CSS Box Model

CISC-2350-R01 | Fall 2017 | Week 8

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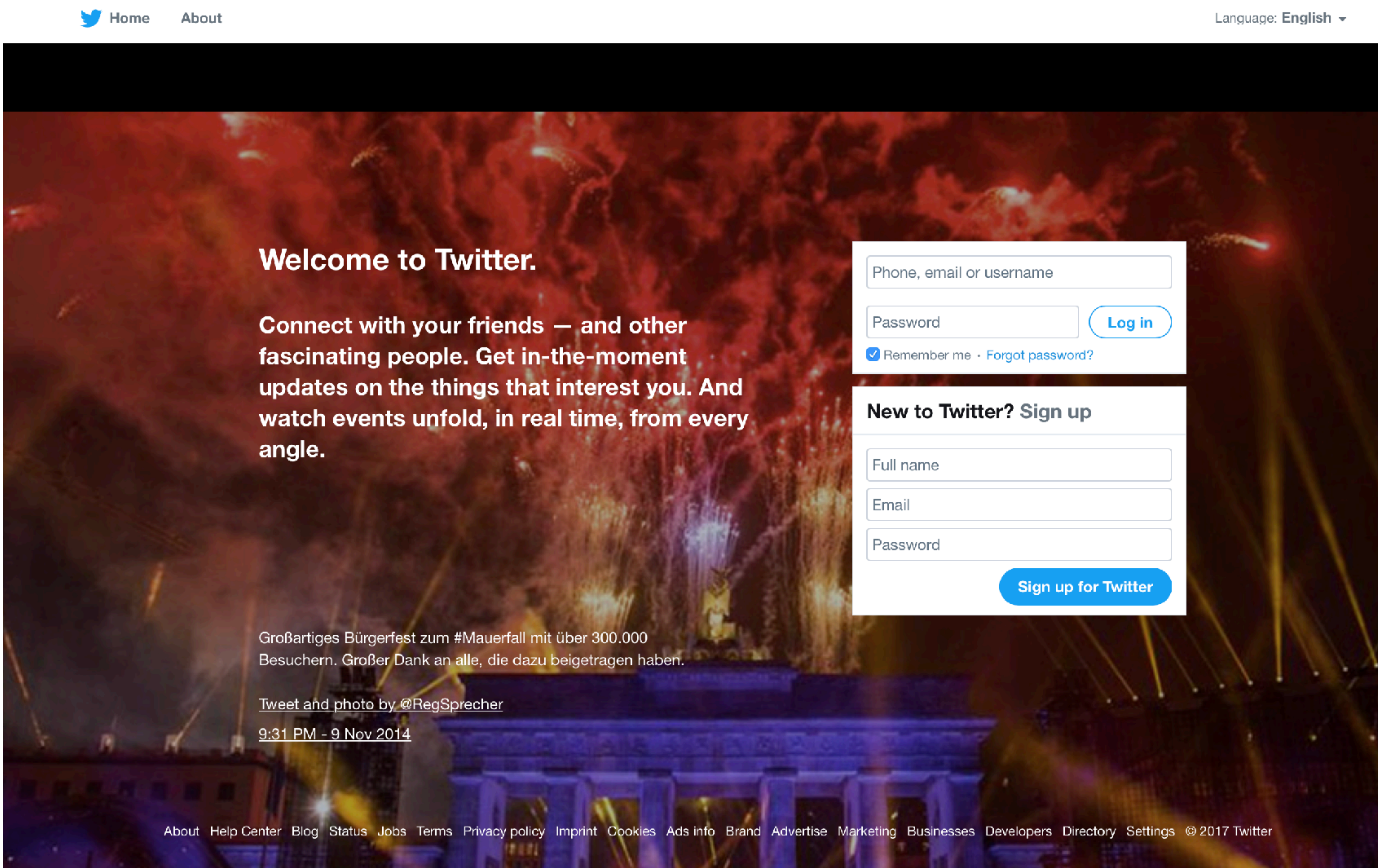
Today’s Agenda

- Attendance
- CSS Box Model
- Sizing:
    - Width and Height
    - Border, Margin, Padding
    - Block vs. Inline elements
    - box-sizing
- Changing boxes in CSS: Visual Style
- Intro to Positioning in CSS
- Homework Assignment

CSS treats each **HTML** element as it lives in a box.



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Tweet and photo by @RegSprecher

