Computer Science 571 2nd Exam
Prof. Papa
Tuesday, December 2, 2014, 5:30pm – 6:50pm

Name: **Student ID Number:**

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

REST Questions [10 pts]

Each question is worth 2 points.

Q1: What are the 3 fundamental aspects of REST design patters?

A1: client, server and resources

Q2: What are the 4 simple operations of REST?

A2: PUT, GET, POST, DELETE

Q3: What is the typical representation of resources in REST?

A3: documents

Q4: What is the major reason of the gain in popularity of REST versus other approaches?

A4: simplicity

Q5: REST:

[X] is Platform independent
[X] is Language Independent
[X] is based on the HTTP standard
[X] is able to run behind firewalls
[ ] is a W3C recommendation
[ ] is based on cookies
[X] does not offer built-in security
[ ] ALL OF THE ABOVE

Web Performance Questions [10 pts]

Questions 1-5 are worth 1 point each.

Q1: Where should you put style sheets and why to optimize performance?

A1: At the top, because IE blocks rendering of the page until all style sheets have been examined.

Q2: Where should you put scripts and why to optimize performance?

A2: At the bottom, because scripts block everything from rendering below them in the page

Q3: Should you “inline” JavaScript code or use external files and why to optimize performance?

A3: Use external files because they are cached

Q4: Should you scale images or not, and why?

A3: No, because 1) rescaling in the browser is time consuming and 2) sending an image larger than needed transfers more bytes than necessary

Q5: What are the two rules that minimize the transfer of information between server and browser?

A5: compression and JavaScript minification

Q6. List any 5 recent rules (not the initial 14 rules) for faster Web pages from Yahoo‘s YSlow that help speed up web performance. **This question is worth 5 points.**

A6:

Avoid empty src or href

Use get for AJAX requests

Reduce number of DOM elements

Avoid HTTP 404 (not found) Error

Reduce cookie size

Use cookie-free domain

Do not scale images in HTML

Make favicon small and cacheable

HTML5 Questions [10 pts]

Each question is worth 2 points.

Q1: In HTML5 is it possible to perform "document editing" just using HTML elements and attribues?

A1: No, JavaScript code using the HTML5 Document Editing API is required.

Q2: Which of the following capabilities have included in HTML5?

A2:
[X] canvas
[X] video and audio
[X] local SQL database
[X] geolocation
[X] CSS 2D/3D transformations
[ ] flash plugin
[ ] ALL OF THE ABOVE

Q3: Why have FRAMES been removed from HTML5?

A3: Frames have been removed from HTML5 because their usage affected usability and accessibility for the end user in a negative way in HTML4

Q4: What happened to the "align" attribute used on caption, iframe, img, input, and many other elements in HTML4?

A4: they have been removed from HTML5 and are handled by CSS exclusively

Q5: Consider the following HTML5:

```
<canvas id="myCanvas" width="200" height="100"
style="border:1px solid #000000;">
</canvas>
```

What is the purpose of the "id" attribute?

A5: It is used to obtain a "handle" to the canvas using getElementById so that a "drawing context" object can be create to draw on the canvas.

JSON /AJAX Questions [10 pts]

Each is worth 1 point.

Q1: Of the URLs below, which have the same origin?

a. http://www.ajaxbook.com
b. http://www.ajaxbook.com:8443
c. https://www.ajaxbook.com
d. http://ajaxbook.com
e. http://carsearch.ajaxbook.com

A1: **All of the above URLs have different origins**

Q2: Creating an instance of the XMLHttpRequest object is the same in all browsers

a. True
b. False

A2: **False**

Q3: Which XMLHttpRequest method actually makes the request?

a. getAllResponseHeaders()
b. makeRequest()
c. open()
d. send()

A3: **send()**

Q4: What MIME type must be set when using XMLHttpRequest to send a POST request of a form?

a. application/octet-stream
b. Application/xhtml+xml
c. application/x-www-form-urlencoded

A4: **c**

Q5: Which of the following MIME types will cause the web browser to automatically parse an XML response?

a. text/xml
b. text/javascript
c. text/plain
d. text/html

A5: a

Q6: Which JavaScript method is used primarily with JSON?

a. eval()
b. test()
c. run()
d. exec()

A6: a

Q7: Which field of XMLHttpRequest will be populated with a JSON response?

a. responseXML
b. responseText
c. response
d. statusText

A7: b

Q8: Which of the following is not valid JSON?

a. { “name”: “Bob” }
b. { “user”: { “ name”: “Bob” } }
c. { “name”: “Bob”, “getName”: function() { return this.name } }

A8: c

Q9: The XMLHttpRequest object can be used to upload a file.

