CSC435: Web Programming

Lecture 6: CSS Positioning and Floating

Bei Xiao

American University

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Activity Outline

- Document object model (DOM) and cascading
- Float, Positioning, Display
- Page Layout Exercise

Reading

- Float:

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

- Fantastic tutorial on float:
- https://css-tricks.com/almanac/properties/f/float/

Last class: CSS Box Model

Margin

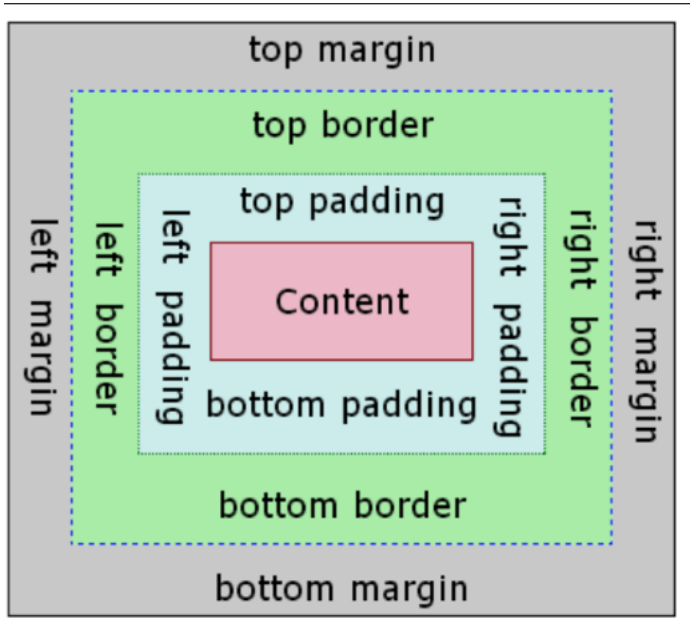
(outside) space between different elements

Border

(optionally visible) line that separates elements

Padding

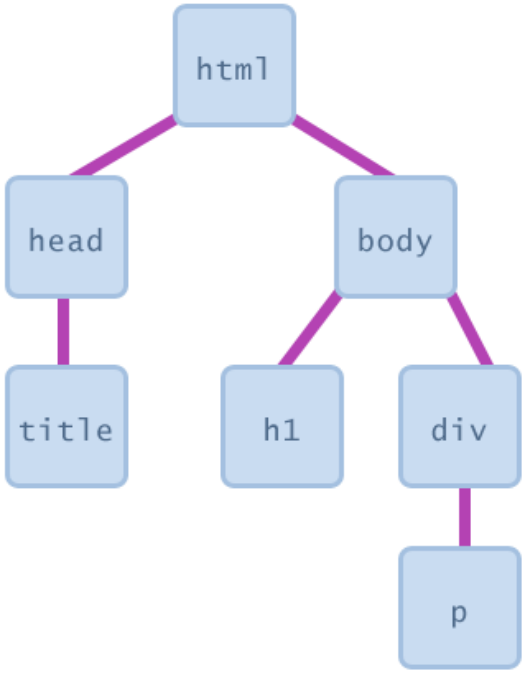
(inside) space between elements content and border



CSS Selector Summary

Example	Example described
`p`	All `<p>` elements
`.abc`	All elements with the `abc class`, i.e. `class="abc"`
`#abc`	Element with the `abc id`, i.e. `id="abc"`
`p.abc`	`<p>` elements with `abc class`
`p#abc`	`<p>` element with `abc id` (`p` is redundant)
`div strong`	`<strong>` elements that are descendants of a `<div>`
`h2, div`	`<h2>` elements and `<div>`s

Document object model (DOM) tree

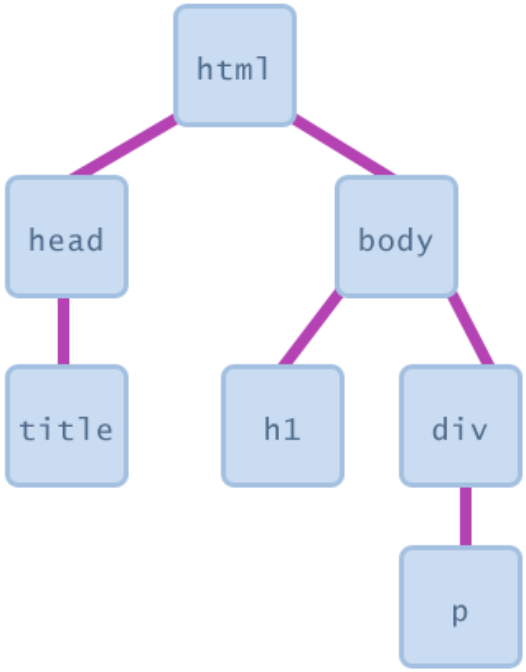


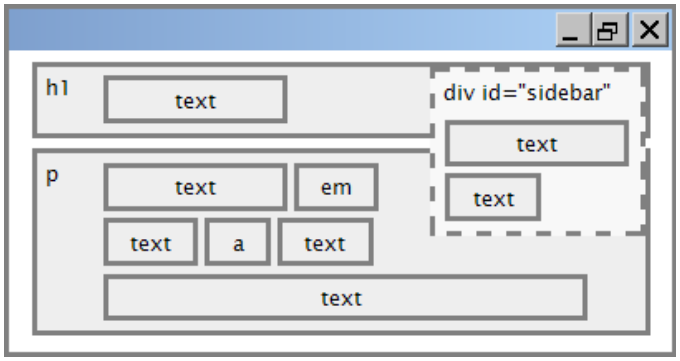

```
<html>
  <head>
    <title> ...
</title>
  </head>
  <body>
    <h1> ... </h1>
    <div>
      <p> ... </p>
    </div>
  </body>
</html>
```

- The Document Object Model (DOM) is a cross-platform and language-independent convention for representing and interacting with objects in HTML, XHTML, and XML documents.

- JavaScript can add, remove any element and attribute in HTML, CSS, creating events, etc.

Document object model (DOM) tree





- The Document Object Model (DOM) is a cross-platform and language-independent convention for representing and interacting with objects in HTML, XHTML, and XML documents.

- JavaScript can add, remove any element and attribute in HTML, CSS, creating events, etc.

CSS inheritance

- The CSS properties set on an element via the cascade can be inherited by that element's child elements.

- But only certain element can be inherited (e.g. margins, width, border will not be inherited).

```
div {
   font-size: 20px
}
```

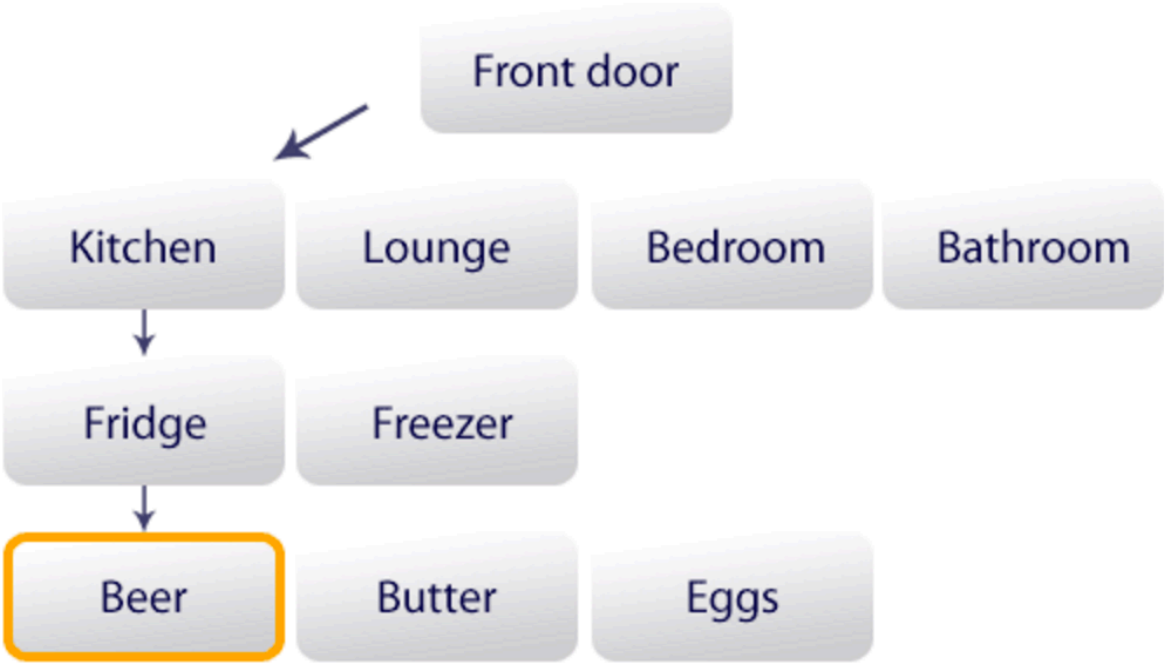
CSS

```
<div>
     <p> This I <em> sentence</em> will
have a 20px
         <a href="#"> font-size </a>
      </p>
</div.
```

HTML

Check here for CSS property table: https://www.w3.org/TR/CSS21/propidx.html

Demo: living room



Demo: living room

Add a style sheets that change the appearance of the page:

- Each div has its own border and box properties.
- All texts are centered.
- All divs are centered on the page. Has a width of 300px and height 100px. Add border accordingly. Add padding of 10px. Border radius is 10px.

- Pizza is in a red container.
- All texts have "**Georgia**" font.
- **"My can of beer" is bolded.**
- "Soap" is italic.

Normal flow of the page

- Statically-positioned elements are positioned according to the "normal flow of the page".

- Block element: always take up the full width available, with **newlines** before and after.

  div, h1,p, ul, table, etc.

- In-line element: only takes as much width as needed and do not force new lines

  span, a, img, etc

The CSS Float

Informally:

- A float element is removed from normal document flow.
- Two properties: “float:left” and “float:right” pushing it to the left or right of the containing element .

- Block elements will ignore it.
- Inline elements will wrap around it.

- One use for float is for text to wrap around an image since text is inline.

Basic document flow

I am a basic block level element. My adjacent block level elements sit on new lines below me.

