CSC435: Web Programming

Lecture 5: Page layout and CSS box model

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Activity Outline

- More on Class and IDs
- Precedence
- CSS Box model
- Quiz
- Exercise

Announcement

- Teaching Assistant: Jiachen Yao

- Office hour: Monday 12:30-2:30pm
- Location, TBA

Reading

- CSS Box Model

- https://developer.mozilla.org/en-US/docs/Learn/CSS/Styling_boxes/Box_model_recap

HTML id attribute

```
<p>Spatula City!  Spatula City!</p>
<p id="mission">Our mission is to provide the most
spectacular spatulas and splurge on our specials
until our
customers <q>esplode</q> with splendor!</p>
```

Spatula City! Spatula City!

Our mission is to provide the most spectacular spatulas and splurge on our specials until our customers “esplode” with splendor!

- allows you to give a unique ID to any element on a page
- each ID must be unique; can only be used once in the page

CSS ID selectors

```
#mission {
    font-style: italic;
    font-family: "Garamond", "Century Gothic", serif;
}
```
CSS

Spatula City! Spatula City!

Our mission is to provide the most spectacular spatulas and splurge on our specials until our customers "esplode" with splendor!

output

- applies style only to the paragraph that has the ID of `mission`
- element can be specified explicitly: `p#mission {`

The HTML class attribute

```
<p class="shout">Spatula City!  Spatula City!</p>
<p class="special">See our spectacular spatula specials!</p>
<p class="special">Today only: satisfaction guaranteed.</p>
```

Spatula City! Spatula City!

See our spectacular spatula specials!

Today only: satisfaction guaranteed.

- classes are a way to group some elements and give a style to only that group
("I don't want ALL paragraphs to be yellow, just these three...")

- unlike an `id`, a `class` can be reused as much as you like on the page

CSS class selectors

```
.special {                    /* any element with class="special" */
  font-weight: bold;
}
p.shout {                     /* only p elements with class="shout" */
  color: red;
  font-family: cursive;
}
```
CSS

Spatula City! Spatula City!

See our spectacular spatula specials!

Today only: satisfaction guaranteed.

output

- applies rule to any element with class `special`, or a `p` with class `shout`

Multiple classes

```
<h2 class="shout">Spatula City!  Spatula City!</h2>
<p class="special">See our spectacular spatula specials!</p>
<p class="special shout">Satisfaction guaranteed.</p>
<p class="shout">We'll beat any advertised price!</p>
```

Spatula City! Spatula City!

We'll beat any advertised price!

- an element can be a member of multiple classes (separated by spaces)

CSS for following examples

```
.special {
   background-color: yellow;
   font-weight: bold;
}
.shout {
   color: red;
   font-family: cursive;
}
```
CSS

Spatula City! Spatula City!

We'll beat any advertised price!

Precedence

- Browser default [lowest]
- External style sheet
- Internal style sheet
- Inline style [Highest]
  - *If a link to an external style sheet is placed after an internal style sheet, the external will take precedence!*

Precedence

- If two rules otherwise have equal precedence, the last one declared wins.
- The more specific rule has precedence.
  - “p#paragarph_1” has precedence over “p”
  - Sometimes this can be confusing:
  - Div.p.bio{ font-size: 14px}
  - #siebar p {font-size:12px}

  - Generally: an id is more specific than a class is more specific than an element.
  - Details here:

http://www.vanseodesign.com/css/css-specificity-inheritance-cascaade/

Precedence summary

- The more specific rule wins (according to a well-defined set of specificity rules). See the link in previous page.
- If two rules have equal specificity, the one that comes later wins.

CSS page layout

- Look at www.xkcd.com
- CSS can manage page layout

Generic HTML tags: `span` and `div`

These tags are for when no other more specific tag applies (like the English words “things” and “stuff”).

Span

A generic inline tag (like or)

Div

A generic block tag (like <header>,<article>, <section>,<p>)

CSS Attributes: width and height

- Block and inline elements normally have the height of their content.
- Inline elements have the width of their content
- Block elements have a width that stretches across the whole page.

