Computer Science 571 MidTerm
Prof. Horowitz
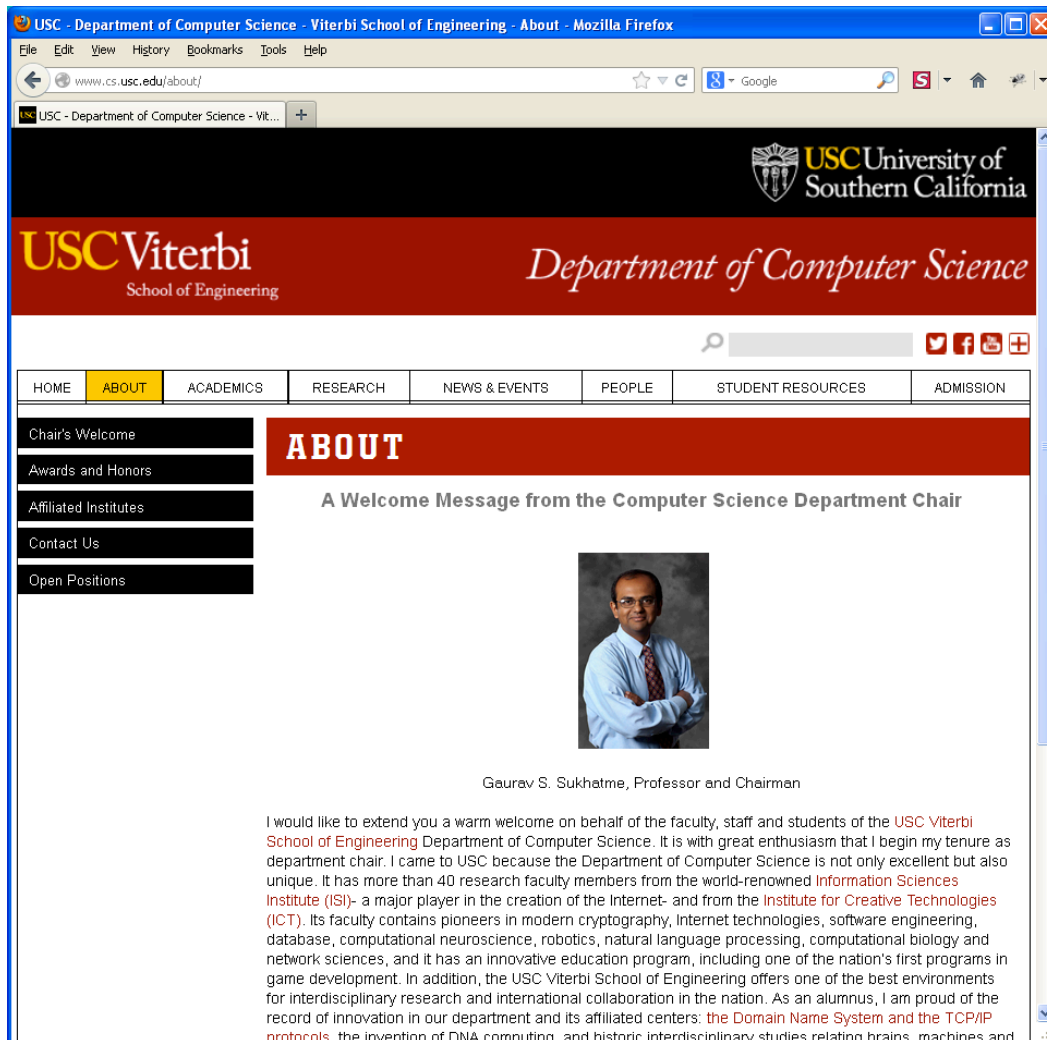
Thursday, February 28, 2013, 9:30am – 10:45am

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

General Questions [30 pts]