By default we span 100% of the width of our parent element, and we are as tall as our child content. Our total width and height is our content + padding + border width/height.

We are separated by our margins. Because of margin collapsing, we are separated by the width of one of our margins, not both.

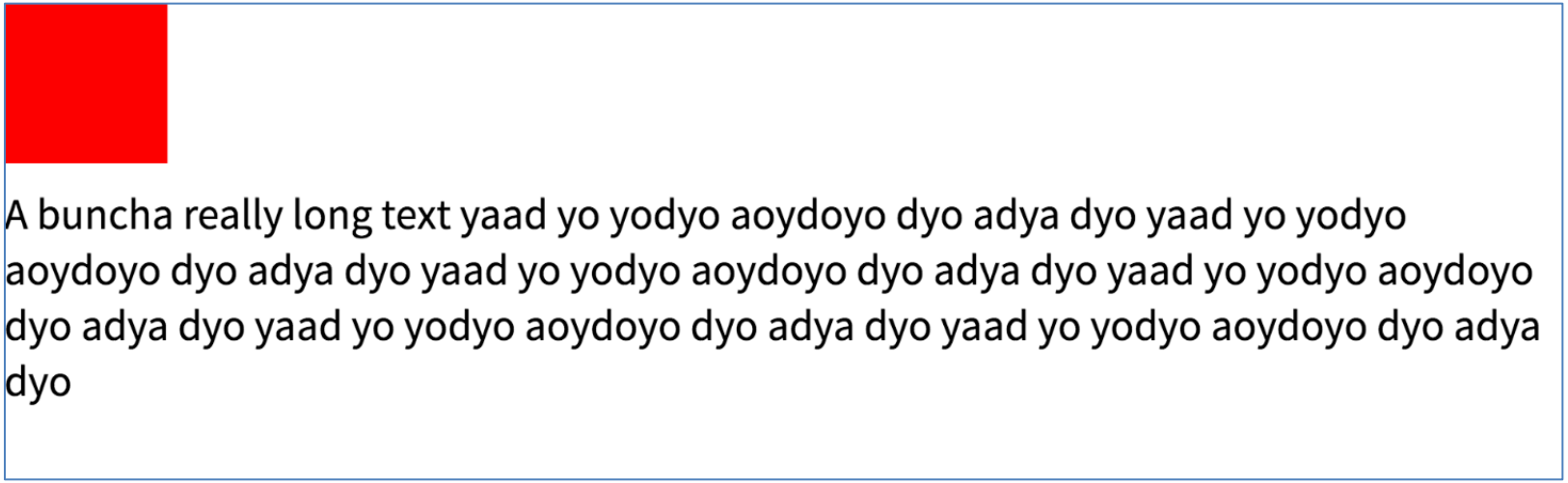
inline elements like this one and this one sit on the same line as one another, and adjacent text nodes, if there is space on the same line. Overflowing inline elements will wrap onto a new line if possible (like this one containing text), or just go on to a new line if not, much like this image will do:

https://codepen.io/pen/?&editable=true

Floating Example

The red block is a non-floating (regular) block element (a div). It's only 100px wide, but since it is a block element, the browser positions it on its own line (spanning the width of the page).

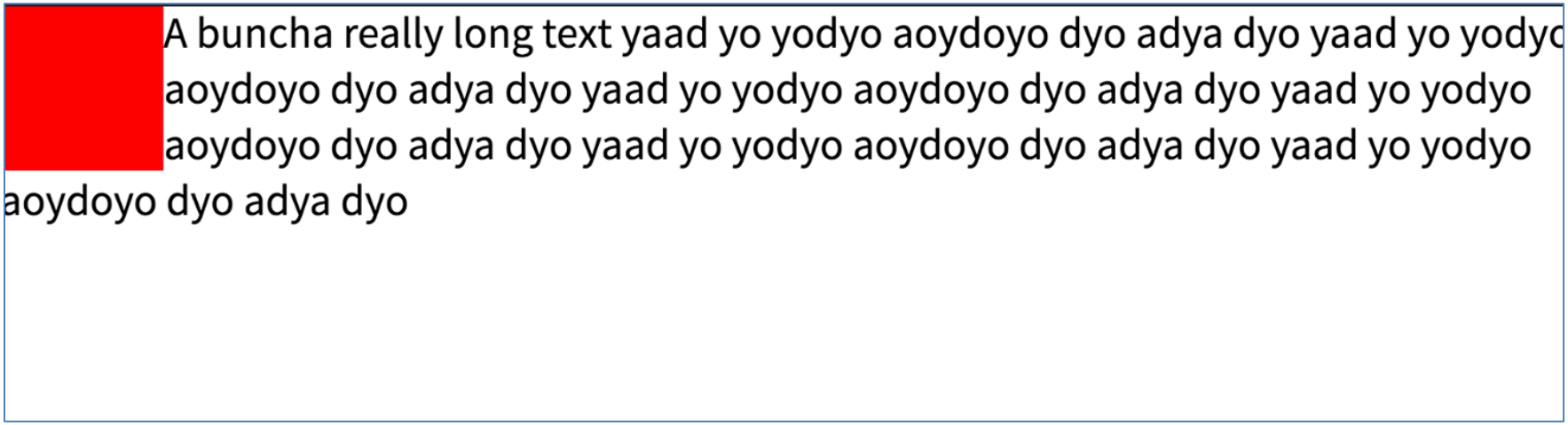
```
<div>  (white background)
<div> (red block)
<p>    (text)
```



Floating Example

Now the red block has the float CSS property set to left. This tells the browser to give the elements as much spaces as it needs, and then start brining the next content up from below and fill the cracks.

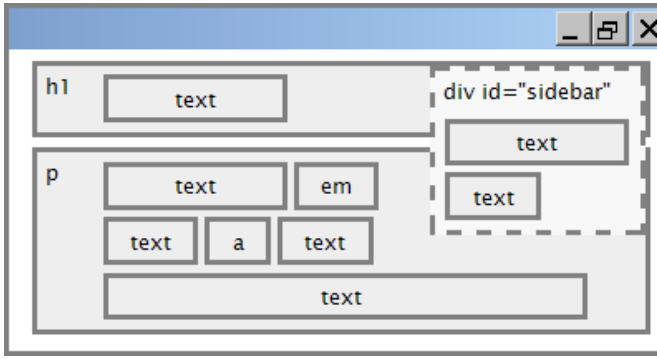
```
<div>  (white background)
<div> (red block, floating left)
<p>    (text)
```



The CSS float property

property	description
float	side to hover on; can be left, right, or none (default)

- a ***floating*** element is removed from normal document flow
- Underlying text wraps around it as necessary



Float example

```
•   <img src="images/koala.jpg" alt="Koala" class="headericon" />
•   Lorem ipsum dolor sit amet, consectetur adipiscing elit....
```

```
img.headericon {
    float: left;
}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aliquam sc rus ut dui mollis, sed malesuada leo pretium. M orbi bibend um mi rum convallis. Duis id eros dolor. In id eros blandit lectus viverra ommodo velit. Cras pretium nunc id nisl elementum, at interdum odio blandit. Donec luctusrutrum iaculis. Praesent luctus ante et cursus suscipit.

Float demo

