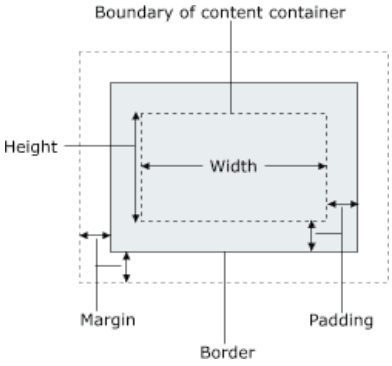
Page Layout with CSS

Web Engineering Class
Department of Computer Engineering, Junior of first semester 2009

본 내용은 University of Washington, CSE 190 M (Web Programming), Spring 2007 수업에서 사용된 자료입니다.

CSS Box Model

- for layout purposes, every element is composed of:
  - the actual element's content
  - a border around the element
  - padding between the content and the border (*inside*)
  - a margin between the border and other content (*outside*)
- width = content width + L/R padding + L/R border + L/R margin
  height = content height + T/B padding + T/B border + T/B margin
  - IE6 doesn't do this right, and sucks



CSS properties for borders

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

This is a heading.

- `border`: all properties of border on all 4 sides
- a border is specified as three items:
  - its thickness (specified in `px`, `pt`, `em`, `%`, or one of the following general widths: `thin`, `medium`, `thick`)
  - its style (one of `none`, `hidden`, `dotted`, `dashed`, `double`, `groove`, `inset`, `outset`, `ridge`, `solid`)
  - its color (specified as seen previously for text and background colors)

More border properties

- `border-color`, `border-width`, `border-style`: specific properties of border on all 4 sides
- `border-bottom`, `border-left`, `border-right`, `border-top`: all properties of border on a particular side
- `border-bottom-color`, `border-bottom-style`, `border-bottom-width`, `border-left-color`, `border-left-style`, `border-left-width`, `border-right-color`, `border-right-style`, `border-right-width`, `border-top-color`, `border-top-style`, `border-top-width`: specific properties of border on a particular side
- Complete list of border properties

Border example 2

```
h2 {
    border-left: thick dotted #CC0088;
    border-bottom-color: rgb(0, 128, 128);
    border-bottom-style: double;
}
```

This is a heading.

- each side's border properties can be set individually
- if you omit some properties, they receive default values (e.g. `border-bottom-width` above)

CSS properties for padding

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

Padding example 1

```
p { padding: 20px; border: 3px solid black; }
h2 { padding: 0px; background-color: yellow; }
```

This is the first paragraph

This is the second paragraph

This is a heading

- notice that padding shares the background color of the element

Padding example 2

```
p { padding-left: 200px; padding-top: 30px;
    background-color: fuchsia; }
```

This is the first paragraph

This is the second paragraph

- each side's padding can be set individually

CSS properties for margins

- `margin`: margin on all 4 sides
- `margin-bottom`: margin on bottom side only
- `margin-left`: margin on left side only
- `margin-right`: margin on right side only
- `margin-top`: margin on top side only

- Complete list of margin properties

Margin example 1

```
p {
    margin: 70px;
    background-color: fuchsia;
}
```

This is the first paragraph

This is the second paragraph

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

Margin example 2

```
p {
    margin-left: 200px;
    background-color: fuchsia;
}
```

This is the first paragraph

This is the second paragraph

- each side's margin can be set individually

Recall: properties for dimensions

```
p { width: 400px; background-color: yellow; }
h2 { width: 50%; background-color: aqua; }
```

This paragraph uses the first style above.

This heading uses the second style above.

- `width`, `height`: how wide or tall to make this element
- `max-width`, `max-height`, `min-width`, `min-height`: the maximum or minimum size of this element in the given dimension
- all of these apply only to block elements; ignored for inline elements

