Computer Science 571 Exam #1
Prof. Papa
Friday, October 9, 2015, 5:30pm – 6:50pm

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>

PHP Questions [20 pts]

Each question is worth 2 points.

Q1: Which of the following is true in PHP?

A1:
[ ] PHP is strictly typed
[ ] Function names are case-sensitive
[ ] Identifiers can contain spaces.
[X] Local variables are restricted to a function or class
[ ] Variable names begin with a dollar sign ($) followed by underscore (_)
[ ] ALL OF THE ABOVE
[ ] NONE OF THE ABOVE

Q2: What is the meaning of the PHP_SELF variable?

A2: A variable that returns the current script being executed, including its name and path

Q3: Consider the PHP code snippet:

```php
<?php
$foo = 25;                    // Numerical variable
$bar = "Hello";               // String variable
$bar = ($foo * 7) + $bar;     //valid or invalid expression?
?>
```

Is the expression on the third line of the script valid or invalid?

A3: **valid**

Q4: Consider this PHP code snippet:

```php
<?php
$foo = 25;
$bar = "Hello";      // String variable

echo $foo,$bar;
echo "5x5=",$foo;
```

What is the output produced? Indicate any space with an underscore _

A4:
25Hello   (no spaces)
5x5=25   (no spaces)

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

A5: **$_GET['myName']**

Q6: What are the 3 ways to get data from users on the Web?

A6:
URLs / Links
Forms
Cookies
Sessions

Q7: Where does PHP put all of the query parameters that were sent with the URL?

A7: PHP puts them into an associative array. That array is what is called a Super global variable.

Q8: What is an example of a PHP Super global variable?

A8: $_GET, $_POST, $_COOKIE, $_SESSION

Q9: What is the difference between PHP urlencode and rawurlencode?

A9: in urlencode, spaces become "+, in rawurlencode, spaces become "%20"

Q10: Which parts of the URL would you use urlencode and which rawurlencode?

A10: urlencode for path, rawurlencode for query string

JAVASCRIPT REGULAR EXPRESSIONS QUESTIONS [10 PTS]

JavaScript 1.5 introduced a new notation for Regular Expressions using the the ?=. notation.

Q1 (8 pts). Please write a regular expression that restricts a password to at least one number, one lowercase and one uppercase letter and at least 8 characters that are letters, numbers or the underscore.

A1. `/^(?=.*\d)(?=.*[a-z])(?=.*[A-Z])\w{8,}$/;`

`(last semicolon not required)`

Note: there is NO partial credit provided for this question.

Q2 (2 pts). What additional attributes are introduced in HTML5 for the form input fields to make it easier to demand and match the input?

A2. REQUIRED and PATTERN

HTML5, DOM & ADVANCED JAVASCRIPT QUESTIONS [10 PTS]

Each question is worth 2 points.

Q1: The purpose of the HTML5 placeholder attribute is:

[X] … to be a short hint to the user about what kind of input a form field is expecting.
[ ] .. to replace a proper label for the form field
[ ] Both of the above

Q2: Give an example of a field where the HTML5 autocomplete attribute should

be "off".

A2: The account number in a banking website

Q3: What is the purpose of the HTML5 autofocus attribute?

A3: The autofocus attribute indicates to the browser that the control it's applied to should receive the focus when the page loads.

Q4: List 3 DOM APIs that can be used in more modern browsers to get an Element:

A4: any 3 of

a) getElementById
b) getElementsByTagName
c) getElementsByClassName
d) querySelector

Q5: What does it mean that the JavaScript language is functionally scoped?

A5: It means that any variables created inside a function are only available inside that function and not visible outside.

