CSE 190 M, Summer 2010
Final Exam

Name: _____

Quiz Section: _____ **TA:** _____

Student ID #: _____

Rules:

- You have **110 minutes** to complete this exam.
  You may receive a deduction if you keep working after the instructor calls for papers.
- This test is open-book/notes. You may use any paper resources <u>other than practice exams</u>.
- You may *not* use any computing devices, including calculators, cell phones, or music players.
- Unless otherwise indicated, your code will be graded on proper behavior/output, not on style.
- Please do not abbreviate code, such as writing ditto marks ("") or dot-dot-dot marks (...).
- If you enter the room, you must turn in an exam and will not be permitted to leave without doing so.
- You must show your **Student ID** to a TA or instructor for your submitted exam to be accepted.

Good luck! You can do it!

Problem	Description	Earned	Max
1	HTML/CSS Tracing		15
2	HTML/CSS Coding		15
3	PHP		20
4	JavaScript/DOM		20
5	Ajax/XML		15
6	SQL		15
X	Extra Credit		1
TOTAL	**Total Points**		**100**

1. **HTML/CSS Tracing**

   Draw a picture of how the following HTML and CSS code will look when the browser renders it on-screen. Assume that the HTML is wrapped in a valid full page with a `head` and `body`. Indicate a background coloring by shading lightly or by drawing repeated diagonal lines like this. If you can't clearly write *italic* text, circle it instead.

HTML:

```
<div id="b">
    <p>Hello</p>        <p>Goodbye</p>
</div>

<div id="a">
    <em>Happy</em>      <em>Sad</em>
</div>

<div class="a c"> Monday Tuesday Wednesday </div>
<div class="b">    Thursday Friday Saturday </div>

<div>
    <div id="d" class="c">
        <p><em>SUNDAY</em></p>
    </div>
</div>
```

CSS:

```
div { padding: 2em; }                .b { float: left; }
#a { border: 3px dashed black; }     .c, .b { border: 5px dotted red;
#b { background-color: yellow; }             margin: 1em; width: 5em; }
.c { float: right; }                 p em { text-decoration: underline; }
.d { font-weight: bold; }
```

2. HTML/CSS Coding

Write the HTML and CSS code necessary to recreate the following appearance on-screen.
No manual line breaks have been inserted into the text.

Most of the HTML code is given to you; the code given may not be modified. The only change you may make to the provided HTML code is that you may add any number of **div and span elements**, possibly with id and/or class attributes, as targets for CSS styling. Write **valid code** that would pass the W3C validators. Assume that the given HTML text would appear inside the body of the page.

- Text on the page uses a **sans-serif** font. The area around the outside of the page has a bluish color of **#0088EE**.

- The central content area has a **white background** and a **3px-thick solid** border using the color **#005588**. The content area is **centered** within the page and occupies **85%** of the page width.

- The list of links appears **without bullets** displayed all in **one line**, **centered** on the page. Each link's text is **bold**, and the link has **1em** of horizontal space between it and the other neighboring links.

- Each news story on the page has an image that **hovers** to the right of other content, which wraps around it as necessary. There is **1em** blank space around stories on all sides. No two stories should "collide" together; each story should be **large enough** on the page to fit its content.

Mark up the text on the next page with your div/span tags. If a tag can't fit in the space provided, write it in the margins and draw an arrow to where it should be inserted. Though 3 articles are shown above, your solution should work for any number of stories. (Don't rely on article-specific IDs or on there being exactly 3 of them.)

Write your answer on the next page.

2. HTML/CSS Coding (writing space)

Mark up the **HTML code** below.

```
<img src="brunologo.png" alt="logo" />



<ul id="links">
  <li><a href="home.html">HOME</a></li>
  <li><a href="vids/">VIDEOS</a></li>
  <li><a href="shirt.html">FUNNY SHIRTS</a></li>
  <li><a href="trailer.html">BRUNO MOVIE TRAILER</a></li>
  <li><a href="photos/">PHOTOS</a></li>
  <li><a href="http://dvdshop.com/">DVD SHOP</a></li>
</ul>



<img src="brunouniversal.jpg" alt="Bruno at Universal" />



<h2>Universal Responds to Lawsuit</h2>



<p>Movie studio Universal Pictures on Friday responded to a lawsuit filed...</p>



<img src="paulaabdul.jpg" alt="Paula Abdul" />



<h2>Paula Abdul Talks About Being in Bruno</h2>



<p>Paula Abdul accepted an invite last year to receive an award as ...</p>



<img src="eminem.jpg" alt="Eminem" />



<h2>Eminem Admits He Was Involved</h2>



<p>Three days after storming out of the MTV awards, Eminem admits to RapRadar...</p>
```

Write your **CSS code** here. Put your CSS in two columns if you need more writing space, and/or use scratch paper.

