Computer Science 571 2^{nd} Exam
Prof. Papa
Tuesday, April 30, 2013, 5:30pm – 6:40pm

Name: **Student ID Number:**

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

PHP Questions [10 pts]

Each question is worth 2 points.

Q1: Which of the following is true in PHP?

A1:
[ ] PHP is not strictly typed
[ ] A data type is either text or numeric
[ ] Variables are case-insensitive
[ ] PHP decides what type as variable is
[ ] Constant names begin with a dollar sign ($)
[ ] ALL OF THE ABOVE

Q2: What kind of assignment is `$bar = &$foo;`

A2:

Q3: Write two statements that concatenate and print the two strings “SEAT” and “Altea”:

A3:

Q4: Consider this PHP code snippet:

```
<?php
$foo = 25;

echo ″5x5=$foo″; // double quotes
echo ′ 5x5=$foo′ ; // single quotes
```

What is the output produced?

A4:

Q5: Assume a form contains one textbox named "txtName", and the form is submitted using the POST method. How would a PHP script access the form data?

A5:

Web Security Questions [10 pts]

Each question is worth 2 points.

Q1: What are "brute force attacks"?

A1:

Q2: What are 2 easy ways to avoid "brute force attacks"?

A2:

Q3: What is an easy way to create a password that cannot be looked up in a dictionary?

A3:

Q4: Give 2 examples of "commonly used" weak passwords

A4:

Q5: Name one of the two ways to reduce the threat of Cross-site Scripting (XSS)?

A5:

HTML5 Questions [10 pts]

Each question is worth 2 points.

Q1: What is the current status of the HTML5 vocabulary, associated APIs and HTML Canvas specifications?

A1:

Q2: Which of the following are new features in HTML5?

[ ] publication dates and time
[ ] web page sections
[ ] applet upgrade
[ ] offline web applications
[ ] network based storage
[ ] persistent local storage
[ ] ALL OF THE ABOVE

Q3: What is the benefit of using AAC vs. MP3 codec encoding?

A3:

Q4: What is the meaning of the "autoplay" attribute?

A4:

Q5: Name two popular HTML5 video codecs?

A5:

Java Servlets Questions [10 pts]

Below is the Java source which implements a portion of the proxy back-end of Homework #8, but some of the code is missing, replaced by XXXXXXXs. Fill in the missing code. Each answer is worth 1 point.

```
import java.io.*;
import java.net.*;
import java.util.*;
import javax.servlet.*;
import javax.servlet.http.*;
import org.jdom.*;
import org.jdom.input.*;
import org.jdom.output.*;
```

```
public class MusicSearch extends HttpServlet {


      public void XXXXXXX1 (HttpServletRequest request,
HttpServletResponse

response) throws ServletException, IOException {
            PrintWriter out = response.getWriter();
        try {

            String title = request. XXXXXXX2 ("title");


            String type = request. XXXXXXX3 ("type");


          title = title.replace(' ','XXXXXXX4');


            response.setContentType("text/html; charset=UTF-8");

                  // Retrieve xml from perl script
          String data = XXXXXXX5 (title,type);


          //out.println(data);

          //Call appropriate parsing function depending on type
          String json = "";
          if(type.equals("artists")) {
                        json = parseArtists(data);
                  } else if(type.equals("albums")) {
                        json = parseAlbums(data);
                  } else if(type.equals("songs")) {
                        json = parseSongs(data);
                  }

          //Return json back to html
          out.println(json);
        } catch(XXXXXXX6 e) {

            System.out.println(e.getMessage());
        }
      }

      public String getPerlData(String title, String type) throws Exception
{

        URL url = new URL("http://cs-server.usc.edu:18493/cgi-
bin/music_xml.pl?title="+title+"&type="+type);
        URLConnection connection = url. XXXXXXX7 ();
        BufferedReader in = new BufferedReader(new
InputStreamReader(connection. XXXXXXX8 (), "XXXXXXX9"));
                  ______________________________________________________

        String xmlString;
        String totalString="";
        while((xmlString = in. XXXXXXX10)!=null)
                  ______________________________________________________

          {
            totalString += xmlString;
          }
        in.close();

        return totalString;
      }

      public String parseArtists(String data) throws JDOMException,
IOException {

[... CODE REMOVED ...]
      }

      public String parseAlbums(String data) throws JDOMException,
IOException {
[... CODE REMOVED ...]
      }

      public String parseSongs(String data) throws JDOMException,
IOException {
[... CODE REMOVED ...]
}
```

Web Performance Questions [10 pts]

Each question is worth 2 points.

