
        "<li> Human Behavior & Social Institutions (3 cr.) e.g., B190 or B399</li>" +
        "<li> Literary and Intellectual Traditions (3 cr.) e.g., T190 or T390</li>" +
        "<li> Art, Aesthetics and Creativity (3 cr.) e.g., A190 or A399</li>" +
        "</ol>";

    var theContent = document.getElementById("CC");
    theContent.innerHTML = HTML_Text;
}

function common_core_off()
{
    var HTML_Text = "<b>COMMON CORE</b>";
    var theContent = document.getElementById("CC");
    theContent.innerHTML = HTML_Text;
}

//-----
function contemporary_social_values_on()
{
    var HTML_Text = "<b>CONTEMPORARY SOCIAL VALUES (8 Credits)</b>" +
        "<ol>" +
        "<li> Non-Western Cultures (3 cr.) e.g., ANTH E105, POLS Y109</li>" +
        "<li> Diversity in U.S. Society (3 cr.) e.g., SOC S161, HIST H105 or H106</li>" +
        "<li> Health and Wellness (2 cr.) e.g., HPER N220, NURS B109 plus HPER-E 100-level</li>" +
        "</ol>";

    var theContent = document.getElementById("CSV");
    theContent.innerHTML = HTML_Text;
}

function contemporary_social_values_off()
{
    var HTML_Text = "<b>CONTEMPORARY SOCIAL VALUES</b>";

    var theContent = document.getElementById("CSV");
    theContent.innerHTML = HTML_Text;
}
//-----
```