

CSS



Objectives

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- Understand major CSS concepts
- See real life CSS samples
- Present common issues and fix them

The Big Three

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- The three major aspects of every web application
 - ▣ Content
 - ▣ Logic
 - ▣ Styling
- Each aspect should be defined separately and independently to allow ease of maintenance
 - ▣ HTML
 - ▣ Java Script
 - ▣ CSS

CSS

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- Allow for separation of content from styling
- Markup page content

```
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title></title>
  </head>
  <body>
    <div id="header"></div>
    <div id="body"></div>
    <div id="footer"></div>
  </body>
</html>
```

- Then apply style to it

```
#header {
  font-size: 2em;
}

#footer {
  border-top: 1px solid black;
  font-size: 0.85em;
}
```

CSS Versions

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- CSS 1.0
 - ▣ Visual styles
 - ▣ Layout
- CSS 2.1
 - ▣ Positioning
- CSS 3.0
 - ▣ Transform
 - ▣ Animation
 - ▣ Media Query (View Port)
 - ▣ Much more ...

Applying Stylesheet

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- Styles can be applied to a page in different ways
 - ▣ Link
 - ▣ Import
 - ▣ Embedded
 - ▣ In line
- Link is the preferred way
 - ▣ Separation of concerns
 - ▣ Caching

Linking a Style sheet

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- Use **link** element

```
<link rel="stylesheet" href="Site.css" type="text/css" />
```

- Browser must download the CSS file before continue rendering the page
 - ▣ Therefore, CSS links are usually located inside the HEAD element
 - ▣ The HTML automatically being rendered with the correct styling
- HTML5 allows you to drop the type attribute

```
<link rel="stylesheet" href="Site.css" />
```

Embedding

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- Styling instructions are embedded directly inside the HTML
 - Faster HTML rendering since browser does not send another HTTP request

```
<head>
  <title></title>
  <style type="text/css">
    #header {
      font-size: 2em;
    }

    #footer {
      border-top: 1px solid black;
      font-size: 0.85em;
    }
  </style>
</head>
```

- Can remove the type attribute when running under HTML5 compatible browser

In line Styling

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- Styling instructions that are located inside an HTML element using the **style** attribute
 - ▣ Should be used rarely
 - ▣ Cannot be overwritten by external styling

```
<body>
  <div id="header" style="font-size: 2em;">Header</div>

  <div id="body"></div>

  <div id="footer" style="border-top: 1px solid black; font-size: 0.85em;"></div>
</body>
```

Importing

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- ❑ One stylesheet file may import other stylesheet
- ❑ Nice from maintenance aspect
- ❑ Bad for performance
 - ❑ Browser need to issue another HTTP request

```
@import url("Second.css");

#header {
    font-size: 2em;
}

#footer {
    border-top: 1px solid black;
    font-size: 0.85em;
}
```

Cascading

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- Style declarations cascade down to elements from many origins
- The cascade combines
 - ▣ Importance
 - ▣ Origin
 - ▣ Specificity
 - ▣ Order
- Decides which declaration should be applied to any given element

Style Rules

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- A rule consist of two parts
 - ▣ Selector
 - ▣ List of styles in the form of property: value;

```
#footer
{
    border-top: 1px solid black;
    font-size: 0.85em;
}
```

- Writing high quality CSS files is all about building the right selector with the right styling

CSS Selector

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- Can be seen as a specification on its own
- An expression based language which allows the developer to select one or more elements
- Can be applied to any XML based document
- Don't we have XPath ?
 - ▣ CSS usually performs better
 - ▣ CSS is less powerful
 - ▣ CSS was born before XPath

Basic Selectors

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- All tags of particular type

```
button {  
  border: none;  
  padding: 1em;  
}
```

- The universal selector

```
* {  
  font-family: Tahoma;  
}
```

ID Selector

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- From HTML perspective **id** attribute must be unique cross all elements
- From CSS perspective this is not a limitation
- ID selector may return more than one element

```
#header {  
    font-size: 2em;  
}
```

- Still, it is not common to set the same ID to different elements
- Thus, we need a different way to treat multiple element in the same way ... See next slide

Class Selector

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- HTML element can be associated with zero or more CSS classes

```
<button id="button1" class="btn btn-large">Button 1</button>
```

- All elements with a specified class can be selected using the dot syntax

```
.btn-large {  
    font-size: 2em;  
}
```

- Can select elements with multiple classes

```
.btn.btn-large {  
    font-size: 2em;  
}
```


Relationship Selectors

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- Select all links that are descendants of a div

```
div a {  
    color: blue;  
}
```

- Select all links that are direct children of a div

```
div > a {  
    color: blue;  
}
```