Q1: What happens when the following header is present in a response?

`cache-control: max-age`

A1:

Q2: What does the presence of the `max-age` **directive implies?**

A2:

Q3: Why is the use of CSS sprites beneficial to the overall performance of a web page?

A3:

Q4: Why is it better to use GET instead of POST in AJAX requests?

A4:

Q5: For performance, is it beneficial to send an image with dimensions "smaller" than the width and height attributes of the HTML image element that will contain it?

A5:

JSON Questions [10 pts]

Recently Yahoo provides access to the Flickr API using YQL, the Yahoo! Query Language. For example, the YQL query to "Get user info from Flickr ID“, looks like this:

select * from flickr.people.info2 where user_id="26545327@N00" and api_key="92bd0de55a63046155c09f1a06876875";

Results can be requested in JSON or XML. The XML REST call is:

```
http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20flickr.people
.info2%20where%20user_id%3D%2226545327%40N00%22%20and%20api_key%3D%2292bd0de
55a63046155c09f1a06876875%22%3B&diagnostics=true
```

And the result returned is:

```
<?xml version="1.0" encoding="UTF-8"?>
<query xmlns:yahoo="http://www.yahooapis.com/v1/base.rng"
    yahoo:count="1" yahoo:created="2013-04-27T19:55:50Z" yahoo:lang="en-US">
    <diagnostics>
        <publiclyCallable>true</publiclyCallable>
        <user-time>182</user-time>
        <service-time>179</service-time>
        <build-version>36288</build-version>
    </diagnostics>
    <results>
        <person datecreate="1132792566" iconfarm="1" iconserver="30"
            id="26545327@N00" ispro="0" nsid="26545327@N00"
path_alias="fabiokung">
            <username>Fabio Kung</username>
            <realname>Fabio Kung</realname>
            <location>São Paulo, Brazil</location>
            <timezone label="Brasilia" offset="-03:00"/>
            <description>&lt;a href="http://fabiokung.com/about"
rel="nofollow"&gt;fabiokung.com/about&lt;/a&gt;</description>
            <photosurl>http://www.flickr.com/photos/fabiokung/</photosurl>
            <profileurl>http://www.flickr.com/people/fabiokung/</profileurl>

<mobileurl>http://m.flickr.com/photostream.gne?id=1805705</mobileurl>
            <photos>
                <firstdatetaken>2003-01-01 00:00:01</firstdatetaken>
                <firstdate>1142015714</firstdate>
                <count>175</count>
            </photos>

<buddyiconurl>http://farm1.static.flickr.com/30/buddyicons/26545327%40N00.jp
g</buddyiconurl>
        </person>
    </results>
</query>
```

The JSONP REST call is (notice &format=json and &callback=cbfunc):

```
http://query.yahooapis.com/v1/public/yql?q=select%20*%20from%20flickr.people
.info2%20where%20user_id%3D%2226545327%40N00%22%20and%20api_key%3D%2292bd0de
55a63046155c09f1a06876875%22%3B&format=json&diagnostics=true&callback=cbfunc
```

Complete the missing parts of the JSONP result:

```
cbfunc({
 "query": {
  "count": 1,
  "created": "2013-04-27T19:58:46Z",
  "lang": "en-US",
  "diagnostics": {
   "publiclyCallable": "true",
   "user-time": "186",
   "service-time": "182",
   "build-version": "36288"
  },
  "results": {











"timezone": {



    },
    "description": "<a href=\"http://fabiokung.com/about\"
rel=\"nofollow\">fabiokung.com/about</a>",







    },
    "buddyiconurl":
"http://farm1.static.flickr.com/30/buddyicons/26545327%40N00.jpg"
   }
  }
 }
});
```

XML Schema Question [10 pts]

Google Sitemap uses the Sitemap Protocol to allow webmasters to inform search engines about URLs on websites that are available for crawling. In its simplest form, a Sitemap that uses the Sitemap Protocol is an XML file that lists URLs for a site.