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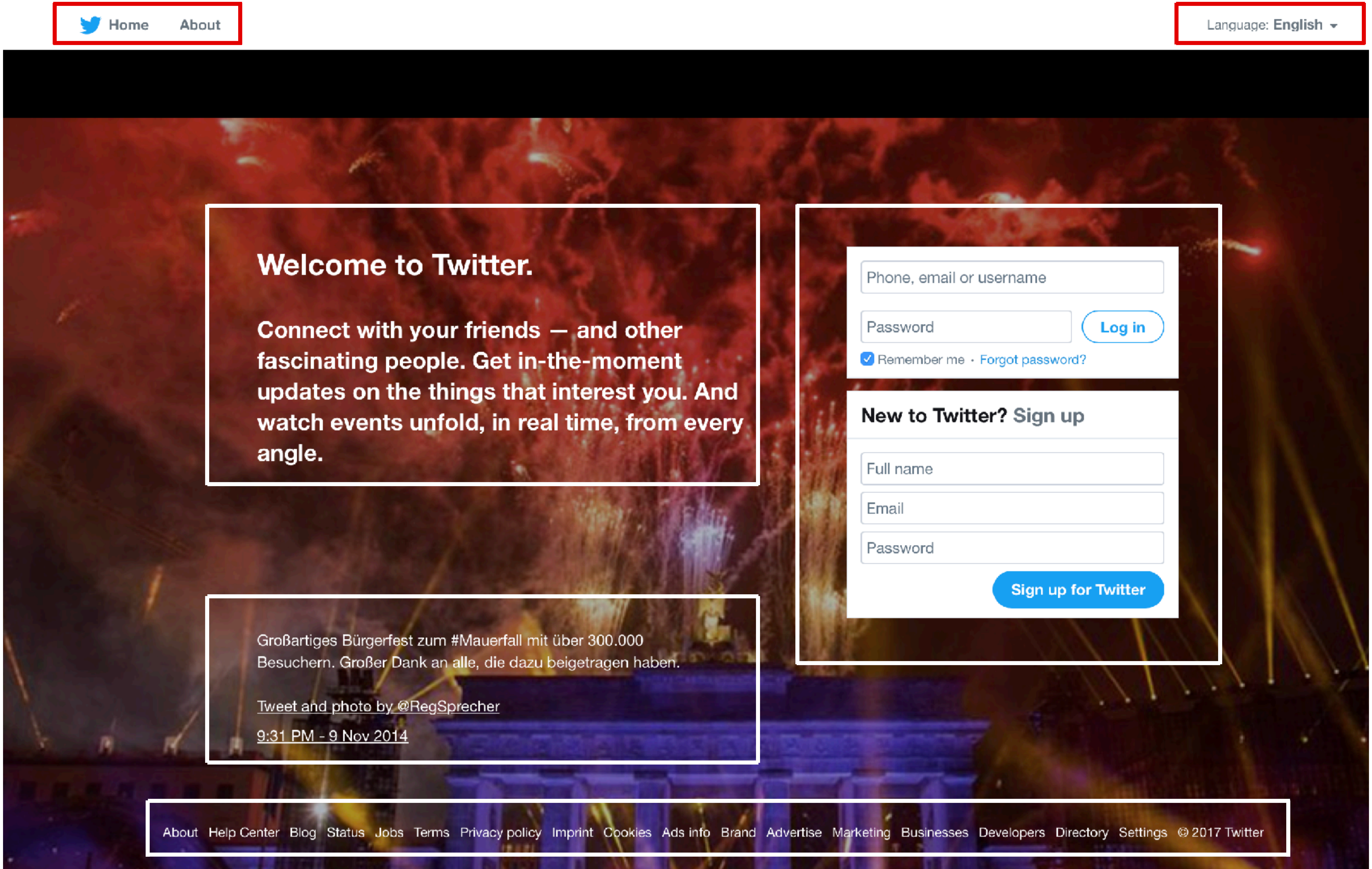