- Following sibling (not previous)

```
button + button {  
    color: red;  
}
```

Sibling Selector

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- + selects only immediate element that is following the left side of the operand
- Below selector does not match the second button

```
button + button {  
  color: red;  
}
```

```
<button>Button 1</button>  
<span></span>  
<button>Button 2</button>
```

- ~ does the magic

```
button ~ button {  
  color: red;  
}
```

- There is no “previous sibling” selector in CSS

Attribute selectors

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□ Select element if a certain attribute is present

- Regardless of whether the attribute has a value

```
<style type="text/css">  
  a[href] {color: blue;}  
</style>
```

□ Check for an attribute's value

```
<style type="text/css">  
  img[src="spacer.gif"] {width: 5px;}  
</style>
```

□ Check for an attribute's partial value

- use `~=` for space separated, use `|=` for hyphen-separated

```
<style type="text/css">  
  table[title~= "important"] {width: 100%;}  
</style>
```

More attribute selectors

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- Check for an attribute beginning with a value

```
<style type="text/css">  
  table[title^="important"] {width: 100%;}  
</style>
```

- Check for an attribute ending with a value

```
<style type="text/css">  
  table[title$="important"] {width: 100%;}  
</style>
```

- Check for an attribute's partial value

```
<style type="text/css">  
  table[title*="important"] {width: 100%;}  
</style>
```

Pseudo Class Selectors

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- Selectors with a colon preceding them
- The most known sample is the A pseudo classes

```
a:visited {  
    color: blue;  
}  
  
a:active {  
    color: green;  
}
```

- Order is important
 - ▣ All pseudo classes are of the same specificity level
 - ▣ Therefore, last wins

More Pseudo Class Selectors

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- **first-child**: The first element within a parent
- **first-of-type**: The first element of a specific type
 - ▣ Allows you to select the first IMG inside a DIV even when the IMG is not the first child

```
<div>
  <p></p>

  <button>Button</button>
</div>
```

```
div button:first-child {
  background-color: blue;
}

div button:first-of-type {
  background-color: blue;
}
```

Pseudo Element Selectors

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- Select “unreal” element that does not exist on the page
- Are used to inject content without modifying the HTML ... Didn't we say separation of concerns?
- **::before** – Creates a pseudo-element that is the first child of the element matched
- **::after**
- **::first-letter**
- **::first-line**

CSS 2 vs. CSS 3

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- CSS 2
 - ▣ Both pseudo class and pseudo element use colon “:”
- CSS 3
 - ▣ Pseudo class uses colon “:”
 - ▣ Pseudo element uses double colon “::”
 - ▣ Motivation is to distinguish the twos
- Most browser support both

Injecting Icons using CSS

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- Is an icon content or styling ?
- Using pseudo-element we can add an icon without modifying the HTML

```
<ul>
  <li class="css">
    <span>Ori</span>
  </li>
  <li class="html">
    <span>Roni</span>
  </li>
</ul>
```

```
li:before {
  position: relative;
  top: 5px;
}

li.css:before {
  content: url(CSS3.ico);
}

li.html:before {
  content: url(HTML.ico);
}
```

Specificity

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- Assuming the following markup

```
<div>  
  <button class="btn">Button</button>  
</div>
```

- And the following selectors

```
div button {  
  color: red;  
}  
  
.btn {  
  color: green;  
}
```

- Who wins ?

Specificity – Formal Definition

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- Count the number of ID selectors (=a)
- Count the number of class selectors, attribute selectors, pseudo-class (=b)
- Count the number of type selectors and pseudo-element (=c)
- Ignore the universal selector
- Selectors inside negation are counted as usual. The negation itself does not count
- Concatenate the three number a-b-c
 - ▣ Assuming a number system with a large base

Specificity - Samples

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□ `div button {
 color: red;
}` → 2

□ `.btn {
 color: green;
}` → 10

□ `#header .progressbar a {
 text-decoration: none;
}` → 111

- Inline style is always stronger
- In case of two selectors with same specificity the later wins

!important

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- Style rule annotated with **!important** is more specific than any other selectors
 - ▣ Even inline rule 😊
- Is considered bad practice
 - ▣ Hard to maintain

```
<button style="color: red;">Button 1</button>
```

```
button {  
    color: blue !important;  
}  
  
button {  
    color: green !important;  
}
```

- In case of multiple !important styles → Later wins

Why a selector is ignored ?

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- Consider following Markup

```
<body>  
  <p>  
    <div>Hello</div>  
  </p>  
</body>
```

- And the following rules

```
p div {  
  font-size: 2em;  
}
```

- What is wrong ?

