Computer Science 571 2nd Exam
Prof. Horowitz
Tuesday, April 24, 2012, 9:30am – 10:45am
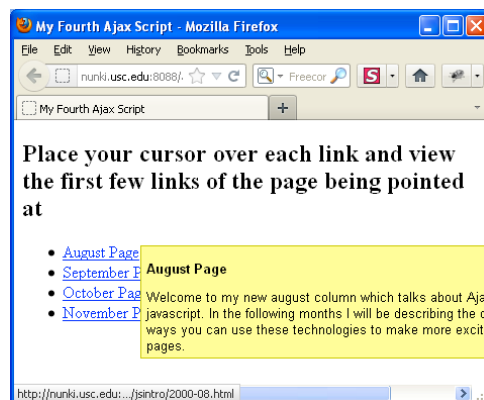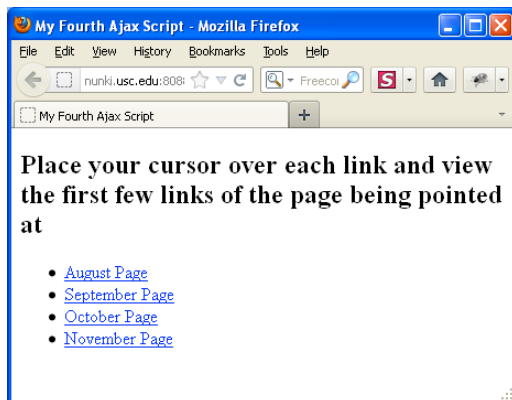
Name: **Student ID Number:**

1. **This is a closed book exam.**
2. **Please answer all questions on the test**

- Javascript + Ajax [20 pts]
- JSON [10 pts]
- XML Schemas [15 pts]
- Java Servlets [15 pts]
- Web Site Performance [15 pts]
- HTML5 [10 pts]
- Tomcat [5 pts]
- Assignment #8 [10 pts]

JavaScript and AJAX Questions [20 pts]

Above are two web pages. The first page shows 4 links: August Page, September Page, October Page, and November Page. The second page shows what happens when the cursor is placed over the link labeled August Page. Below is the JavaScript source code that is imported into the web page and that generates the effect you see above. Some of the code has been elided, using XXXXXXX. Please supply the missing code.

```
window.onload = XXXXXXXXXXX;                          initAll
var xhr = false;
```

```
var xPos, yPos;
function initAll() {
      var allLinks = document.getElementsByTagName("XXXXXX");    A
      for (var i=0; i< allLinks.XXXXXX; i++) {               length
            allLinks[i].onmouseover = showPreview; } }
function showPreview(evt) { getPreview(evt); return false; }
function hidePreview() {
      document.getElementById("previewWin").style.visibility =
"XXXXXX"; }                                               hidden
function getPreview(evt) {
      if (evt) { var url = evt.target; }
      else { evt = window.event;  var url = evt.srcElement; }
      xPos = evt.clientX;  yPos = evt.clientY;
      if (window.XXXXXXXXX) {                        XMLHttpRequest
            xhr = new XXXXXXXXX(); }                 XMLHttpRequest
      else { if (window.ActiveXObject) {
            try {  xhr = new ActiveXObject("Microsoft.XMLHTTP");
}  catch (e) { }  } }
      if (xhr) { xhr.onreadystatechange = showContents;
            xhr.open("GET", url, true);  xhr.send(null);
      } else { alert("Sorry, but I couldn't create an
XMLHttpRequest"); }  }
function showContents() {
      var prevWin = document.getElementById("XXXXXXX");  previewWin
      if (xhr.readyState == 4) {
            prevWin.innerHTML = (xhr.status == XXX) ?       200
xhr.XXXXXXXX : "There was a problem with the request " + responseText
xhr.status;
            prevWin.style.top = parseInt(yPos)+2 + "px";
            prevWin.style.left = parseInt(xPos)+2 + "px";
            prevWin.style.visibility = "visible";
            prevWin.onmouseout = XXXXXXXXX; }}        hidePreview
```

JSON Question [10 pts]

The Yahoo! PlaceFinder uses REST calls to access its data. A sample REST call
is shown below followed by an edited version of what is returned:

```
http://where.yahooapis.com/geocode?q=1600+Pennsylvania+Avenue,+Wa
shington,+DC&appid=[yourappidhere]
```

```
<ResultSet version="1.0">
<Result>
  <latitude>38.898717</latitude>
  <longitude>-77.035974</longitude>
  <line1>1600 Pennsylvania Ave NW</line1>
  <line2>Washington, DC  20006</line2>
  <country>United States</country>
</Result>
</ResultSet>
```

When the "format=JSON" is selected, instead of an XML result a JSON response is returned. Please fill in the JSON missing code:

{"ResultSet": {"Result":
{ "latitude": "38.898717",
"longitude": "-77.035974",
"line1": "1600 Pennsylvania Ave NW",
"line2": "Washington, DC 2006",
"country": "United States",
}}}