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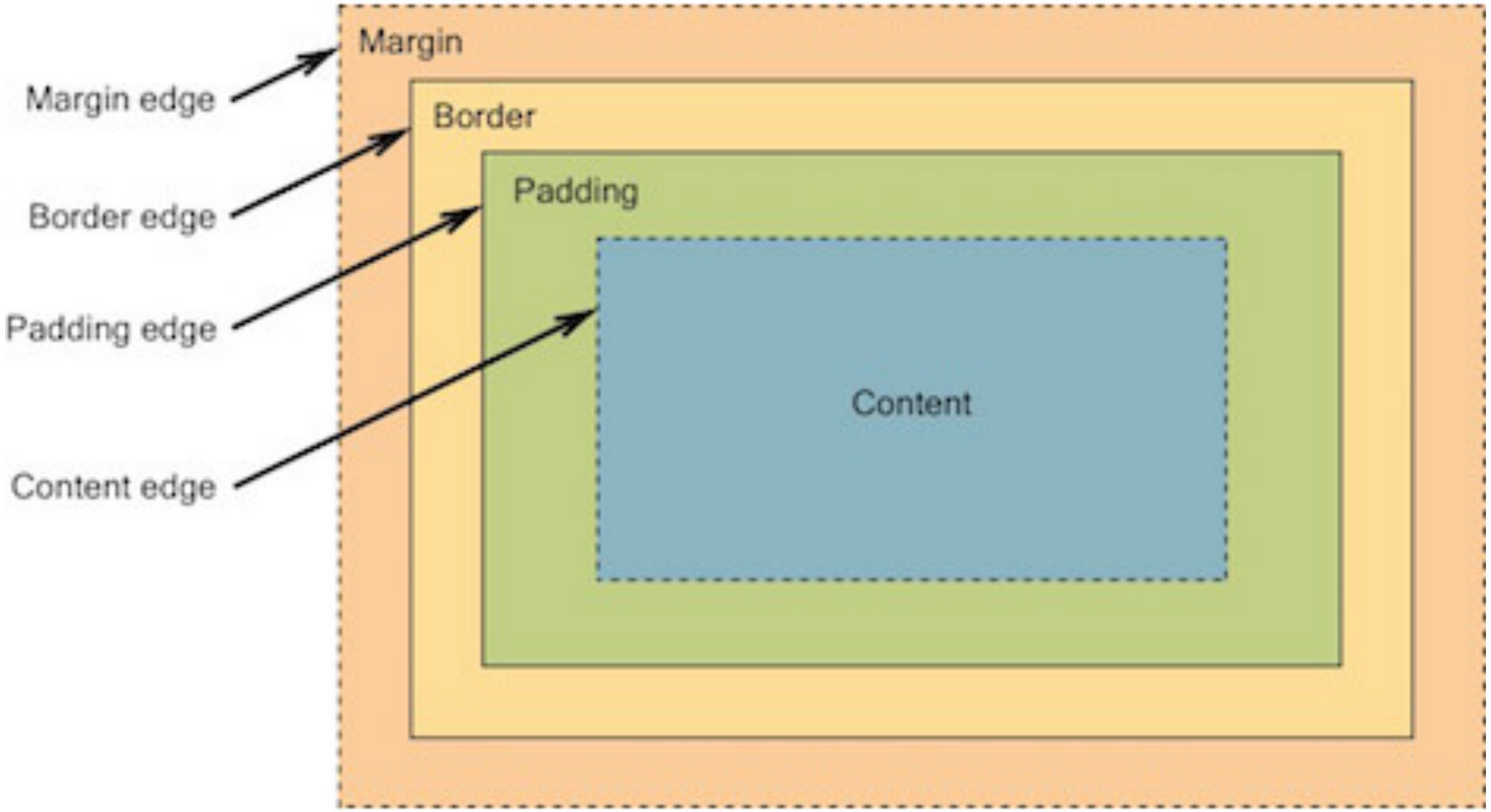