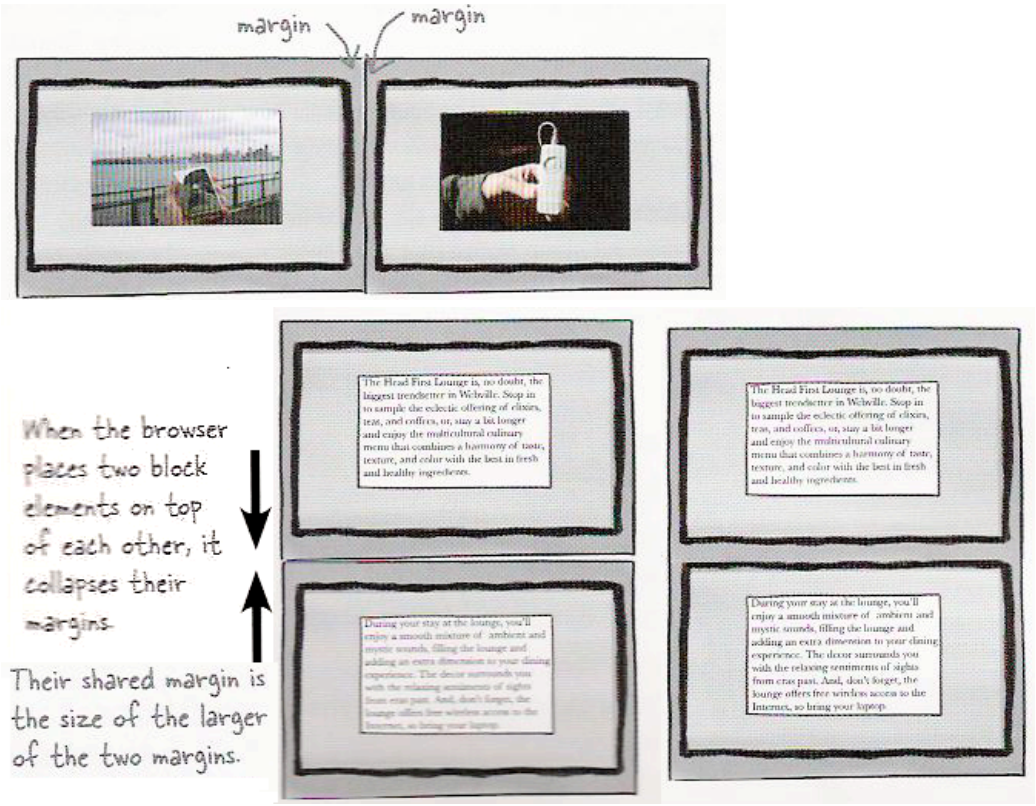
Centering a block element: `auto` margins

```
p { width: 500px; margin-left: auto; margin-right: auto; }
```

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

- only works if `width` is set
  (otherwise, element occupies entire width of page)
- to center inline elements within a block element,
  use `text-align: center;` instead

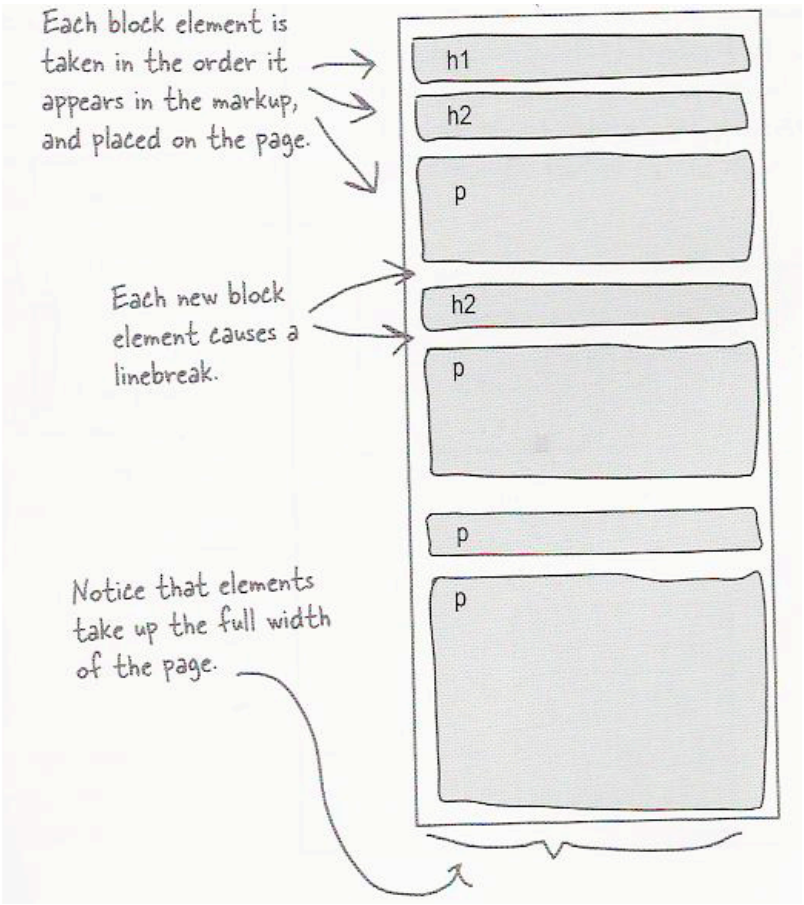
Top/bottom margin collapse



- when two block elements appear on top of each other, their margins are collapsed
- their shared margin is the larger of the two individual margins

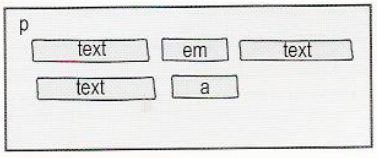
Document flow - block elements

```
<html>
    <head>...</head>
    <body>
        <h1>...</h1>
        <h2>...</h2>
        <p>...</p>
        <h2>...</h2>
        <p>...</p>
        <p>...</p>
        <p>...</p>
    </body>
</html>
```