```
img
{
float:left;
margin:5px 10px 10px 5px;
height:300px;
width:370px;
}
```

My Favourite Pumpkin Pie

This is the traditional holiday pumpkin pie. This classic recipe has been on Pumpkin labels since 1950. This pie is easy to prepare and even easier to enjoy. Just mix, pour, bake for a delicious homemade tradition. Pumpkin pie is my favourite dessert.

- 3/4 cup granulated sugar
- 1 teaspoon ground cinnamon
- 1/2 teaspoon salt
- 1/2 teaspoon ground ginger
- 1/4 teaspoon ground cloves
- 2 large eggs
- 1 can pureed 100% pumpkin
- NESTLE Evaporated Milk
- 1 unbaked 9-inch (4-cup volume) deep-dish pie shell

Directions

Directions MIX sugar, cinnamon, salt, ginger and cloves in small bowl. Beat eggs in large bowl. Stir in pumpkin and sugar-spice mixture. Gradually stir in evaporated milk. POUR into pie shell. BAKE in preheated 425Â° F oven for 15 minutes. Reduce temperature to 350Â° F; bake for 40 to 50 minutes or until knife inserted near center comes out clean. Cool on wire rack for 2 hours. Serve immediately or refrigerate. Top with whipped cream before serving.

Float demo

iv 2
Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div
1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1
Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div
1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1
Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div
1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1
iv 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1 Div 1
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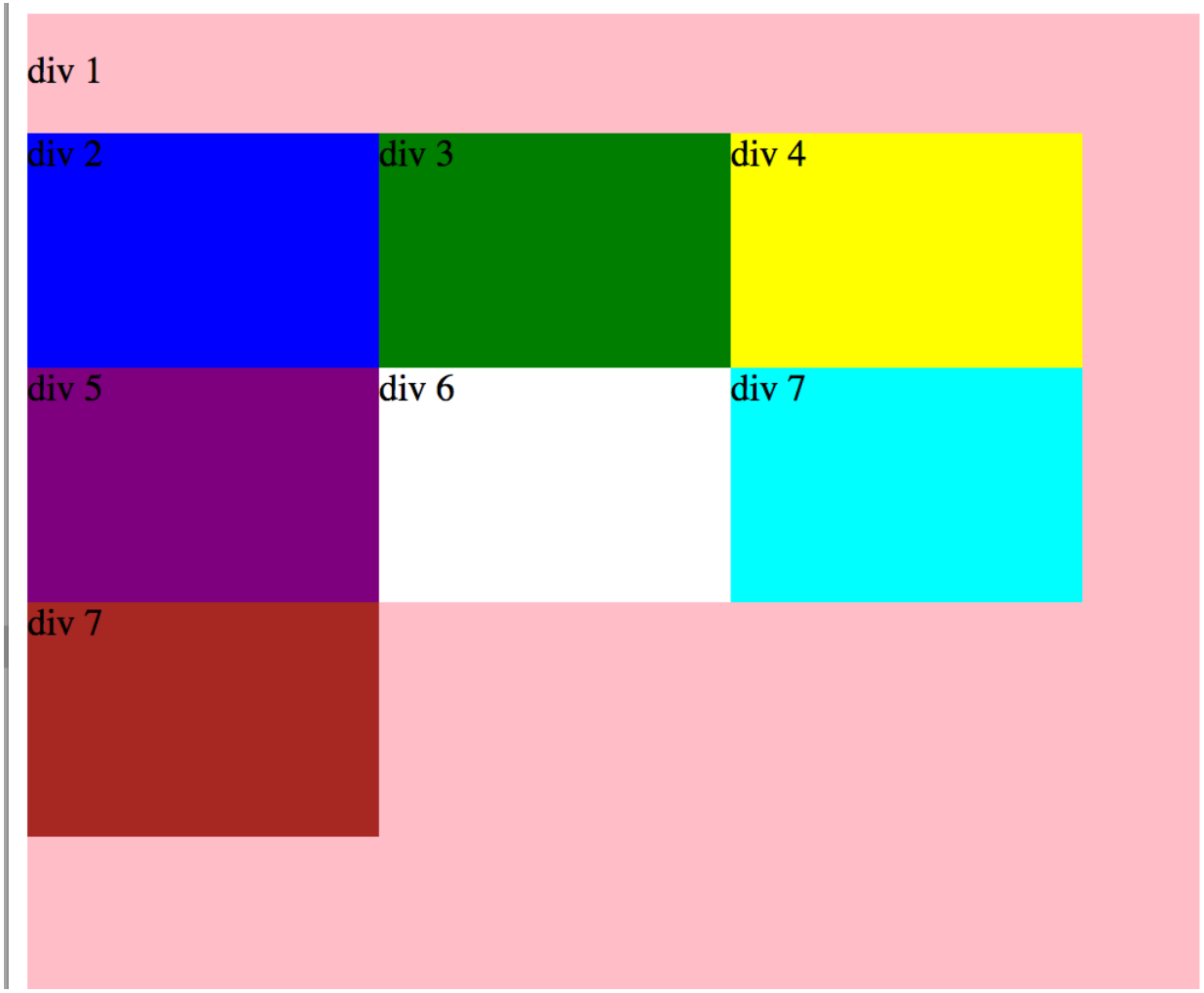
iv 1 Div 1 Div 1 Div 1 Div 1

Float demo



Float content with width

- I am not floating, no width set

I am floating right, no width set

I am floating right, no width set, but my text is very long so this paragraph doesn't really seem like it's floating at all, darn

I am not floating, 45% width

I am floating right, 45% width

- often floating elements should have a `width` property value
  - if no `width` is specified, other content may be unable to wrap around the floating element

Float

- It is the common way to get block elements to sit side-by-side.

- Specifics:
  - A left-floated box will float to the left until it touches either the edge of the parent element, or the edge of another floated box

  - If the size of the floated box exceeds the available horizontal space, the floated box will be shifted down

Clear property

```
p { background-color: fuchsia; }
h2 { clear: right; background-color: cyan; }
```

XKCD a webcomic of romance, sarcasm, math, and language...

My XKCD Fan Site

property	description
clear	disallows floating elements from overlapping this element; can be left, right, both, or none (default)

Positioning Elements

position: fixed

Puts an element at a position within the browser window. Always stays the same place even if the page is scrolled.

position: absolute

Puts an element at an absolute position with respect to whole webpage or a parent container.

Effects on Parent Containers

position: relative

Makes children positioned relative to the container.

position: absolute

Makes children positioned relative to the container.

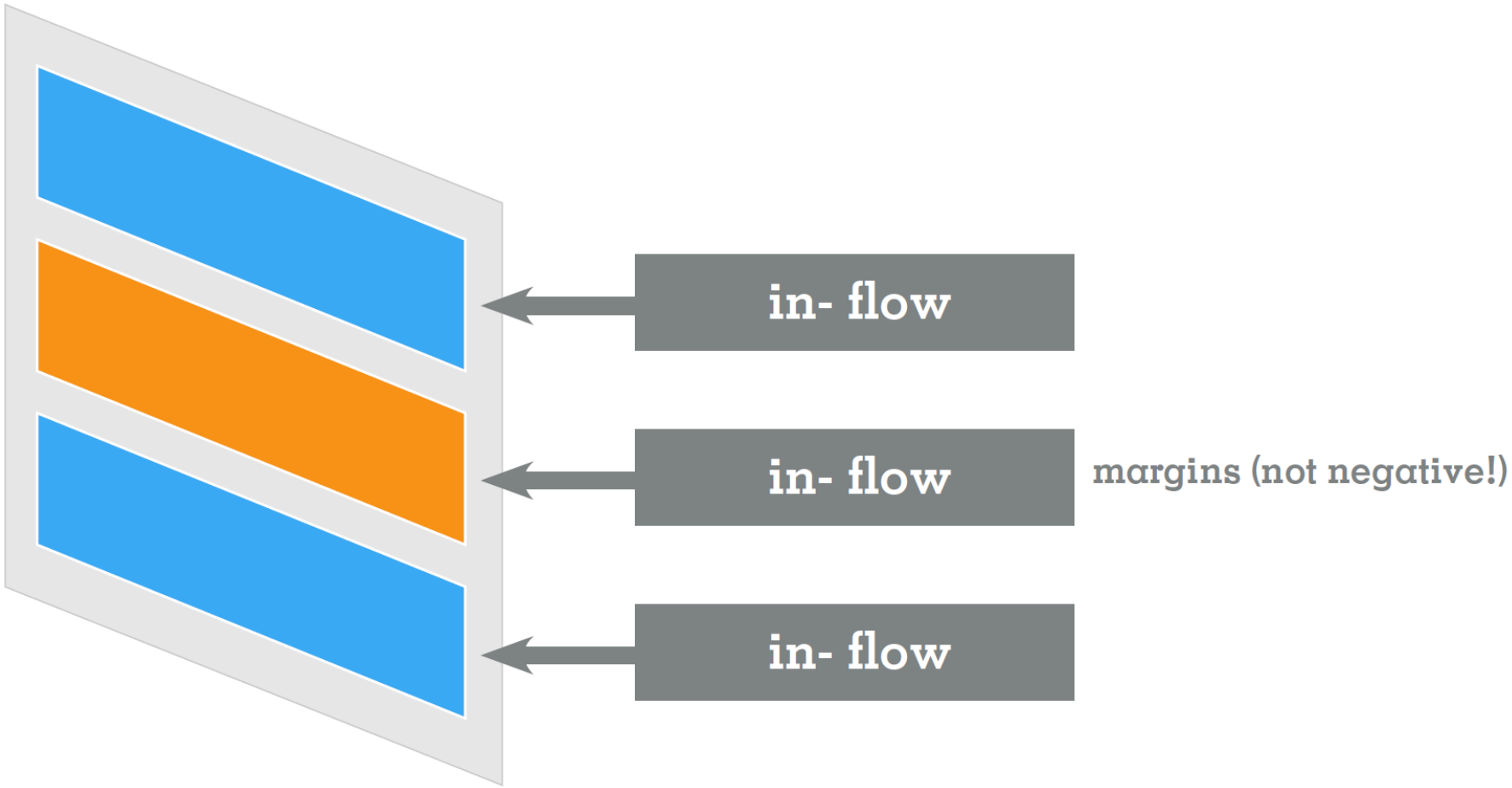
The position property