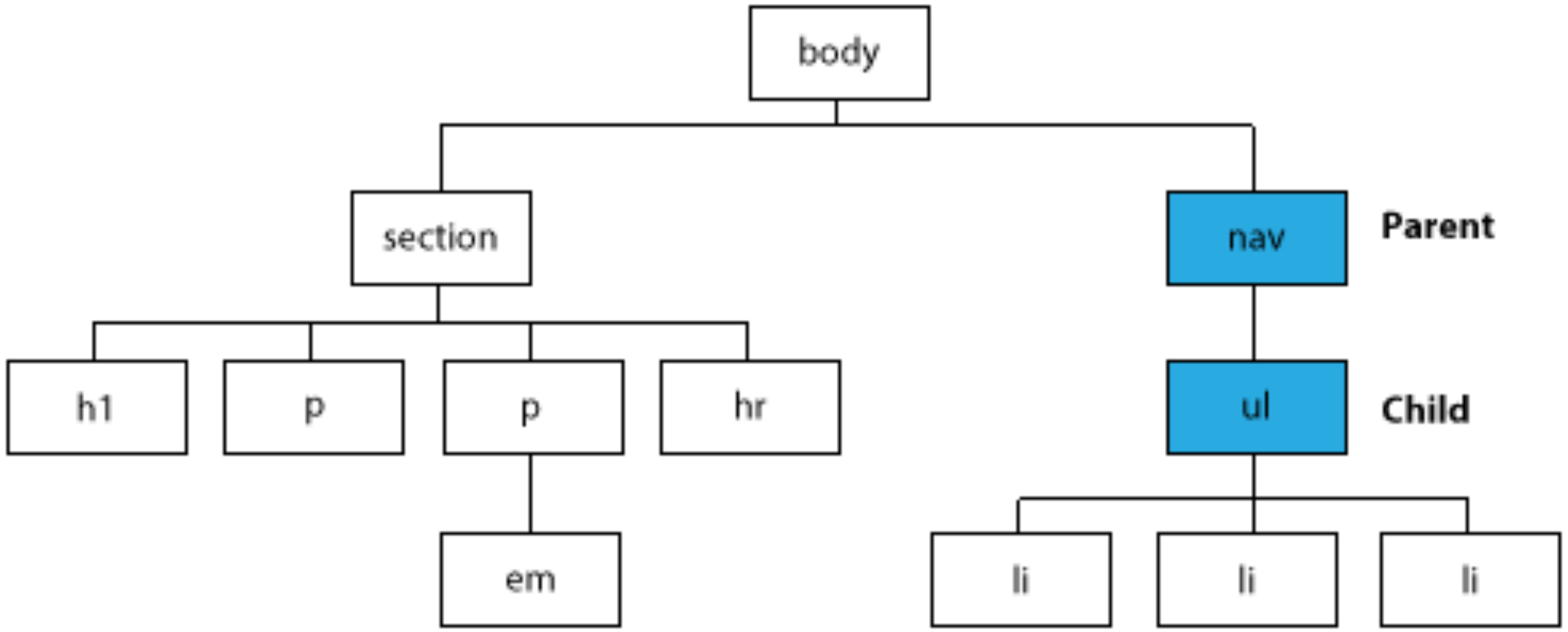
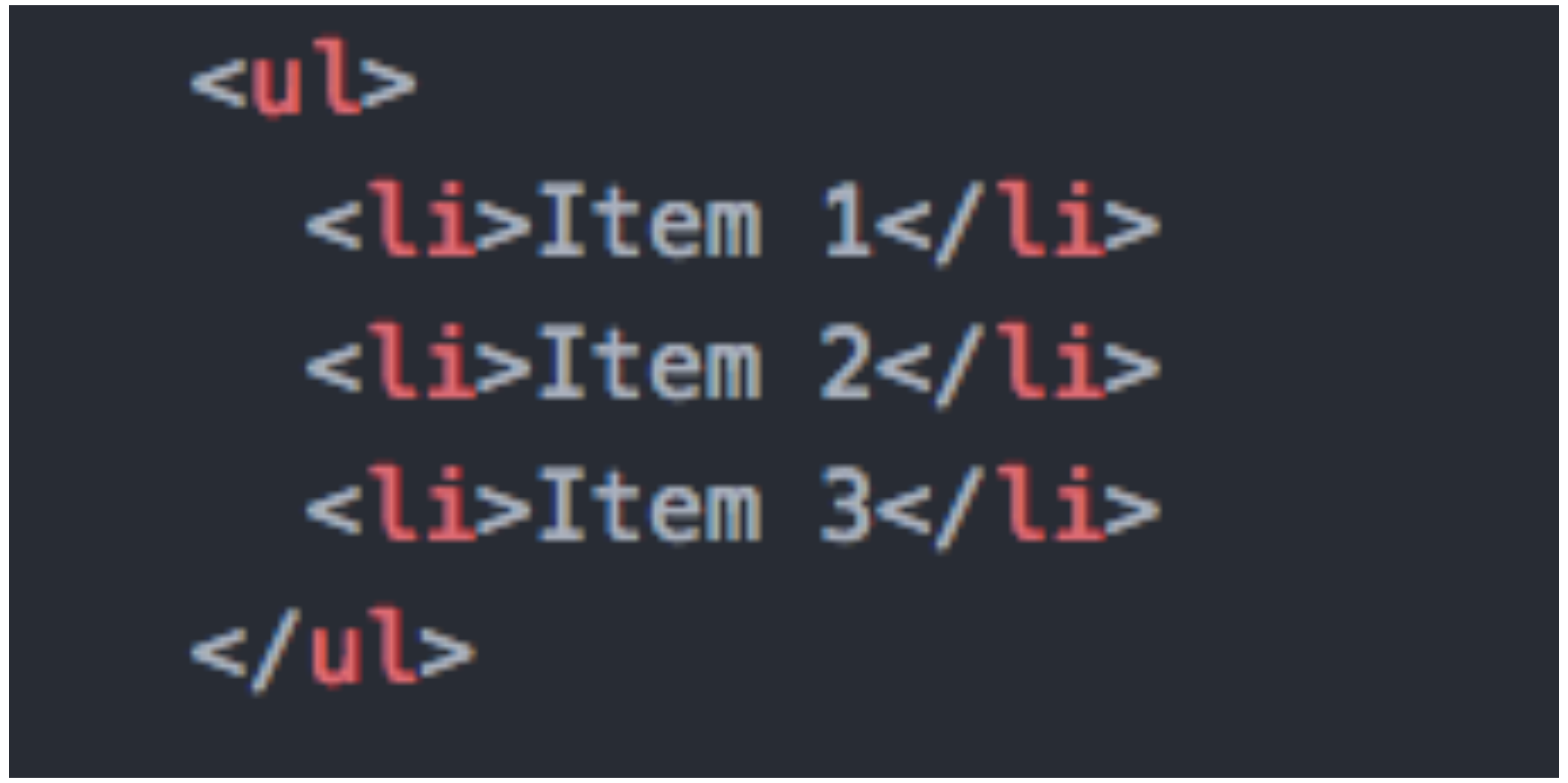