HTTP QUESTIONS [17 PTS]

Below is the web page www.bloomberg.com. Following that is part of the exchange of messages between the browser and the server, obtained by running Live HTTP Headers. Answer the questions that follow. Each question is worth 1 point.
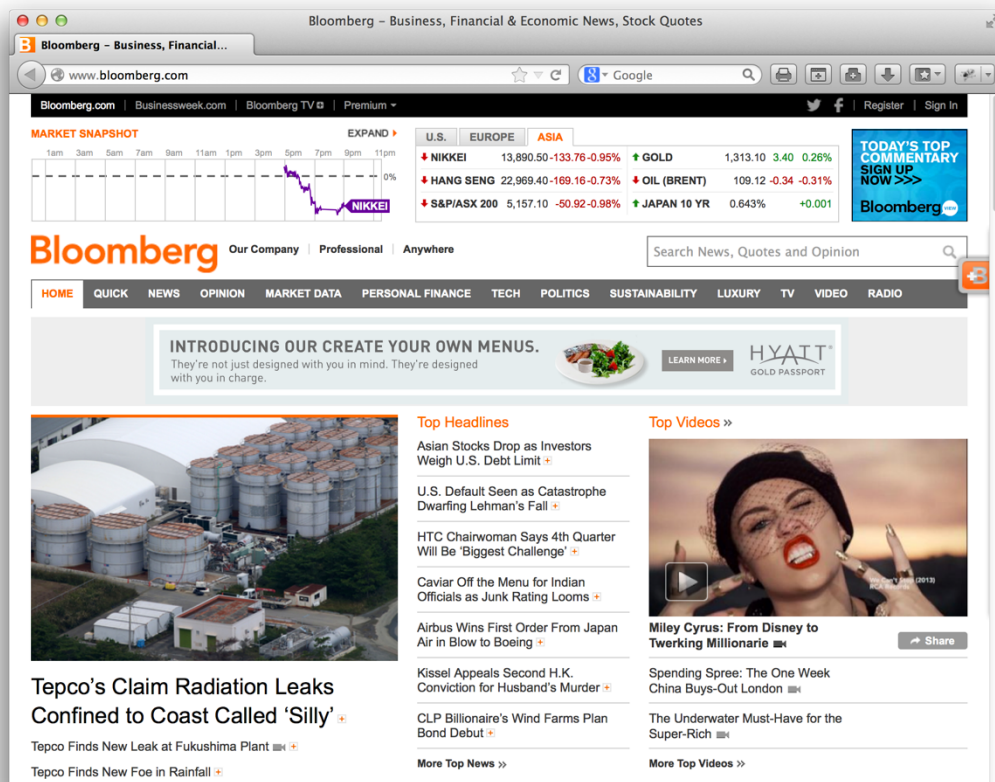
```
----------------------------------------------------------
 (1) http://bloomberg.com/

GET / HTTP/1.1
Host: bloomberg.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
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
DNT: 1
Connection: keep-alive

HTTP/1.1 301 Moved Permanently
Date: Mon, 07 Oct 2013 04:26:05 GMT
Server: Apache
Location: http://www.bloomberg.com/
Content-Type: text/html; charset=iso-8859-1
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 193
Keep-Alive: timeout=5, max=500
Connection: Keep-Alive
----------------------------------------------------------
(2) http://www.bloomberg.com/

GET / HTTP/1.1
```

```
Host: www.bloomberg.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
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
DNT: 1
Connection: keep-alive

HTTP/1.1 200 OK
Status: 200 OK
Content-Type: text/html; charset=utf-8
X-Runtime: 9
Etag: "427fcf8f86c48aee41969a854ac93363"
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 38719
Cache-Control: private, max-age=51
Date: Mon, 07 Oct 2013 04:26:06 GMT
Connection: keep-alive
------------------------------------------------------------
(3) http://cdn.gotraffic.net/v/20131004_173359/stylesheets/main-min-v3_1.css

GET /v/20131004_173359/stylesheets/main-min-v3_1.css HTTP/1.1
Host: cdn.gotraffic.net
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
Accept: text/css,*/*;q=0.1
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Connection: keep-alive

HTTP/1.1 200 OK
Server: Sun-Java-System-Web-Server/7.0
Vary: Accept-Encoding
Expires: Sat, 04 Oct 2014 22:03:51 GMT
Cache-Control: public,max-age=31536000
Content-Type: text/css
Last-Modified: Fri, 04 Oct 2013 22:01:42 GMT
Etag: W/"3346d-524f3ac6"
Content-Encoding: gzip
Content-Length: 38110
Date: Mon, 07 Oct 2013 04:26:06 GMT
Connection: keep-alive
------------------------------------------------------------
(4) http://www.bloomberg.com/rapi/js_config.js

GET /rapi/js_config.js HTTP/1.1
Host: www.bloomberg.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Connection: keep-alive
```

```
HTTP/1.1 200 OK
Status: 200 OK
X-Runtime: 24
Content-Type: text/javascript; charset=utf-8
Etag: "c74967659d54746bf8b22eb67163134b"
Vary: Accept-Encoding
Content-Encoding: gzip
Content-Length: 1439
Cache-Control: private, max-age=16
Date: Mon, 07 Oct 2013 04:26:06 GMT
Connection: keep-alive
----------------------------------------------------------
(5) http://www.bloomberg.com/favicon.ico

GET /favicon.ico HTTP/1.1
Host: www.bloomberg.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
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
DNT: 1
Connection: keep-alive

HTTP/1.1 200 OK
Server: Sun-Java-System-Web-Server/7.0
Vary: Accept-Encoding
Content-Type: image/x-icon
Last-Modified: Tue, 24 May 2011 23:03:08 GMT
Etag: W/"47e-4ddc392c"
Content-Encoding: gzip
Content-Length: 316
Cache-Control: max-age=161638
Expires: Wed, 09 Oct 2013 01:20:04 GMT
Date: Mon, 07 Oct 2013 04:26:06 GMT
Connection: keep-alive
----------------------------------------------------------
(6)
http://cdn.gotraffic.net/custom_contents/7bef4987c4e3a931110ba89e93b609a1.jpg