```
div#ad {
  position: fixed;
  right: 10%;
  top: 45%;
}
```

Here I am!

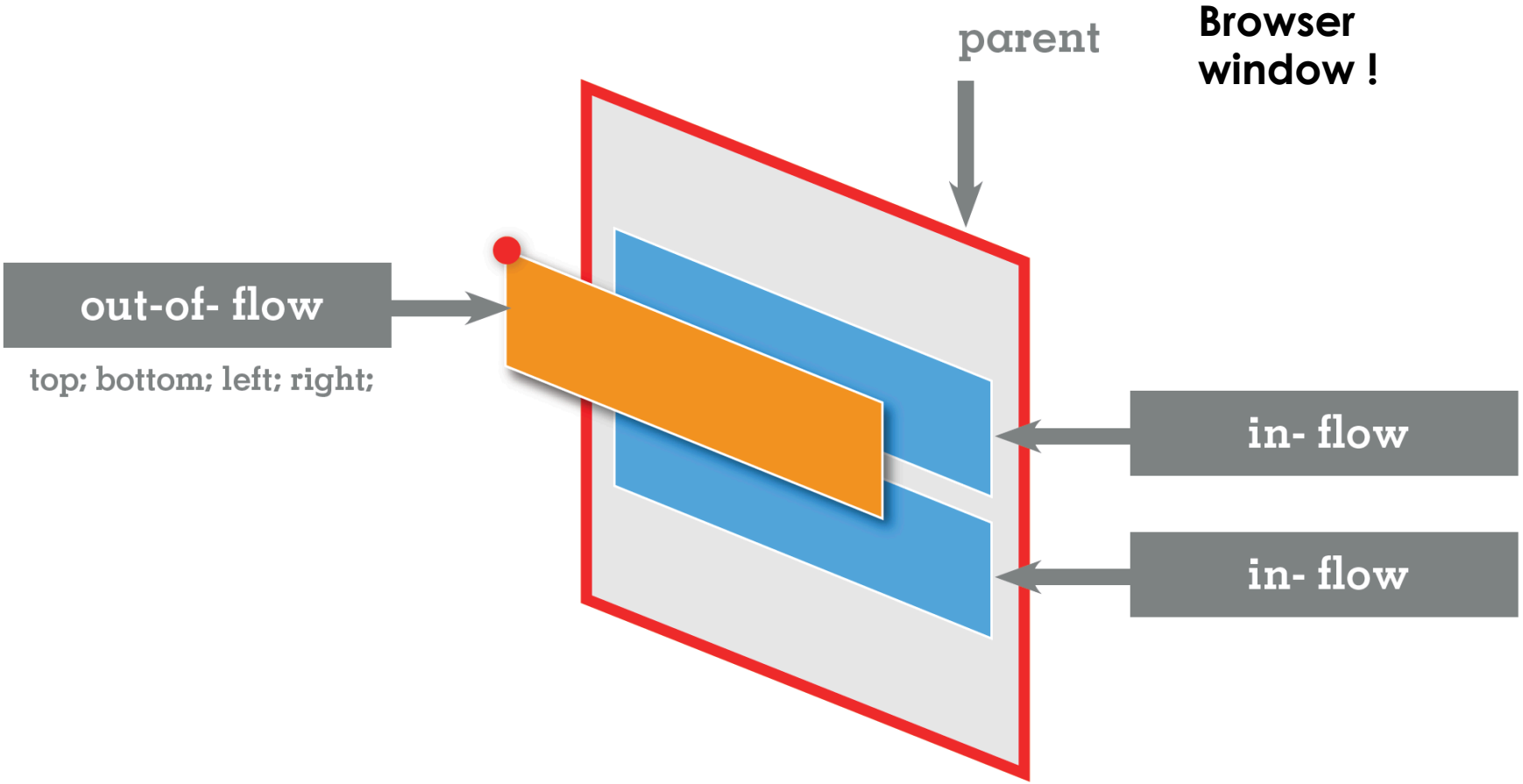
property	value	description
position	static	default position
	relative	offset from its normal static position
	absolute	a fixed position within its containing element
	fixed	a fixed position within the browser window
top, bottom, left, right	positions of box's corners	

1. Static (default)



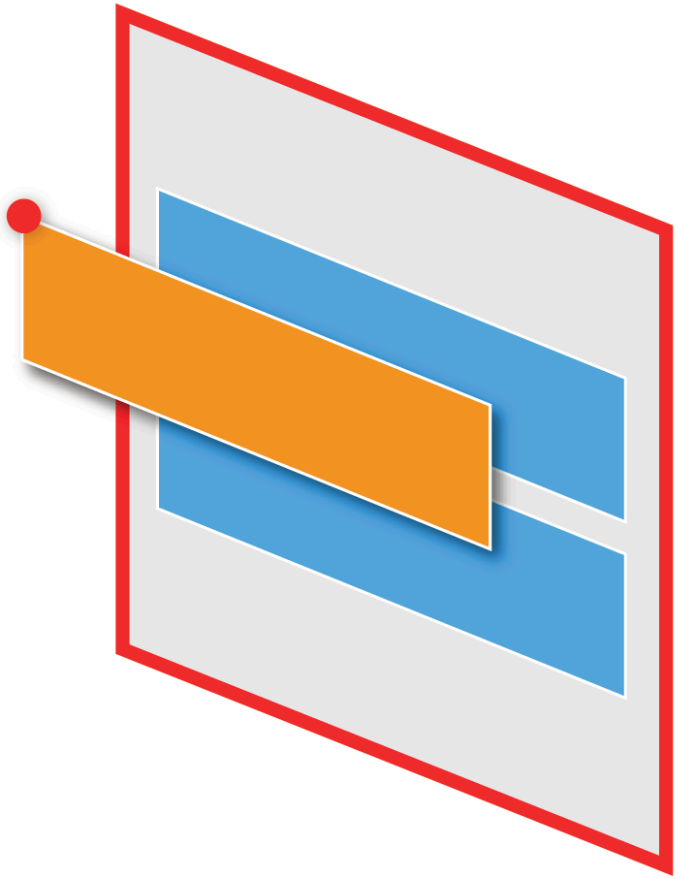
Slide credit: Yana Sakellion

2. Fixed position



Slide credit: Yana Sakellion

2. Fixed position do not scroll



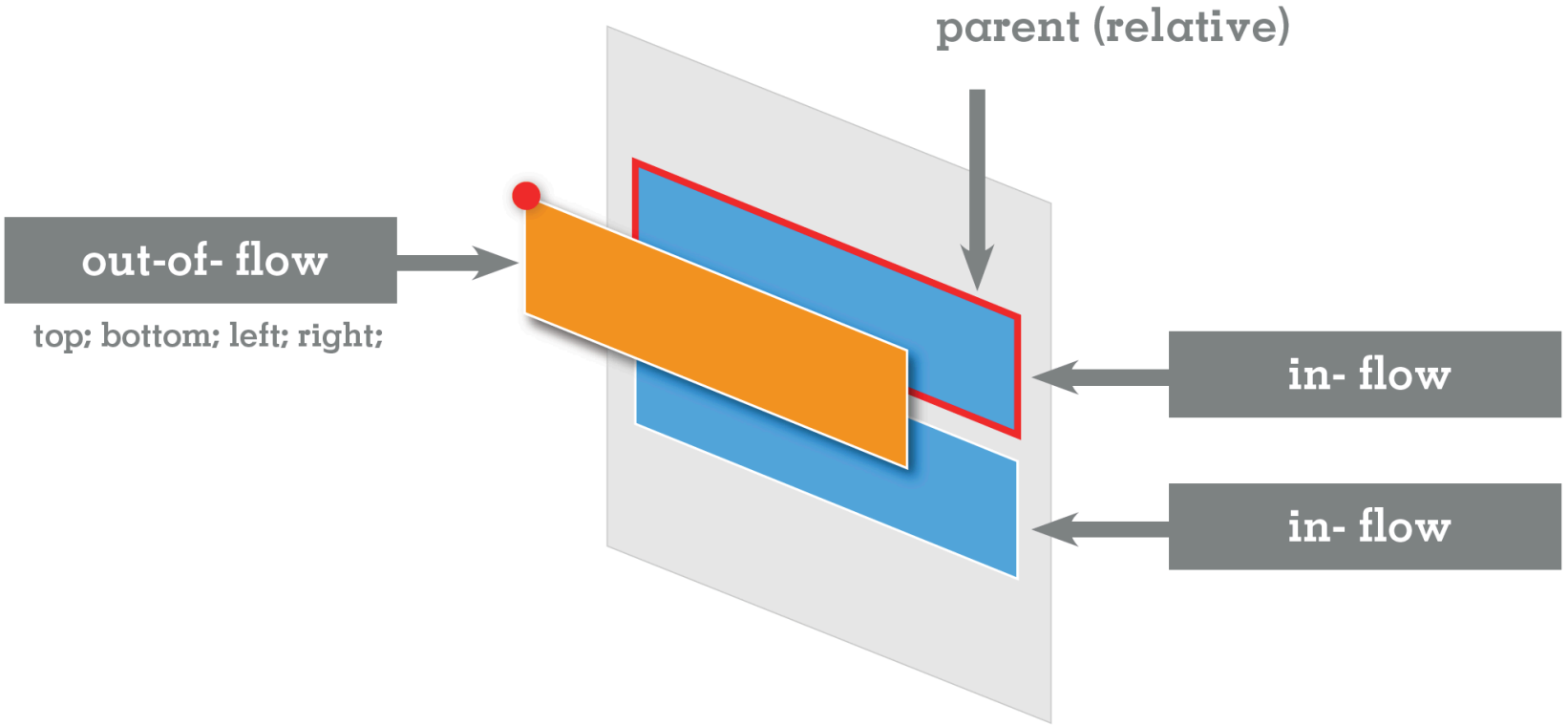
- use for sticky navigation
- browser is an anchor point
- add coordinates to position

top, bottom, left, rigth - negative values allowed

Sticky navigation Example: https://niice.co/

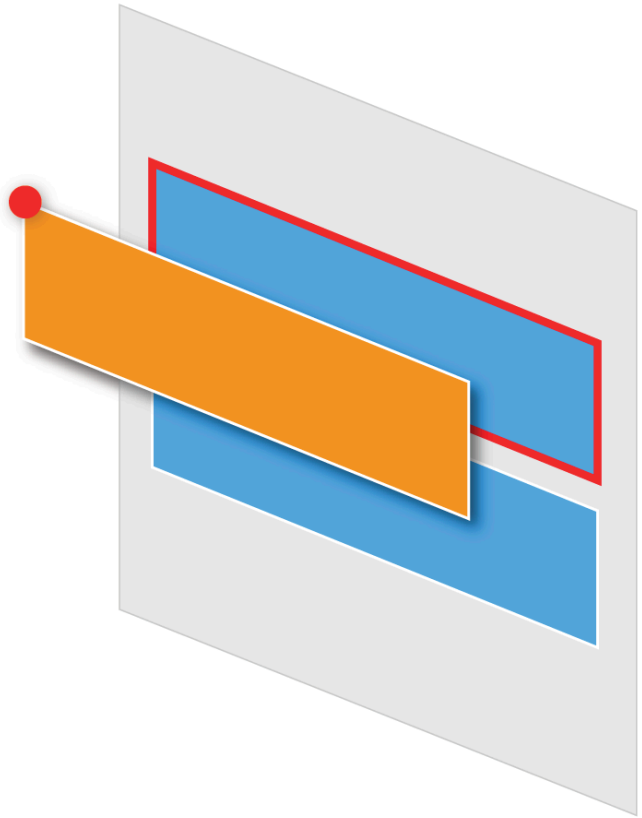
Slide credit: Yana Sakellion

3. Absolute Position



Slide credit: Yana Sakellion

3. Absolute Position



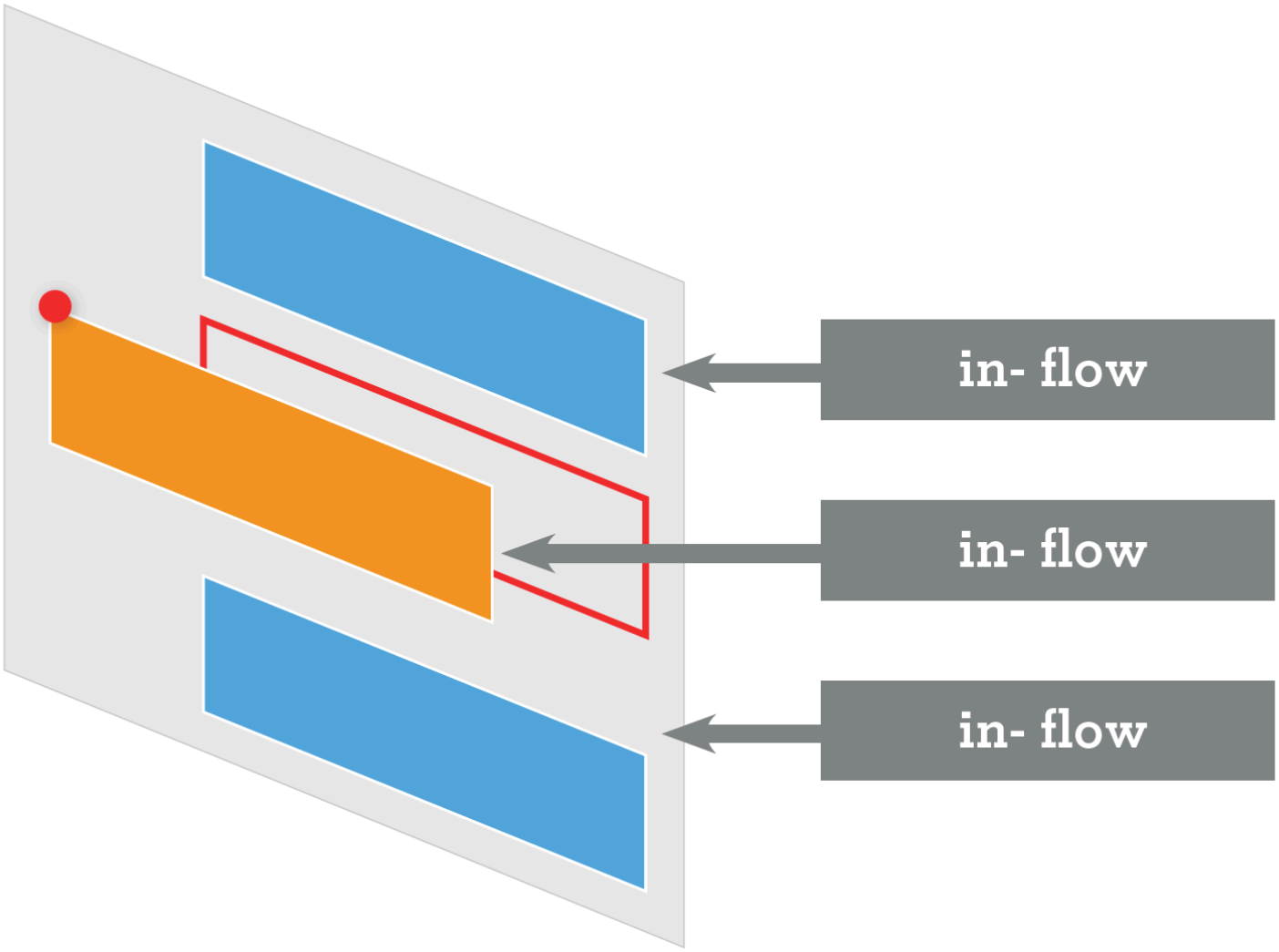
- use to overlap elements
- parent is an anchor point
- set parent's position to relative
- add coordinates to position

top, bottom, left, rigth - negative values allowed

If absolute positioned element has no positioned ancestors, it uses document body.

Slide credit: Yana Sakellion

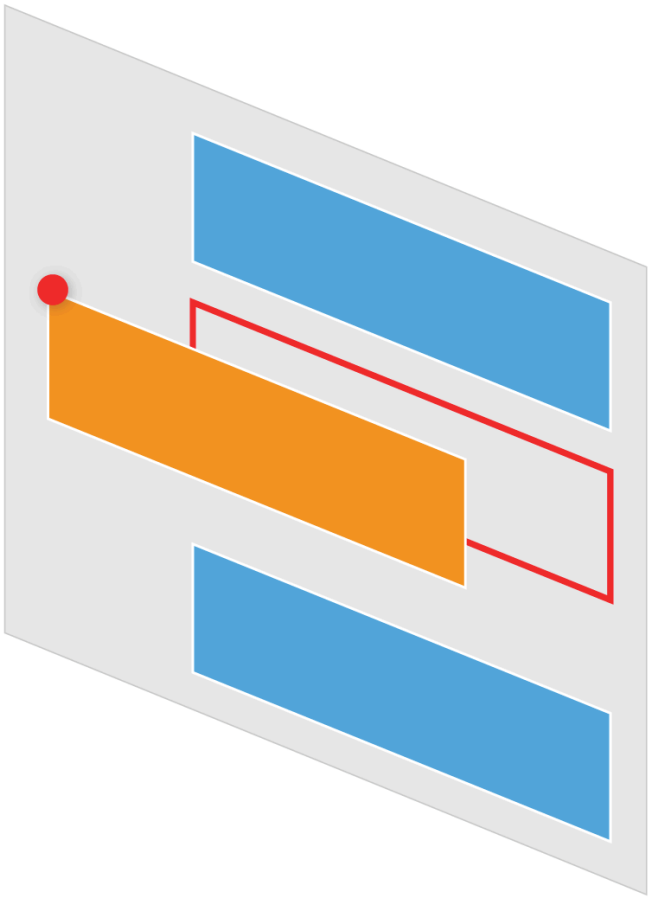
4. Relative Position



top; bottom; left; right;

Slide credit: Yana Sakellion

4. Relative Position

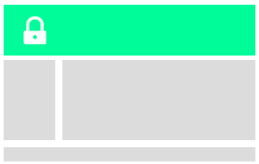
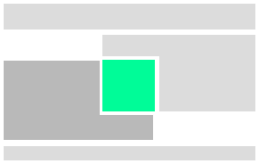


- use with absolute child
- use after fixed element
- itself is an anchor point
- add coordinates to position

top, bottom, left, rigth - negative values allowed

Slide credit: Yana Sakellion

CSS position summary

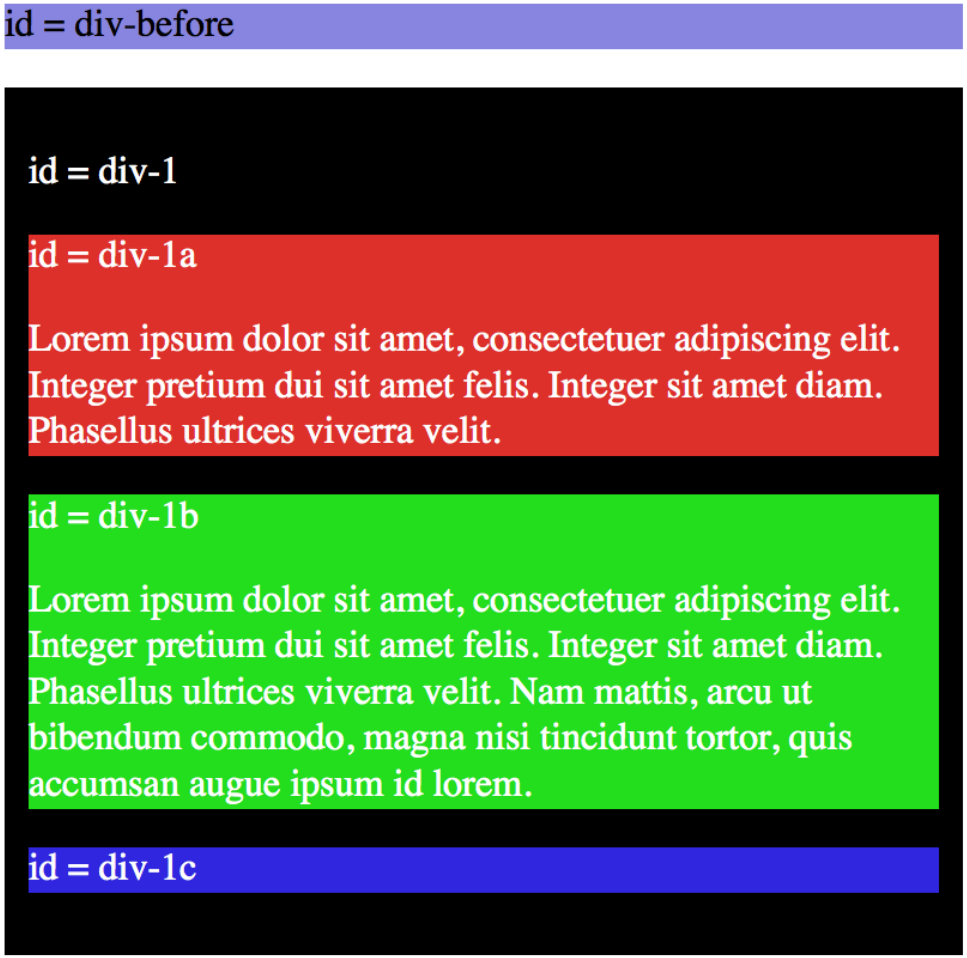
	WHEN TO USE	SAMPLE	FLOAT	OFFSET WITH	NEGATIVE VALUES
* Static	use most of the time use for columns and rows		✓	margin: value;	✗
Fixed	elements that do not scroll		✗	left / right: value; top / botom: value;	✓
Absolute	elements that overlap		✗	left / right: value; top / bottom: value;	✓
Relative	on first element following fixed element to declare a parent of an absolute element		✗	left / right: value; top / bottom: value;	✓

Slide credit: Yana Sakellion

Positioning: static

- Default position for all element. You don't have to specify this unless you want to override a position previously set.

