Computer Science 571 Exam #1
Prof. Papa
Friday, February 9, 2016, 6:00pm – 7:20pm
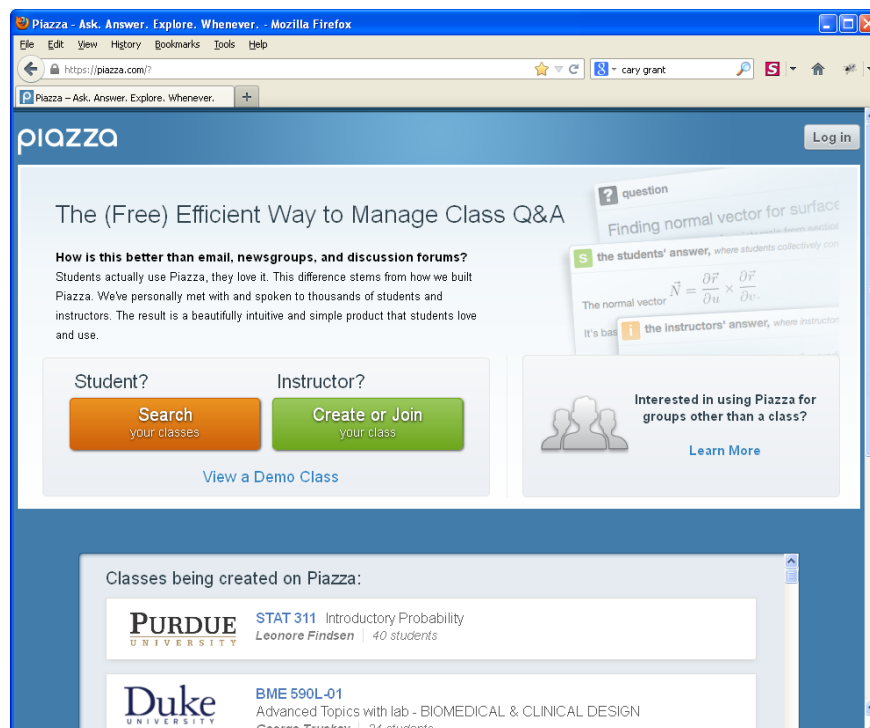
Name: **Student Id Number:**

1. This is a closed book exam.
2. Please answer all questions.
3. Place all answers on the exam and return the entire exam

IMPORTANT Note: For each multiple-choice question, please choose all correct answers –OR- "All of the above". <u>There is no partial credit for a partial answer.</u>

HTTP [20 POINTS]