GET /custom_contents/7bef4987c4e3a931110ba89e93b609a1.jpg HTTP/1.1
Host: cdn.gotraffic.net
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
Accept: image/png,image/*;q=0.8,*/*;q=0.5
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Connection: keep-alive

HTTP/1.1 200 OK
Server: Sun-Java-System-Web-Server/7.0
Expires: Thu, 02 Oct 2014 11:02:14 GMT
Cache-Control: public,max-age=31536000
Content-Type: image/jpeg
Last-Modified: Wed, 02 Oct 2013 11:01:33 GMT
```

```
Content-Length: 10373
Etag: "2885-524bfd0d"
Accept-Ranges: bytes
Date: Mon, 07 Oct 2013 04:26:06 GMT
Connection: keep-alive
-----------------------------------------------------------
(7) http://www.google-
analytics.com/__utm.gif?utmwv=5.4.5&utms=1&utmn=2013761266&utmhn=www.bloomber
g.com&utme=8(recommendation_cookie*name*4!markets_video_tab_test*tv_reco)9(t2
bb03*blp.home%3Aindex*4!follow*qt)11(1*4!1*1)&utmcs=UTF-
8&utmsr=1440x900&utmvp=1425x735&utmsc=24-bit&utmul=en-
us&utmje=1&utmfl=11.8%20r800&utmdt=Bloomberg%20-
%20Business%2C%20Financial%20%26%20Economic%20News%2C%20Stock%20Quotes&utmhid
=1044610829&utmr=-&utmp=%2F&utmht=1381119968678&utmac=UA-11413116-
1&utmcc=__utma%3D30057196.1607550793.1381119969.1381119969.1381119969.1%3B%2B
__utmz%3D30057196.1381119969.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmc
md%3D(none)%3B&utmu=qQAAAAAAAAAAAAAAAQ~

GET
/__utm.gif?utmwv=5.4.5&utms=1&utmn=2013761266&utmhn=www.bloomberg.com&utme=8(
recommendation_cookie*name*4!markets_video_tab_test*tv_reco)9(t2bb03*blp.home
%3Aindex*4!follow*qt)11(1*4!1*1)&utmcs=UTF-
8&utmsr=1440x900&utmvp=1425x735&utmsc=24-bit&utmul=en-
us&utmje=1&utmfl=11.8%20r800&utmdt=Bloomberg%20-
%20Business%2C%20Financial%20%26%20Economic%20News%2C%20Stock%20Quotes&utmhid
=1044610829&utmr=-&utmp=%2F&utmht=1381119968678&utmac=UA-11413116-
1&utmcc=__utma%3D30057196.1607550793.1381119969.1381119969.1381119969.1%3B%2B
__utmz%3D30057196.1381119969.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmc
md%3D(none)%3B&utmu=qQAAAAAAAAAAAAAAAQ~ HTTP/1.1
Host: www.google-analytics.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
Accept: image/png,image/*;q=0.8,*/*;q=0.5
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Connection: keep-alive

HTTP/1.1 200 OK
Pragma: no-cache
Expires: Wed, 19 Apr 2000 11:43:00 GMT
Last-Modified: Wed, 21 Jan 2004 19:51:30 GMT
X-Content-Type-Options: nosniff
Content-Type: image/gif
Date: Thu, 26 Sep 2013 23:07:09 GMT
Server: Golfe2
Content-Length: 35
Cache-Control: private, no-cache, no-cache=Set-Cookie, proxy-revalidate
Age: 883139
Alternate-Protocol: 80:quic
-----------------------------------------------------------
(8) http://www.google.com/pagead/drt/ui

GET /pagead/drt/ui HTTP/1.1
Host: www.google.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:21.0)
Gecko/20100101 Firefox/21.0
```

```
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
DNT: 1
Connection: keep-alive

HTTP/1.1 302 Found
Location:
https://accounts.google.com/ServiceLogin?service=doritos&passive=true&go=true
Cache-Control: private
X-Frame-Options: ALLOWALL
Content-Type: text/html; charset=UTF-8
X-Content-Type-Options: nosniff
Date: Mon, 07 Oct 2013 04:26:09 GMT
Server: safe
Content-Length: 407
X-XSS-Protection: 1; mode=block
Alternate-Protocol: 80:quic
----------------------------------------------------------
(9) TRANSACTION OMITTED INTENTIONALLY
----------------------------------------------------------
```