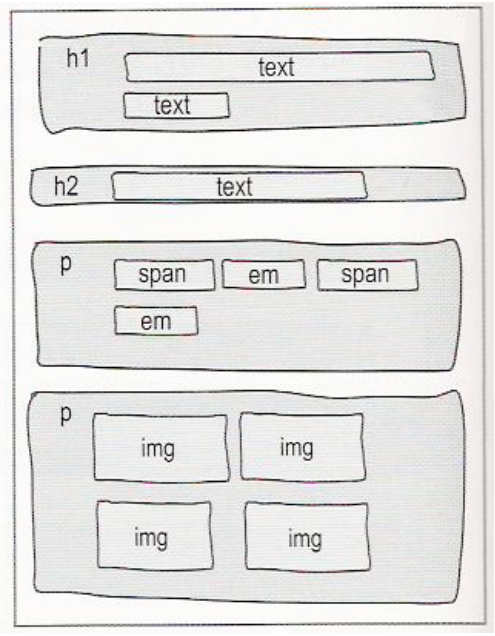
Document flow - inline elements

```
<p>
Join us <em>any evening</em> for
these and all our other wonderful <a
href="beverages/elixir.html" title="Head
First Lounge Elixirs">elixirs</a>.
</p>
```



Document flow - a larger example

Here I am!



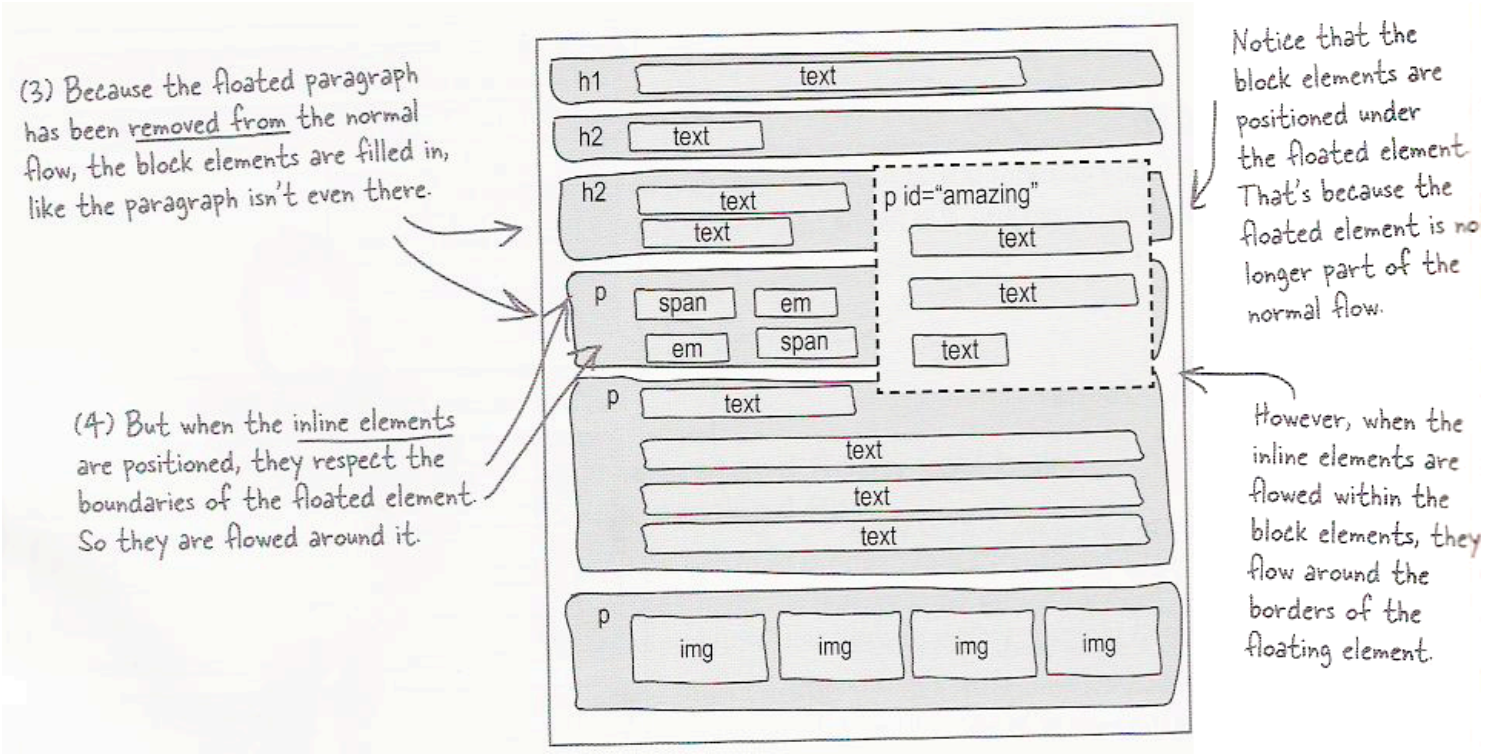
The CSS **`float`** property (reference)

```
img.floatright { float: right; width: 130px; }
```

Borat Sagdiyev (born July 30, 1972) is a fictional Kazakhstani journalist played by British-Jewish comedian Sacha Baron Cohen. He is the main character portrayed in the controversial and successful film Borat: Cultural Learnings of America for Make Benefit Glorious Nation of Kazakhstan. Borat ...