```
#div-1 {
position:static;}
```



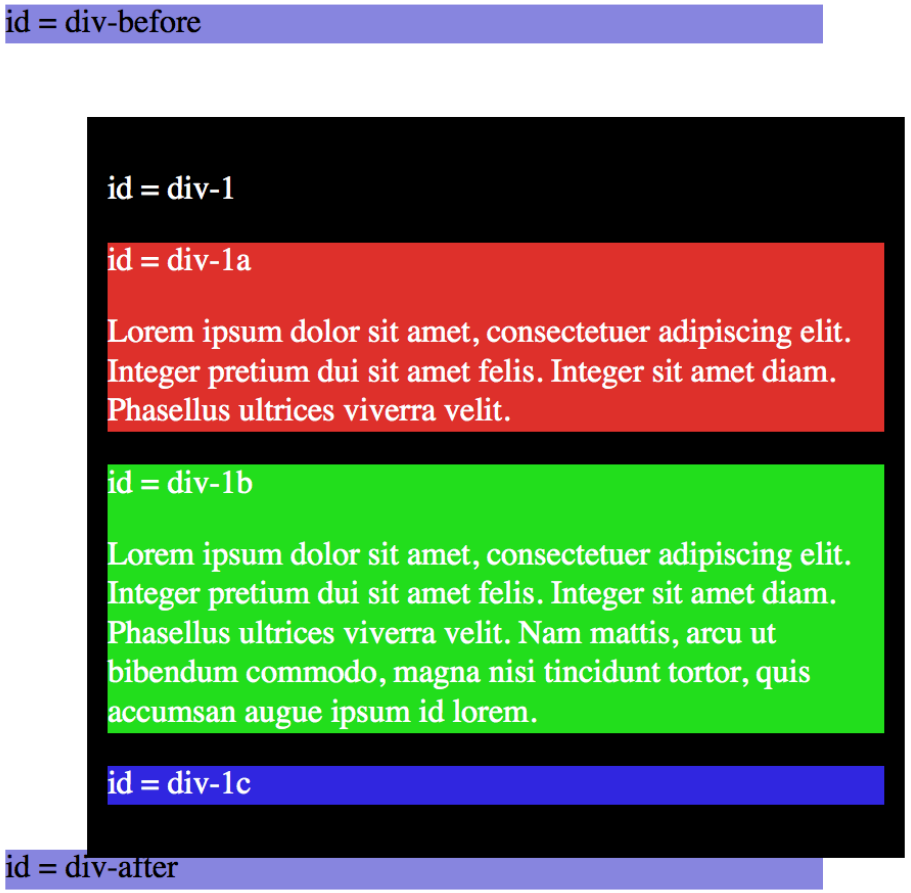
Positioning: relative

- Relative position means relative

to the element where it would normally occur. You can specify top,

bottom, left or right.