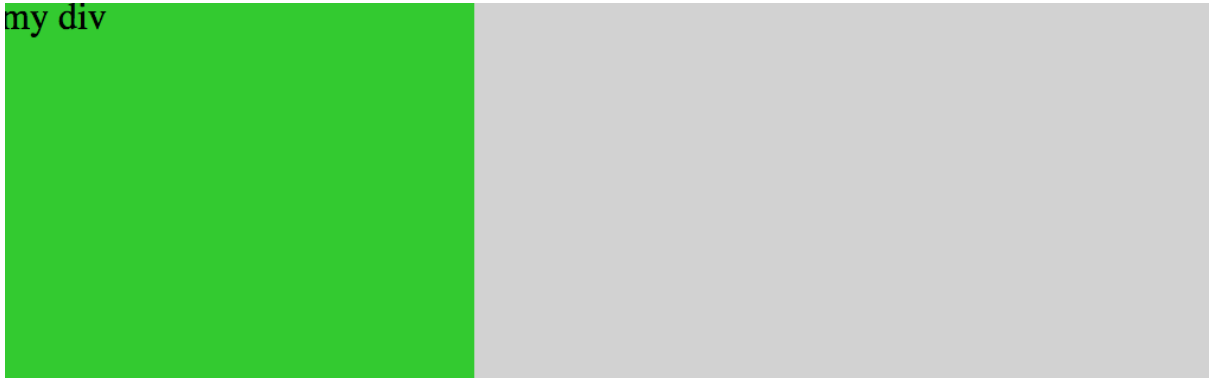
width and height Example

```
<div class='block'>my div</div>
```

HTML

```
div.block{
    height:200px;
    width:200px;
    background-color: limegreen;
}
```

CSS



output

Box Model

Box Model

What?

Margin

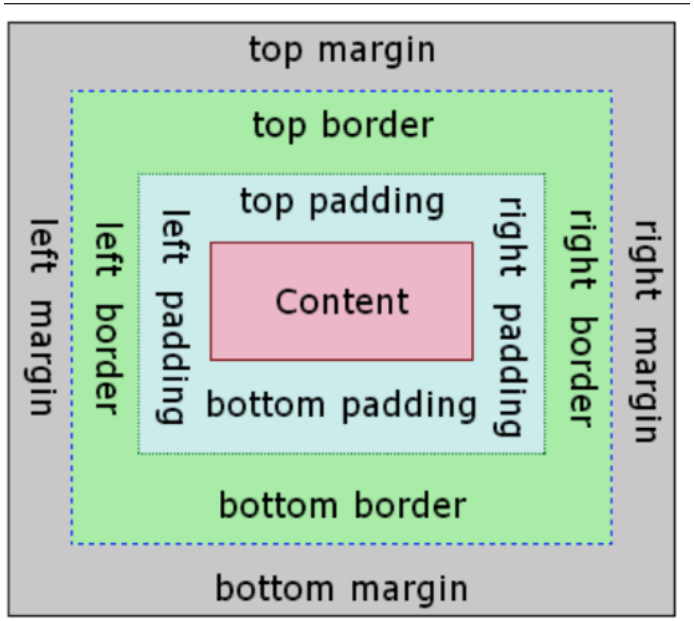
(outside) space between different elements

