ANSWER KEY
Final Examination
CIS 228: The Internet
Prof. St. John
Lehman College
City University of New York
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1. True or False:

   (a) F In HTML, every element has an opening and closing tag.

   (b) F You can only use words, not images, as the label for a link.

   (c) F "`http://google.com`" is an example of a relative path.

   (d) T Attributes describe properties of an element.

   (e) F In HTML, you can only use JPEG and GIF as image file formats.

   (f) F Strict HTML requires the use of <br /> instead of

   (g) T In HTML, you can have tables nested inside tables.

   (h) T In JavaScript, loops can be nested inside loops.

   (i) F The regular expression /\d(5)/ matches the form of US phone numbers.

   (j) T JavaScript functions cannot call other functions.

2. Answer in two sentences or less the following:

   (a) What is an event in JavaScript? Give an example.

   ```
   Events are notifications that let you know when something of interest
   has occurred.  For example, when the page is loaded, an ''onload''
   event is triggered.
   ```

   (b) What triggers events (i.e. where do events come from)? Give an example.

   ```
   Although events are initiated by a user, they ultimately come from
   the browser.  For example, a ''key press'' is an event triggered
   by the user but the browser must package up the information about
   the event and then pass it along to a function that has been designated
   to respond to the event.
   ```

3. Fill in the following table with the corresponding decimal or hexcode representation of the number. For partial credit, show your work.

Decimal	Hexcode
11	#B
17	#11
33	21
58	#4a
255	#ff

$\#11 = 10 \cdot 16 + 1 = 16 + 1 = 17$

$33 \div 16 = 2$ `remainder` 1

$\#4a = 4 \cdot 16 + \#a = 48 + 10 = 58$

$\#ff = \#f \cdot 16 + \#f = 16 \cdot 15 + 15 = 240 + 15 = 255$

4. (a) What does the following JavaScript code do? Write the **ending** value for each variable in the box below. (Show your work for partial credit.)

```
var lehman, citi, goldman, jp=100;

lehman = jp-jp;
goldman = 2*jp;
citi = goldman/jp;
goldman--;
```

lehman	citi	goldman	jp
0	2	199	100

(b) What does the following JavaScript code do?

```
var count;

for (count = 5; count > 0; count--)
{
    alert(count);
}
alert{"Blast off!");
```

It displays 5, 4, 3, 2, 1 in separate alert boxes, followed by a alert
box with ''Blast off!.''

5. Fill in the following Javascript **functions** that will do the following:

(a) Displays the message to the user:

```
function displayMessage(message)
{

alert(message);

}
```

(b) Take as input a number, `digit`, and return true if `digit` is less than 16, otherwise return false:

```
function test{digit)
{

if ( digit < 16)
    return(true);
else
    return(false);

}
```

(c) Takes as input a number, **count**, and displays "bye" that many times:

```
function sayBye{count)
{

  var i;

  for (i=0; i < count; i++) {
      alert("bye");
  }

}
```