The picture above is a snapshot of the Piazza home page. Below, are the HTTP headers exchanged between the browser and Bing. The transactions have been edited, leaving only a few of the transactions.

```
------------------------------------------------------------Transaction 1
http://ocsp.godaddy.com/
POST / HTTP/1.1
Host: ocsp.godaddy.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
```

```
Content-Length: 106
Content-Type: application/ocsp-request
Connection: keep-alive


HTTP/1.1 200 OK
Date: Fri, 22 Feb 2013 18:24:27 GMT
Server: Apache
content-transfer-encoding: Binary
Cache-Control: max-age=12905, public, no-transform, must-revalidate
Last-Modified: Fri, 22 Feb 2013 16:10:52 GMT
Expires: Fri, 22 Feb 2013 22:10:52 GMT
Etag: "2e38ac3a0ac40d876bb7ba482005e6c68ceb96a9"
p3p: CP="IDC DSP COR LAW CUR ADM DEV TAI PSA PSD IVA IVD HIS OUR SAM PUB LEG UNI COM
NAV STA"
Content-Length: 1923
Connection: close
Content-Type: application/ocsp-response
-----------------------------------------------------------Transaction 2
https://www.piazza.com/

GET / HTTP/1.1
Host: www.piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: piazza_session=EGyCDvHvKwuwCyLDEDGGtxGyFuHDEFGx.0;
__utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
__utmv=231435806.|2=user_type=instructor=1
Connection: keep-alive

HTTP/1.1 302 Found
Server: nginx/1.2.1.1431
Date: Fri, 22 Feb 2013 18:24:27 GMT
Content-Type: text/html; charset=utf-8
Content-Length: 86
Connection: close
Status: 302
X-Powered-By: Phusion Passenger (mod_rails/mod_rack) 3.0.7
Set-Cookie: piazza_session=EGyCDvHvKwuwCyLDEDGGtxGyFuHDEFGx.0; path=/; expires=Thu, 22
Aug 2013 18:24:27 GMT; HttpOnly
X-Runtime: 0
Location: https://piazza.com/?
Cache-Control: no-cache
-----------------------------------------------------------Transaction 3
https://piazza.com/?

GET /? HTTP/1.1
Host: piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: __utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
last_piaz_user=gr81dafcQqZ; __utmv=231435806.|2=user_type=instructor=1
Connection: keep-alive
If-None-Match: "2549c6767dbab8e1f80868d7e90d7c02"

HTTP/1.1 200 OK
Server: nginx/1.2.1.1431
```

```
Date: Fri, 22 Feb 2013 18:24:27 GMT
Content-Type: text/html; charset=utf-8
Transfer-Encoding: chunked
Connection: close
Vary: Accept-Encoding
Status: 200
X-Powered-By: Phusion Passenger (mod_rails/mod_rack) 3.0.7
Set-Cookie:
piazza_session=HuyLKtGCDIIFLxvutxKxttyGJLvttLvy.5%26x%26%26%7C%22%21r%7Cw5M5Trab_rf%2C
V%2CV%5E5%3F5%275MD0; path=/; expires=Thu, 22 Aug 2013 18:24:27 GMT; HttpOnly
X-Runtime: 96
p3p: CP='IDC DSP CURa ADMa DEVa OUR ONL UNI COM NAV'
Etag: "5f45fe0637dfbc9241d25b51926dd804"
Cache-Control: private, max-age=0, must-revalidate
Content-Encoding: gzip
------------------------------------------------------------Transaction 4
https://piazza.com/css/splash/style.css?v=5202

GET /css/splash/style.css?v=5202 HTTP/1.1
Host: piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: text/css,*/*;q=0.1
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: __utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
last_piaz_user=gr81dafcQqZ; __utmv=231435806.|2=user_type=instructor=1;
piazza_session=HuyLKtGCDIIFLxvutxKxttyGJLvttLvy.5%26x%26%26%7C%22%21r%7Cw5M5Trab_rf%2C
V%2CV%5E5%3F5%275MD0
Connection: keep-alive

HTTP/1.1 200 OK
Server: nginx/1.2.1.1431
Date: Fri, 22 Feb 2013 18:24:28 GMT
Content-Type: text/css
Transfer-Encoding: chunked
Connection: close
Last-Modified: Tue, 19 Feb 2013 03:31:35 GMT
Vary: Accept-Encoding
Expires: Mon, 25 Mar 2013 18:24:28 GMT
Cache-Control: max-age=2678400
Content-Encoding: gzip
------------------------------------------------------------Transaction 5
https://connect.facebook.net/en_US/all.js

GET /en_US/all.js HTTP/1.1
Host: connect.facebook.net
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Connection: keep-alive
If-None-Match: "094376e05ec9a60405bad2f7c3718bf0"

HTTP/1.1 304 Not Modified
Content-Type: application/x-javascript; charset=utf-8
Etag: "094376e05ec9a60405bad2f7c3718bf0"
Cache-Control: public, max-age=124
Expires: Fri, 22 Feb 2013 18:26:32 GMT
Date: Fri, 22 Feb 2013 18:24:28 GMT
Connection: keep-alive
------------------------------------------------------------Transaction 6
https://piazza.com/javascripts/sliding-panel.js?v=5202
```

```
GET /javascripts/sliding-panel.js?v=5202 HTTP/1.1
Host: piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: __utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
last_piaz_user=gr81dafcQqZ; __utmv=231435806.|2=user_type=instructor=1;
piazza_session=HuyLKtGCDIIFLxvutxKxttyGJLvttLvy.5%26x%26%26%7C%22%21r%7Cw5M5Trab_rf%2C
V%2CV%5E5%3F5%275MD0
Connection: keep-alive

HTTP/1.1 200 OK
Server: nginx/1.2.1.1431
Date: Fri, 22 Feb 2013 18:24:28 GMT
Content-Type: application/x-javascript
Transfer-Encoding: chunked
Connection: close
Last-Modified: Thu, 29 Nov 2012 09:02:40 GMT
Vary: Accept-Encoding
Expires: Mon, 25 Mar 2013 18:24:28 GMT
Cache-Control: max-age=2678400
Content-Encoding: gzip
----------------------------------------------------------Transaction 7
https://piazza.com/js/splash/splash.js?v=5202

GET /js/splash/splash.js?v=5202 HTTP/1.1
Host: piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: __utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
last_piaz_user=gr81dafcQqZ; __utmv=231435806.|2=user_type=instructor=1;
piazza_session=HuyLKtGCDIIFLxvutxKxttyGJLvttLvy.5%26x%26%26%7C%22%21r%7Cw5M5Trab_rf%2C
V%2CV%5E5%3F5%275MD0
Connection: keep-alive

HTTP/1.1 200 OK
Server: nginx/1.2.1.1431
Date: Fri, 22 Feb 2013 18:24:28 GMT
Content-Type: application/x-javascript
Transfer-Encoding: chunked
Connection: close
Last-Modified: Thu, 17 Jan 2013 20:43:36 GMT
Vary: Accept-Encoding
Expires: Mon, 25 Mar 2013 18:24:28 GMT
Cache-Control: max-age=2678400
Content-Encoding: gzip
----------------------------------------------------------Transaction 8
https://piazza.com/piazzza_js/ajax.js?v=5202

GET /piazzza_js/ajax.js?v=5202 HTTP/1.1
Host: piazza.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: __utma=231435806.1547084154.1357668061.1361132434.1361506957.15;
__utmz=231435806.1357668061.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none);
```