```
#div-1 {
 position: relative;
 top:20px;
 right:-40px;}
```



Positioning: absolute

- the element is removed form
- the document and placed exactly

where you tell it to go

```
#div-1a {
 position:absolute;
top:5;
 left:5px;
 width:200px;

}
```

Positioning: relative + position: absolute

If we set relative positioning on div-1,

Any elements within div-1 will be positioned relative to div-1. Here

of div-1:

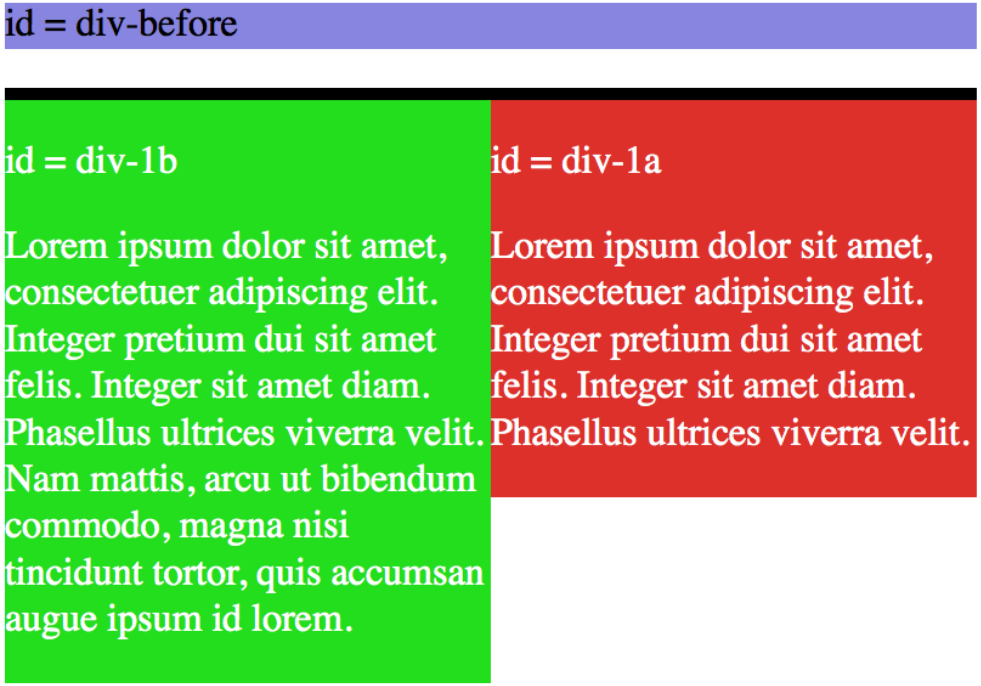
```
#div-1{
position:relative;}

#div_1a{
position:absolute;
top:0
right:0
width:200px;
}
```

Positioning: two columns layout

How do we make the page has two columns using position relative and absolute?

Please modify div-1, div-1a and div-1b to make

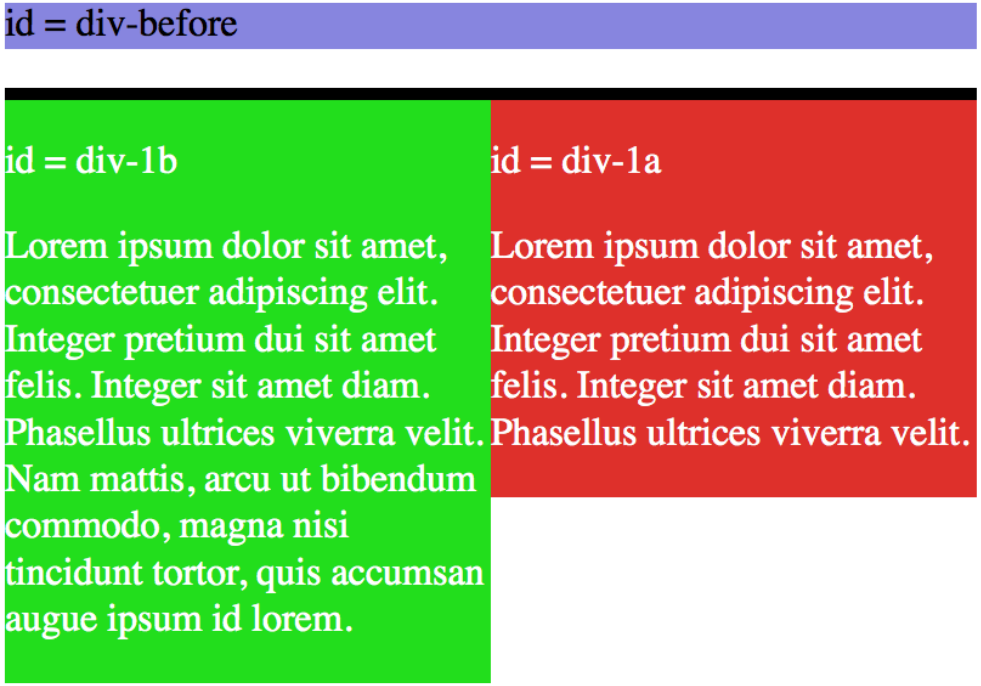


Positioning: two columns layout

How do we make the page has two columns using position relative and absolute?

Please modify div-1, div-1a and d

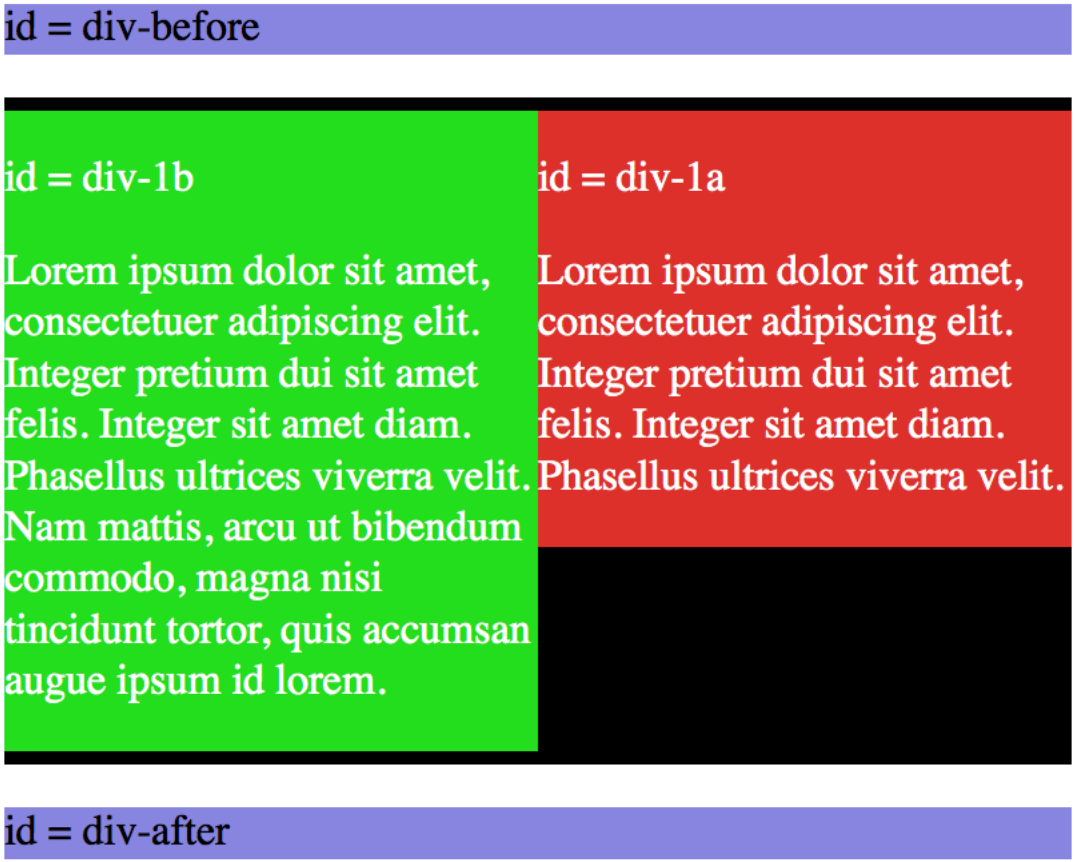
the page appear:




```
#div-1{
position:relative;}
#div_1a{
position:absolute;
top:0
right:0
width:200px;
}
#div_1b{
position:absolute;
top:0
left:0
width:200px;
}
```

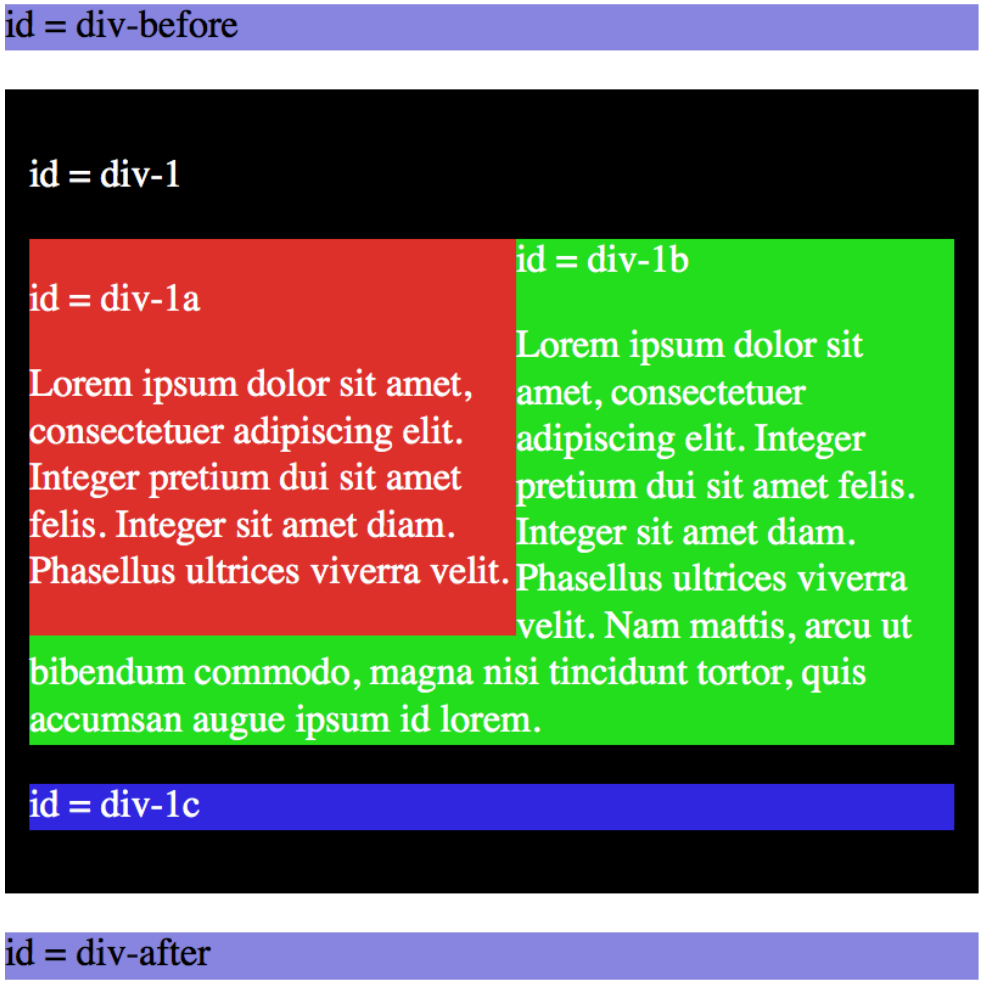
Positioning: two columns layout

Two columns that have absolute height



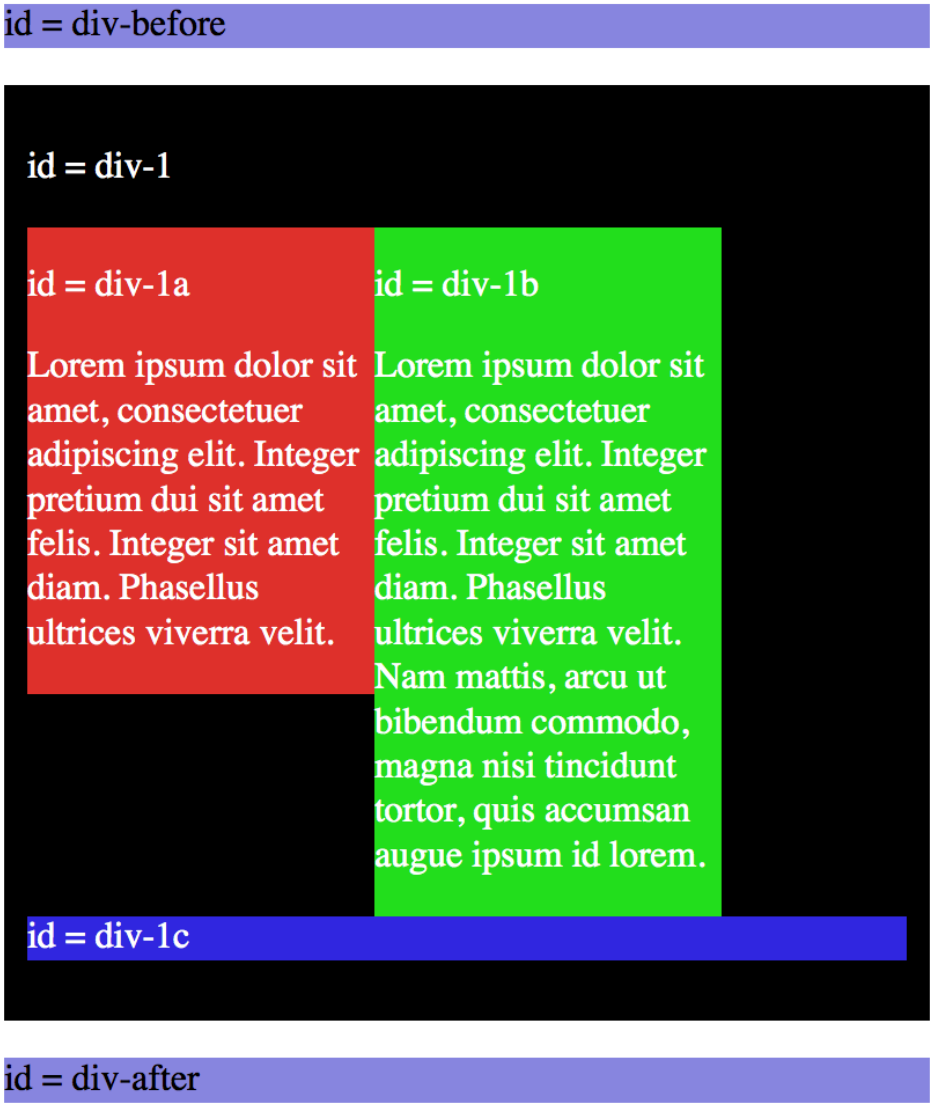

```
#div-1{
position:relative;
height: 250px}
#div_1a{
position:absolute;
top:0
right:0
width:200px;
}
#div_1b{
position:absolute;
top:0
left:0
width:200px;
}
```

This can also be easily achieved by float but notice text will wrap around

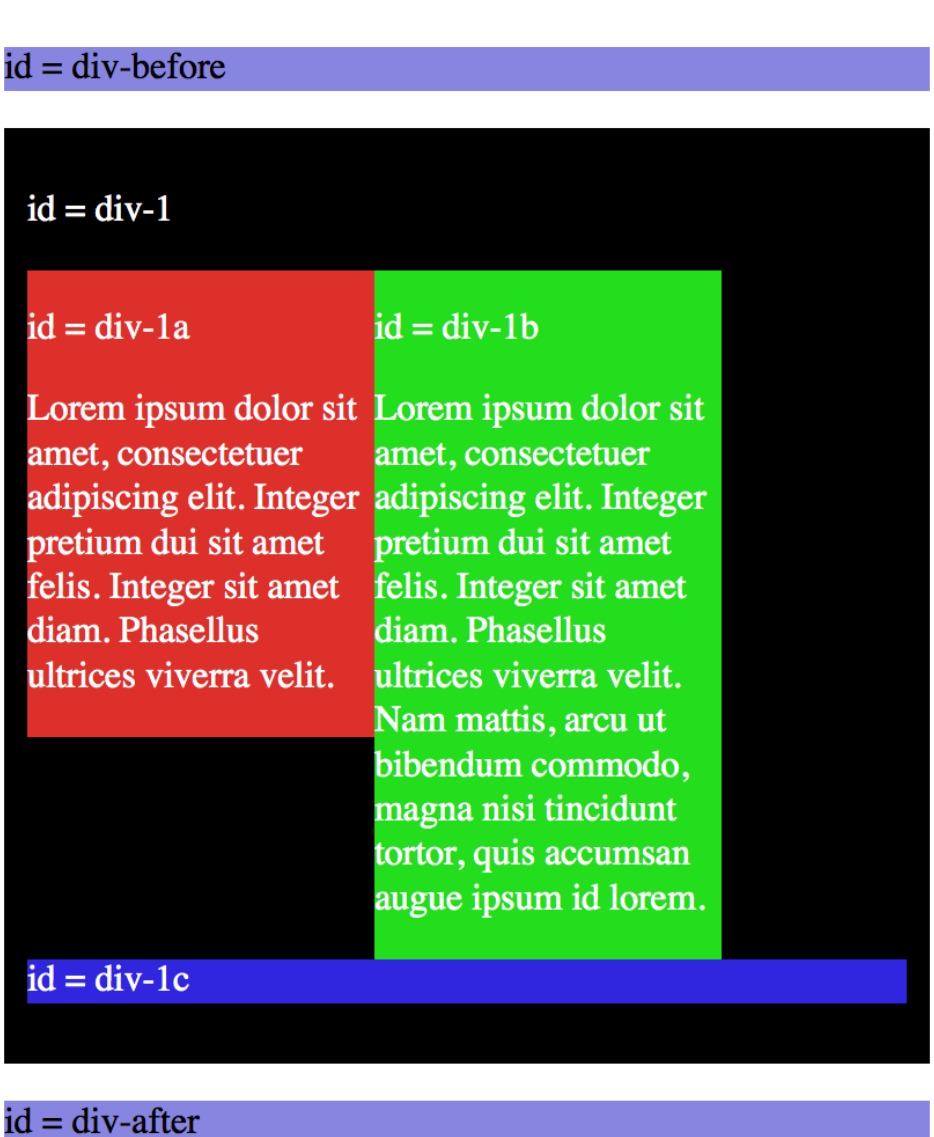