- `float` can be `left`, `right`, or `none` (default)
- floating elements are removed from normal document flow
- underlying text wraps around floating element as necessary

Floating elements diagram



Common `float` bug: missing width

I am not floating, no width

I am floating right, no width

I am not floating, 45% width

I am floating right, 45% width

- often floating block elements must have a `width` property value
  - if no `width` is specified, the floating element may occupy 100% of the page width, so no content can wrap around it

Practice Problem

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all going direct the other way - in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.

Result: **Interaction Pane:**

Show Answer Evaluate

The `clear` property

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

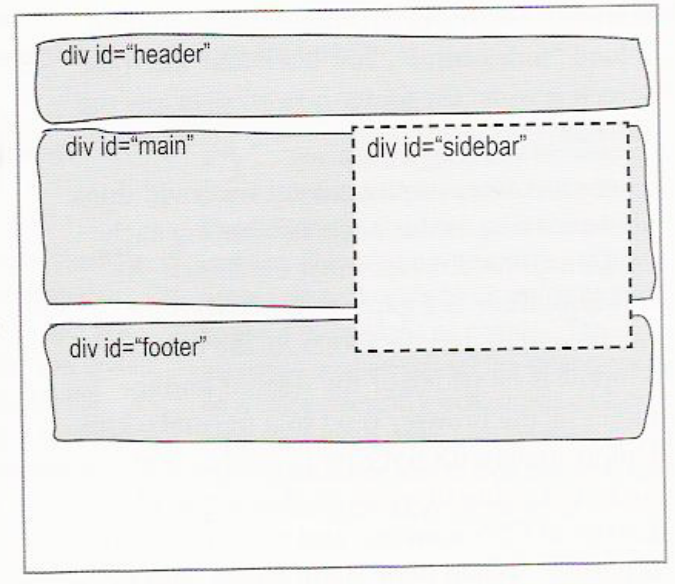
Homestar Runner is a Flash animated Internet cartoon. It mixes surreal humour with references to 1980s and 1990s pop culture, notably video games, classic television and popular music.

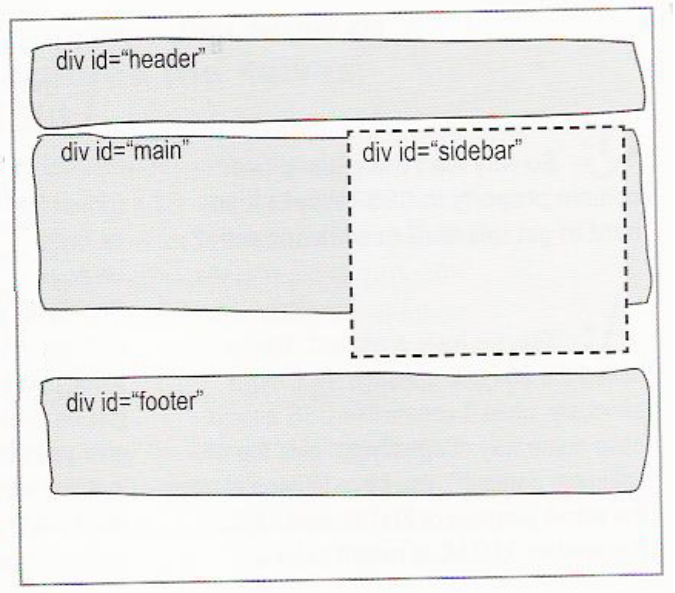
My Homestar Runner Fan Site

- disallows any floating elements from overlapping this element
- `clear` can be `left`, `right`, `both`, or `none` (default)

Clear diagram

```
div#sidebar { float: right; }
div#footer { clear: right; }
```





Practice problem (HTML) (CSS)

W3Schools.com

"Never increase, beyond what is necessary, the number of entities required to explain anything." William of Ockham (1285-1349)