last_piaz_user=gr81dafcQqZ; __utmv=231435806.|2=user_type=instructor=1;
piazza_session=HuyLKtGCDIIFLxvutxKxttyGJLvttLvy.5%26x%26%26%7C%22%21r%7Cw5M5Trab_rf%2C
V%2CV%5E5%3F5%275MD0
Connection: keep-alive

HTTP/1.1 200 OK
Server: nginx/1.2.1.1431
Date: Fri, 22 Feb 2013 18:24:28 GMT
Content-Type: application/x-javascript
Transfer-Encoding: chunked
Connection: close
Last-Modified: Thu, 07 Feb 2013 08:37:42 GMT
Vary: Accept-Encoding
Expires: Mon, 25 Mar 2013 18:24:28 GMT
Cache-Control: max-age=2678400
Content-Encoding: gzip
---Transaction 9
https://ssl.google-
analytics.com/__utm.gif?utmwv=5.3.9&utms=1&utmn=1800083830&utmhn=piazza.com&utme=8(2!u
ser_type)9(2!instructor)11(2!1)&utmcs=UTF-8&utmsr=1920x1080&utmvp=1006x754&utmsc=24-
bit&utmul=en-
us&utmje=1&utmfl=11.5%20r502&utmdt=Piazza%20%E2%80%93%20Ask.%20Answer.%20Explore.%20Wh
enever.&utmhid=381092738&utmr=-&utmp=%2F&utmac=UA-21514163-
1&utmcc=__utma%3D231435806.1547084154.1357668061.1361506957.1361557560.16%3B%2B__utmz%
3D231435806.1357668061.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&
utmu=q~

GET
/__utm.gif?utmwv=5.3.9&utms=1&utmn=1800083830&utmhn=piazza.com&utme=8(2!user_type)9(2!
instructor)11(2!1)&utmcs=UTF-8&utmsr=1920x1080&utmvp=1006x754&utmsc=24-bit&utmul=en-
us&utmje=1&utmfl=11.5%20r502&utmdt=Piazza%20%E2%80%93%20Ask.%20Answer.%20Explore.%20Wh
enever.&utmhid=381092738&utmr=-&utmp=%2F&utmac=UA-21514163-
1&utmcc=__utma%3D231435806.1547084154.1357668061.1361506957.1361557560.16%3B%2B__utmz%
3D231435806.1357668061.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&
utmu=q~ HTTP/1.1
Host: ssl.google-analytics.com
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:19.0) Gecko/20100101 Firefox/19.0
Accept: image/png,image/*;q=0.8,*/*;q=0.5
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Connection: keep-alive

