CSc 337 Midterm Examination Solutions
October 28, 2013

Problem 1: (10 points) (one point each)   <u>Mean: 7.4</u>

(a) HTML and CSS serve very different purposes. In a word or two, what's the purpose of each?

   HTML: Structure; CSS: Appearance

(b) In Chrome, what is the keystroke sequence that (1) brings up Chrome DevTools on your machine? (2) shows the HTML source for the current page?

   On my Mac it's (1) alt-cmd-I and (2) alt-cmd-U

(c) In the default stylesheet used by most browsers there's only one property that differs between `div` and `span` elements. What's that property?

   `display`

(d) What are the names of the five generic font families? (You may abbreviate greatly!)

   "s, ss, m, c, f" was good enough.

(e) What is meant by the CSS term "shorthand property"? Show a declaration that uses one.

   A single property that allows multiple property values to be set with a single declaration.
   Example: `padding: 1em`

(f) Write an HTML opening tag that shows an example of "visual markup" and explain what it means.

   See CSS slide 5.

(g) Label the dimensions in the following CSS code with the side that each dimension specifies:
   `margin: 1px 2px 3px 4px`
                  T   R   B   L

(h) Setting aside history, `whm` thinks it's pretty silly to have `h1`, `h2`, `h3`, ..., `h6` elements. What's an alternative to having six different elements?

   Have a single element and specify the level with an attribute.

(i) In what year did the HTML5 specification become a finalized W3C recommendation? (That is, when was it finally approved?)

   As HTML slide 9 shows, the markup language itself is still only a Candidate Recommendation; the slide following it shows that the whole HTML5 umbrella is quite a ways from being approved.

   Several students felt this question was unfair because the mid-term FAQ on Piazza clearly stated that you did not need to know any dates. I see a difference in knowing a date and knowing whether something has happened at all, and I think it's important to know that HTML5 is far from being a standard. If you disagree with my distinction, let's talk. But either way, you'll see this question again on the final exam!

(j) Name a person who did something notable related to the development of the Web and briefly describe what that

notable thing was.

Few students put forth anything pertinent but even "Al Gore invented the Internet." earned a point.

Problem 2: (6 points)   <u>Mean: 2.6</u>

The following HTML5 document does not validate. What errors does it have?

```
<!doctype html>
<title>x</title>
<p>
Testing <em>this <b>now!</em></b>
  <p>
  Paragraph 2
  </p>
</p>
<ul class=x>
      <ol>three
      <li>one
      <li>two
</ul>
```

There are three errors: (1) the `em` and `b` closing tags are mismatched. (2) Paragraphs don't nest; the second `<p>` tag acts to close the first paragraph. When the second `</p>` tag is reached, no paragraph is open. (3) An `<ol>` can't be a child of a `<ul>`, only an `<li>` can—that's a content model example that I've often cited. Each was worth two points apiece.

A fair number of students cited missing tags for `html`, `head`, and `body`. As demonstrated when we covered HTML slide 39, those tags are optional in the simple case, like the document above.   Take a look at http://www.w3.org/TR/html5/syntax.html#optional-tags. Experiment, too!   You'll see that closing tags for paragraphs, list items, and more are typically optional.

I personally prefer less visual clutter, so I take advantage of those rules on optional tags. However, you might find yourself working for an employer who requires closing tags, quotes on all attributes, and back-in parking only. If so, heed their rules!

For work in this class you may choose to always use closing tags and always quote attributes, and that's fine, but I do want you to understand what the HTML5 CR requires. Maybe you'll one day impress an interviewer with your HTML knowledge by showing them that other than a `doctype`, a `title` element is all you need!

Problem 3: (3 points)   <u>Mean: 2.3</u>

<u>*In one or two words*</u>, *what is an image characteristic that would make GIF be the best (or only) choice for the image's format?* <u>Animation</u>

Same question, but for PNG. <u>Variable transparency</u>

Same question, but for JPG. <u>Photograph</u>

Problem 4: (4 points)   <u>Mean: 2.1</u>

What's meant by the term "content model"? Write a short sentence that is an example of a content model specification.

An element's content model specifies what it can hold. Example: A paragraph can hold phrasing content.

What's meant by the term "content category"? Write a short sentence that is an example of a content category specification.