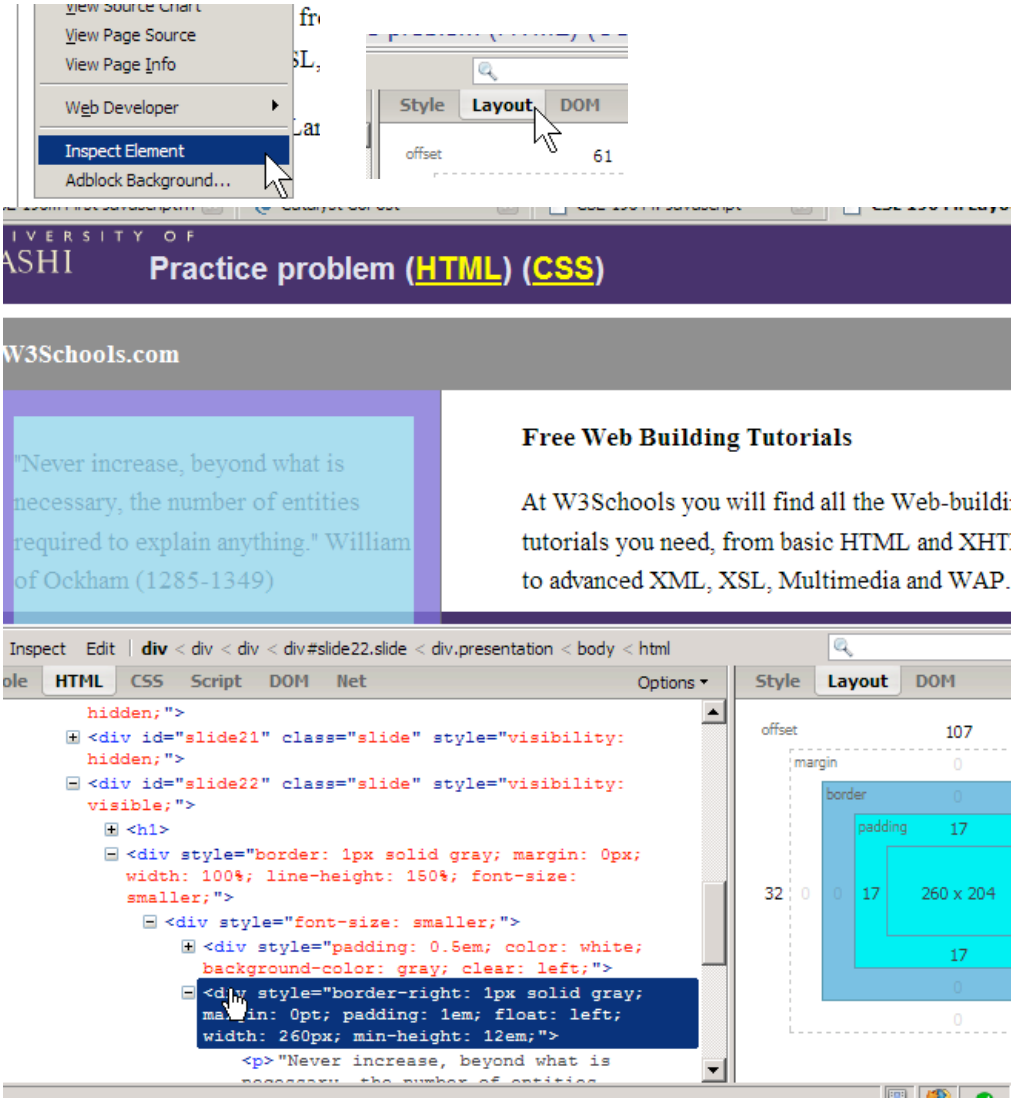
Free Web Building Tutorials

At W3Schools you will find all the Web-building tutorials you need, from basic HTML and XHTML to advanced XML, XSL, Multimedia and WAP.

W3Schools - The Largest Web Developers Site On The Net!

- which `div` elements should `float`, and how?
- how would we add a second column on the left?