```
#div-1{
position:relative;}
#div_1a{
float:left
}
#div_1b{
}
```

How to achieve this? Use clear



How to achieve this? Use clear




```
#div-1{
position:relative;}
#div_1a{
float:left;
width:190px
}
#div_1b{
float:left
width:190px
}
#div_1c{
clear:both:
}
```

Alignment vs. float vs. position

1. if possible, lay out an element by *aligning* its content
   - horizontal alignment: text-align
     - set this on a block element; it aligns the content within it (not the block element itself)

   - vertical alignment: vertical-align
     - set this on an inline element, and it aligns it vertically within its containing element

2. if alignment won't work, try *floating* the element

3. if floating won't work, try *positioning* the element
   - absolute/fixed positioning are a last resort and should not be overused

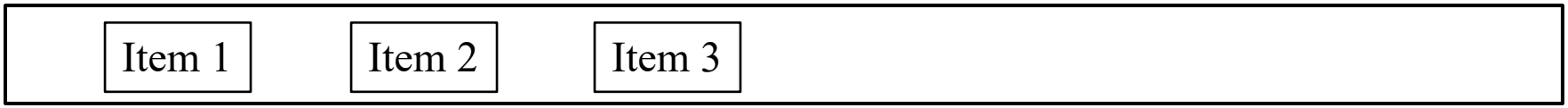
display property

- Affects how an element is displayed.
- **none**- removes element from page. Other elements as positioned as if element doesn't exist.
- **block-element** is treated as a block element.
- **inline-element** is treated as inline element. You can't specify width and height.
- **Inline-block**-element only takes up available width and doesn't force newlines, but you can specify width, height, and margins, etc.
  - Another way to get block elements to go side by side.

Display block elements as inline

```
<ul id="topmenu">
  <li>Item 1</li>
  <li>Item 2</li>
  <li>Item 3</li>
</ul>
```

```
#topmenu li {
  display: inline;
  border: 2px solid gray;
  margin-right: 1em;
}
```



- lists and other block elements can be displayed inline
  - flow left-to-right on same line
  - width is determined by content (block elements are 100% of page width)

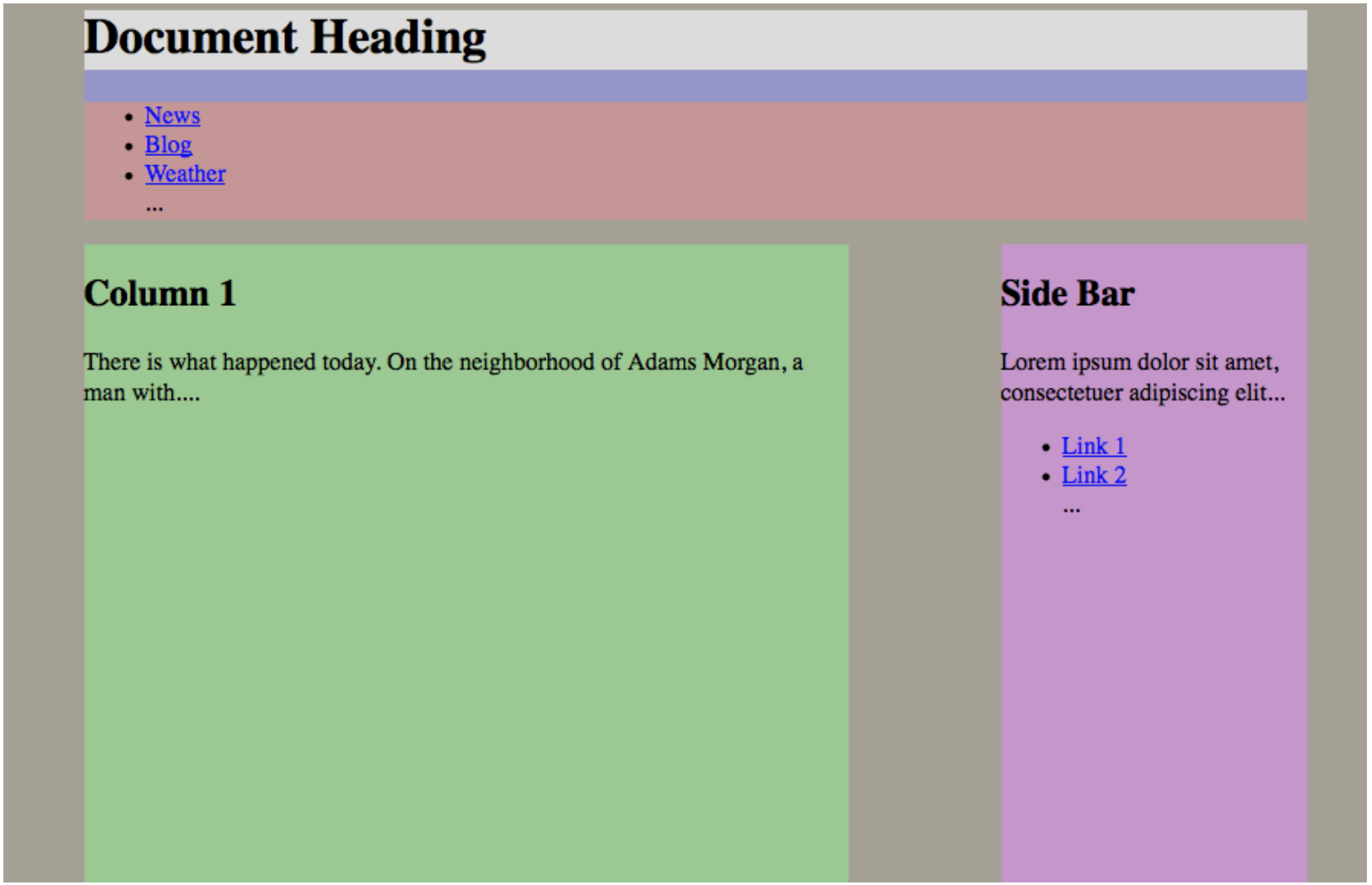
Flexbox

- A layout library built into CSS-more on this next week.
- Useful for nestling block elements next to each other in rows or columns and specifying how much space each of the elements take up.
- When you set a parent to display:flex, all items inside becomes “flex-items”.
- https://css-tricks.com/snippets/css/a-guide-to-flexbox/

Exercise 1:

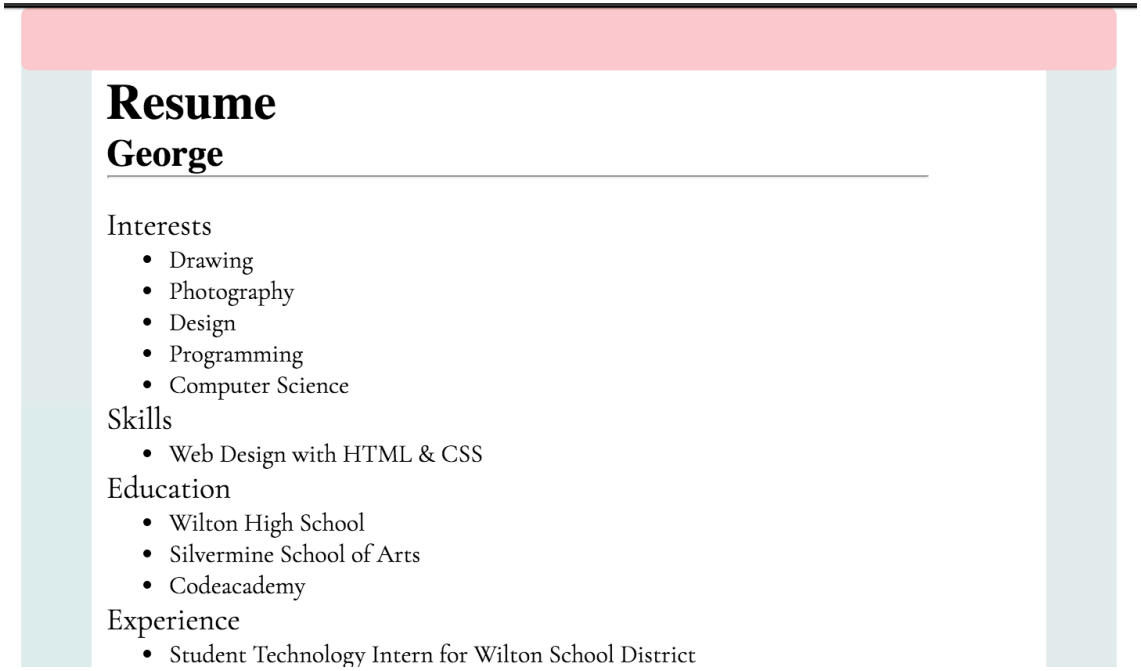
Using Display Property, create the following page:

Exercise 2: Page layout



Now, let's go back to Resume

- Download SimpeResume.html or you your own resume.html
- Add style sheets.



Resume

George

Interests

- Drawing
- Photography
- Design
- Programming
- Computer Science

Skills

- Web Design with HTML & CSS

Education

- Wilton High School
- Silvermine School of Arts
- Codeacademy

Experience

- Student Technology Intern for Wilton School District

Hyperlinks

- Link states
- a: link- a normal unvisited link
- a: visited- a link the user has visited
- a: hover_ a link when the user mousess over it.
- A: active- alink the moment it is clicked
- Example a: link{…}
- A#my_id:hover{…}

Next Week:

- Wrap up HTML/CSS, buttons, links, etc.
- Finish take-home exercise: Journal.html.
- Homework 2 is due on Monday, end of the day.
- Onto JavaScript.

Exercises & Take-home reading

- 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