Q1: What would be the GET request following transaction #8?

A1: GET /ServiceLogin?service=doritos&passive=true&go=true HTTP/1.1

Q2: How big is the HTML of the Bloomberg's home page?

A2: 38719 bytes

Q3: How many redirects are listed and what are those transactions?

A3: 2 redirects, #1 and #8

Q4: Why are transactions (3) and (4) responding with an Etag?

A4: Because CSS and JavaScript can be cached by the browser

Q5: Of the servers listed, which are compressing their responses?

A5: Apache, Sun-Java-System-Web-Server/7.0

Q6: What content is Google Analytics responding with?

A6: A 35-byte GIF image – OR – AN IMAGE

Q7: Why is the content returned by transaction (6) not compressed?

A7: Because JPG images should not be compressed, as they already are.

Q8: What is the purpose of transaction (5)?

A8: Provide an icon to be used on the left side of the address field in a browser.

Q9: What content distribution network is Bloomberg using?

A9: GoTraffic.net

Q10: What character sets are used in these transactions?

A10: iso-8859-1, utf-8

These are additional HTTP and Web Server questions. Each is worth 1 point.

Q11: Normal TCP traffic begins with what?

A11: A 3-way handshake. The SYN packet synchronizes the sequence numbers

Q12. What does HTTP use as a transport layer protocol?