Invalid HTML

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- According to the HTML specification P tag can only contain inline elements
- When browser encounters DIV inside P it assumes that the DIV element is a sibling and therefore “closes” the P tag

```
<body>  
  <p></p>  
  <div>Hello</div>  
  <p></p>  
</body>
```

- The following rule DOES match

```
p + div {  
  font-size: 2em;  
}
```

Inheritance

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- Some styles are inherited from parent element
 - ▣ font-size, color, background-color
- Other styles can be set by the designer to be inherited

```
.child {  
  background-color: blue;  
  padding: inherit;  
}
```

- The inheritance rule is weak
 - ▣ Every new definition overrides it

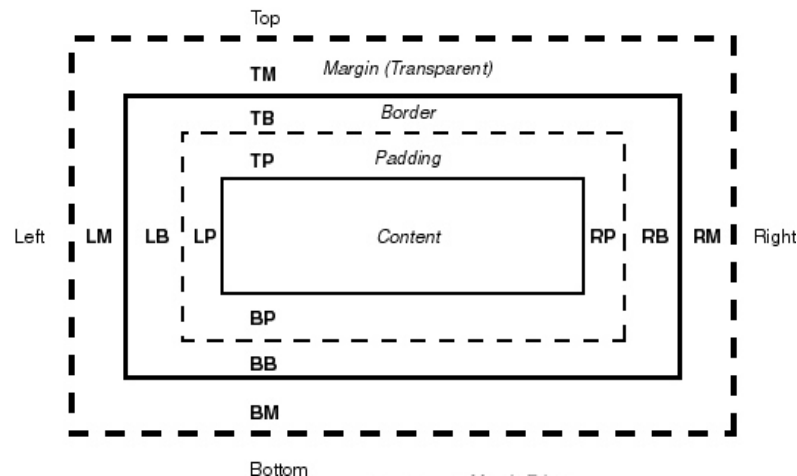
The CSS box model

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□ Every element is treated as a box

□ A box consists of

- ▣ Content
- ▣ Padding
- ▣ Border
- ▣ Margin



□ Margin vs. padding

- ▣ The margin takes the colour of the container's background
- ▣ The padding takes the colour of the content's background

CSS Box model

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- The total width that an element occupies is the addition of content, padding and border
- Setting element's width using CSS only effect the content width, not the total width
- Usually, this behavior breaks our design
 - ▣ See next slide

Was IE right ?

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- Suppose we have two child elements that are exactly filling their parent element

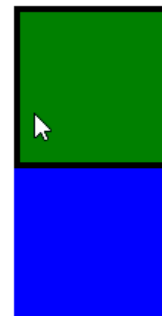
```
<div class="parent">  
  <div class="child child1"></div>  
  <div class="child child2"></div>  
</div>
```

```
.child1 {  
  background-color: green;  
}  
  
.child2 {  
  background-color: blue;  
}
```



- We want to add border when mouse is hovering
 - ▣ The extra border pushes the second element to the next line

```
.child:hover {  
  border: 2px solid black;  
}
```

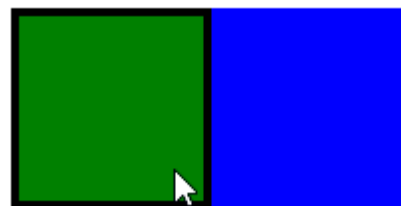


box-sizing

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- By default CSS width means content width
- **box-sizing** changes the box model
- When box-sizing is **border-box** the CSS width means content+padding+border

```
.child {  
  width: 100px;  
  height: 100px;  
  float: left;  
  box-sizing: border-box;  
}
```



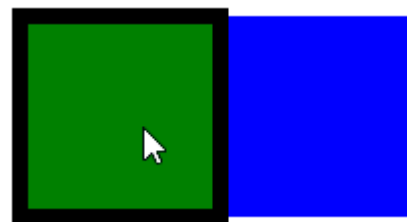
- Other supported values: content-box, padding-box

Outline

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- Continuing our previous example
- It would be nicer if the border appears around the element and not inside it
 - ▣ Thus element remains the same size
 - ▣ Sibling elements should not be effected

```
.child:hover {  
  outline: 4px solid black;  
  position: relative;  
}
```



- Why position relative ?

Colliding Margin

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- ❑ Two plus two doesn't always equal four
- ❑ When bottom margin of one element touches the top margin of another
- ❑ The browser applies the larger of the two

```
<div class="block1"></div>  
<div class="block2"></div>
```



```
.block1 {  
  height: 1em;  
  background-color:red;  
  margin-bottom: 1em;  
}  
  
.block2 {  
  height: 1em;  
  background-color:blue;  
  margin-top: 1em;  
}
```

Go with the flow

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- HTML tags act much like text in a word-processing program
 - ▣ Tags are filling the entire width of a page and flowing from top to bottom
- Each box flows one after the other
 - ▣ Except special boxes
- Many problems can be solved by flowing with the flow ...