HTTP/1.1 200 OK
Age: 87787
Cache-Control: private, no-cache, no-cache=Set-Cookie, proxy-revalidate
Content-Length: 35
Content-Type: image/gif
Date: Thu, 21 Feb 2013 18:01:53 GMT
Expires: Wed, 19 Apr 2000 11:43:00 GMT
Last-Modified: Wed, 21 Jan 2004 19:51:30 GMT
Pragma: no-cache
Server: GFE/2.0
X-Content-Type-Options: nosniff
X-Firefox-Spdy: 3

Each of the following questions is worth 2 points. There is <u>no partial credit</u> allowed.

Q1: How many web servers are involved in these HTTP transactions and what are their complete names?

A1: Apache, nginx/1.2.1.1431, GFE/2.0

Q2: What is the name and version of the browser used in these transactions?

A2: Firefox version 19.0.

Q3: What engine is the browser using?

A3: Gecko/20100101

Q4: Are any transactions returning compressed data? If so, which ones?

A4: All transactions returning the header "Content-Encoding: gzip"): transactions 6, 7, and 8.

Q5: Transaction 2 returns "302 Found". What does that mean?

A5: The browser must "redirect" to a new page given by the Location header: https://piazza.com/?

Q6: What data is returned by the browser in transaction 5 and why?

A6: <u>No data</u> is returned (304 Not Modified) because the cashed file is "fresh"

Q7: Is the Etag returned in the response to transaction 5 used anywhere else, and if it is "where"?

A7: <u>Yes, it is used in the <u>corresponding request</u> in the header "If-None-Match"

Q8: Name 4 headers used in these transactions for cache control.

A8: Any 4 of "Cache-Control", "Last-Modified", "Expires", "Etag", "If-None-Match", "Date", "Vary", "Pragma".

Q9: Are any transactions using HTTP/2 or SPDY?

Q10: What type(s) of files are transmitted in "compressed" format?

A10: HTML (transaction 3, text/html, gzip), CSS (transaction 4, text/css, gzip), JavaScript (transaction 6, 7 and 8, application-x-javascript, gzip),

DOM QUESTIONS [20 POINTS]

[5 points] Below is a simple XML file that defines a "boxlist" containing "boxes" of different sizes. The "size" of the box must always be listed. There can be any number of boxes, in any order, and a box can be empty or have any number of "items".

```
<boxlist>
    <box size="big">This is a big box</box>
    <box size = "medium">Medium sized box
      <item>Some Stuff</item>
      <item>More stuff</item>
    </box>
    <box size = "small">this is a small box</box>
</boxlist>
```

Write a DTD that could be used to describe this and other XML files that satisfy the above specification. Partial credit will be allowed.

Answer:

```
<!ELEMENT boxlist (box*)>
<!ELEMENT box (item*)>
<!ELEMENT item (#PCDATA)>
<!ATTLIST box size (big|medium|small)
               #REQUIRED>
```


[15 points] The following set of examples makes use of this XML file (books.xml):

```
<bookstore>
<book category="cooking">
<title lang="en">Everyday Italian</title>
<author>Giada De Laurentiis</author>
<year>2005</year>
<price>30.00</price>
```

```
</book>
<book category="children">
<title lang="en">Harry Potter</title>
<author>J K. Rowling</author>
<year>2005</year>
<price>29.99</price>
</book>
<book category="web">
<title lang="en">XQuery Kick Start</title>
<author>James McGovern</author>
<author>Per Bothner</author>
<author>Kurt Cagle</author>
<author>James Linn</author>
<author>Vaidyanathan Nagarajan</author>
<year>2003</year>
<price>49.99</price>
</book>
<book category="web" cover="paperback">
<title lang="en">Learning XML</title>
<author>Erik T. Ray</author>
<year>2003</year>
<price>39.95</price>
</book>
</bookstore>
```

You will be asked to fill some missing lines. Each missing line is worth 1 point. There is not partial credit.