A12: TCP

Q13. What layer is HTTP?

A13: Application layer

Q14: What does it mean that HTTP is a stateless protocol?

A15: It means the web server maintains no information about past client requests.

Q15: For each HTTP Status codes, indicate each type.

A15:

2xx: **Success**
3xx: **Redirection**
4xx: **Client Error**
5xx: **Server Error**

Q16: What are three uses of Apache log files?

a) finding problem with a site (broken links)
b) analyze traffic patterns
c) detecting malicious activity

Q17: What are the two different methodologies to analyze web server traffic patterns"

a) use web server logs
b) use Google Analytics

JAVASCRIPT QUESTIONS [20 PTS]

Consider the following XML file whose name is airbus.xml:

```
<?xml version = "1.0"?>
<catalog>
    <title>Airbus Aircrafts</title>
    <aircraft>
       <Airbus>A380</Airbus>
       <seats>555</seats>
       <Range>15000km </Range>
       <Wingspan>79.80m</Wingspan>
       <Length>73.00m</Length>
       <Height>24.10m</Height>
       <Image>http://www-scf.usc.edu/~csci571/A380.jpg</Image>
    </aircraft>
    <aircraft>
       <Airbus>A330/A340</Airbus>
       <seats>380</seats>
       <Range>14600km</Range>
       <Wingspan>63.45m</Wingspan>
       <Length>75.30m</Length>
       <Height>17.30m</Height>
       <Image>http://www-scf.usc.edu/~csci571/A340.jpg</Image>
    </aircraft>
</catalog>
```

Complete the JavaScript code snippet below that produces the following output.
The JavaScript code should be dynamic and work with similar XML files which
follow the same XML Schema.

Completing the code is worth 10 points.

```
A380
555
A330/A340
380
```

One of many solutions:

```html
<html>
<head><title>Airbus</title></head>
<body>

<script type="text/javascript">
var xmlhttp = new XMLHttpRequest();
xmlhttp.open("GET","airbus.xml",false);
xmlhttp.send();
xmlDoc=xmlhttp.responseXML;

planes=xmlDoc.getElementsByTagName("aircraft");
planeNodeList=planes.item(0).childNodes;

ELEMENT_NODE = 1;     // MS parser doesn't define Node.ELEMENT_NODE

for(i=0;i<planes.length;i++)
{
    planeNodeList=planes.item(i).childNodes;
    for(j=0;j<planeNodeList.length;j++)
    {
        if(planeNodeList.item(j).nodeType==ELEMENT_NODE)
        {
            if(planeNodeList.item(j).nodeName=="Airbus")
            {
                document.write(planeNodeList.item(j).firstChild.nodeValue +
"<BR />");
            }
            else if(planeNodeList.item(j).nodeName=="seats")
            {
                document.write(planeNodeList.item(j).firstChild.nodeValue +
"<BR />");
            }
        }
    }
}
</script>
</body>
</html>
```

The following questions are worth 2 points each.

Q1: Which of the following JavaScript statements is syntactically correct?

[ ] var multipleValues = [ ];

[ ] var multipleValues = new Array();

[ ] var multipleValues = Array();

[ ] var multipleValues = Array(5);

[X] All of the above

Q2: Since arrays in JavaScript are objects what do they have?

A2: properties and methods

Q3: What are reverse(), join() and sort() in JavaScript?

A3: Methods of the array object

Q4: Consider the following JavaScript statement:

var myLinks = getElementsByTagName ("a");

What is the data type of the result?

A4: an array

Q5: Consider the following JavaScript statements:

```
var foo = 5;
var bar = "5";
console.log(foo + bar);
var bar = "b";
console.log(foo * bar);
```

A5: What will be output to the console?

55

CSS QUESTIONS [20 PTS]

Below are lines extracted from the CSS sheet of espn.com. For each line answer the question. Each question is worth 2 points.