Margin edge
Border edge
Padding edge
Content edge
Margin
Border
Padding
Content

It’s important to understand the box model and anatomy of a page before we can go onto building more complex layouts in CSS.

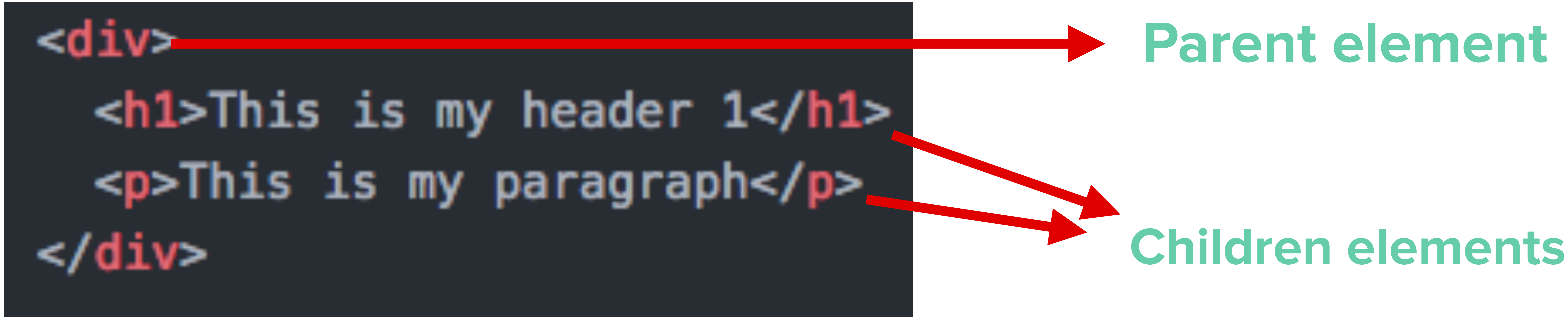
Parent and child elements





```
<ul>
  <li>Item 1</li>
  <li>Item 2</li>
  <li>Item 3</li>
</ul>
```

Parent and child elements



```
<div>
  <h1>This is my header 1</h1>
  <p>This is my paragraph</p>
</div>
```

Parent element

Children elements

<div> is your friend!

Changing boxes in CSS: Sizing

1. Width and height

Width and Height

- The dimensions of a block element are specified with width and height:

```
div {
      width: 400px;
      background color: white;
}
```

- Like text, they can be given px, % and em values
- It’s recommended to start with pixels on container elements and for the elements within you can use other
- **Example 1**

Max/min width and height

- ***max-width*** property ensures that text does not appear too wide within a big browser window
- ***min-width*** property ensures text does not appear too narrow
- It’s helpful when we look at website on different size screens

```
div {
        min-width: 400px;
        max-width: 600px;
        background color: white;
}
p {
        width: 75%;
}
```

- **Example 2**

Overflow

- ***overflow*** property tells the browser what to do if the content contained within a box is larger than the box itself
- ***overflow: hidden*** hides extra content that does not fit
- ***overflow: scroll*** adds a scrollbar to the box
- It’s helpful when we look at website on different size screens

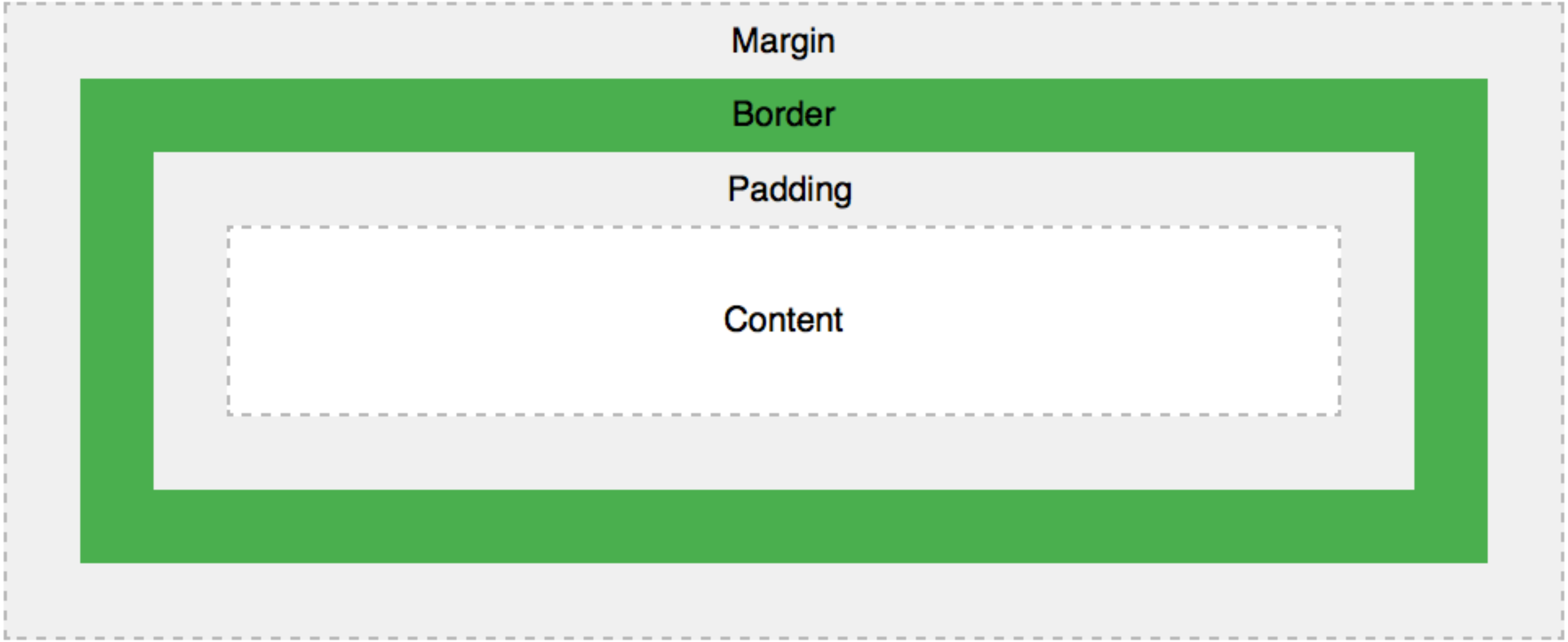
```
div {
        width: 400px;
        width: 600px;
        background color: white;
}
p {
        width: 75%;
        overflow: hidden;
}
```