To start the examples we need a way of downloading the XML file. This is done using the function loadXMLDoc that follows. Fill in the missing code:

```
function loadXMLDoc(dname)
{
if (window.XMLHttpRequest)
{ xhttp=new XMLHttpRequest(); }
else
{ xhttp=new ActiveXObject("Microsoft.XMLHTTP"); }
xhttp.open("GET",dname,false);                    1.
xhttp.send();                                     2.
return xhttp.responseXML;
}
```

Example 1: Read the code, look at the output and then provide the missing code

```
<!DOCTYPE html><html><head>
<script src="loadxmldoc.js">
</script></head>
```

```
<body><script>
xmlDoc=loadXMLDoc("books.xml");
document.write("Number of book nodes: ");
document.write(xmlDoc.getElementsByTagName('book').length);
    3.
document.write("<br>");
//Remove the first book
y=xmlDoc.getElementsByTagName("book")[0];                    4.
xmlDoc.documentElement.removeChild(y);                       5.
document.write("Number of book nodes after removing the first
book: ");
document.write(xmlDoc.getElementsByTagName('book').length); 6.
</script></body></html>
```

Output
Number of book nodes: 4
Number of book nodes after removing the first book: 3

Example 2: Read the code, look at the output and then provide the missing code

```
<!DOCTYPE html><html><head>
<script src="loadxmldoc.js"> </script>
</head><body><script>
xmlDoc=loadXMLDoc("books.xml");
x=xmlDoc.getElementsByTagName('book');

document.write("Book 1 – category:  "+
x[0].getAttribute('category'));                             7.
document.write("<br>");
document.write("Removing category attribute of the first book");
x[0].removeAttribute('category');                           8.
document.write("Book 1 – category:  "+
x[0].getAttribute('category'));                             9.
</script></body></html>
```

Output
Book 1 – category: cooking
Removing category attribute of the first book
Book 1 – category: null

Example 3: Read the code, look at the output and then provide the missing code

```
<!DOCTYPE html><html><head>
<script src="loadxmldoc.js">
</script></head><body><script>
xmlDoc=loadXMLDoc("books.xml");
```

```
newNode=xmlDoc.createElement("book");
y=xmlDoc.getElementsByTagName("book");                          10.
document.write("Book elements before: " + y.length);           11.
document.write("<br>");
x=xmlDoc.documentElement;                                       12.
x.insertBefore(newNode,y[3]);                                   13.
y=xmlDoc.getElementsByTagName("book");                          14.
document.write("Book elements after: " + y.length);            15.
</script></body></html>
```

Output
Book elements before: 4
Book elements after: 5

PHP QUESTIONS [20 POINTS]

[10 points] Below is one example of the output of the program show_vars.php, a program that prints the PHP environment variables and the POST and GET name=value pairs. Following the output is the actual PHP source code, with some of the code removed. Please provide the missing code.