XML Schema Questions [15 pts]

Below is an XML Schema definition for a ship-order:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<xsd:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xsd:element name="orderentity" type="xsd:string"/>
<xsd:element name="name" type="xsd:string"/>
<xsd:element name="address" type="xsd:string"/>
<xsd:element name="city" type="xsd:string"/>
<xsd:element name="country" type="xsd:string"/>
<xsd:element name="title" type="xsd:string"/>
<xsd:element name="note" type="xsd:string"/>
<xsd:element name="quantity" type="xsd:positiveInteger"/>
<xsd:element name="price" type="xsd:decimal"/>
<xsd:attribute name="orderid" type="xsd:string"/>

<xsd:element name="shipto">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element ref="name"/>
      <xsd:element ref="address"/>
      <xsd:element ref="city"/>
      <xsd:element ref="country"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>

<xsd:element name="item">
  <xsd:complexType>
    <xsd:sequence>
       <xsd:element ref="title"/>
       <xsd:element ref="note" minOccurs="0"/>
       <xsd:element ref="quantity"/>
       <xsd:element ref="price"/>
    </xsd:sequence>
  </xsd:complexType>
 </xsd:element>

<xsd:element name="shiporder">
```

```
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="orderentity"/>
            <xsd:element ref="shipto"/>
            <xsd:element ref="item" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attribute ref="orderid" use="required"/>
    </xsd:complexType>
</xsd:element>

</xsd:schema>
```

[10 pts] Write a ship-order instance file that represents the following order: one item is ordered: "Titanic Vessel", priced at $7,500,000, order ID 998877, ordered by White Star Line, shipped to Captain Edward Smith at address Pier 71, Southampton, England..

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<shiporder orderid="998877"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="shiporder.xsd">
<orderentity>White Start Line</orderentity>
<shipto>
<name>Captain Edward Smith</name>
<address>Pier 71</address>
<city>Southampton<city>
<country>England</country>
</shipto>
<item>
<title>Titanic Vessel</title>
<quantity>1</quantity>
<price>$7,500,000</price>
</item>
</shiporder>
```

[5 pts] A typical Los Angeles phone number begins with a "1" followed by a dash, followed by a 3 digit area code, followed by a dash, followed by 3 digits, a dash, and 4 digits. Create a new simple type called LAPhoneNumber using the notation of XML schemas.
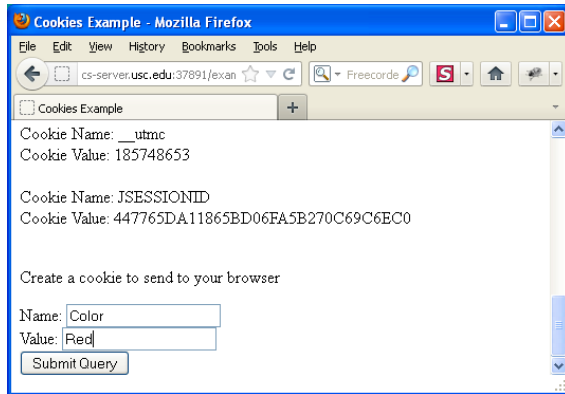
```
<xsd:simpleType name="LAPhoneNumber">
   <xsd:restriction base="xsd:string">
     <xsd:pattern value="1-\d{3}-\d{3}-\d{4}"/>
   </xsd:restriction>
</xsd:simpleType>
```
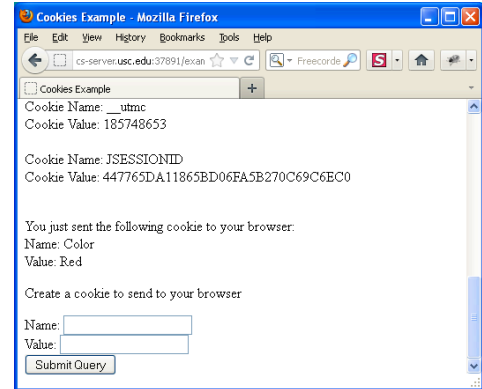
Java Servlet Questions [15 pts]

Below is snapshot of a web page that includes two cookie values and a pair of text boxes. The values Color and Red have been placed into the text boxes. In the second snapshot you see the resulting web page after the Submit button is clicked.