Border

(optionally visible) line that separates elements

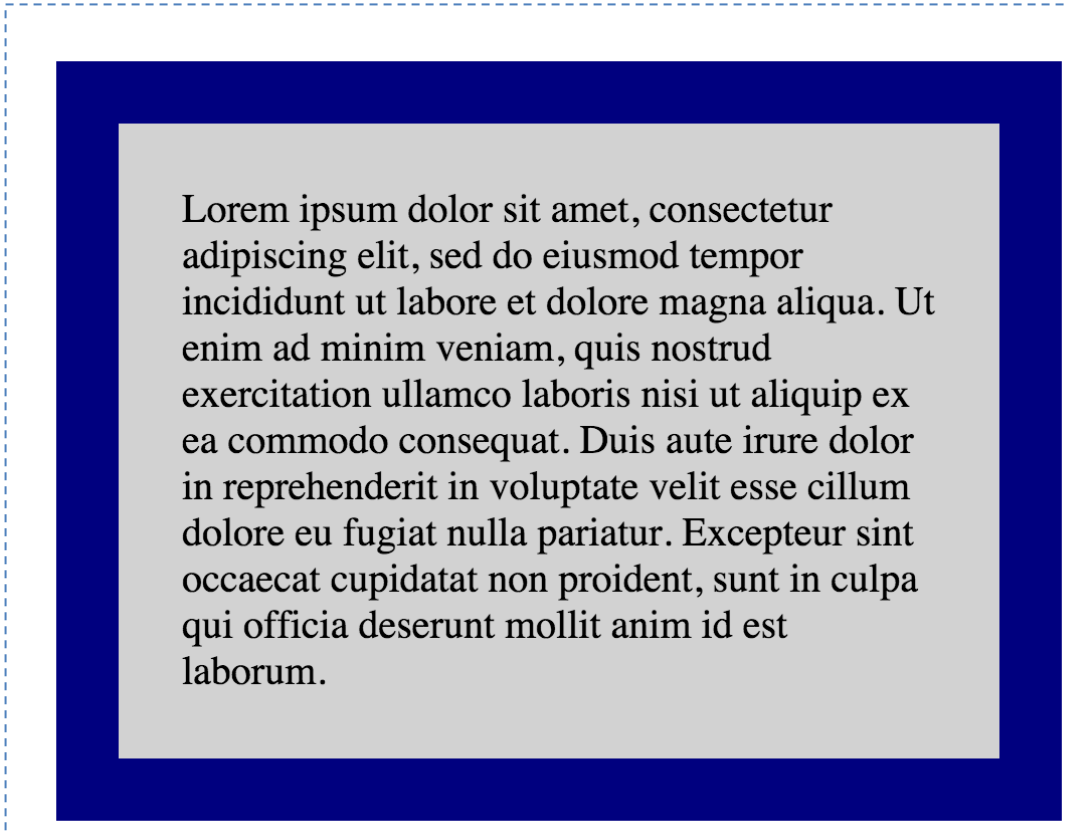
Padding

(inside) space between elements content and border



Box Model

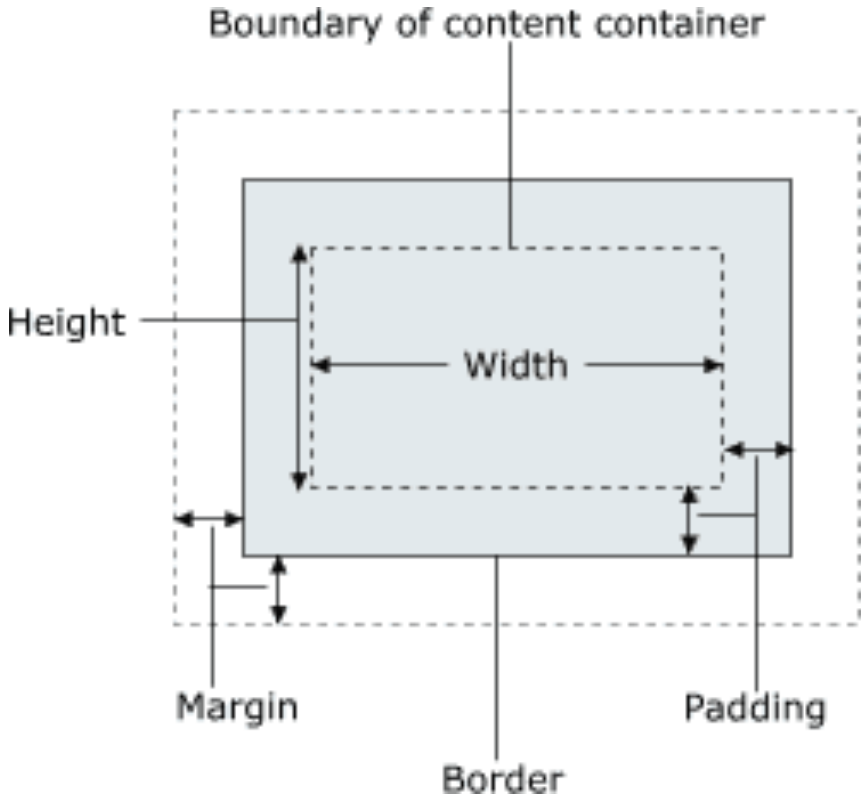
```
div {
   width: 300px;
   padding: 25px;
   border: 25px solid navy;
   margin: 25px;
}
```



Computing Box Dimensions

- “width” and “height” of an element refers to the content. If you have margins, padding, etc. Those also add to the dimensions of the box.
  - To compute the box dimension, make sure to account for the margins, etc. on both sides (e.g. both left and right margin)
- This is important because it is the entire box, and not merely the content, that takes space on the page.