$_SERVER	$_POST	$_GET

DOCUMENT_ROOT: /var/local/www/htdocs
HTTP_ACCEPT: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
HTTP_ACCEPT_ENCODING: gzip, deflate
HTTP_ACCEPT_LANGUAGE: en-US,en;q=0.5
HTTP_CONNECTION: keep-alive
HTTP_COOKIE: __utma=185748653.285999088.1365278272.1380911712.1380922899.12;
__utmz=185748653.1380911712.11.5.utmcsr=www-
scf.usc.edu|utmccn=(referral)|utmcmd=referral|utmcct=/~csci571/2013Fall/lynda.html;
__unam=304c066-13dea736b4b-47b5ef49-13; soc_textsize=small; desktopCookie=uschomepage;
__utmc=185748653
HTTP_HOST: www-scf.usc.edu
HTTP_REFERER: http://www-scf.usc.edu/~csci571/special.html
HTTP_USER_AGENT: Mozilla/5.0 (Windows NT 6.1; WOW64; rv:24.0) Gecko/20100101 Firefox/24.0
PATH: /usr/bin:/usr/sbin:/sbin:/usr/lsd/sbin:/usr/lsd/etc:/usr/lsd/bin:/usr/ucs/bin:/usr/
spac/bin:/usr/usc/etc:/usr/usc/bin:/usr/usc/X/bin:/usr/usc/X11/bin:/usr/lib/nis:/usr/lib/n
etsvc/yp:/usr/ccs/bin
REMOTE_ADDR: 76.89.147.160
REMOTE_PORT: 49818
SCRIPT_FILENAME: /home/scf-22/csci571/public_html/Special/php_ex/show_vars.php
SCRIPT_URI: http://www-scf.usc.edu/~csci571/Special/php_ex/show_vars.php
SCRIPT_URL: /~csci571/Special/php_ex/show_vars.php
SERVER_ADDR: 68.181.201.23
SERVER_ADMIN: webadm@usc.edu
SERVER_NAME: www-scf.usc.edu
SERVER_PORT: 80
SERVER_SIGNATURE:
Apache/1.3.31 Server at www-scf.usc.edu Port 80
 	
SERVER_SOFTWARE: Apache/1.3.31 (Unix) PHP/4.3.9 mod_layout/3.0.3
UNIQUE_ID: Uk@TEES1yRcAADLrIYQ
GATEWAY_INTERFACE: CGI/1.1
SERVER_PROTOCOL: HTTP/1.1
REQUEST_METHOD: GET
	empty	empty

```
QUERY_STRING:
REQUEST_URI:  /%7Ecsci571/Special/php_ex/show_vars.php
SCRIPT_NAME:  /~csci571/Special/php_ex/show_vars.php
PATH_TRANSLATED:  /home/scf-22/csci571/public_html/Special/php_ex/show_vars.php
PHP_SELF:  /~csci571/Special/php_ex/show_vars.php
argv:  Array
empty
argc:  0
```

- A form with method = POST

First Name [   ]

Last Name [   ]

[Submit]

- A form with method = GET

First Name [   ]

Last Name [   ]

[Submit]

Source code for show_vars.php

```php
<!doctype html><html>
<head><title>Show $_SERVER, $_POST, $_GET
Variables</title></head>
<style type="text/css">
th {   text-align:left;}
</style>
<body>
<?php
    function print_tabs($tabs) {
        for($i = 0; $i < $tabs; $i++) {              1.
            echo "     ";
        }
    }
    function print_array($arr, $tabs = 0) {
        if(!empty($arr)) {
            foreach($arr as $k=> $v) {
                print_tabs($tabs);
                echo $k . ":" . $v . "<br/>";   2.
                if(is_array($v)) {
                    print_array($v, $tabs+1);
                }
            }
```

```
            } else { echo "empty";              }
        }
?>
<table border='1'>
<tr><th width="33%">$_SERVER</th><th width="34%">$_POST</th><th
width="33%">$_GET</th></tr>
        <tr>
<td valign="top"> <?php print_array($_SERVER); ?> </td>                    3.
<td valign="top"> <?php print_array($_POST); ?>   </td>                    4.
<td valign="top"> <?php print_array($_GET); ?>    </td>                    5.
        </tr>  </table>
<ul>
        <li><a href="?fname=Hello&lname=World">A form with method
= POST</a>
        <div>
        <form method="POST" action="">
        <p>
         <label for="fname">First Name</label>
         <input type="text" value="" name="fname">
        </p>
        <p>
         <label for="lname">Last Name</label>
         <input type="text" value="" name="lname">
        </p>
        <p><input type="submit" value="Submit" name="submit"></p>
</form>        </div></li>
        <li><a href="?fname=Hello&lname=World">A form with method
= GET</a>
        <div>
        <form method="GET" action="">
        <p>
        <label for="fname">First Name</label>
        <input type="text" value="" name="fname">
        </p>
        <p>
        <label for="lname">Last Name</label>
        <input type="text" value="" name="lname">
</p><p><input type="submit" value="Submit" name="submit"></p>
</form>        </div></li></ul>
</body></html>
```