An element's content category characterizes it in some way. Example: A strong element is phrasing content.

Grocery store analogy: "Only foods are to be placed in a refrigerated case. Magazines are a non-food." The first sentence specifies content model; the second specifies content category.
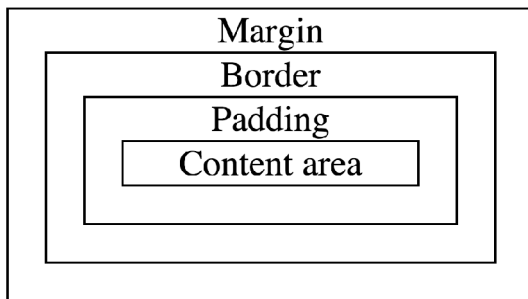
Problem 5: (3 points) Mean: 2.1

Write a CSS rule that makes text in paragraphs be red, then label the parts of the rule. Hint: You should have five labels.

See CSS slide 14.

Problem 6: (4 points) Mean: 3.8

Draw and label the elements of the CSS box model.

Problem 7: (6 points) Mean: 4.5

Describe in detail the visual effect of each of the following CSS declarations:

In short, all have no effect!

`color: "red"`
Ineffective because the CSS keyword `red` is quoted.

`font: "sans-serif"`
The `font` shorthand requires a font size to come first but, again, having a CSS keyword in quotes is a mistake.

`width: 300`
No units are specified.

Problem 8: (6 points) Mean: 3.9

Indicate whether each statement is true or false

__T__ *A* `span` *can have a* `background-image`.

__T__ *A paragraph can be a child of a* `div`.

__F__ *postion:static allows an element to be "pinned" to the screen, not moving when the user scrolls the wrindow.*
> (static is the default value; fixed produces the "pinned" effect.)

__T__ *There is a good reason to specify position:relative but with no accompanying offset properties like left or top.*
> (See CSS slide 142.)

__T__ *All HTML elements have the same set of CSS properties.*
> In retrospect I see this question is poorly worded. Elements have an element box. All element boxes have the same set of CSS properties. The values of those properties will differ but the set of properties does not.

__F__ *The specificity of p div a { ... } is 0,1,1,1.*
> The specificity is 0,0,0,3

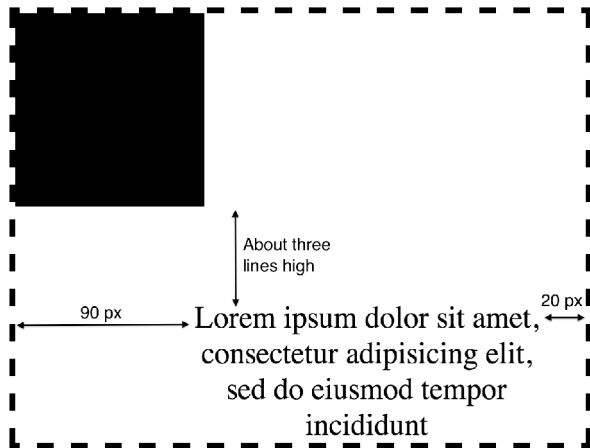## Problem 9: (10 points) <u>Mean: 9.5</u>

Write HTML and CSS that renders like the following. The lines are one pixel wide. There are two pixels between the inner and outer lines. The boxes should extend to the full width of the browser window. Don't write any of the <!doctype ...> *etc. boilerplate.*


```
<style>
    div {border:1px solid; padding: 2px}
</style>
<div>
  <div>
  ABC
  <span style="background-color:black; color:white">XYZ</span>
</div>
```

Problem 10: **(24 points)** **Mean: 21.1**

*Write HTML and CSS that renders like the following. The dashed line is three pixels wide. The black square is 100x100 pixels. Note the centering of the text. The entire figure should be restricted to the left half of the browser window. **Just write "Lorem..." for the text.** Don't write any of the `<!doctype ...>` etc. boilerplate. The lines with double-headed arrows are just to show dimensions—do not reproduce them or their associated measurements.*

About three
lines high

90 px

Lorem ipsum dolor sit amet,
consectetur adipisicing elit,
sed do eiusmod tempor
incididunt