Inline vs. Block element

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- Not all boxes are alike
- Two different types
 - ▣ Block
 - ▣ Inline
- Block element creates a break before and after it
 - ▣ For example, P tag
- Inline element appears on the same line as the content and tags beside them

Inline Element's Padding & Margin

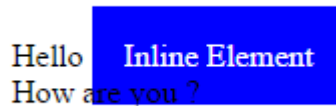
41

□ Assuming following markup & CSS

```
<body>
  Hello <span class="label">Inline Element</span>
  <br /> How are you ?
</body>
```

```
.label {
  color: white;
  background-color: blue;
  padding: 1em;
}
```

□ The result is surprising



Hello Inline Element
How are you ?

Inline Element's Padding & Margin

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- ❑ Vertical padding and margin have no effect on sibling elements
- ❑ Horizontal padding and margin are honored
- ❑ You can change the element display style to **inline-block**

```
.label {  
  color: white;  
  background-color: blue;  
  padding: 1em;  
  display: inline-block;  
}
```

Hello Inline Element
How are you ?

Inline Element's Height & Width

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- Height and width are completely ignored !!!

```
<body>  
  Hello <span class="label">Inline Element</span><br />  
  How are you ?  
</body>
```

```
.label {  
  color: white;  
  background-color: blue;  
  width: 200px;  
  height: 200px;  
}
```

- Width and height are determined according to the element's content

Hello **Inline Element**
How are you ?

- Solution: Again, move to **inline-block**

inline-block Element

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- From parent perspective inline-block element is just like a plain inline element
 - ▣ Flows from left to right
 - ▣ The margin & padding are taken into account
- However, the element itself feels like a block
 - ▣ By default width and height are set according to content
 - ▣ Or you can change them to other values

Line Box

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- Inline elements are arranged inside a virtual line space
- CSS defines a set of rules to determine the position of an element inside the line
 - ▣ Horizontal positioning is straightforward
 - ▣ Vertical positioning is tricky

Line's Baseline

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- By default all inline element are positioned according to the line's baseline

```
<div class="line">
  <span class="label1">&#xC4g</span>
</div>
```

```
.line {
  background-color: green;
  width: 4em;
}

.label1 {
  background-color: red;
  font-size: 0.5em;
}
```



Where is the baseline ?

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- This is the tricky part
- Officially, the line's baseline is the position where a non styled “x” (lowercase) is located
- However, there are many factors that effect the position of the baseline
 - ▣ Font
 - ▣ Minimization of the line height
 - ▣ Elements inside the line ☹

vertical_align

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- ❑ Effects only inline elements
- ❑ Determines the vertical position of an element relative to the line
- ❑ Supports
 - ▣ baseline (default)
 - ▣ bottom/top
 - ▣ middle
 - ▣ sub/super
 - ▣ text-top/text-bottom

Centering an Icon

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- You want to attach a small icon with a line of text

```
<div class="line">  
  <span class="icon"></span>  
  <span class="label1">Very very long text ...</span>  
</div>
```

■ ABCDEFGHIJKLMOP

- The icon is not vertically centered
- Let's use `vertical_align`

```
.icon {  
  ...  
  vertical-align: middle;  
}
```

■ ABCDEFGHIJKLMOP

- Oops ... worse

vertical_align middle

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- middle is relative to the line's baseline ☹️
 - ▣ Not to the line vertical center point
- How can we change the location of the baseline ?
 - ▣ The trick is to define an element that its height equals to the line's height
 - ▣ Then set its vertical align property to middle
 - ▣ Since the element cannot be moved inside the line (too tall) the browser moves the baseline (Wow ...)

vertical_align middle

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```
.icon {  
  display: inline-block;  
  height: 16px;  
  width: 16px;  
  background-color: red;  
  vertical-align: middle;  
}  
  