6. Be the browser with the following HTML files (note that the CSS is in-line). On the following page of the exam, draw the page and indicate any style (color, borders, etc) on your page:
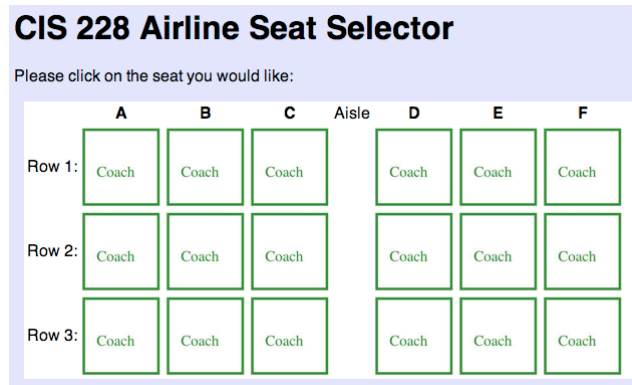
```
<html>
<head>
<style>
    body {
        font-family: sans-serif;
        background-color: #ddddff;
    }
    #airplane {
        background-color: #ffffff;
        margin: 10px;
        text-align: center;
    }
</style>
<script>
var seats = new Array;
function initializeSeats() {
    var max = 18, i;
    for (i = 1; i <= max; i++) {
        seats[i] = "empty";
        document.getElementById("seat"+i).src = "coach.jpg";
        document.getElementById("seat"+i).alt = "Coach seat";}
}
function seatSelect(i) {
    if (seats[i] == "empty") {
        document.getElementById("seat"+i).src = "full.jpg";
        document.getElementById("seat"+i).alt = "Seat taken";
        seats[i] = "taken";
    }
    else {
        alert("That seat is not available."); }
}
</script>
</head>
<body onload = "initializeSeats()">
    <h1>CIS 228 Airline Seat Selector</h1>
    <p>Please click on the seat you would like:</p>
    <div id="airplane">
    <table>
     <tr><td></td><th>A</th><th>B</th><th>C</th><td>Aisle</td><th>D</th><th>E</th><th>F</th></tr>
     <tr>
       <td>Row 1:</td>
       <td><img id="seat1" src="" alt="" height="80" onclick="seatSelect(1)"></td>
       <td><img id="seat2" src="" alt="" height="80" onclick="seatSelect(2)"></td>
       <td><img id="seat3" src="" alt="" height="80" onclick="seatSelect(3)"></td>
```

```
      <td></td>
      <td><img id="seat4" src="" alt="" height="80" onclick="seatSelect(4)"></td>
      <td><img id="seat5" src="" alt="" height="80" onclick="seatSelect(5)"></td>
      <td><img id="seat6" src="" alt="" height="80" onclick="seatSelect(6)"></td>
    </tr>
    <tr>
      <td>Row 2:</td>
      <td><img id="seat7" src="" alt="" height="80" onclick="seatSelect(7)"></td>
      <td><img id="seat8" src="" alt="" height="80" onclick="seatSelect(8)"></td>
      <td><img id="seat9" src="" alt="" height="80" onclick="seatSelect(9)"></td>
      <td></td>
      <td><img id="seat10" src="" alt="" height="80" onclick="seatSelect(10)"></td>
      <td><img id="seat11" src="" alt="" height="80" onclick="seatSelect(11)"></td>
      <td><img id="seat12" src="" alt="" height="80" onclick="seatSelect(12)"></td>
    </tr>
    <tr>
      <td>Row 3:</td>
      <td><img id="seat13" src="" alt="" height="80" onclick="seatSelect(13)"></td>
      <td><img id="seat14" src="" alt="" height="80" onclick="seatSelect(14)"></td>
      <td><img id="seat15" src="" alt="" height="80" onclick="seatSelect(15)"></td>
      <td></td>
      <td><img id="seat16" src="" alt="" height="80" onclick="seatSelect(16)"></td>
      <td><img id="seat17" src="" alt="" height="80" onclick="seatSelect(17)"></td>
      <td><img id="seat18" src="" alt="" height="80" onclick="seatSelect(18)"></td>
    </tr>
  </table>
</div>
</body>
</html>
```
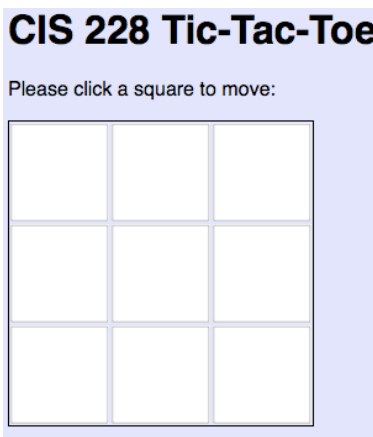
CIS 228 Airline Seat Selector

Please click on the seat you would like:

	A	B	C	Aisle	D	E	F
Row 1:	Coach	Coach	Coach		Coach	Coach	Coach
Row 2:	Coach	Coach	Coach		Coach	Coach	Coach
Row 3:	Coach	Coach	Coach		Coach	Coach	Coach

7. Write the HTML **and** CSS to make the following table:

CIS 228 Tic-Tac-Toe

Please click a square to move:

(Hint: the elements of the table are images, called `empty.jpg`. Use a `<div>` to style the "tic-tac-toe board" a different color from the background.)

```
<html>
<head>
```

```html
<style>
body {
font-family: sans-serif;
background-color: #ddddff;
}
#airplane {
background-color: #ffffff;
margin: 10px;
text-align: center;
}
</style>

<!--Script section not needed to answer this problem, so left off.-->

</head>

<body onload = "initializeSeats()">
<h1>CIS 228 Airline Seat Selector</h1>
<p>
Please click on the seat you would like:
</p>
<div id="airplane">
<table>
<tr>
<td></td><th>A</th><th>B</th><th>C</th><td>Aisle</td><th>D</th><th>E</th><th>F</th>
</tr>
<tr>
<td>Row 1:</td>
<td><img id="seat1" src="empty.jpg"></td>
<td><img id="seat2" src="empty.jpg"></td>
<td><img id="seat3" src="empty.jpg"></td>
<td></td>
<td><img id="seat4" src="empty.jpg"></td>
<td><img id="seat5" src="empty.jpg"></td>
<td><img id="seat6" src="empty.jpg"></td>
</tr>
<tr>
<td>Row 2:</td>
<td><img id="seat7"></td>
<td><img id="seat8" src="empty.jpg"></td>
<td><img id="seat9" src="empty.jpg"></td>
<td></td>
<td><img id="seat10" src="empty.jpg"></td>
<td><img id="seat11" src="empty.jpg"></td>
<td><img id="seat12" src="empty.jpg"></td>
</tr>
```

```
<tr>
<td>Row 3:</td>
<td><img id="seat13" src="empty.jpg"></td>
<td><img id="seat14" src="empty.jpg"></td>
<td><img id="seat15" src="empty.jpg"></td>
<td></td>
<td><img id="seat16" src="empty.jpg"></td>
<td><img id="seat17" src="empty.jpg"></td>
<td><img id="seat18"src="empty.jpg"></td>
</tr>
</table>
</div>
</body>
</html>
```

8. Write the style sheet, `lounge.css`, that will arrange the following page:
the fonts should be small and sans serif, the headings should be aqua blue with
the `h1` at 150% and `h2` at 130%, and the paragraph `guarantee` should have serif
fonts, a white dashed border, background color aqua-blue, and a background im-
age in the upper left corner (path for the image is "`images/background.gif`".
Further, the elixir menu (contained in a `div`) should be displayed as a sidebar
menu on the upper right hand side of the page.

(Hint: Do not change any of the HTML code.)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1" />
    <title>Head First Lounge</title>
    <link type="text/css" rel="stylesheet" href="lounge.css" media="screen" />
  </head>
  <body>
    <p><img src="images/logo.gif" alt="Head First Lounge" /></p>
    <h1>Welcome to the Head First Lounge</h1>
     <div  id="elixir">
    <h2>Weekly Elixir Specials</h2>
    <p>
      <img src="images/yellow.gif" alt="Lemon Breeze Elixir" />
    </p>
    <h3>Lemon Breeze</h3>
    <p>
      The ultimate healthy drink, this elixir combines
      herbal botanicals, minerals, and vitamins with
      a twist of lemon into a smooth citrus wonder
      that will keep your immune system going all
      day and all night.
    </p>
    <p>
      <img src="images/chai.gif" alt="Chai Chiller Elixir" />
    </p>
    <h3>Chai Chiller</h3>
    <p>
      Not your traditional chai, this elixir mixes mat&eacute;
      with chai spices and adds an extra chocolate kick for
      a caffeinated taste sensation on ice.
    </p>
    <p>
      <img src="images/black.gif" alt="Black Brain Brew Elixir" />
    </p>
    <h3>Black Brain Brew</h3>
    <p>
      Want to boost your memory?  Try our Black Brain Brew
      elixir, made with black oolong tea and just a touch
      of espresso.  Your brain will thank you for the boost.
    </p>
  </div>
    <p>
      The Head First Lounge is, no doubt, the biggest trendsetter in Webville.
    </p>
    <p>
```

```
     During your stay at the lounge, you'll enjoy a smooth mixture of
     ambient and mystic sounds, filling the lounge and adding an extra dimension
     to your dining experience.
   </p>
   <p id="guarantee">
     Our guarantee: at the lounge, we're committed to providing you,
     our guest, with an exceptional experience every time you visit.
     Whether you're just stopping by to check in on email over an
     elixir, or are here for an out-of-the-ordinary dinner, you'll
     find our knowledgeable service staff pay attention to every detail.
     If you're not fully satisfied, have a Blueberry Bliss Elixir on us.
   </p>
   <p>
     But that's not all; at night, join us in the backroom as our resident
     DJ spins a choice selection of trance and drum&amp;bass beats across
     our spacious tiki-themed dance floor.
   </p>
   <p>
     Now that you've experienced the lounge <em>virtually</em>, isn't
     it time to check us out <em>for real</em>? We're located right
     in the heart of Webville, and we've created some
     <a href="about/directions.html"
        title="Detailed Directions to the Lounge">detailed directions</a>
     to get you here in record time. No reservations necessary;
     come and join us anytime.
   </p>
   <p>&copy; 2005, Head First Lounge</p>
  </body>
</html>
```

Answer:

```css
body {
  font-size:             small;
  font-family:           Verdana, Helvetica, Arial, sans-serif;
  line-height:           1.6em;
}
h1, h2 {
  color:                 #007e7e;
}
h1 {
  font-size:             150%;
}
h2 {
  font-size:             130%;
}
#guarantee {
  font-family:           Georgia, "Times New Roman", Times, serif;
  color:                 #444444;
  border-color:          white;
  border-width:          1px;
  border-style:          dashed;
  background-color:      #a7cece;
  padding:               25px;
  padding-left:          80px;
  margin:                30px;
  margin-right:          250px;
  background-image:      url(images/background.gif);
  background-repeat:     no-repeat;
  background-position: top left;
}
```

9. Create a form for ordering ice cream from 228 Ice Cream Shop. Your form should have the following choices (the name used by the web application is included in `typewriter font`):

- choice of cone (plain, sugar, chocolate): `cone`,
- ice cream (chocolate, vanilla, coffee, cookie dough): `iceCream`,
- extras (sprinkles, chocolate sauce, caramel sauce): `extras[]`,
- name: `name`,
- a text area for comments and special instructions: `comments`

For the first two, you should allow only one answer (ie radio buttons or pull-down menu), while for extras, multiple answers are expected (i.e. checkboxes).

The web application for processing the form is located at:
`http://comet.lehman.cuny.edu/stjohn/icecream.php`

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en">
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1" />
    <title>The 228 Ice Cream Shop</title>
  </head>
  <body>

    <h1>The 228 Ice Cream Shop</h1>
    <h2>Fill out the form below and click "order now" to order</h2>

    <form id="beanform"
        action="http://comet.lehman.cuny.edu/stjohn/icecream.php" method="post">
      <table>
        <tr>
          <th>Choose your cone:</th>
          <td>
            <select name="cone">
              <option value="plain">Plain</option>
              <option value="sugar">Sugar</option>
              <option value="chocolate">Chocolate</option>
            </select>
          </td>
        </tr>
        <tr>
          <th>Ice Cream:</th>
          <td>
            <input type="radio" name="iceCream" value="chocolate"
                id="chocolate" />
            Chocolate
            <br />
```

```html
              <input type="radio" name="iceCream" value="vanilla"
                  id="vanilla" />
              Vanilla
              <br />
              <input type="radio" name="iceCream" value="coffee"
                  id="coffee" />
              Coffee
              <br />
              <input type="radio" name="iceCream" value="cookieDough"
                   id="cookieDough" />
              Cookie Dough
              <br />
            </td>
          </tr>
    <tr>
            <th>Extras:</th>
            <td>
              <input type="checkbox" name="extras[]" value="sprinkles" id="sprinkles"
              Sprinkles
              <br />
              <input type="checkbox" name="extras[]" value="chocSauce" id="chocSauce"
              Chocolate Sauce
              <br />
              <input type="checkbox" name="extras[]" value="carSauce" id="carSauce"
              Caramel Sauce
            </td>
          </tr>
          <tr>
            <th>Name:</th>
              <td>
               Name:
               <input type="text" name="name" id="name" value="" />
               </td>
           </tr>
           <tr>
             <th>Customer Comments:</th>
             <td>
               <textarea name="comments" id="comments" rows="10" cols="48">
               </textarea>
             </td>
           </tr>
           <tr>
      <th></th>
             <td>
               <input type="submit" value="Order Now" />
             </td>
           </tr>
```

```
          </table>
        </form>
    </body>
</html>
```

10. Write a **complete** HTML file with JavaScript that squares a number:

- The webpage displays an image of your favorite pet or destination.
- When the page is loaded, greet the user:
  "Welcome! Click on image for squaring:"
- When the image is clicked, ask the user to enter a number and then display the square of the number.

```html
<html>
  <head>
    <title>iRock - The Virtual Pet Rock</title>
    <script type="text/javascript">
      function touchRock() {
        var userNum = prompt("What is your number?", "Enter  number here.");
        if (userNum) {
          alert("Here's your number:  " + userNum*userNum + ".");
          document.getElementById("rockImg").src = "rock_happy.png";
        }
      }
    </script>
  </head>

  <body onload="alert('Hello, I am your pet rock.');">
    <div style="margin-top:100px; text-align:center">
      <img id="rockImg" src="rock.png" alt="iRock"onclick="touchRock();" />
    </div>
  </body>
</html>
```