20 px

```
<style>
    #outer {
        border:3px dashed;
        width: 50%
        }

    #bsq {
        width:100px;
        height:100px;
        background-color:black
        }

    #text {
        padding:3em 20px 0px 90px;
        text-align: center
        }
</style>
<div id=outer>
    <div id=bsq></div>
    <div id=text>
    Lorem...
    </div>
</div>
```

Problem 11: **(12 points)** **Mean: 8.8**

*Consider the page rendered below, and then answer **in english** the following questions:*

(a) *How might the picture in the upper right be made to appear there, with text flowing around it, and whitespace to the right of the picture? Also describe where it would appear in the markup with respect to the first sentence of the text.*

Float the picture's image right and give it a right margin; put it before the text.

(b) *How might the picture on the left made to appear there, which is about halfway through the text?*

Float the picture's image left and give it a left margin; put it about halfway through the text.

(c) *How might the roughly-centered thick black ring with white interior be produced?*

An 80 by 80 pixel div with 10px solid black border, white background, and border radius of 50 would produce the ring. Use relative positioning with maybe 45% top and left offset. Use relative positioning with no offset on the containing div.

Note: I wish I'd said in the problem, "that ring is not an image", but I didn't. If you used an image and lost

points, see me to get them back!

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Problem 12: (8 points)   Mean: 5.7

This problem is like `sequence.html` from assignment 2—you are to create a series of a CSS rules such that each rule is applied in turn to the markup below it has the effect, and only the effect, described in each of the steps.

```
<style>
/* Step 1: Turn all text in paragraphs red */
      p { color: red }

/* Step 2: Make "Second" be green */

      div div {  color: green }

/* Step 3: Underline only "test" in "Third test" */

      span.x { text-decoration: underline }

/* Step 4: Make "Fourth" blue but "Third test" still be red */

      p { color: blue }
      .x { color: red }

</style>
<div id=d1>
    First
    <div>Second</div>
    <p id=p1 class=x>
        <span>Third <span class=x>test</span></span>
    <p>
    Fourth
</div>
```

Problem 13: (4 points)   Mean: 3.1

Write an HTML fragment with text that will be turned red by the following rule.

```
p div #x { color: red }
```

It was not my intent to write an impossible problem here but I believe this problem as written is impossible—now that I think about it I can't think of a way to make a div a descendent of a paragraph. Sorry!

If you said it was impossible, that was good enough. If you didn't recognize that, you might have written something like this:

```
<p><div><div id=x>testing</div></div></div>
```

Same as previous but for this rule:

```
li > a.ext { color: red }

<ul><li><a class=ext>text</a></li></ul>
```

Extra Credit Section (½ point each unless otherwise noted) Mean: 0.9

(1) I've made the TAs learn all your names but let's see if you've learned theirs. What are the TA's names and which one has red hair? (one point!)

If you missed this one you better make it a point to get to know the TAs before the final!

(2) Who coined the term "hypertext"?

Many people said Tim Berners-Lee, but it was Ted Nelson, whose vision is Xanadu.

(3) What's a glyph?

Wikipedia says, "[An] element of writing: an individual mark on a written medium that contributes to the meaning of what is written.", but a wide range of answers was counted as correct.

(4) What are the names of the HTML elements represented by the <a> and <ul> tags, respectively?

Anchor and unordered list. For credit, both were required.

(5) What's the specificity of an inline style?

Its specificity is 1,0,0,0.

Statistics

Note that the mean for each problem is shown on the same line as the problem number. The overall mean is 77.9; the overall median is 80.5.

Here are all scores, in order:
```
94.5, 94.0, 92.5, 92.5, 89.0, 88.5, 88.0, 88.0, 87.5, 87.5, 86.0, 85.5,
85.5, 84.5, 84.5, 84.5, 84.5, 84.0, 83.5, 83.0, 83.0, 82.5, 82.5, 82.5,
82.5, 81.5, 81.0, 81.0, 80.5, 80.5, 80.5, 80.0, 79.5, 79.0, 78.5, 78.0,
77.9, 77.5, 77.5, 76.5, 75.5, 75.0, 74.0, 74.0, 73.0, 73.0, 72.5, 71.0,
71.0, 70.5, 69.5, 68.5, 68.0, 67.5, 67.5, 63.0, 60.5, 54.5, 51.5, 28.0
```