.label1 {  
  font-size: 1em;  
  vertical-align: middle;  
}
```

■ ABCDEFGHIJKLMOP

- Most designers are surprised that changing **.label1** `vertical_align` property actually effects the **.icon** position

Vertical Centering

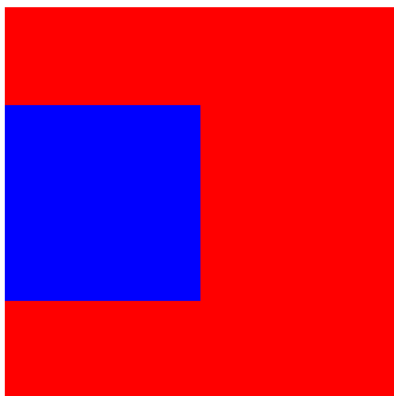
52

- Can the `vertical_align` be used to implement a general vertical centering of an element ?
- Only if
 - ▣ Parent consists of one line
 - ▣ Child is inline element
 - ▣ The line's baseline is located at the center point
- The last requirement is difficult
 - ▣ However, we can inject a pseudo element with 100% and `vertical_align middle`

Vertical Centering

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```
<div class="parent">  
  <div class="child"></div>  
</div>
```



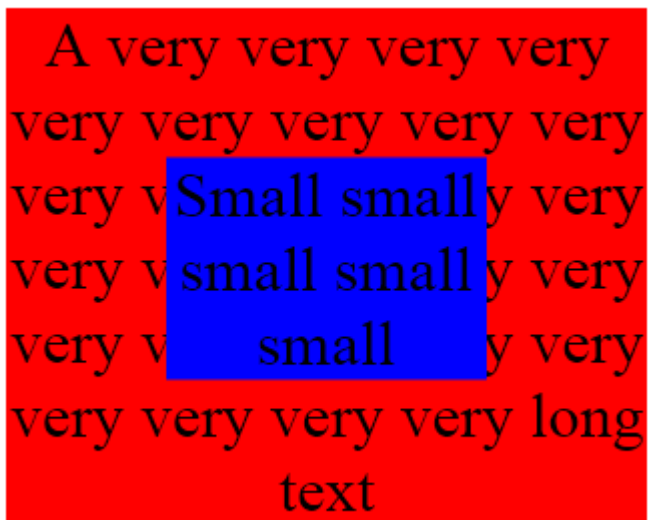
```
.parent {  
  display: inline-block;  
  background-color: red;  
}  
  
.parent:after {  
  content: "";  
  height: 100%;  
  display: inline-block;  
  vertical-align: middle;  
}  
  
.child {  
  display: inline-block;  
  background-color: blue;  
  vertical-align: middle;  
}
```

- Works even if parent and child heights are of unknown value

Vertical Centering

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- What if parent consists of two or more lines ?
- Use transform (CSS3)



```
.parent {
  width: 10em;
  display: inline-block;
  background-color: red;
  position: relative;
  text-align: center;
}

.child {
  position: absolute;
  top: 50%;
  left: 50%;
  transform: translate(-50%, -50%);
  width: 5em;
  display: inline-block;
  background-color: blue;
}
```

Wrap

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- Inline element is treated as a single word
- When a line has no more space, the next element is pushed to a new line
- New line might overflow its container (vertically)

```
<div class="parent">  
  Text text text text text text text  
</div>
```

```
.parent {  
  display: inline-block;  
  width: 7em;  
  height: 2em;  
  background-color: red;  
}
```

Text text text
text text text text
text

white-space: nowrap

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- You can prevent element wrapping by setting **white-space** to **nowrap**

```
<div class="parent">  
  Text text text text text text text text  
</div>
```

```
.parent {  
  display: inline-block;  
  width: 7em;  
  height: 2em;  
  background-color: red;  
  white-space: nowrap;  
}
```

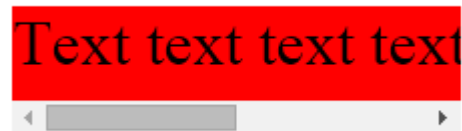
Text text text text text text text text

Controlling the overflow

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- By default the overflow content is visible
- Can configure parent's **overflow** style to
 - ▣ **hidden** - Hide the overflow content
 - ▣ **scroll** - Always display a scrollbar
 - ▣ **auto** - Display a scrollbar only if overflow exists

```
.parent {  
  display: inline-block;  
  width: 7em;  
  height: 2em;  
  background-color: red;  
  white-space: nowrap;  
  overflow-x: auto;  
}
```



Exact filling

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- Suppose we have two child elements that need to **exactly** fill their parent

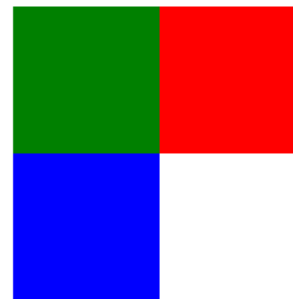
```
<div class="parent">  
  <div class="child1"></div>  
  <div class="child2"></div>  
</div>
```

```
.parent {  
  background-color: red;  
  width: 200px;  
  height: 200px;  
}
```

```
.child1 {  
  background-color: green;  
  width: 100px;  
  height: 200px;  
}
```

```
.child2 {  
  background-color: blue;  
  width: 100px;  
  height: 200px;  
}
```