Width and Height



width = content width + L/R padding + L/R border + L/R margin
height = content height + T/B padding + T/B border + T/B margin

Ways to specify size in CSS

- Pixels (px)
- Pt (1/72 inch) i.e. 12 pt font
- mm, cm, in
- Em, ex (for font), 12 pt font
  - Em: Relative to the font-size of the element (**2em** means 2 times the size of the current font)
  - Ex: Relative to the x-height of the current font (rarely used)
- Percent % (usually of the browser window dimension)

CSS properties for borders

```
h2 { border: 5px solid red; }
```
CSS

This is a heading.

output

property	description
border	thickness/style/color of border on all 4 sides

Thickness (specified in `px`, `pt`, `em`, or `thin`, `medium`, `thick`)

Style (`none`, `hidden`, `dotted`, `dashed`, `double`, `groove`, `inset`, `outset`, `ridge`, `solid`)

Color (specified as seen previously for text and background colors)

More Border Properties

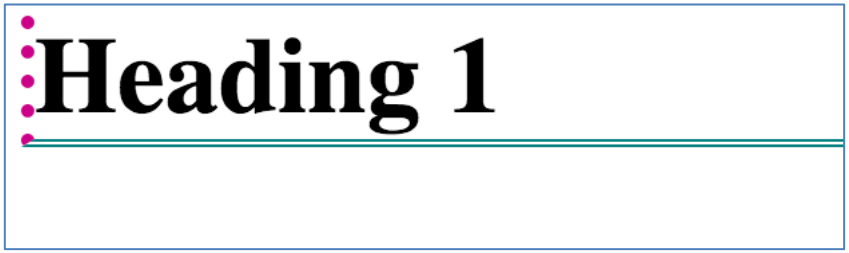
- Specific properties of borders of all sides:
  - border-color, border-width, border-style

- All Properties for specific side:
  - border-bottom, border-left, border-right, border-top

  Properties of border on a particular side.
  - border-top-color

CSS border example

```
h1 {
  border-left: thick dotted #CC0088;
  border-bottom-color: rgb(0, 128, 128);
  border-bottom-style: double;
}
```
CSS

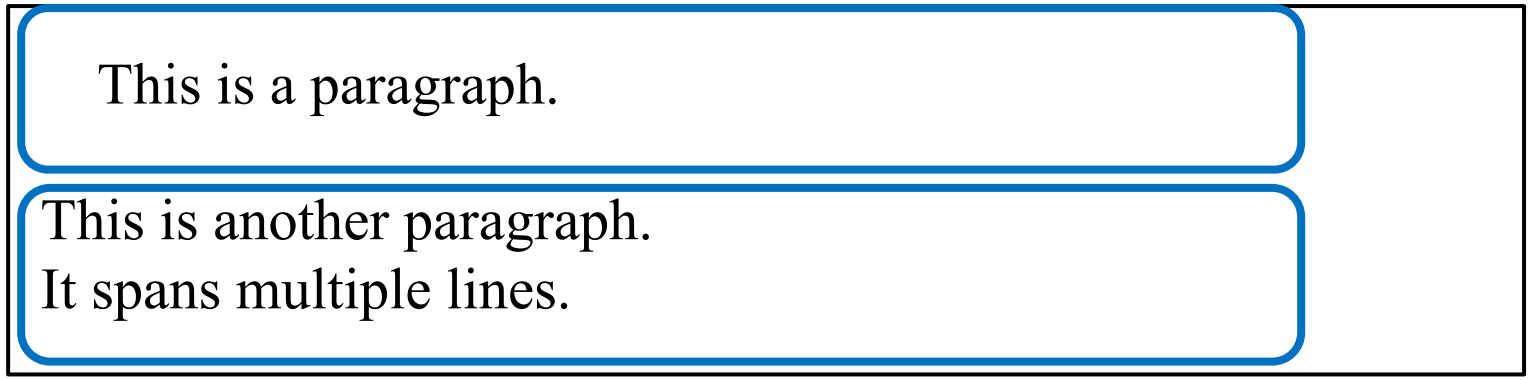


Output

- each side's border properties can be set individually
- if you omit some properties, they receive default values (e.g. border-bottom-width above)
- More on default:
- https://css-tricks.com/the-css-box-model/