Google provides an XML Schema that describes the structure of these files, as shown below (some optional elements have been removed for simplicity):

```
<xsd:schema xmlns="http://www.sitemaps.org/schemas/sitemap/0.9"
targetNamespace="http://www.sitemaps.org/schemas/sitemap/0.9"
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <xsd:annotation>
    <xsd:documentation>
    XML Schema for Sitemap files.
    Last Modifed 2006-07-25
  </xsd:documentation>
  </xsd:annotation>
  <xsd:element name="urlset">
    <xsd:complexType>
      <xsd:sequence>
        <xsd:element maxOccurs="unbounded" ref="url" />
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="url">
    <xsd:complexType>
      <xsd:all>
        <xsd:element ref="loc" />
        <xsd:element minOccurs="0" ref="changefreq" />
      </xsd:all>
    </xsd:complexType>
  </xsd:element>
  <xsd:element name="loc">
    <xsd:annotation>
      <xsd:documentation>
      REQUIRED: The location URI of a document.
      The URI must conform to RFC 2396
(http://www.ietf.org/rfc/rfc2396.txt).
    </xsd:documentation>
    </xsd:annotation>
    <xsd:simpleType>
      <xsd:restriction base="xsd:anyURI">
        <xsd:minLength value="12" />
        <xsd:maxLength value="2048" />
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
  <xsd:element name="changefreq">
    <xsd:simpleType>
      <xsd:restriction base="xsd:string">
        <xsd:enumeration value="always" />
        <xsd:enumeration value="hourly" />
        <xsd:enumeration value="daily" />
        <xsd:enumeration value="weekly" />
        <xsd:enumeration value="monthly" />
        <xsd:enumeration value="yearly" />
        <xsd:enumeration value="never" />
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
</xsd:schema>
```

Create an instance XML file that contains two "url" entries:

1. **The first entry for `http://www.example.com/` , has changefreq = daily;**
2. **The second entry for `http://www.example.com/catalog?item=12&amp;desc=vacation_hawaii` has changefreq = weekly.**

3. **Notice that the namespace id of the root element is `http://www.sitemaps.org/schemas/sitemap/0.9`**

```
<?xml version="1.0" encoding="UTF-8"?>
```

JSON/AJAX Questions [10 pts]

Q1: The open() method of the XMLHttpRequest object has this syntax:

open(method, URL, flag, username, password)

with the last three parameters being optional. What is the purpose and the default value of the third parameter, “flag”?

A1:

Q2: What are basic technologies used in AJAX?

A2:

[ ] HTML
[ ] CSS
[ ] JavaScript
[ ] XML
[ ] JSON
[ ] XHTML
[ ] XSLT
[ ] Web Remoting
[ ] DOM
[ ] ALL OF THE ABOVE

Q3: What is the major problem with the “classic” web application model vs. the “Ajax” application model?

A3:

Q4: What property of the XMLHttpRequest object is used to retrieve JSON returned data?

A4:

Q5: What is the following:

```
(/^(\s|[,:{}\[\]]|"(\\["\\bfnrtu]|[^\x00-\x1f"\\])*"|-
?\d+(\.\d*)?([eE][+-]?\d+)?|true|false|null)+$/.test(text))
```

A5:

Cookies and Privacy Questions [10 pts]