- The result is surprising

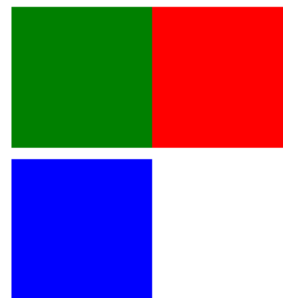


Block means block

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- A block element breaks the line
- Following element are moved to next line
- Setting a width for the block element has no effect on the line breaking
- Change child DIVs to inline-block

```
div div {  
  display: inline-block;  
}
```



- Ooops ... why is that ?

White Space

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- There is no difference between one white space and multiple white space characters
- However, one white space character does occupy some space (0.25em)

```
<div class="parent">  
  <div class="child1"></div><div class="child2"></div>  
</div>
```

```
<div class="parent">  
  <div class="child1"></div><!--  
  --><div class="child2">  
    </div>  
</div>
```

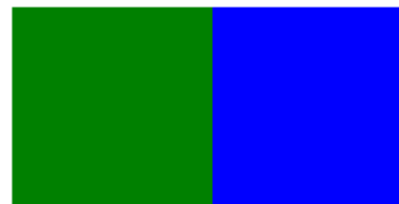


Zero font-size

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- Previous problem can be solved by zeroing the font-size
- However, remember that font-size is inherited to child elements
- Therefore, you may need to “restore” the font-size for child elements

```
.parent {  
  background-color: red;  
  width: 200px;  
  height: 100px;  
  font-size: 0;  
}
```

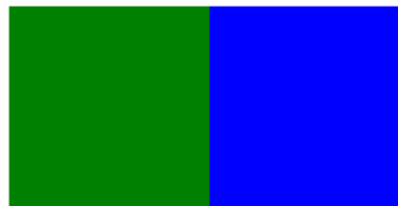


Floating

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- Floating can solve our problem too

```
.child {  
  width: 100px;  
  height: 100px;  
  float: left;  
}
```



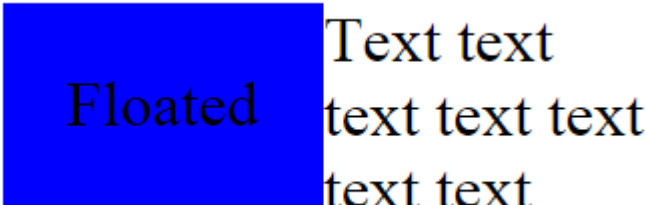
- However, float has side effects that must be considered
 - ▣ See next slides for more details

Floating – Float First

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- Floated element must come before the content itself

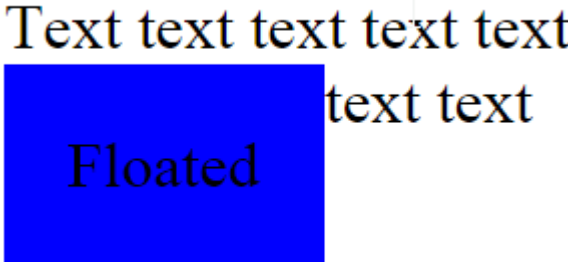
```
<div class="parent">
  <span class="floated">Floated</span>
  Text text text text text text
</div>
```



The diagram illustrates the correct layout when a floated element precedes its content. A blue rectangular box labeled "Floated" is positioned on the left. To its right, the text "Text text" is on the first line, and "text text text" and "text text" are on the subsequent lines, all aligned to the left of the page.

- Not following the rule creates strange layout

```
<div class="parent">
  Text text text text text text
  <span class="floated">Floated</span>
</div>
```



The diagram illustrates an incorrect layout when the floated element follows its content. The text "Text text text text text" is on the first line. Below it, a blue rectangular box labeled "Floated" is positioned on the left. To the right of the box, the text "text text" is on the line below the first line of text.