- **Example 3**

2. Border, Margin, Padding

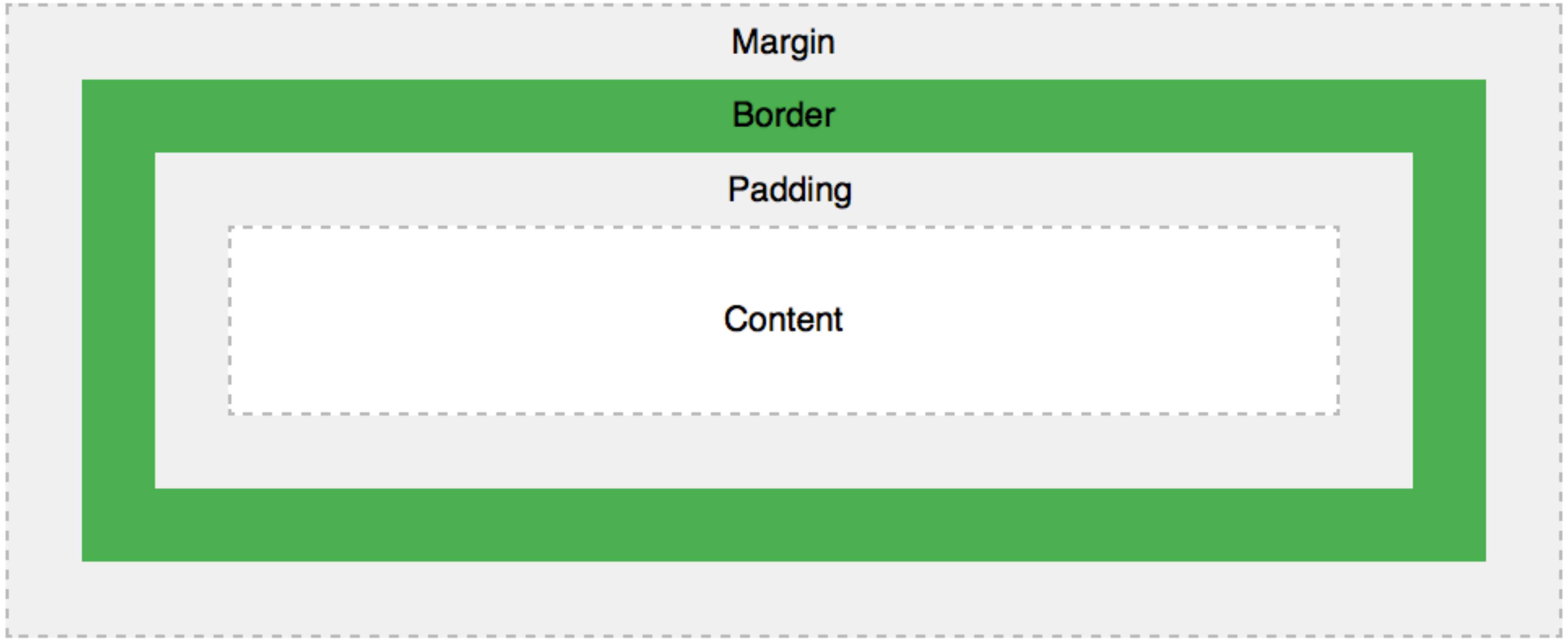
Every box has three available properties that can be adjusted to control it’s appearance

The CSS box model is essentially a box that wraps around every HTML element. It consists of: borders, padding, margins and the content.



Border, margin, padding

- **Border:** separates the boxes from one another
- **Margin:** creates a gap between borders of two boxes
- **Padding:** a space between the border of the box and the content in it



Border

- You can control three properties of a box border: **width, style and color**
  - width: value can be given in px or thin, medium, thick
  - style: solid, dotted, dashed, double, groove, ridge, inset, outset, hidden/ none
  - color: hex, rgb, existing color names (just as with text)

```
p {
    border-width: 2px;
    border-style: dashed;
    border-color: blue;
}
```

OR

```
border: 2px dotted blue;
```

Border

- You can also control every side for color and width with:

  border-top-color (or right, bottom, left)
  border-top-width

  OR

  border-width: 2px 5px 10px 2px; (goes top, right, bottom, left)

Padding

- Padding is the space between the words and the border
- It can be controlled with one parameter or one for each top, right, bottom, left

```
p {
      border-width: 2px;
      border-style: dashed;
      border-color: blue;
      padding: 10px;
}
```

OR

padding-top, padding-right, padding-bottom, padding-left

OR

```
padding: 10px 5px 3px 1px;
```

Note: padding **gets added** to the width.