Rounded corners with border-radius

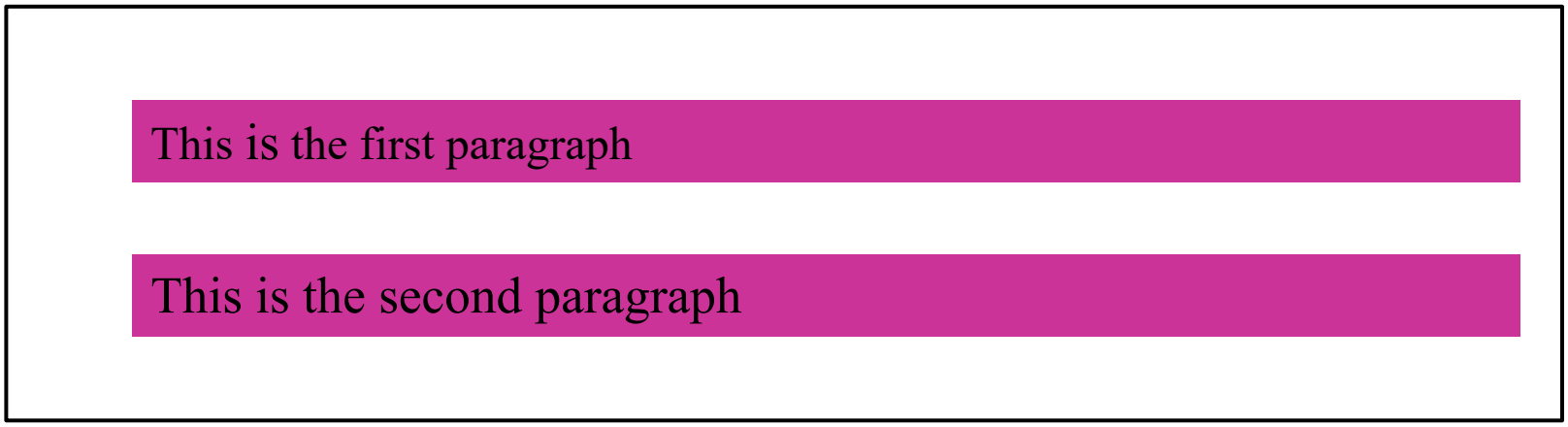
```
p {
  border: 3px solid blue;
  border-radius: 12px;
  padding: 0.5em;
}
```



- each side's border radius can be set individually, separated by spaces

Margin example 1

```
p {
  margin: 50px;
  background-color: fuchsia;
}
```



- notice that margins are always transparent
  (they don't contain the element's background color, etc.)

CSS properties for Margins

Specified in px, pt, em, rem, %, ex, cm (don't) (see more on CSS units)

Property	
margin	Margin on all 4 sides
margin-bottom	Margin on bottom only
margin-left	Margin on left only
margin-right	Margin on right only
Margin-top	Margin on top side only
Complete list of margin properties	

```
p {
   margin: 25px 50px 75px 100px;
}
```

- top margin is 25px
- right margin is 50px
- bottom margin is 75px
- left margin is 100px

Center a block: auto margins

```
p {
  margin-left: auto;
  margin-right: auto;
  width: 750px;
}
```

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

- You can set the margin property to auto to horizontally center the element within its container (e.g. <p>).
- The element will then take up the specified width, and the remaining space will be split equally between the left and right margins

CSS Properties for padding

Again, specified in px, pt, em, rem, %, ex, cm (don't) (see more on CSS units)

Property	
padding	padding on all 4 sides
padding-bottom	padding on bottom only
padding-left	padding on left only
padding-right	padding on right only
padding-top	Padding on top side only
Complete list of padding properties	

Alignment

- text-align
  - Align inline elements horizontally inside a parent container

- Vertical-align
  - Align inline elements vertically relatively to the text

Example: Alignment

```css
div {
  text-align: right;
}

img {
  vertical-align: middle;
}
```

CSS

```html
<div>
  <p>
    This is some text!
    <img src="../../images/home.png">
  </p>
</div>
```

HTML

Output

This is some text!

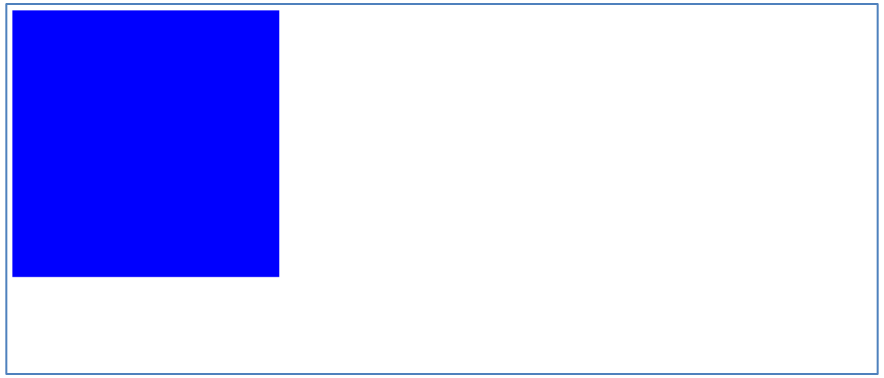
How to Center Page Elements (output next slide0

```
<body>
  <div class="block">
</body>
```
HTML

```
body {
  text-align: center; /** Doesn't work! */
}

.block {
  width: 100px;
  height: 100px;
  background-color: blue

  /* Try this instead: */
  /* margin-right: auto; */
  /* marign-left: auto; */
}
```
CSS