Floating – Collapsing Height

64

- A block parent with only floated children has no height

```
<div class="parent">
  <span class="floated">floated</span>
  <span class="floated">floated</span>
</div>
```

```
.floated
{
  float: left;
}
```

```
.parent
{
  background-color: red;
}
```

floatedfloated

- Can fix that with overflow: hidden

```
.parent
{
  background-color: red;
  overflow: hidden;
}
```

floatedfloated

Floating – Border and Background

65

- Text wraps around floating elements
- Border and background do not

```
<div class="view">
  <div class="floated">
    Floated floated floated
  </div>
  <div class="header">
    Header header header header header
  </div>
  <div class="title">
    Title
  </div>
</div>
```

Header header header
header header
Title

Floated
floated
floated

- Can fix that with `overflow: hidden` (again ...)

```
.header {
  overflow: hidden;
}

.title {
  overflow: hidden;
}
```

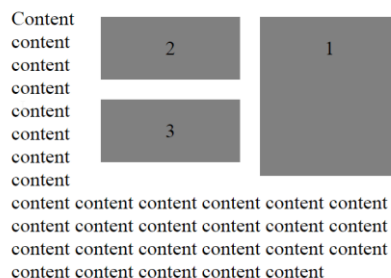
Header header header
header header
Title

Floated
floated
floated

Stopping the Float

66

- Floating elements sit one after the other (horizontal ordering)



- What if we want the floating elements to sit one below the other

```
.floated
{
    clear: both;
}
```



CSS Positioning

67

- CSS offers four types of positioning
 - ▣ Static – The default behavior
 - ▣ Absolute
 - ▣ Relative
 - ▣ Fixed
- Remember our moto: “Go with the flow”

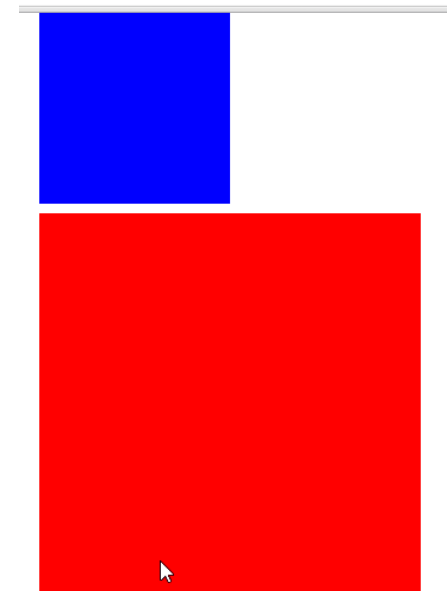
Absolute Positioning

68

- Position an element relative to the boundaries of its closest positioned ancestor
 - ▣ Positioned ancestor = parent element with non default position style

```
<div class="parent">  
  <div class="child">  
  </div>  
</div>
```

```
.child {  
  height: 5em;  
  width: 5em;  
  background-color: blue;  
  position: absolute;  
  top: 0;  
}
```



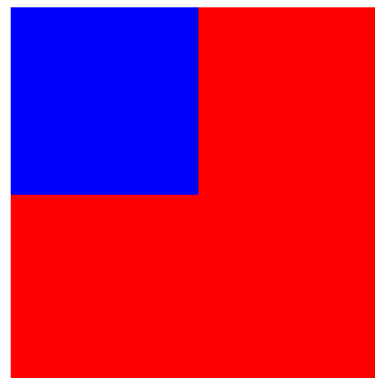
- The .child element has no positioned ancestor and therefore is positioned relative to the window

Absolute Positioning

69

- Common scenario is to position an element relatively to its parent while keeping the parent in the exact location
- Solution: Use **relative** positioning

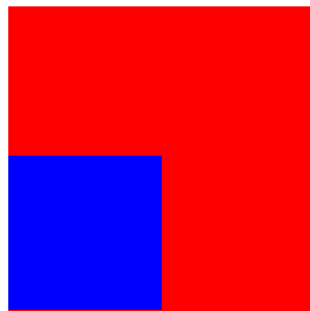
```
.parent {  
  height: 10em;  
  width: 10em;  
  background-color: red;  
  position: relative;  
}
```



Absolute Position: bottom & right

70

- Absolute positioning using top and left is straightforward
- However, what does it mean absolute position with bottom equal 5px ?
- Answer: The bottom edge of the child element should be located 5px above the bottom edge of the parent

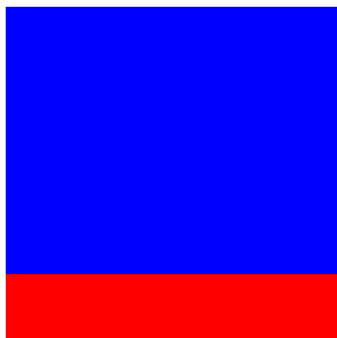


Absolute Position: Docking

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- Absolute positioning can be used to dock an element
- For example, bottom docking

```
<div class="parent">  
  <div class="child dock-bottom">  
  </div>  
</div>
```