Margin

- Margin is the area outside of the border, but still in the element
- It can be specified with one parameter or one for each top, right, bottom, left

```
p {
    min-width: 400px;
    max-width: 600px;
    margin: 40px;
}
```

OR

margin-top, margin-right, margin-bottom, margin-left

OR

margin: 10px 5px 3px 1px;

Note: margin also **gets added** to the width.

Example 4: Box Model

3. Block vs inline elements

Block vs. Inline elements

What happens when we don’t specify width and height?
Block vs. Inline elements

Block vs. Inline elements

- Every HTML element has a default display value depending on what type of element it is. The default display value for most elements is **block or inline.**
- **A block-level element** always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can to fit the width of parent elements).
  - div, h1 - h6, p
- **An inline element** does not start on a new line and only takes up as much width as necessary.
  - span, a, img

Changing inline to block

- **display** property allows you to turn an inline element into a block element or hide an element from the page
  - *inline:* turns block element into inline
  - *block:* turns inline element into block
  - *inline-block:* makes block-level element to flow like an inline element, while retaining other features of a block-level element
  - *none:* hides an element from the page (though you will still see it in the source of the page in the browser)

```
h1 {
    display: inline;
    margin: 40px;
    padding: 5px;
}
```

Hiding boxes

- **visibility** property allows you to hide boxes from the browser (different from display: none)
- It leaves a space where the element would have been

```
h1 {
    visibility: hidden / visible;
}
```