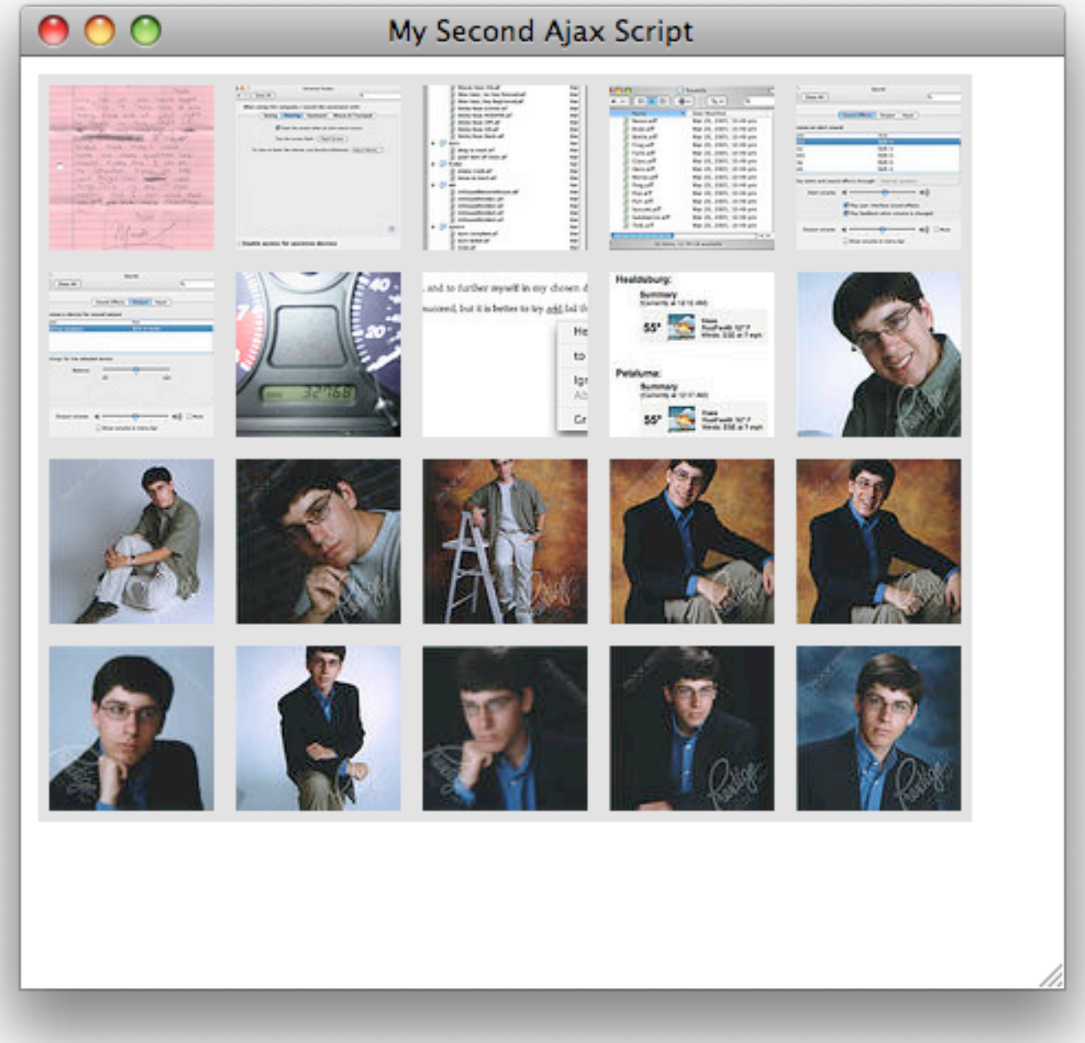
Q1: Write a JavaScript function that creates a cookie with a given value and expiration date. Use the API toGMTString() to produce a date in the correct format. You do not have to check for the validity of the passed parameters.

```
function setCookie(name, value, expireDate) {



}
```

Q2: Write a JavaScript function that retrieves the value of a cookie, given its name. Complete the given function below.

```
function getCookie(name) {
      var item = unescape(name) + "=";
      if (document.cookie.length > 0) {










      }
  }
}
```

JavaScript and Ajax Questions [10 pts]



Below is the HTML source code that produces the web page above.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN">
<html>
<head>
      <title>My Second Ajax Script</title>
      <script src="script02.js" type="text/javascript"
language="Javascript">
      </script>
</head>
<body>
<div id="pictureBar"> </div>
</body>
</html>
```

Below is the JavaScript source code, script02.js, that was imported into the HTML above, but some of the lines are missing, replaced by XXXXXXXs. Fill in the missing.

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

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

      if (xhr) {
            xhr.onreadystatechange = showPictures;
            xhr.open("GET", "flickrfeed.xml", XXXXXXXX1);
            xhr.send(null);
      }
      else {
            alert("Sorry, but I couldn't create an XMLHttpRequest");
      }
}

function showPictures() {
      var tempDiv = document. XXXXXXXX2;
      var pageDiv = document.getElementById("XXXXXXXX3");

      if (xhr.readyState == 4) {
            if (xhr.status == 200) {
                  XXXXXXXX4 = xhr.responseText;
                  var allLinks = tempDiv.getElementsByTagName("a");

                  for (var i=1; i<allLinks.length; i+=2) {
                        pageDiv. XXXXXXXX5 (allLinks[i].cloneNode(true));
                  }
            }
            else {
                  alert("There was a problem with the request " +
xhr.status);
            }
      }
}
```