[10 points] Complete the PHP code below which checks if an array element is a female name and puts the "Mrs." Prefix. Otherwise it puts the "Mr." prefix, producing the listed output.

```
//declare an array of names
```

```php
$names=array();

$message="Hello ";
$prefix1="Mr. ";
$prefix2="Mrs. ";

$names[0]="John";
$names[1]="George";
$names[2]="James";
$names[3]="Anna";
$names[4]="Robert";
$names[5]="John";
$names[6]="James";
$names[7]="George";
$names[8]="Maria";
$names[9]="Peter";
$names[10]="James";
print('<br>The sort function sorts array<br>');
sort($names);

//Get size of array
$asize=sizeof($names);

    for( $i=0; $i<$asize; $i++ )
    {
        if( ($names[$i]=="Anna")||($names[$i]=="Maria") )
        {
        print($message.$prefix2.$names[$i]."<br>");
        }
        else
        {
        print($message.$prefix1.$names[$i]."<br>");
        }
    }
print('<br>');
```

Output:
The sort function sorts an array
Hello Mrs.Anna
Hello Mr.George

```
Hello Mr. George
Hello Mr. James
Hello Mr. James
Hello Mr. James
Hello Mr. John
Hello Mr. John
Hello Mrs. Maria
Hello Mr. Peter
Hello Mr. Robert
```

JAVASCRIPT REGULAR EXPRESSIONS QUESTIONS [10 POINTS]

Q1. [5 points] Describe in one sentence what does the pattern checks for a match:

```
var pattern = /(^-*\d+$)|(^-*\d+\.\d+$)/
```

A1. Either an optional minus sign, followed by one or more digits, or an optional minus sign followed by one or more digits, followed by a dot (.), and optionally followed by one or more additional digits.

Q2. [5 points] Describe in one sentence what does the pattern checks for a match:

```
var pattern = /^[0-9]{3}[\- ]?[0-9]{2}[\- ]?[0-9]{4}$/;
```

A2. Anchored at the beginning and at the end the pattern matches: 3 digits, an optional hyphen, two digits, an optional hyphen, followed by 4 digits; in effect a Social Security Number.

WEB SERVER QUESTIONS [10 POINTS]

Below is a replica of an actual httpd.conf file from a real website. Each line has been numbered. Answer the questions immediately after the end of the file. Each question is worth 2 points.

```
1. ################################
2. ### General Settings
3. ################################

4. ServerType standalone
5. ServerRoot "/usr/local/apache"
6. PidFile "/var/run/httpd.pid"
```

```
7.  ScoreBoardFile "/var/log/apache/httpd.scoreboard"
8.  Timeout 300
9.   KeepAlive On
10. MaxKeepAliveRequests 100
11. KeepAliveTimeout 15
12. MinSpareServers 10
13. MaxSpareServers 20
14. StartServers 10
15. MaxClients 256
16. MaxRequestsPerChild 0
17. Port 80
18. HostnameLookups Off
19. ServerSignature Off
20. ErrorDocument 403 /link_error.php
21. ErrorDocument 404 /link_error.php
22. ErrorDocument 500 /link_error.php
23. User nobody
24. Group nobody
25. ServerAdmin webmaster@mp3xyz.com
26. ServerName SERVER-IP
27. NameVirtualHost SERVER-IP
28. DocumentRoot "/usr/local/apache/htdocs"
29. ServerTokens ProductOnly

30. Include conf/vhosts.conf
31. Include conf/vhosts_ssl.conf

32. #LoadModule sql_log_module     libexec/mod_log_sql.so
33. LoadModule php5_module         libexec/libphp5.so

34. <Directory "/usr/local/apache/htdocs">
35. Options FollowSymLinks
36. AllowOverride None
37.     Order deny,allow
38.     Allow from all
39. </Directory>

40. ScriptAlias /cgi-bin/ "/usr/local/apache/cgi-bin/"

41. <Directory "/usr/local/apache/cgi-bin">
42.     AllowOverride None
43.     Options +ExecCGI
44.     Order allow,deny
45.     Allow from all
46. </Directory>

47. <Files ~ "^\.ht">
48.     Order allow,deny
49.     Deny from all
50.     Satisfy All
51. </Files>

52. DirectoryIndex index.html index.php


53. LogLevel warn
```

```
54. LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"
\"%{Cookie}i\"" combined
55. LogFormat "%h %l %u %t \"%r\" %>s %b" common
56. LogFormat "%{Referer}i -> %U" referer
57. LogFormat "%{User-agent}i" agent

58. ErrorLog /var/log/apache/error_log
59. CustomLog /var/log/apache/access_log combined env=!attacks
60. CustomLog /var/log/apache/attack_log combined env=attacks

61. TypesConfig /usr/local/apache/conf/mime.types
62. DefaultType text/plain

63. AddEncoding x-compress Z
64. AddEncoding x-gzip gz tgz
65. AddType application/x-tar .tgz
66. AddType application/x-httpd-php .php
67. AddType application/x-httpd-php-source .phps


68. BrowserMatch "Mozilla/2" nokeepalive
69. BrowserMatch "MSIE 4\.0b2;" nokeepalive downgrade-1.0 force-response-1.0
70. BrowserMatch "RealPlayer 4\.0" force-response-1.0
71. BrowserMatch "Java/1\.0" force-response-1.0
72. BrowserMatch "JDK/1\.0" force-response-1.0

73. <Location /server-status>
74. SetHandler server-status
75. Order Deny,Allow
76. Deny from all
77. Allow from 10.0.0.0/24
78. Allow from 192.168.0.0/16
79. Allow from 172.16.200.0/16
80. </Location>
```