Initial screen with values: Color and Red input   **Result after the submit button is clicked**

[10 pts] Below is the source code for the Java servlet that is called by the web page on the left to produce the web page on the right. Some of the code has been removed using XXXXX. You are asked to provide the missing code:

```java
import java.io.*;
import javax.servlet.*;
import javax.XXXXXXXXX*;                                    servlet.http

public class CookieExample extends HttpServlet {
    public void doGet(HttpServletRequest request, HttpServletResponse response)
    throws IOException, ServletException
    {
        response.setContentType("XXXXXX");              text/html
        PrintWriter out = response.getWriter();
        Cookie[] cookies = request.XXXXXX();            getCookies
        for (int i = 0; i < cookies.XXXXXX; i++) {      length
            XXXXXX c = cookies[i];                      Cookie
            String name = c.getName();
            String value = c.getValue();
            out.println(name + " = " + value);
        }
        String name = request.getParameter("cookieName");
        if (name != null && name.length() > 0) {
            String value = request.getParameter("cookieValue");
            Cookie c = new Cookie(name, value);
            response.addCookie(c);
        }
    }
}
```

[5 pts] What is the name assigned to the pair of text boxes that hold the values Color and Red as defined in the HTML for the web page?

cookieName, cookieValue

Web Performance Questions [15 pts]

5

[5 pts] Among the 14 rules that were given for improving the client-side performance of a web page one rule suggests placing items at the bottom of the web page. What rule is it?

Answer: place scripts to the bottom

[5 pts] Consider the following HTTP response header

```
HTTP/1.1 200 OK
Date: Fri, 30 Oct 2008 13:19:41 GMT
Server: Apache/1.3.3 (Unix)
Cache-Control: max-age=3600, must-revalidate
Expires: Fri, 30 Oct 2008 14:19:41 GMT
Last-Modified: Mon, 29 Jun 2008 02:28:12 GMT
ETag: "3e86-410-3596fbbc"
Content-Length: 1040
Content-Type: text/html

Will this page be cached by the browser? If so, for how long?
```

Answer: yes, 3600 seconds

[5 pts] Consider the following lines of code that have been placed within the httpd.conf file of the Apache web server:

```
<FilesMatch "\.(ico|pdf|flv|jpg|jpeg|png|gif|js|css|swf)$">
Header set Expires "Thu, 15 Apr 2010 20:00:00 GMT"
</FilesMatch>
```

Explain the purpose of the above lines:

Answer: It is a way to add an Expires header to files using the Apache httpd.conf file;

HTML5 Questions [10 pts]

HTML5 offers many new syntactical elements. Below is a list of elements some of which are new to HTML5 and the others already existed in HTML4. Identify the new elements introduced in HTML5:

<aside>, <audio>, <base>, <canvas>, <caption>, <figure>, <footer>, <input>, <link>, <meter>, <noscript>, <object>, <param>, <pre>, <q>, <section>,<small>, <span>, <summary>, <title>, <tr>, <video>

<aside>, <audio>, <canvas>, <figure>, <footer>, <meter>, <q>, <small>, <summary>, <video>

Tomcat Questions [5 pts]

[2 pts] In what folder of Tomcat does one place Java servlets that are part of a user-developed application?

Answer: WEB-INF/classes

[2 pts] What is the name of the deployment descriptor file that must be modified to deploy a Java servlet?

Answer: web.xml

[1 pts] What is the name of the folder where the Tomcat server is configured? And what is the name of the file that must be edited with port settings?
Answer: conf folder, server.xml file

Assignment #8 Questions [10 pts]

[5 pts] Write out the URL that you used to invoke your Java servlet in assignment #8:

```
var url_ajax = "http://cs-
server.usc.edu:37281/examples/servlet/HWExample?chain="+form_hotels.city.val
ue+"&city="+form_hotels.chain.value;
```

Note: the correct answer will have a different protocol, and different HWExample, different values for everything after the question mark (?), but it must have a place for the hotel chain and the city name.

[10 pts] In the prototype solution for assignment #8, as part of the routine that uploads the selected hotel and related information to Facebook there is the following component of FB shown below: (assume that hotel_name, hotel_location, hotel_rating, hotel_image, hotel_review and hotel_no_review have been appropriately set); your task is to supply the missing information, shown as XXXXX

```
FB.XXXXX(                                                ui
   {
     XXXXX: "stream.publish",                            method
     user_message_prompt: "",
     message: "",
     XXXXX: {                                            attachment
       name: ""+hotel_name,
       href: ""+hotel_review,
       caption: "Check this hotel",
       description: (
"The Hotel is located at " +hotel_location+" and has a rating of
"+hotel_rating+"."
        ),
 media:[{ type: "image", src: ""+hotel_image, href: ""+hotel_review}],
         properties:{
 "Find the Hotel Reviews ":{"text":"here","href":""+hotel_review}
       }
     },
     action_links: [                                     action_links
```

```
                { text: "Check Reviews", href: ""+hotel_review }
        ]
    },
    /*{
        method: 'feed',
        name: ''+hotel_name,
        link: ''+hotel_review,
        picture: ''+hotel_image,
        caption: 'Check this Hotel',
description: 'The Hotel is location at ' +hotel_location+' and has a rating
of '+hotel_rating+'.',
        message: 'Share your thoughts about this hotel'
    },*/
    XXXXX(response) {                          function
        if (response && response.post_id) {
            alert('Post was successfully published to Facebook.');
        } else {
            alert('Post was not published to Facebook.');
        }
    }
);
}
```