Snapshot of Computer Science Dept About Page

Below is the source code (slightly edited), that produced the page above. Some lines are longer than the width of the page. Please answer all of the questions that follow the source code.

```
<!doctype html>
<html lang="en-US">
<head>
<meta charset="utf-8"/>
<title> USC -  Department of Computer Science - Viterbi School of Engineering - About
</title>
<link rel="icon" href="/favicon.ico" type="image/x-icon" />
<link rel="stylesheet" href="/css/screena.css?v=1" media="screen">
<!--[if lte IE 7]><link rel="stylesheet" href="/css/ie7.css?v=1"
media="screen"/><![endif]-->
<link rel="stylesheet" href="/css/print.css?v=1" media="print">
<script type="text/javascript">
// <![CDATA[
var themeRootDirectory = "";
// ]]>
</script>
<script
src="http://ajax.googleapis.com/ajax/libs/jquery/1.7.2/jquery.min.js"></script>
<script>window.jQuery || document.write('<script
src="/scripts/jquery1.7.2.js"><\\/script>')</script>
<script src="/scripts/common.js"></script>
<!--[if lte IE 6]>
<script src="/scripts/supersleight.js"></script>
<![endif]-->
</head>
<body id="page_about">
<div id="masthead"><div class="inner">
<a href="http://www.usc.edu" target="_blank" id="logo-usc" title="Click here to visit
the USC Web site [External]"><img src="/images/logo-usc.png" width="216" height="51"
alt="Logo: University of Southern California"/></a>
</div></div><!-- Ends: #MASTHEAD/.INNER -->
<div id="header">
<div class="viterbi-logo">
<div style="background:#900">
<div id="viterbi-logo"><a href="http://viterbi.usc.edu/" id="logo-viterbi"
title="Click here to return to the Viterbi homepage"><img src="/images/logo-
viterbi.png" alt="Logo: The USC Andrew and Erna Viterbi School of Engineering"/></a>
<a href="/" id="logo-dept" title="Return to homepage"><img src="/images/logo-dept.png"
alt="Homepage"/></a></div>
</div>
<div id="search-social">
<ul id="social">
  <li><a href="http://twitter.com/USCViterbi" target="_blank" class="icon icon-
twitter" title="Click here to follow us on Twitter
[External]">Twitter<span> </span></a></li>
  <li><a href="http://www.facebook.com/USCViterbi" class="icon icon-facebook"
target="_blank" title="Click here to friend us on Facebook
[External]">Facebook<span> </span></a></li>
  <li><a href="http://www.youtube.com/user/USCViterbi" class="icon icon-youtube"
target="_blank" title="Click here to view our YouTube videos
[External]">YouTube<span> </span></a></li>
  <li><a href="http://www.viterbi.usc.edu/about/social-media.htm" class="icon icon-
plus" title="Click here to view our Social Media page">Social
Media<span> </span></a></li>
    </ul>
```

```html
<form action="/search/" method="get">
        <fieldset>
   <legend>Please enter your search term and submit the form</legend>
   <input type="hidden" name="hq" value="site:cs.usc.edu" />
   <input type="image" src="/images/btn-search.png" class="submit"/>
   <input type="text" class="input" id="header_search_input" name="q"/>
 </fieldset>
</form>
<br class="clear" />
</div>
    <table id="nav">
    <tr> <td><a href="/"><span>Home</span></a></td>
            <td class="on"><a href="/about/" class="on"><span>About</span></a></td>
            <td><a href="/academics/"><span>Academics</span></a></td>
            <td><a href="/research/"><span>Research</span></a></td>
            <td><a href="/news/"><span>News & Events</span></a></td>
            <td><a href="/faculty_staff/"><span>People</span></a></td>
            <td><a href="/students/"><span>Student Resources</span></a></td>
            <td><a href="/admission/"><span>Admission</span></a></td>
                            </tr>
</table><!-- Ends: #NAV --></div></div><!-- Ends: #HEADER/.INNER -->
<div id="container"><div class="inner">
    <div class="layout-2col clearfix">
        <div class="col col1">
           <ul id="subnav">
<ul id="subnav">
<li class=""><a href="/about/">Chair's Welcome</a></li>
                    <ul id="subnav">
 <li class=""><a href="/about/awardsandhonors.htm">Awards and Honors</a>
</li>
 <ul id="subnav">
 <li class=""><a href="/about/affiliatedinstitutes.htm">Affiliated Institutes</a>
 </li>
 <ul id="subnav">
 <li class=""><a href="/about/contact.htm">Contact Us</a>
 </li>
 <ul id="subnav">
 <li class=" last"><a href="/about/jobs/">Open Positions</a>
</li>
           </ul><!-- subnav -->
        </div><!-- Ends: .COL1 -->
        <div class="col col2">
            <div id="page-title">
    <h1>About</h1>
</div><!-- Ends: #PAGE-TITLE -->
            <div class="contentDetail layout-1col-wide clearfix">
    <div class="col main">
        <div class="contentDetail"><h4 style="text-align: center;">A Welcome Message
from the Computer Science Department Chair</h4>
<p> </p>
<p style="text-align: center;"> <img width="100" height="150"
src="/assets/001/82640.jpg" alt="" /></p>
<p style="line-height: 15px; text-align: center;"><span style="font-family: 'Microsoft
Sans Serif', Arial, Helvetica, Verdana; line-height: normal; background-color:
rgb(255, 255, 255);">Gaurav S. Sukhatme, Professor and Chairman<br />
</span></p>
<p style="line-height: 15px;"><span style="line-height: 15px;">I would like to extend
you a warm welcome on behalf of the faculty, staff and students of the </span><a
href="http://viterbi.usc.edu/" style="line-height: 15px;" target="_blank"
class="linkInText">USC Viterbi School of Engineering</a><span style="line-height:
15px;"> Department of Computer Science. It is with great enthusiasm that I begin
my tenure as department chair. I came to USC because the Department of Computer
```