How do we center the blue box?

Confusing Stuff:

- text-align apply to a parent container to align the inline content within
- Vertical-align apply to inline items (usually those with a height, like an image) to vertically align them relative to other inline elements.
- margin-left: auto; margin-right: auto --- use auto margins and a width to center a block element in its parent.

Exercise 1: box model

- Download Exercise1.html from blackboard.
- Finish the declarations in the <style> tag that create the effects so that the paragraph box has the same width as the heading box.

Exercise 1 : box model

- Download Exercise1.html from blackboard.
- Finish the declarations in the <style> tag that create the effects so that the paragraph box has the same width as the heading box.
- Answer: 225(width)+ 5 (left margin)+5 (left Border)+25(left padding)+25 (right padding)+5 (left border)+10 (left margin)=300

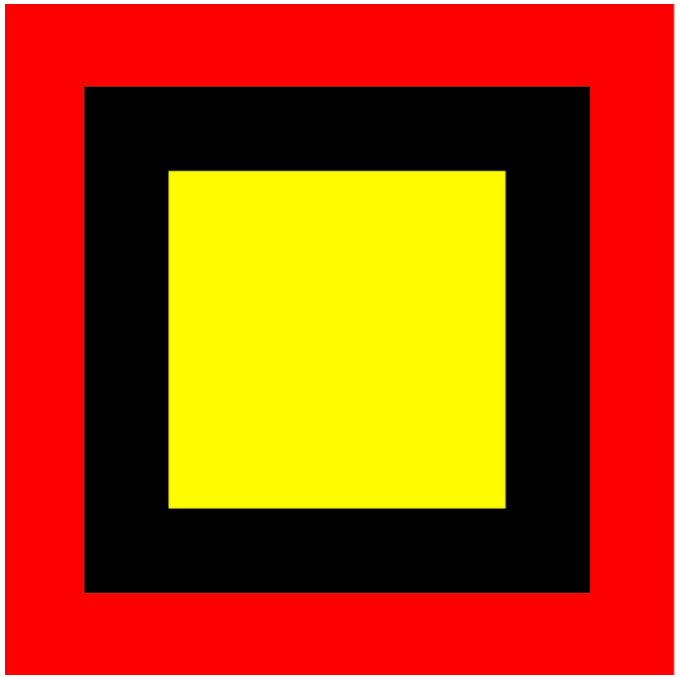
Exercise 2

- Download Widthheightstarter.html and add a <style> section to make the webpage appear

The picture above is 300px wide. The total width of this element is also 300px.

Exercise 3

- Give boxes.html (download from blackboard), write boxes.css to make the appearance on the slide below.



The outer border of the box is red, the inner border of the box is black, and the inner background color of the box is yellow.

Both the outer and inner borders have a width of 50 pixels. The yellow portion of the box has a width and height of 200 pixels. The overall box has a width and height of 400 pixels.

Exercise: Resume

- Download the resume.html from blackboard.

- Please fix the typos and inconsistency in the .html

- Can you create a style.css so that this page looks better?

- For the body text: use one of the Google font:
- https://www.google.com/fonts/specimen/Open+Sans
- For the headers, choose another font.
- Make a nice background color for the page
- Make the header have different font from the paragraph
- Experiment with font size and font spacing.

Next Class:

- CSS positioning
- Flow
- Review & Exercise: Journal page lay out
- Homework 2 out

Exercises & Take-home reading

- Finish resumu.html, resume.css
- Take-home tutorials (this will be so helpful for homework)

CSS positioning:
http://www.w3schools.com/css/css_positioning.asp

CSS box model:
This is a great read:
https://css-tricks.com/the-css-box-model/

Simple tutorials to review:
http://www.w3schools.com/css/css_boxmodel.asp

https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Box_Model/Introduction_to_the_CSS_box_model