Firefox Firebug extension

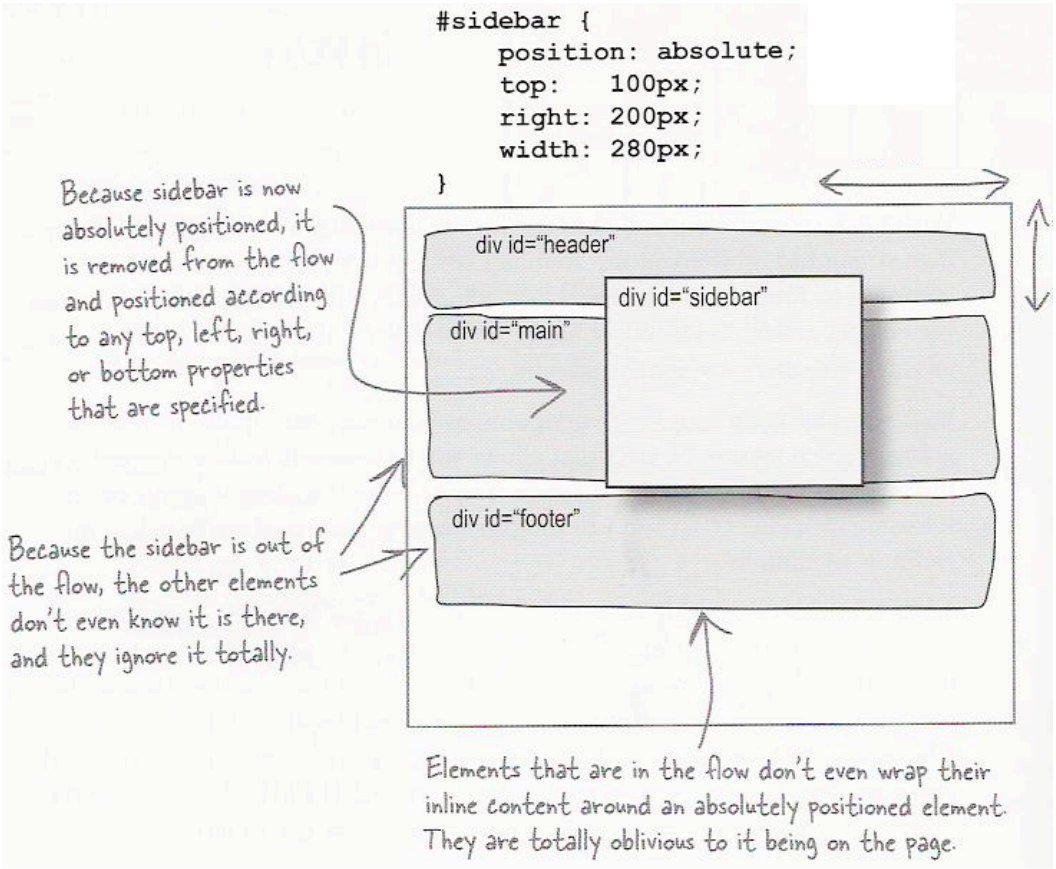


The `position` property (examples)

```
div#rightside {
    position: fixed;
    right: 10%;
    top: 36%;
}
```

- `static` : default position
- `relative` : offset from its normal static position
- `absolute` : at a fixed position *within its containing element*
- `fixed` : at a fixed position *within the browser window*
  - `top`, `bottom`, `left`, `right` properties specify positions of box's corners

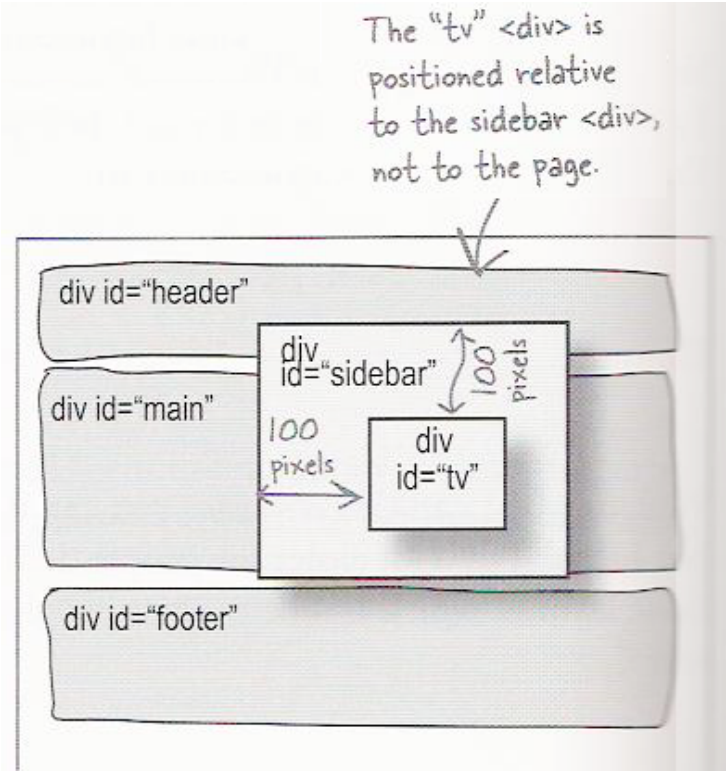
Absolute positioning



- removed from normal flow (like floating ones)
- positioned relative to the block element containing them (assuming that block also uses `absolute` or `relative` positioning)
- actual position determined by `top`, `bottom`, `left`, `right` values
- should often specify a `width` property as well