Science is not only excellent but also unique. It has more than 40 research faculty members from the world-renowned Information Sciences Institute (ISI)- a major player in the creation of the Internet- and from the Institute for Creative Technologies (ICT). Its faculty contains pioneers in modern cryptography, Internet technologies, software engineering, database, computational neuroscience, robotics, natural language processing, computational biology and network sciences, and it has an innovative education program, including one of the nation’s first programs in game development. In addition, the USC Viterbi School of Engineering offers one of the best environments for interdisciplinary research and international collaboration in the nation. As an alumnus, I am proud of the record of innovation in our department and its affiliated centers: the Domain Name System and the TCP/IP protocols, the invention of DNA computing, and historic interdisciplinary studies relating brains, machines and mathematics. A former student wrote one of the first computer viruses and led the theoretical study of the computer virus concept. I am equally proud of the accomplishments of our current faculty, including path-setting results in social networks, software engineering, high-performance computing, natural language technologies, and the recent Academy Award winning work in computer graphics. Their profound and diverse research and educational contributions to a wide array of computer science and interdisciplinary arenas are impressive. I hope you will continue to follow our progress.</p>
<p style="line-height: 15px; text-align: justify;" class="text">You can also find detailed information about all of our degree options, courses, faculty and research throughout this website. To prospective scholars and prospective students, I hope you consider joining us. To all our students, we in the Computer Science Department look forward to working with you to make your USC Viterbi School education a success.</p></div>   </div>
</div><!-- Ends: .LAYOUT-1COL-WIDE -->
        </div><!-- Ends: .COL2 -->
        <br class="clear"/>
    </div><!-- Ends: .CONTENT -->
</div></div><!-- Ends: #CONTAINER/.INNER -->
<div id="footer"><div class="inner">
    <ul id="footernav">
            <li class="end">University of Southern California - Department of Computer Science - Viterbi School of Engineering
    <!--// ENDS: #FOOTERNAV -->
</div></div><!-- Ends: #FOOTER/.INNER -->
<script>
var _gaq=[['_setAccount','UA-7307942-21'],['_trackPageview']];
(function(d,t){var g=d.createElement(t),s=d.getElementsByTagName(t)[0];
g.src=('https:'==location.protocol?'//ssl':'//www')+'.google-analytics.com/ga.js';
s.parentNode.insertBefore(g,s)}(document,'script'));
</script>
</body>
</html>

For the questions below,
- if a link is clicked, please provide the complete URL which produces the resulting page.
- if a function is called, please name the function and its arguments

1. [3 pts] Which character set does the file conform to?