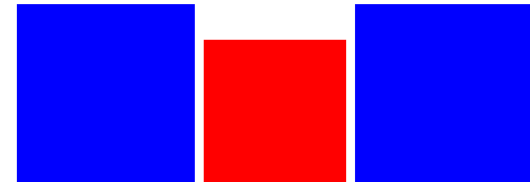
```
.parent {  
  width: 10em;  
  height: 10em;  
  background-color: blue;  
  position: relative;  
}  
  
.child {  
  height: 2em;  
  background-color: red;  
}  
  
.dock-bottom {  
  position: absolute;  
  left: 0;  
  right: 0;  
  bottom: 0;  
}
```

Absolute Position: Out of flow

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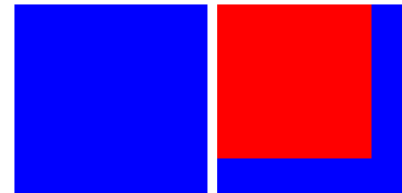
- Absolute positioned element is out of the normal document flow
- As if all other elements don't know that the element exist

```
<div class="child1 child"></div>  
<div class="child2 child"></div>  
<div class="child3 child"> </div>
```



- Now, lets add position: absolute

```
.child2 {  
  background-color: red;  
  position: absolute;  
}
```



Fixed Position

73

- Position an element relative to the boundaries of the window
- Beside the different parent it behaves the same as absolute positioning
 - Out of flow

```
.status-bar {  
    position:fixed;  
    height: 2em;  
    line-height: 2em;  
    background-color: red;  
    left:0;  
    right:0;  
    bottom:0;  
    text-align: center;  
}
```



Relative Position

74

- Position an element relative to itself
 - ▣ Are you serious ?
- Actually, very useful
 - ▣ Relative positioned element + `left: 5px` → move 5px to the right while keeping all other elements untouched

```
<div class="child1 child"></div>  
<div class="child2 child"></div>  
<div class="child3 child"></div>
```



```
.child {  
  width: 5em;  
  height: 5em;  
  background-color: blue;  
  display: inline-block;  
  float: left;  
}  
  
.child2 {  
  background-color: red;  
  position: relative;  
  left: 10px;  
  top: 10px;  
}
```

z-index

75

- Absolute positioned elements might overflow each other
- By default, the later absolute positioned element has higher z-index priority

```
<div class="child child1"></div>  
<div class="child child2"></div>
```



```
.child {  
  position: absolute;  
  width: 5em;  
  height: 5em;  
}  
  
.child1 {  
  top: 1em;  
  left: 1em;  
  background-color: red;  
}  
  
.child2 {  
  top: 2em;  
  left: 2em;  
  background-color: green;  
}
```

Size Units

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□ So many options

Type		Type	
px	Pixel	pc	12pt
in	Inch	ex	Relative to “x”
cm	Centimeter	ch	Relative to “0”
mm	Millimeter	vw/vh/vmin/vmax	Relative to view port
em	Relative to font-size	%	Like em
rem	Root em		
pt	1/72 inch		

□ You probably need only three: em, rem, px

The Pixel unit - px

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- px is easily understood
- Parent size has no effect
- Browser zoom may effect
- Be aware, that 1 CSS pixel does not necessary means 1 hardware pixel
 - ▣ Apple Retina and other modern monitors
- Most of the time using px is not convenient
 - ▣ You probably want to change parent size and accept all children to adjust accordingly

The M unit - EM

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- EM means the size of the M letter (printing world)
- Inside the CSS world 1em means the size of the base font
 - ▣ By default is 16px (most browsers)
- Changing font family has no effect
- em is a relative unit
 - ▣ Changing parent's font-size effects children

em vs. px

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□ 1em = 16px

```
<div class="child child1">Child1</div>  
<div class="child child2">Child2</div>
```

```
.child1 {  
  font-size: 2em;  
}  
  
.child2 {  
  font-size: 32px;  
}
```

Child1
Child2

□ When changing parent font-size

```
html  
{  
  font-size: 32px;  
}
```

Child1
Child2

The Root EM - rem

80

- Size is relative to the HTML tag's font-size and not to the parent

```
<div class="parent">  
  Parent  
  <div class="child1">  
    Child1  
  </div>  
  <div class="child2">  
    Child2  
  </div>  
</div>
```

```
.parent {  
  font-size: 2em;  
}  
  
.child1 {  
  font-size: 2em;  
}  
  
.child2 {  
  font-size: 2rem;  
}
```

Parent
Child1
Child2

Which unit is the best ?

81

- Depends (like always ...)
- Most of the time you should use **em**
- Use **rem** for padding & margin
- Use **px** for border

Summary

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- ❑ Mastering CSS is not easy
- ❑ Web Designer is a profession
- ❑ Can greatly improve your skills by understading some major CSS concepts
 - ❑ Box model
 - ❑ Inline vs. block element
 - ❑ Line box
 - ❑ Floating
 - ❑ Unit size