3. PHP

Suppose the following HTML form `girlscout.html` exists for ordering Girl Scout Cookies online:

```
<form action="cookies.php" method="post">
  <div><input id="input1" type="text" name="samoas" size="2" /> Samoas x $3.50</div>
  <div><input id="input2" type="text" name="thinmints" size="2" /> Thin Mints x $4.00</div>
  <div>Shipping: <br />
    <label><input id="input4" type="radio" name="shipping" value="regular" /> Regular ($7)</label> <br />
    <label><input id="input5" type="radio" name="shipping" value="express" /> Express ($9)</label></div>
  <div><label><input id="input3" type="checkbox" name="donation" /> Donate $5 extra?</label></div>
  <div><input id="input6" type="submit" value="Buy" /></div>
</form>
```

Your task is to write the **PHP code** that would be saved in `cookies.php` to process the cookie order form. You should display an **h1 heading** saying "Your order:" followed by **pictures** of the cookie boxes the user has ordered. The user can order two kinds of cookies: Samoas and Thin Mints. You should display the image `samoas.jpg` once for each box of Samoas ordered, and display `thinmints.jpg` once for each box of Thin Mints ordered.

Your code should also compute the **total cost** of the order. Each box of Samoas costs $3.50 and each box of Thin Mints costs $4.00. There is a **shipping cost** added to the order, which costs either $7.00 for regular shipping or $9.00 for express shipping. The user can optionally choose to check a box to make a $5.00 charitable **donation** with their order, which would be added to the order's total cost. If the donation box is checked, also print a "**Thank you** for your donation!" message at the bottom of your output.

The **screenshots** below show example values typed into the form, along with your page's resulting appearance:

`girlscout.html` appearance	Your `cookies.php` page's appearance

You **don't have to round** the order cost to 2 decimal places. Your code doesn't need to output a complete HTML page; assume that your output will be put inside the page's `body`. **Assume valid form input**; the user will always submit numeric non-negative values for the number of Samoas and Thin Mints, and one of the two shipping methods will always be chosen. You will receive a small deduction if you use `print` or `echo` statements in your solution.

3. **PHP (writing space)**

4. JavaScript/DOM

Write the **JavaScript code** to add behavior to the following page that has a user interface for entering grades on homework assignments. You will compute the percentage of points earned, with an optional **curve**. When "Compute!" is clicked, your JS code should use the values in the text boxes to compute the percentage (**rounded** to the nearest percent). If the "Curve +5" checkbox is checked, add **+5 percent** up to a **maximum of 100%** total.

You should insert the percentage into the page as a new `div` added to the end (bottom) of the existing page section with the `id` of `resultsarea`. If the overall percentage is **60% or more**, give your newly created `div` a CSS class of `pass`; otherwise give it a class of `fail`. Each time the user clicks "Compute!", you will insert such a new `div`; this means that several `div`s would be there after several clicks of "Compute!".

In the code shown there are 3 assignments, but your code should work for **any number of assignments** ≥ 1.

When **"Clear"** is clicked, all text in all of the input text boxes should be erased.

Assume valid input; that is, assume that when "Compute!" is clicked, the user will have already typed valid text into every box that can be interpreted as an integer. You may assume that **Prototype** is also included in the page.

HTML:

```
<h1>Grade Calculator</h1>

<div id="assignments">
  <div class="hw">
    HW1 <input class="earned" type="text" size="2" />
      / <input class="max" type="text" size="2" />
  </div>
  <div class="hw">
    HW2 <input class="earned" type="text" size="2" />
      / <input class="max" type="text" size="2" />
  </div>
  <div class="hw">
    HW3 <input class="earned" type="text" size="2" />
      / <input class="max" type="text" size="2" />
  </div>
  ...
</div>

<div>
  <label><input id="curve" type="checkbox" /> Curve +5 ?</label>
</div>

<div id="resultsarea">
  <button id="compute">Compute!</button>
  <button id="clear">Clear</button>

  <!-- your percentages should be inserted here -->
</div>
```

CSS:

```
.pass {
  background-color: #cfc;
  font-weight: bold;
}

.fail {
  background-color: #fcc;
  font-style: italic;
}
```