Q1: What does this declaration do?

```
.logo-nba-large {
    background-image:
url(http://a4.espncdn.com/prod/assets/teamlogos/nba/logo-nba-teams-
large-vert.png);
    background-position: -100px 0;
    background-repeat: no-repeat
}
```

A1: Creates a generic CSS class named logo—nba-large that sets a background image and its position, and does not repeat it.

Q2: Give an HTM example usage of the declaration below:

```
body.page2 #header h1.phrase {
    position: absolute;
    top: 36px;
    left: 189px;
    font: 12px Helvetica, Arial, sans-serif;
    color: #fee399;
    padding: 2px;
    padding-right: 10px;
    width: 470px
}
```

A2:

```
<body class=page2>
    <div id=header>
        <H1 class=phrase>
        This is my phrase
        </H1>
    </div>
</body>
```

Q3: Give an HTM example usage of the declaration below:

```
#header div.insider-logo a {
    display: block;
    height: 25px;
    position: relative !important
}
```

A3:

```
<H1 id=header>
     <div class=insider-logo>
          <a href=http://www.myco.com>
     </div>
</H1>
```

Q4: Give an HTM example usage of the declaration below:

```
.article p {
    margin-bottom: 10px;
    line-height: 17px;
    color: #333
}
```

A4:

```
<div class=article>
     <p>this is an article</p>
</div>
```

Q5: Write the CSS to create a "class" named "photo-enlarge" that applies only to the "BODY" element and a generic "id" name "header", in such a way that when an "anchor" is inside an element with id=header, which in an HTML file with BODY with class=photo-enlarge, the following settings are modified as such:

```
    float: right;
    color: #FFF;
    font-size: 10px;
    font-family: Verdana, Arial, Helvetica, sans-serif;
    padding-right: 14px;
    margin: 8px 10px
```

A5:

```
body.photo-enlarge #header a {
```

```
    float: right;
    color: #FFF;
    font-size: 10px;
    font-family: Verdana, Arial, Helvetica, sans-serif;
padding-right: 14px;
    margin: 8px 10px
}
```

These are additional multiple-choice CSS questions, each worth 2 points.

Q6: What are Pros of CSS Frameworks?

[X] Can save considerable times when designing sites
[X] Create cross-browser compliant code
[X] Have built-in grids to speed up layout development
[ ] Create non-consistent code-base for teams
[ ] All of the above

Q7: What are Cons of CSS Frameworks?

[X] Have lots of code that will not be used.
[X] Every page needs to include Framework's CSS
[ ] Do not rely much on classes
[X] Class structure is non-semantic
[ ] All of the above

Q8: What other CSS Frameworks considerations are true?

[ ] Frameworks are easy to update
[ ] Frameworks are easy to debug
[X] Adding functionality can be time consuming
[X] Time is need to mastering them
[X] They are a great way to learn CSS techniques
[ ] All of the above

Q9: What are frameworks that are currently popular and recommended?

[X] blueprint
[X] 52 framework
[X] 960 grids
[ ] YUI

[X] Bootstrap
[X] css-boilerplate
[X] Baseline
[ ] All of the above

Q10: Where are CSS Operators found in?

A10: In CSS Pre-processors

XML QUESTIONS [3 PTS]

Each question is worth 1 point.

Q1: What are advantages of XML?

[X] XML keeps content separate from presentation
[ ] XML is not hard to read
[X] XML is an open format
[X] XML can be used on both client and server
[X] XML has widespread support in multiple languages and runtime
[ ] Image data types are represented well
[ ] All of the above

Q2: Select all valid XML tag names

[X] <_Element1>
[ ] <1Tag>
[X] <My.Element>
[ ] <#Elem&ent>
[X] <My-Element_Name]
[ ] <XmL>

Q3. What are two ways to add "validity" to XML documents?

A3: Document Type Definitions (DTD) and XML Schemas