

**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”. There is no partial credit for a partial answer.

**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.
- ☒ 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
$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
$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:

☒ ... 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

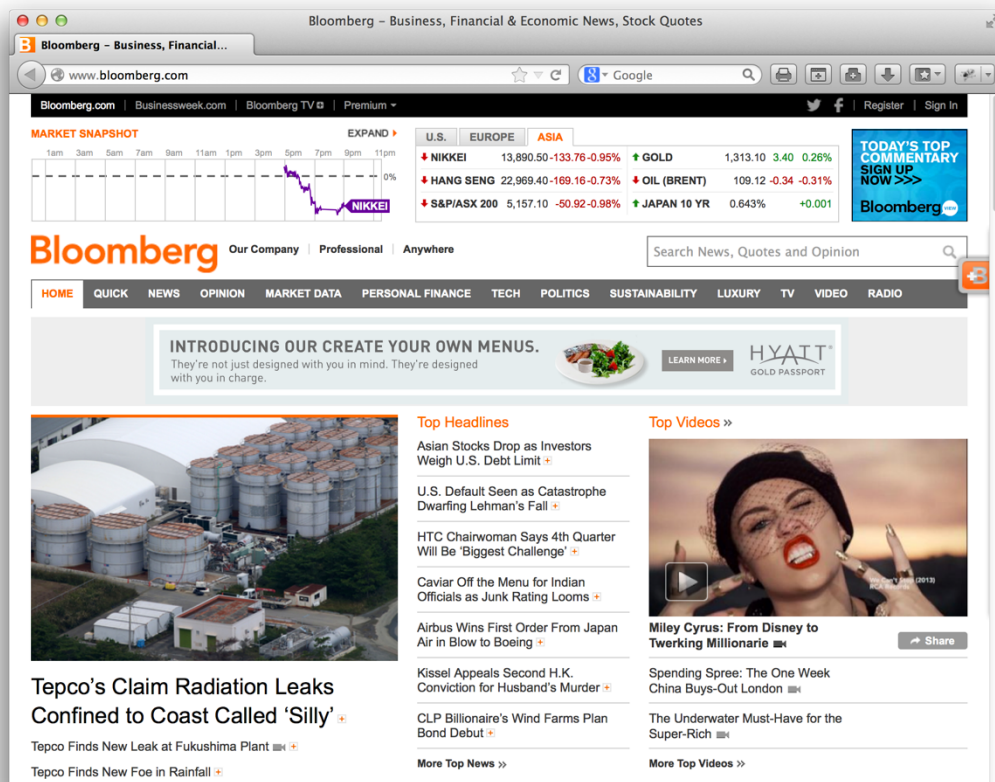
- a) getElementById
- b) getElementsByTagName
- c) getElementsByClassName
- d) querySelector

**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](http://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.gottraffic.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.gottraffic.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.gottraffic.net/custom\\_contents/7bef4987c4e3a931110ba89e93b609a1.jpg](http://cdn.gottraffic.net/custom_contents/7bef4987c4e3a931110ba89e93b609a1.jpg)

GET /custom\_contents/7bef4987c4e3a931110ba89e93b609a1.jpg HTTP/1.1  
Host: cdn.gottraffic.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.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&utmssc=24-bit&utmml=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&utmhc=UA-11413116-1&utmcc=\_\_utma%3D30057196.1607550793.1381119969.1381119969.1381119969.1%3B%2B\_\_utmz%3D30057196.1381119969.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&utmu=qQAAAAAAAAAAAAAAAAAQ~

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&utmssc=24-bit&utmml=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&utmhc=UA-11413116-1&utmcc=\_\_utma%3D30057196.1607550793.1381119969.1381119969.1381119969.1%3B%2B\_\_utmz%3D30057196.1381119969.1.1.utmcsr%3D(direct)%7Cutmccn%3D(direct)%7Cutmcmd%3D(none)%3B&utmu=qQAAAAAAAAAAAAAAAAAQ~ 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>  
<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);`

☒ 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**

NaN

## 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 HTML 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 HTML 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?

- ☒ Can save considerable times when designing sites
- ☒ Create cross-browser compliant code
- ☒ 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?

- ☒ Have lots of code that will not be used.
- ☒ Every page needs to include Framework's CSS
- ☐ Do not rely much on classes
- ☒ 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
- ☒ Adding functionality can be time consuming
- ☒ Time is need to mastering them
- ☒ They are a great way to learn CSS techniques
- ☐ All of the above

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

- ☒ blueprint
- ☒ 52 framework
- ☒ 960 grids
- ☐ YUI



- ☒ Bootstrap
- ☒ css-boilerplate
- ☒ 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?

- ☒ XML keeps content separate from presentation
- ☐ XML is not hard to read
- ☒ XML is an open format
- ☒ XML can be used on both client and server
- ☒ 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

- ☒ <\_Element1>
- ☐ <1Tag>
- ☒ <My.Element>
- ☐ <#Elem&ent>
- ☒ <My-Element\_Name]
- ☐ <XmL>

**Q3:** What are two ways to add “validity” to XML documents?

**A3:** Document Type Definitions (DTD) and XML Schemas