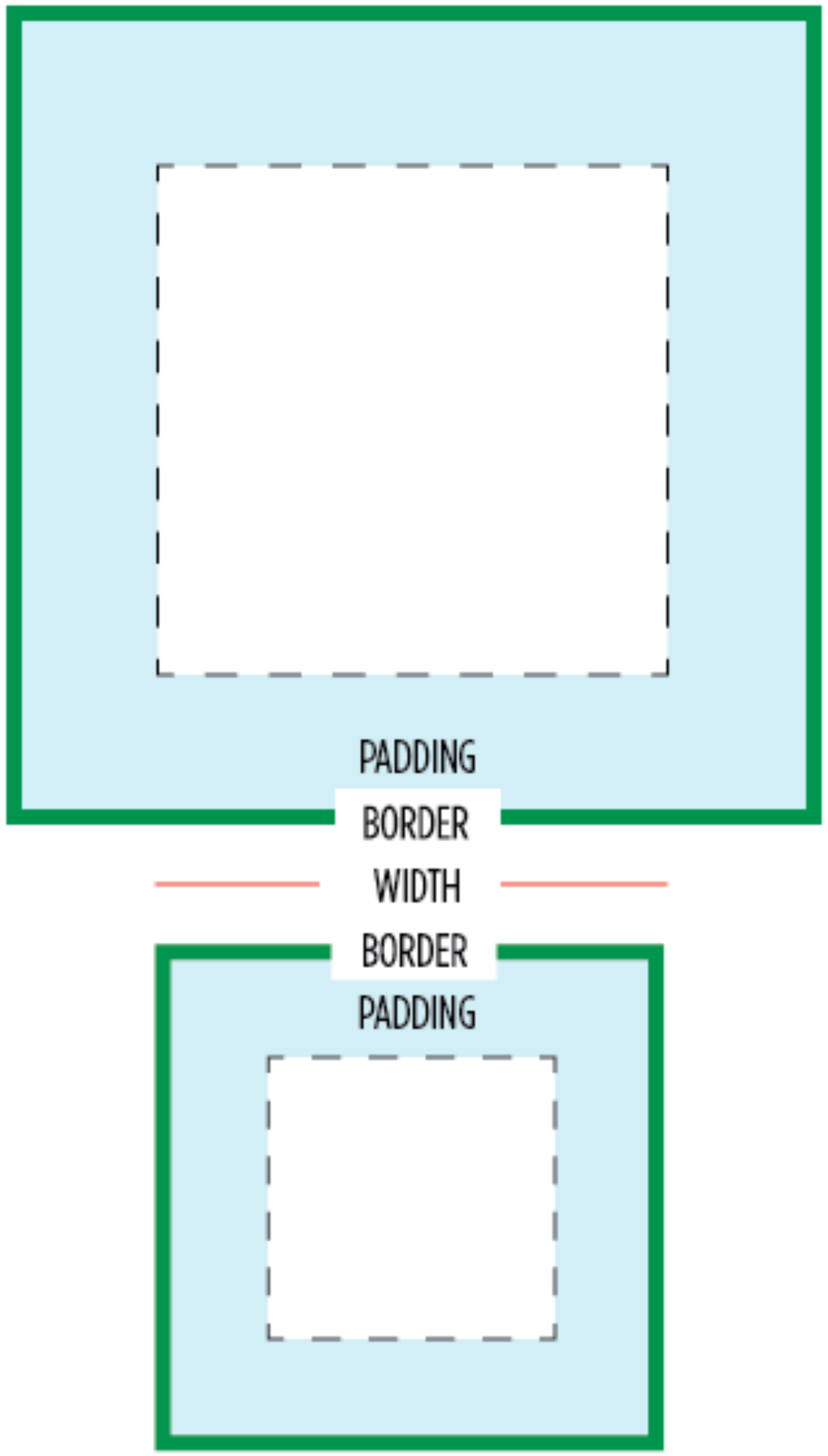
Example 5: Block vs. Inline

More Box Model exercises

https://www.w3schools.com/css/css_boxmodel.asp

http://learn.shayhowe.com/html-css/opening-the-box-model/

4. The box-sizing property



DEFAULT BOX MODEL

ADJUSTED WITH
BOX-SIZING PROPERTY

box-sizing

- **box-sizing** tells the browser what the sizing properties (width and height) should include

```
div {
        min-width: 400px;
        max-width: 600px;
        border: 5px solid red;
        box-sizing: border-box;
}
```

border-box: tells that the width and height properties (and min/max properties) includes content, padding and border, but not the margin.

Additional resources on box-sizing

https://www.w3schools.com/cssref/css3_pr_box-sizing.asp

http://blog.teamtreehouse.com/box-sizing-secret-simple-css-layouts

https://www.paulirish.com/2012/box-sizing-border-box-ftw/

https://css-tricks.com/box-sizing/

https://css-tricks.com/almanac/properties/b/box-sizing/

Changing boxes in CSS: Visual Style

border-radius

- **box-radius** allows to create rounded corners on any box
- The added value indicates the size of the radius in pixels
- You can specify individual values for each corner of a box using:

```
border-top-right-radius
border-bottom-right-radius
border-bottom-left-radius
border-top-left-radius
```

OR

```
border-radius: 5px 10px 5px 10px;
```

Example 6: border-radius

border-image

- **box-image** property applies an image to the border of any box
- It takes a background image and slices it into nine pieces
- Requires three pieces of information:
    - The URL of the image
    - Where to slide the image
    - What to do with the straight edges (stretch, repeat, round)
- Box must have a border width for the image to be shown

```
p {
  border-image: url(“images/photo.jpg”) 11 11 11 11 stretch;
}
```

Example 7: background image

What you can do with background-image

- **https://css-tricks.com/use-cases-fixed-backgrounds-css/**
- Multiple backgrounds: **https://css-tricks.com/stacking-order-of-multiple-backgrounds/**
- Pattern Generator **http://www.kennethcachia.com/plain-pattern/app/**

Positioning in CSS

Centering content

- If you want to center a box on the page (or center it inside the element that it sits in), you can set the *margin-left* and *margin-right* to *auto*
- For it to work you need to set a width for the box (otherwise it will take up the full width of the page)
- Once you have specified the width of the box, setting left and right margins to auto will make the browser to put an equal gap on each side of the box

```
p {
   width: 300px;
   border: 10px solid red;
   margin 10px auto 10px auto;
}
```

Example 8: centering content

Resources on centering

- https://codemyviews.com/blog/how-to-center-anything-with-css
- http://howtocenterincss.com/

Example 9: two-column layout

Intro to CSS layout

- http://learnlayout.com/
- https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout/Introduction

Summary: Boxes

From John Duckett book

- CSS treats each HTML element as if it has its own box
- You can use CSS to control the dimensions of a box
- You can also control the borders, margin and padding for each box with CSS
- It is possible to hide elements using the display and visibility properties
- Block-level boxes can be made into inline boxes, and inline boxes made into block-level boxes
- Legibility can be improved by controlling the width of boxes containing text and the leading
- CSS3 has introduced the ability to create image borders and rounded borders

Questions?

Homework assignment

Homework

By Sunday, October 22, 6pm

1. **Web review presentations: David, John, Lea (post links to your websites by Sunday 6pm).**
2. **Read and review the following CSS documentation on:**
   1. Box model: **https://learn.shayhowe.com/html-css/opening-the-box-model/**
   2. Box sizing:
      1. **https://www.w3schools.com/cssref/css3_pr_box-sizing.asp**
      2. **http://blog.teamtreehouse.com/box-sizing-secret-simple-css-layouts**
      3. **https://www.paulirish.com/2012/box-sizing-border-box-ftw/**
      4. **https://css-tricks.com/box-sizing/**
      5. **https://css-tricks.com/almanac/properties/b/box-sizing/**
   3. Centering: **https://mayvendev.com/blog/how-to-center-anything-with-css**
   4. CSS layout: **https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout/Introduction**
3. **After you review documentation, write 2 paragraphs on #general channel on Slack about what new you learned**
4. **Review https://css-tricks.com/almanac/, find 2 tricks you didn't know about and:**
   - Make a HTML single page using those 2 tricks (use CSS in the external style.css file) - for example, if the trick is linked to background-image, make sure there is an image on the page, and so on.
   - Make sure to include explanation what those tricks do in the page itself (you can see at it as educational page)
   - Do not forget to include links to tricks description on https://css-tricks.com/almanac/
   - Upload your code to a new folder on Github and post two links on #general channel on Slack:
     - Link to your project's repository (folder)
     - Working link to the Github page (yourusername.github.io/pathtofolder)
5. **Office hours on Monday, October 22nd.**