ANSWER: utf-8

2. [3 pts] what is the location (URL) of one of the stylesheets that is used for this file?

ANSWER: http://www.cs.usc.edu/css/screena.css?v=1, or http://www.cs.usc.edu/css/ie7.css?v=1, or http://www.cs.usc.edu/css/print.css?v=1

3. [3 pts] If someone bookmarks this page, what will be the name that they see when the bookmarks are displayed?

ANSWER: USC – Department of Computer Science – Viterbi School of Engineering - About

4. [3 pts] What is the purpose of the line
Var themeRootDirectory = "";

ANSWER: declares and initializes the variable themeRootDirectory to the null string.

5. [3 pts] Provide the complete URL for at least three (3) JavaScript files that are imported.

ANSWER:
http://www.cs.usc.edu/scripts/jquery1.7.2.js
http://www.cs.usc.edu/scripts/common.js
http://www.cs.usc.edu/scripts/supersleight.js

)

6. [3 pts] What is the font-family that is used to display the Chairman's name and title?

Answer: Microsoft San Serif, Arial, Helvetica, Verdana; though Microsoft San Serif is acceptable.

7. [3 pts] What is the effect of the attribute target = _blank in the link
<a href=http://www.usc.edu target="_blank" id="logo-usc">

ANSWER:
It opens the page at www.usc.edu in a new window

8. [3 pts] There is a text box in the upper right corner of the page. What URL is produced if a user enters the word "degree" (the quotes are not included) in the text box and clicks on the button?

ANSWER:
http://www.cs.usc.edu/search/?hq=site%3Acs.usc.edu&q=degree, or

http://www.cs.usc.edu/search/?hq=site:cs.usc.edu&q=degree

9. [3 pts] There is a picture of the Computer Science department chairman. What is the name of the image file?

ANSWER

8260.jpg
or
http://www.cs.usc.edu/assets/001/8260.jpg

10. [3 pts] At the bottom of the page there are some lines within a <script>…</script> element. ? In at most two (2) sentences describe what is happening.

```
<script>
var _gaq=[['_setAccount','UA-7307942-21'],['_trackPageview']];
(function(d,t){var g=d.createElement(t),s=d.getElementsByTagName(t)[0];
g.src=('https:'==location.protocol?'//ssl':'//www')+'.google-analytics.com/ga.js';
s.parentNode.insertBefore(g,s)}(document,'script'));
</script>
```

ANSWER: A script tag is being generated that imports a JavaScript file from google-analytics.com called ga.js. The file receives an account number, UA-7307942-21, and uses it to keep track of people who request this page.