Answer the following questions:

Q1: What is the purpose of lines 40 – 46?

A1: They replace the default "cgi-bin" directory to CGI scripts with /usr/local/apache/cgi-bin and allows everybody to execute CGI scripts in it.

Q2: On startup how many copies of the server are created

A2: 10 or 11, both are acceptable (why 11 is acceptable? Startservers=10, but apache may not include the parent process in the count)

Q3: What is the purpose of lines 73 – 80?

A3: They allow access to the <mark>"apache server status"</mark> only to IP addressed in the LAN (Local Area Network (starting with 10., 192 or 172). Alternatively it excludes Internet access to the apache server status,

Q4: What is the purpose of line 9?

A4: It turns on "persistent connections"

Q5: What is the purpose of lines 20, 21 and 22?

A5: They specify a specific page to return in case of status indicators: 403, 404, and 500

CSS QUESTIONS [16 POINTS]

Below are lines extracted from the CSS style sheet of microsoft.com and bing.com. For each line answer the question. Each question is worth 4 points.

Q1. Give an HTML example usage of the declaration below:

```
#sh_rdiv a {position:relative;
float:left;display:block;
text-decoration:none;cursor:default;outline:none}
```

A1.

```
<div ID="sw_rdiv>
        <a href="http://www.hello.com">My link</a>
</div>
```

Q2. What does this declaration do?

```
.hpVpv_Tile_home_theme a,.hpVpv_TilePanel {
background-color:#0072bc; border-color:#fff; color:#fff;
font-family:Segoe UI Light,SegoeUI,Tahoma,Arial,Verdana,sans-serif}
```

A2. Changes the background-color, border color, foreground color, and font-family of a class named `hpVpv_TilePanel` and the A (Anchor) tag INSIDE any **tag with class name** `hpVpv_Tile_home_theme`

Q3. Give two (2) HTML examples of usage of the declaration from Q2:

A3.

```
<div class="hpVpv_TilePanel"> </div>

<div class="hpVpv_Tile_home_theme">
      <a href="http://www.hell.com">My link</a>some text
</div>
```

Q4. Write in the CSS to create a "class" named hidden **that changes the CSS properties** display **to none,** height **to 0,** width **to zero and** overflow **to hidden.**

A4.

```
.hidden {display:none; height:0; width:0; overflow:hidden}
```

LYNDA.COM QUESTIONS [4 POINTS]

Each Question is worth 2 points.

Q1: What are `.reverse()`, `.join()` and `.sort()`, methods of?

A1: methods of JavaScript arrays

Q2: During a 3-way handshake, what is the likely reason of no response?

A2: A firewall