These screenshots show the initial state, and state after scores have been typed and "Compute!" has been clicked.
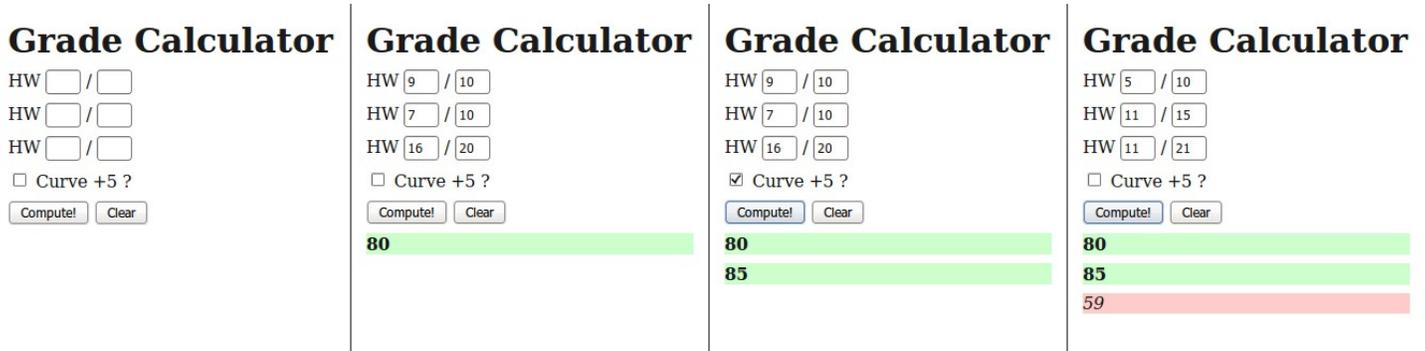
4. **JavaScript/DOM (writing space)**

5. **Ajax/XML**

Suppose that there is a web service named `weather.php`, located on your web server in the same directory as your code. This service outputs XML data describing daily high temperatures Fahrenheit for various US cities. In this problem you will write Ajax JavaScript code to contact the web service (using a GET request), examine its XML data, and display a series of images representing the weather for each city. This code should run when the web page loads.

The XML data returned by the web service consists of an overall document element called `temperatures` that contains a series of one or more `city` elements inside it. Each city element has a `name` attribute containing the city's name and contains a series of one or more `high` elements, each of which represents one day's high temperature. The format matches the following example (though it might have more/fewer than 2 cities at different times):

```
<?xml version="1.0" encoding="UTF-8"?>
<temperatures>
    <city name="Seattle">
        <high>70</high>
        <high>67</high>
        <high>63</high>
    </city>

    <city name="San Diego">
        <high>79</high>
        <high>73</high>
        <high>68</high>
        <high>72</high>
    </city>
    ...
</temperatures>
```

The relevant existing HTML in the page is the following:

```
<h1>Weather Forecast for US Cities</h1>
<ul id="forecast"></ul>
```

When the page loads, read the XML data with Ajax. Turn each city's data into a bullet in the `forecast` list. In each bullet, write the name of the city followed by a colon, and then an image for each day's data in the XML. If the day has a temperature of 70°F or higher, use the image of `warm.gif`. For temperatures of 69°F or lower, use `cold.gif`. Separate neighboring images by 10 pixels. For the example XML shown above, the page would look as follows:

You may assume that the XML data is valid in the format described previously, and that the .php service is reachable. You may also assume that **Prototype** is already linked to the page.

5. **Ajax/XML (writing space)**

6. SQL

Martin Scorsese has directed many movies, including Cape Fear, Casino, The Departed, Goodfellas, Raging Bull, and Taxi Driver. Scorsese is known for appearing as a character in his own films, in the background of a scene. Though he's known more as a director, he appears in our `imdb` database's table of actors due to appearances in his own films.

Write an SQL query to search the `imdb` database for all drama films (films with the "Drama" genre) that Martin Scorsese both directed *and* appeared in as an actor. For a movie to show in your results, Martin Scorsese must be that movie's director, and Martin Scorsese must also have played a character in that film. Show only the names of the movies, in **alphabetical order**. Each film should be listed only once. Recall the `imdb` database tables:

actors

id	first_name	last_name	gender
433259	William	Shatner	M
797926	Britney	Spears	F
831289	Sigourney	Weaver	F
...			

movies

id	name	year	rank
112290	Fight Club	1999	8.5
209658	Meet the Parents	2000	7
210511	Memento	2000	8.7
...			

roles

actor_id	movie_id	role
433259	313398	Capt. James T. Kirk
433259	407323	Sgt. T.J. Hooker
797926	342189	Herself
...		

directors

id	first_name	last_name
24758	David	Fincher
66965	Jay	Roach
72723	William	Shatner
...		

movies_directors

director_id	movie_id
24758	112290
66965	209658
72723	313398
...	

movies_genres

movie_id	genre
209658	Comedy
313398	Action
313398	Sci-Fi
...	

When run on the `imdb` database, your query would produce the following results:

```
+-------------------------------+
| name                          |
+-------------------------------+
| Age of Innocence, The         |
| Boxcar Bertha                 |
| Bringing Out the Dead         |
| Color of Money, The           |
| Gangs of New York             |
| King of Comedy, The           |
| Mean Streets                  |
| New York Stories              |
| Raging Bull                   |
| Taxi Driver                   |
| Who's That Knocking at My Door? |
+-------------------------------+
```

If you unnecessarily join too many tables together that are not needed for the query, you will not receive full credit.

X. Extra Credit

If you were an HTML tag, CSS property, or JavaScript object, which tag/property/object would you be and why?

(Any answer that reflects a coherent thought related to the question will get the +1 point.)