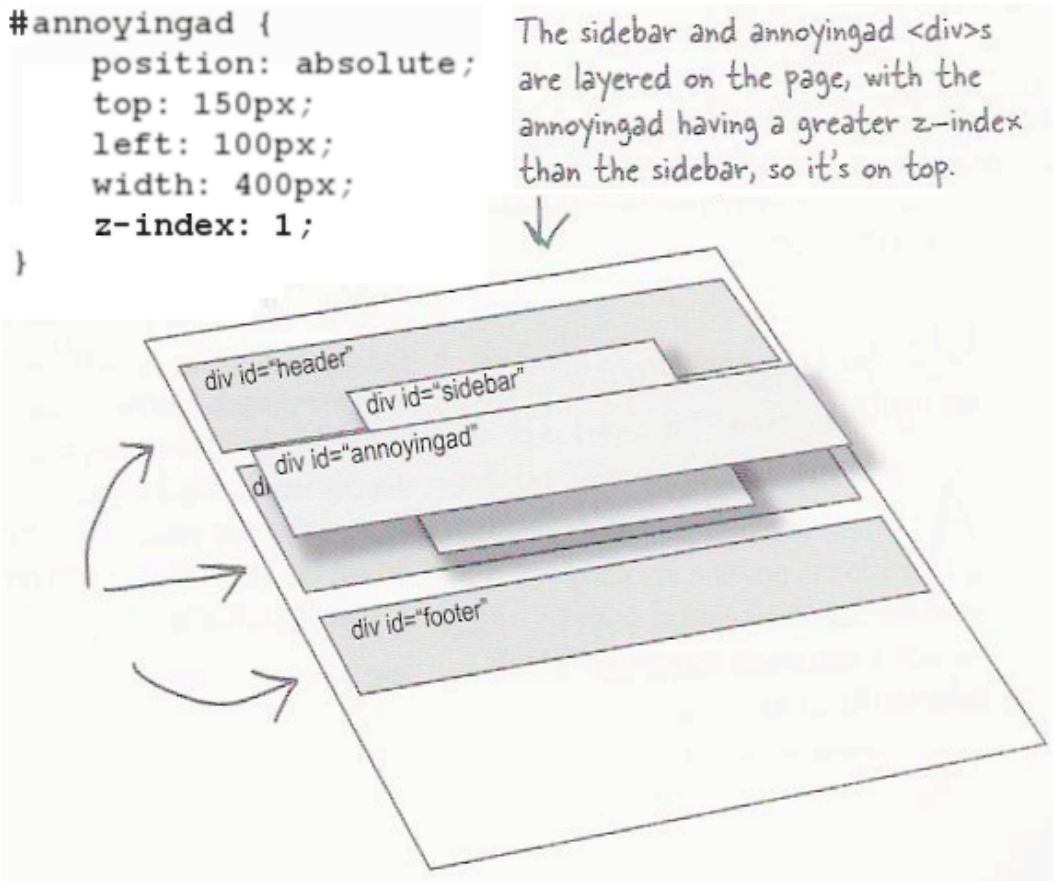
Absolute positioning details

- positioned relative to the block element containing them
- to position many elements absolutely but close to their normal default position, wrap the `absolute` elements in a `relative` element



The `z-index` property

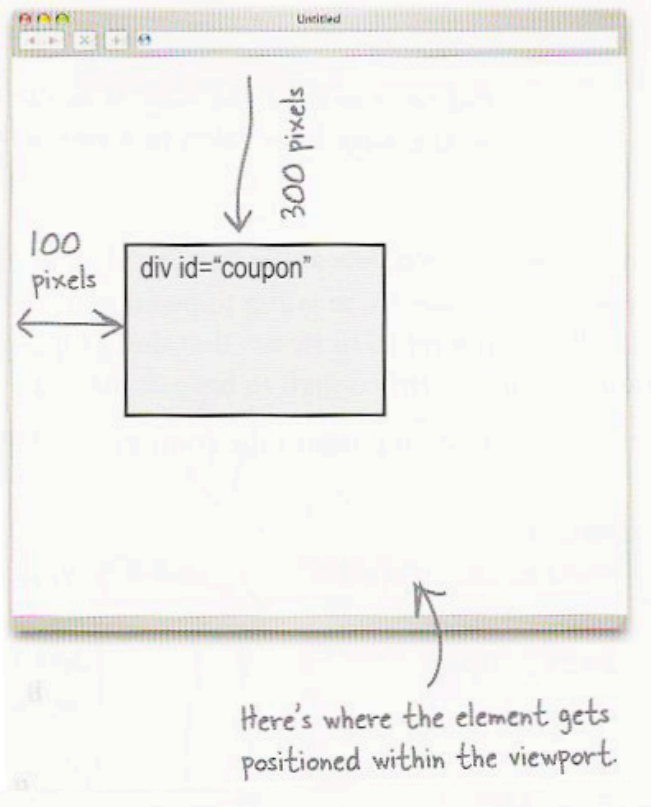
```
#annoyingad {
    position: absolute;
    top: 150px;
    left: 100px;
    width: 400px;
    z-index: 1;
}
```



- sets which absolute positioned element will appear on top of another that occupies the same space
- higher `z-index` wins
- can be `auto` (default) or a number
- can be adjusted in DOM:
  `object.style.zIndex = "value";`