a. True
b. False

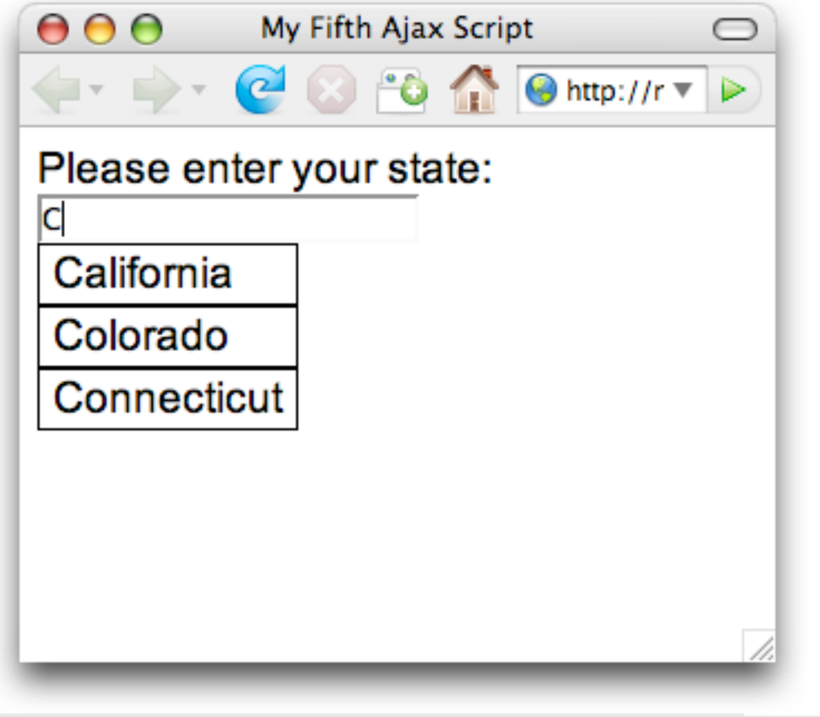
A9: b

Q10: The web browser displays a visual progress indicator while an XMLHttpRequest is being processed.

a. True
b. False

A10: b

JavaScript and Ajax Questions [10 pts]



Please enter your state:

C

California

Colorado

Connecticut

Below is the HTML source code that produces the web page above. There is one edit box, and when each character is typed, a list appears that shows the "suggested" valid answers, obtained from the XML file us-states.xml.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
      <title>My Fifth Ajax Script</title>
      <link rel="stylesheet" rev="stylesheet" href="script05.css" />
      <script src="script05.js" type="text/javascript"
language="Javascript">
      </script>
</head>
<body>
      <form action="#">
            Please enter your state:<br />

            <input type="text" id="searchField" autocomplete="off" /><br />
            <div id="popups"> </div>
      </form>
</body>
</html>
```

Below is the JavaScript source code, script05.js, that was imported into the HTML above, but some of the lines are missing, replaced by XXXXXXXXs. Fill in the missing.

```
window.onload = initAll;
var xhr = false;
var statesArray = new Array();
```

```
function initAll() {
      document.getElementById("searchField").onkeyup = searchSuggest;

      if (window.XMLHttpRequest) {
            xhr = new XMLHttpRequest();
      }
      else {
            if (window.ActiveXObject) {
                  try {
                        xhr = new ActiveXObject("Microsoft.XMLHTTP");
                  }
                  catch (e) { }
            }
      }

      if (xhr) {
            xhr.onreadystatechange = setStatesArray;
            xhr.open("GET", "us-states.xml", true);
            xhr.send(null);
      }
      else {
            alert("Sorry, but I couldn't create an XMLHttpRequest");
      }
}

function setStatesArray() {
      if (xhr.readyState == 4) {
            if (xhr.status == 200) {
                  if (xhr.responseXML) {
                        var allStates =
xhr.responseXML.getElementsByTagName("item");
                        for (var i=0; i<allStates.length; i++) {
                              statesArray[i] =
allStates[i].getElementsByTagName("label")[0].firstChild;
                        }
                  }
            }
            else {
                  alert("There was a problem with the request " +
xhr.status);
            }
      }
}

function searchSuggest() {
      var str = document.getElementById("searchField").value;
      document.getElementById("searchField").className = "";
      if (str != "") {
            document.getElementById("popups").innerHTML = "";

            for (var i=0; i<statesArray.length; i++) {
                  var thisState = statesArray[i].nodeValue;

                  if (thisState.toLowerCase().indexOf(str.toLowerCase()) ==
0) {
                        var tempDiv = document.createElement("div");
                        tempDiv.innerHTML = thisState;
                        tempDiv.onclick = makeChoice;
                        tempDiv.className = "suggestions";

      document.getElementById("popups").appendChild(tempDiv);
                  }
            }
            var foundCt =
document.getElementById("popups").childNodes.length;
            if (foundCt == 0) {
                  document.getElementById("searchField").className =
"error";
            }
            if (foundCt == 1) {
                  document.getElementById("searchField").value =
document.getElementById("popups").firstChild.innerHTML;
                  document.getElementById("popups").innerHTML = "";
            }
      }
}

function makeChoice(evt) {
      var thisDiv = (evt) ? evt.target : window.event.srcElement;
      document.getElementById("searchField").value = thisDiv.innerHTML;
      document.getElementById("popups").innerHTML = "";
}
```

[for graders: each line is worth 2 points]

JSON Question [20 pts]

The REST Yahoo LocalSearch Service allows you to search the Internet for businesses near a specified location, and returns both the latitude and longitude and Yahoo! user ratings of the establishment, as well as search by business categories.

A sample REST call is shown below, followed by an edited version of the XML returned:

http://local.yahooapis.com/LocalSearchService/V3/localSearch?appid=YahooDemo&query=pizza&zip=94306&results=1&output=json