HTTP [24 pts]
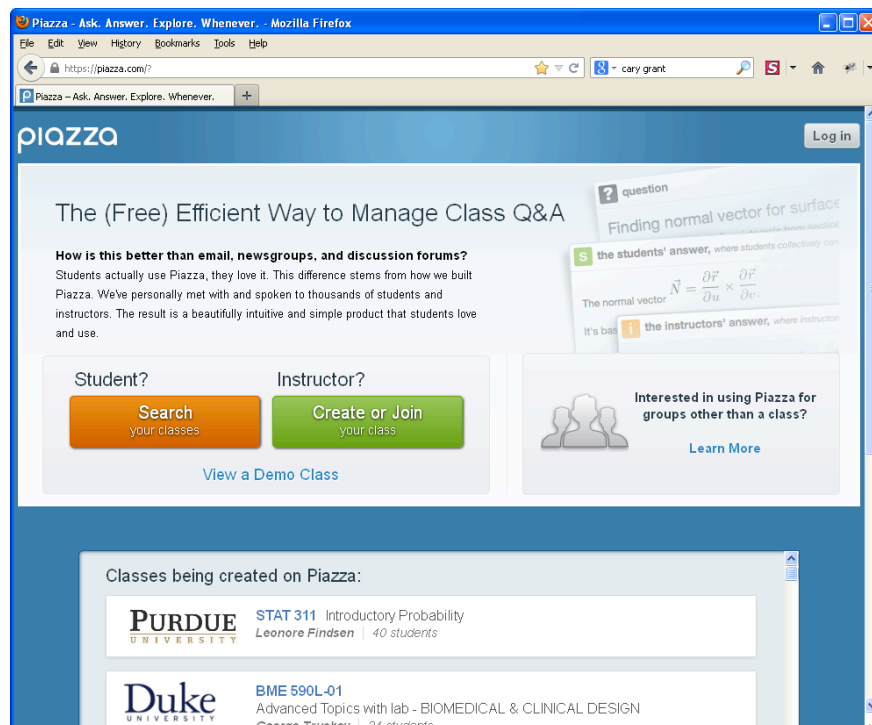
The picture above is a snapshot of the Piazza home page. Below, are the HTTP headers exchanged between the browser and Bing. The transactions have been edited, leaving only a few of the transactions.

```
--------------------------------------------------------------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 4 points.

11. [4 pts] How many web servers are involved in these HTTP transactions and what are their complete names?

Answer: Apache, nginx/1.2.1.1431, GFE/2.0

12. [4 pts] How many cookies are being set in these transactions and what are their names?

Answer: piazza_session

13. [4 pts] What is the name and version of the browser used in these transactions?

Answer: Firefox version 19.0.

14. [4 pts] What webkit is the browser using?

Answer: Gecko/20100101

15. [4 pts] Are any transactions returning compressed data? If so, which ones?

Answer: None

16. [4 pts] Transaction 2 returns "302 Found". What does that mean?

Answer: the browser must load a new page given by location = https://piazza.com/?

DOM QUESTIONs [20 PTS]

17. [10 points] Below is a simple XML file that defines a boxlist containing boxes of different sizes. 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 description.

Answer:

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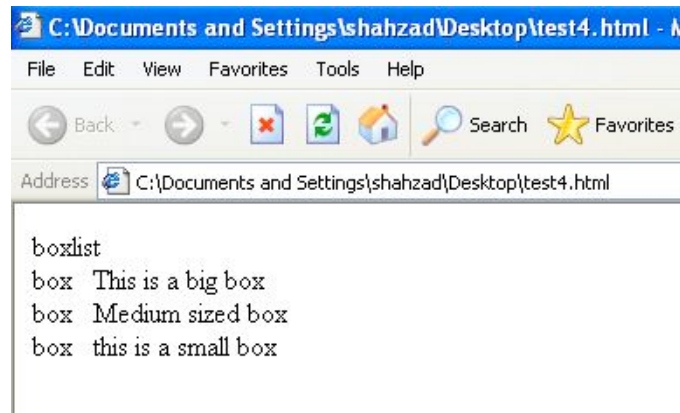   size (big|medium|small) #REQUIRED>

18. [10 pts] DOM Example.

Write a program that could be included in a web page, and executed in the browser. The program reads an xml file, boxes.xml, containing an xml file in the format defined above. Your program will use the DOM parser contained in the Internet Explorer browser to traverse the file and print out the names of the root and its children, and the text associated with each child tag, in any order. The code below will help you get started:

```
<html>
<head></head>
<body>
<script type="text/javascript">
  if (document.implementation && document.implementation.createDocument)
  {
 var xmlDoc = document.implementation.createDocument("","doc",null);
 xmlDoc.async = false;
 loaded = xmlDoc.load("boxes.xml")
//Code to print the root

//code to print the root's children (box) and each node's associated text

</script></body></html>
```

Here is some sample output

```
boxlist
box   This is a big box
box   Medium sized box
box   this is a small box
```

Print the root

```
document.write(xmlDoc.documentElement.nodeName & "<br />")
```

Print the children

```
for each x in xmlDoc.documentElement.childNodes
  document.write(x.nodeName & "   ")
  document.write(x.childnodes(0).nodeValue & "<br />")

next
```

Regular Expressions [12 pts]

19. [4 pts] Consider the regular expression

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

In one sentence describe what the pattern checks for:

Answer:

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.

20. [4 pts] Given the two JavaScript lines below, what is displayed in the alert box?