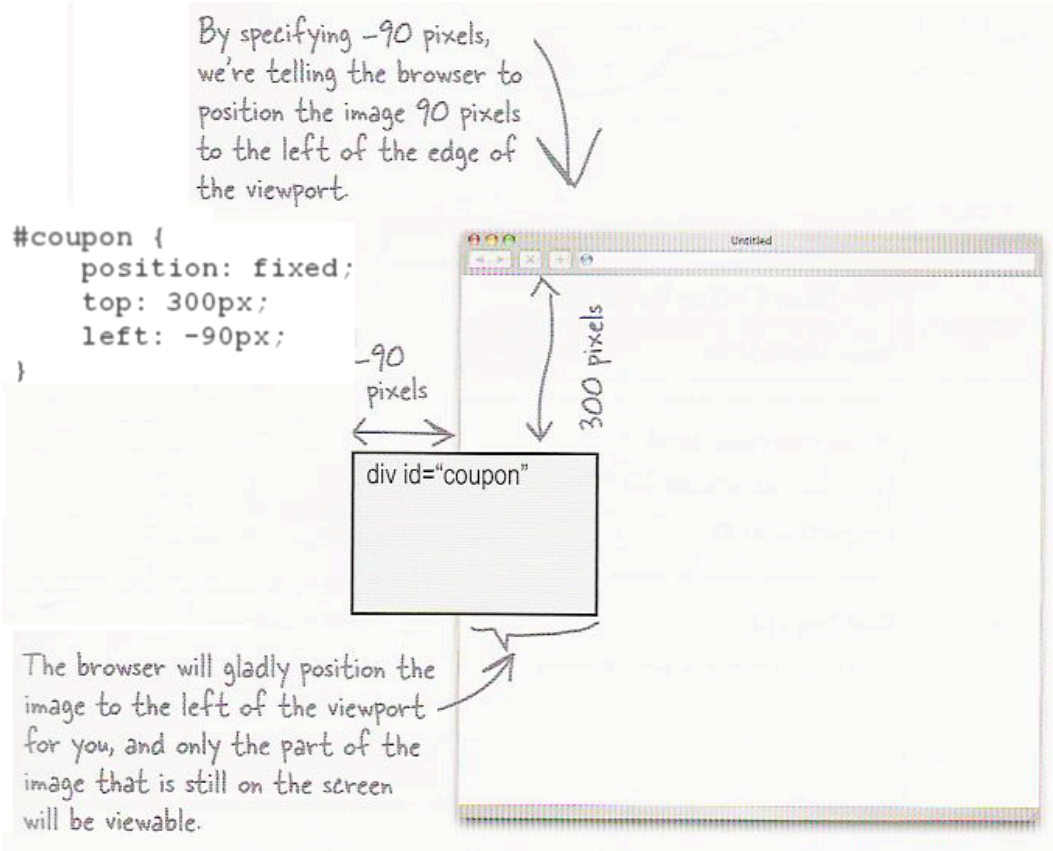
Fixed positioning

```
#coupon {
    position: fixed;
    top: 300px;
    left: 100px;
}
```



- removed from normal flow (like floating ones)
- positioned relative to the browser window

Negative corners



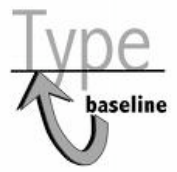
- `left`, `right`, `top`, or `bottom` value can be negative to create an element that sits outside the visible browser window

Details about inline boxes

- size properties (`width`, `height`, `min-width`, etc.) are ignored for inline boxes
- `margin-top` and `margin-bottom` are ignored, but `margin-left` and `margin-right` are not
- the containing block box's `text-align` property controls horizontal position of inline boxes within it
  - text-align does not align block boxes within the page
- each inline box's `vertical-align` property aligns it vertically within its block box

The `vertical-align` property

- specifies where an inline element should be aligned vertically, with respect to other content on the same line within its block element's box
- can be `top`, `middle`, `bottom`, `baseline` (default), `sub`, `super`, `text-top`, `text-bottom`, or a length value or `%`
  - `baseline` means aligned with bottom of non-hanging letters
- in DOM:
  `object.style.verticalAlign = "value";`



`vertical-align` example

```
<p style="background-color: yellow;">
<span style="vertical-align: top; border: 1px solid red;">
Don't be sad!  Turn that frown
<img src="sad.jpg" alt="sad" /> upside down!
<img style="vertical-align: bottom" src="smiley.jpg" alt="smile" />
Smiling burns calories, you know.
<img style="vertical-align: middle" src="puppy.jpg" alt="puppy" />
Anyway, look at this cute puppy; isn't he adorable!  So cheer up,
```

```
and have a nice day.  The End.
</span></p>
```

Don't be sad! Turn that frown  upside down!  Smiling burns calories, you know.  Anyway, look at this cute puppy; isn't he adorable! So cheer up, and have a nice day. The End.

Common bug: space under image

```
<p style="background-color: red; padding: 0px; margin: 0px">
<img src="images/smiley.png" alt="smile" />
</p>
```

- red space under the image, despite `padding` and `margin` of 0
- this is because the image is vertically aligned to the baseline of the paragraph (not the same as the bottom)
- setting `vertical-align` to `bottom` fixes the problem (so does setting `line-height` to `0px`)

The `display` property

```
h2 { display: inline; background-color: yellow; }
```

This is a heading This is another heading

- sets the type of CSS box model an element is displayed with
- can be `none`, `inline`, `block`, `run-in`, `compact`, ...
- use sparingly, because it can radically alter the page layout

The `visibility` property

```
p.secret {
    visibility: hidden;
}
```

- sets whether an element should be shown onscreen
  - the element will still take up space onscreen, but will not be shown
  - to make it not take up any space, set `display` to `none` instead
- can be `visible` (default) or `hidden`
- can be used to show/hide dynamic HTML content on the page in response to events