```
<?xml version="1.0"?>
<ResultSet xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
      xmlns="urn:yahoo:lcl"
xsi:schemaLocation="urn:yahoo:lcl
      http://local.yahooapis.com/LocalSearchService/V3/Loca
lSearchResponse.xsd">
      <Result id="21300761">
            <Title>Oregano's Wood-Fired Pizza</Title>
```

```
           <Address>4546 El Camino Real, #A6</Address>
           <City>Los Altos</City>
           <State>CA</State>
           <Phone>(650) 941-3600</Phone>
           <Latitude>37.401434</Latitude>
           <Longitude>-122.114407</Longitude>
           <Rating>
                <AverageRating>4.5</AverageRating>
                <TotalRatings>11</TotalRatings>
                <TotalReviews>11</TotalReviews>

      <LastReviewDate>1326963606</LastReviewDate>
                <LastReviewIntro>This place is great.
</LastReviewIntro>
           </Rating>
           <Distance>1.19</Distance>
           <Url>http://local.yahoo.com/info-21300761-
oregano-s-woodfired-pizza-los-altos</Url>
      </Result>
</ResultSet>
```

When the “output=json”, a JSON response is returned. Please fill in the missing code:

```
{"ResultSet":
      {"Result":
      {"id":"21300761",
      "Title":"Oregano's Wood-Fired Pizza",
      "Address":"4546 El Camino Real, #A6",
      "City":"Los Altos",
      "State":"CA",
      "Phone":"(650) 941-3600",
      "Latitude":"37.401434",
      "Longitude":"-122.114407",
      "Rating":
           {"AverageRating":"4.5",
           "TotalRatings":"11",
           "TotalReviews":"11",
           "LastReviewDate":"1326963606",
           "LastReviewIntro":"This place is great."},
           "Distance":"1.19",
           "Url":"http:\/\/local.yahoo.com\/info-21300761-
oregano-s-woodfired-pizza-los-altos",
           }
      }
}
```

Grading Guidelines:
There are 15 properties so give 1 point for each property. Writing the opening and the closing parenthesis of the Rating object weighs 5 points.

JQuery Questions [10 pts]

Q1 (2 pts): What is the JavaScript object added by jQuery?

A1: JQuery or $

Q2 (2 pts): What commonly used JavaScript objects are abstracted by jQuery?

A2:

[ ] DOM
[ ] XMLHttpRequest
[ ] JSON
[X] ALL OF THE ABOVE

Q3 (6 pts): [This question is worth 6 points] Consider the following example without JQuery:

```
<FORM>
<INPUT ID="counter1" STYLE="position:relative;
    left:0px" TYPE="button" VALUE="Move Button right once"
    onclick="document.getElementById('counter1').style.left = '500px';">
</FORM>

<FORM> <INPUT ID="counter2" STYLE="position:relative;
           top:0px" TYPE="button" VALUE="Move Button down Once"
           onclick="document.getElementById('counter2').style.top =
'15px';">
</FORM>
```

A3: Rewrite it using JQuery.

```
<FORM>
<INPUT ID="counter1" STYLE="position:relative;
    left:0px" TYPE="button" VALUE="Move Button right once"
    onclick= "$('#counter1').css('left', '500px');" >
</FORM>

<FORM> <INPUT ID="counter2" STYLE="position:relative;
           top:0px" TYPE="button" VALUE="Move Button down Once"
          onclick= "$('#counter2').css('top', '15px');" >
</FORM>
```

Grading Guidelines:

- Writing $('#counter1') twice → 2 points
  - If a student forget writing $ or # deduct 1 point
- Writing *.css* twice → 2 points
- The CSS properties and its values → 2 points

```
If any student came with different solution might be correct please spread
the solution to the other graders to take a decision
```

Responsive Website Design Questions [20 pts]

Each question is worth 4 points.

Q1: A site designed with RWD adapts the layout to the viewing environment by using 3 things. What are they?

A1:
(1) fluid, proportion based GRIDS
(2) flexible images
(3) CSS3 media queries

Q2: List 3 "usability" guidelines for Websites on mobile devices?

A2:
(1)
(2)
(3)

Any 3 of: (1) reduce amount of content, (2) use single columns, (3) change navigation, (4) minimize text entry, (5) design for touchscreens, (6) take advantage of built-in functionality (e.g. maps Apps)

Q3: What is the main difference between "adaptive" and "fluid" grids?

A3: In fluid grids we define relative-based dimensions; in adaptive grids we define pixel-based dimensions.

Q4: In RWD, how do you avoid having an image deformed due to screen size?

A4: Set CSS max-width property to 100%, as in

img { max-width: 100%; }

Q5: Bootstrap comes with 3 components, each store in its own folder. What are these components?

A5: JavaScript, CSS and fonts