```
var email = "richard@example.com";
alert(email.replace(/([a-z\d_-]+)@([a-z\d_-]+)\.[a-z]{2,4}/ig, "$2, $1"));
```
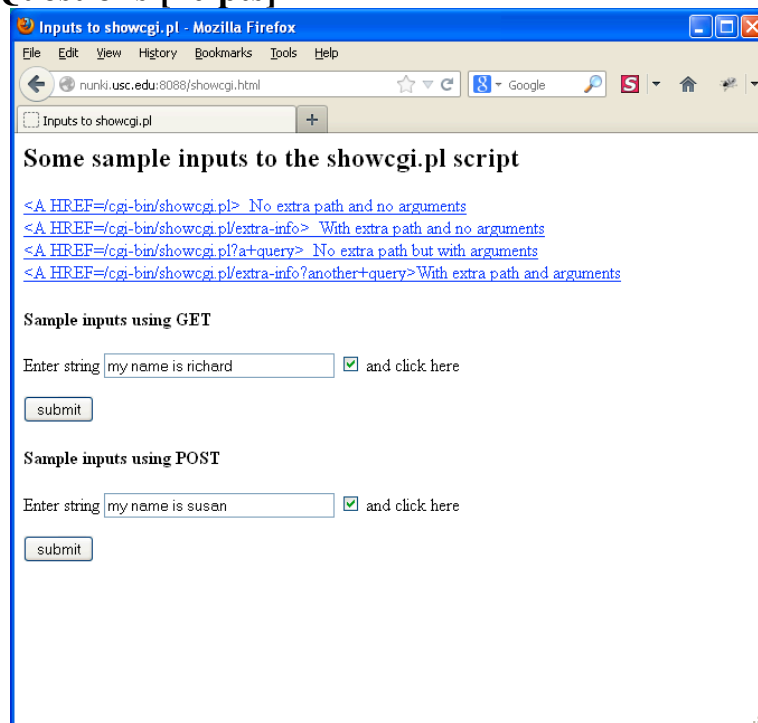
21. [4 pts] What does the following pattern match?

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

Answer:
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.

CGI and Perl Questions [10 pts]

The above web page is showing 4 links and two forms, the first form uses GET and the second form uses POST. The two text boxes have been filled in and the two checkboxes are both selected. All of the links and the ACTION attribute for both forms executes showcgi.pl. Answer the questions about about the output of showcgi.pl

22. [2 pts] When the first link is clicked, what is the value of SERVER_NAME and SERVER_PORT?

Answer:
SERVER_NAME = nunki.usc.edu
SERVER_PORT = 8088

23. [2 pts] When the second link is clicked what environment variable has a different value than it had when the first link was clicked?

Answer:
PATH_INFO

24. [2 pts] When the third link is clicked what environment variable now is assigned a value that did not have one before and what is its value?

Answer:
QUERY_STRING = a+query

25. [2 pts] When the submit button for the GET form is clicked, what will be the value of QUERY_STRING?
Answer:
QUERY_STRING = string=my+name+is+richard&checkbox=on

26. [2 pts] When the submit button for the POST form is clicked, what will be the value of QUERY_STRING?

Answer:
QUERY_STRING =
(answer can be blank, null string or null or anything else that means empty)

Web Server Questions [4 pts]

An E-tag is part of the HTTP protocol. Answer the following questions:

27. [2 points] Who creates the E-tag, web browser or web server?

Answer:
Web Server

28. [2 points] Is the E-tag the same for all web servers? Yes or no?

Answer: NO