# CSS

Cascading Style Sheets

- ✓ Positioning and aligning content
- ✓ Incorporating grid-based thinking
- ✓ Themes: the challenge of using external CSS

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# Positioning and aligning content

- ✓DIVs
- ✓Flex
- ✓Grids

# creating layouts with <div>

The ***div*** tag defines a division or a section in an HTML document and it can be used to group block-elements and format them with CSS. Hence, ***div*** represents a rectangular block of content.

***div*** has been the all-purpose tag to use for creating page layouts. ***div*** is a generic container element; use it only when no semantic element can be used, or if you need to group elements for styling. You should use semantic tags over ***div*** whenever the semantic meaning applies (i.e. you're organising content into meaningful sections)
In short, use ***div*** just for styling or layout and not for meaningful representation (e.g. main, header, footer, etc.)

A **semantic element** clearly describes its meaning to the browser, the developer and software applications such as web-crawlers and screen-readers. Examples of non-**semantic elements**: <**div**> and <span> - Tells nothing about its content. Examples of **semantic elements**: <main>, <nav> , and <article> - Clearly defines its content.

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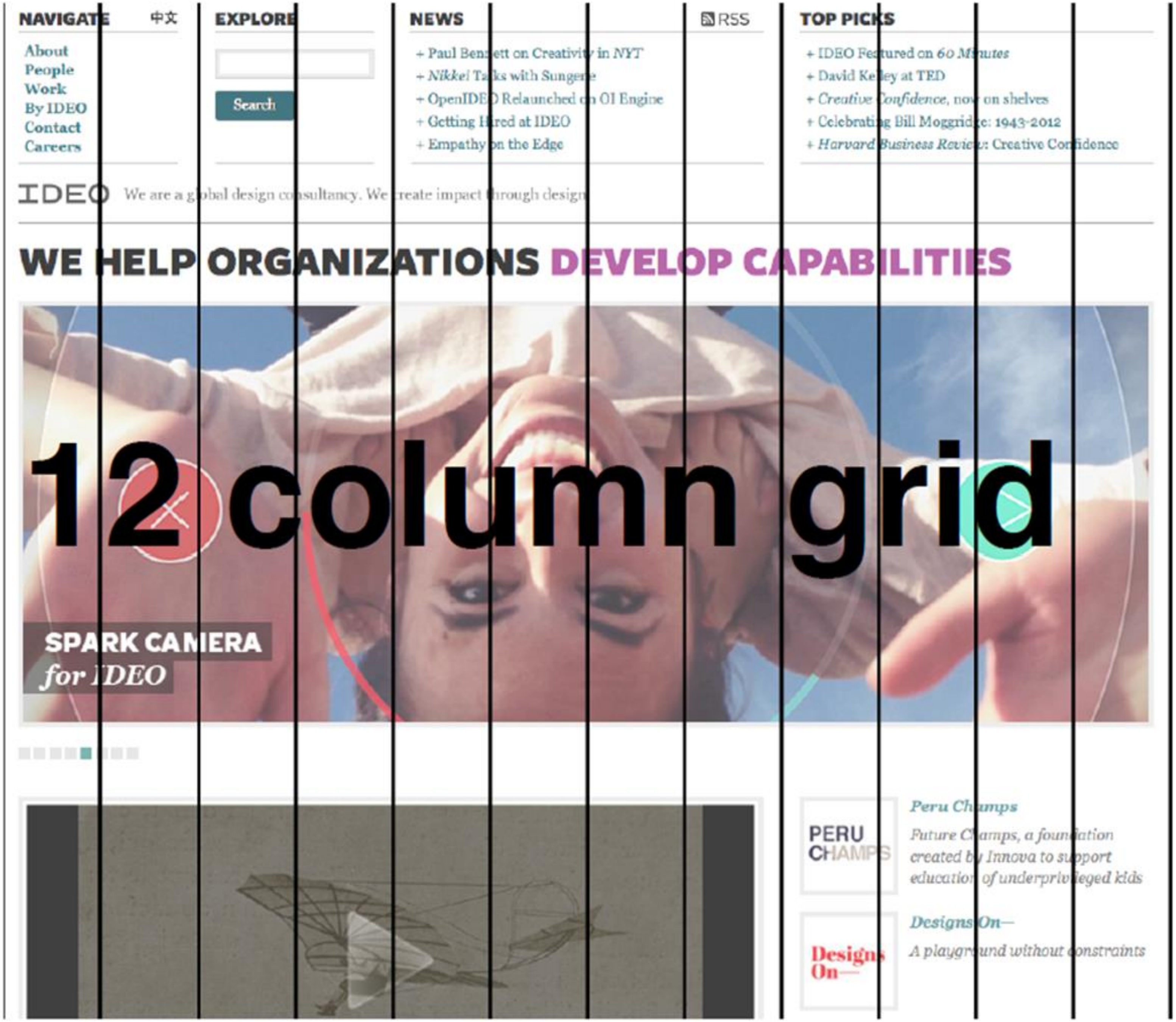
# using <div> to organise content systematically



# 12 column grid

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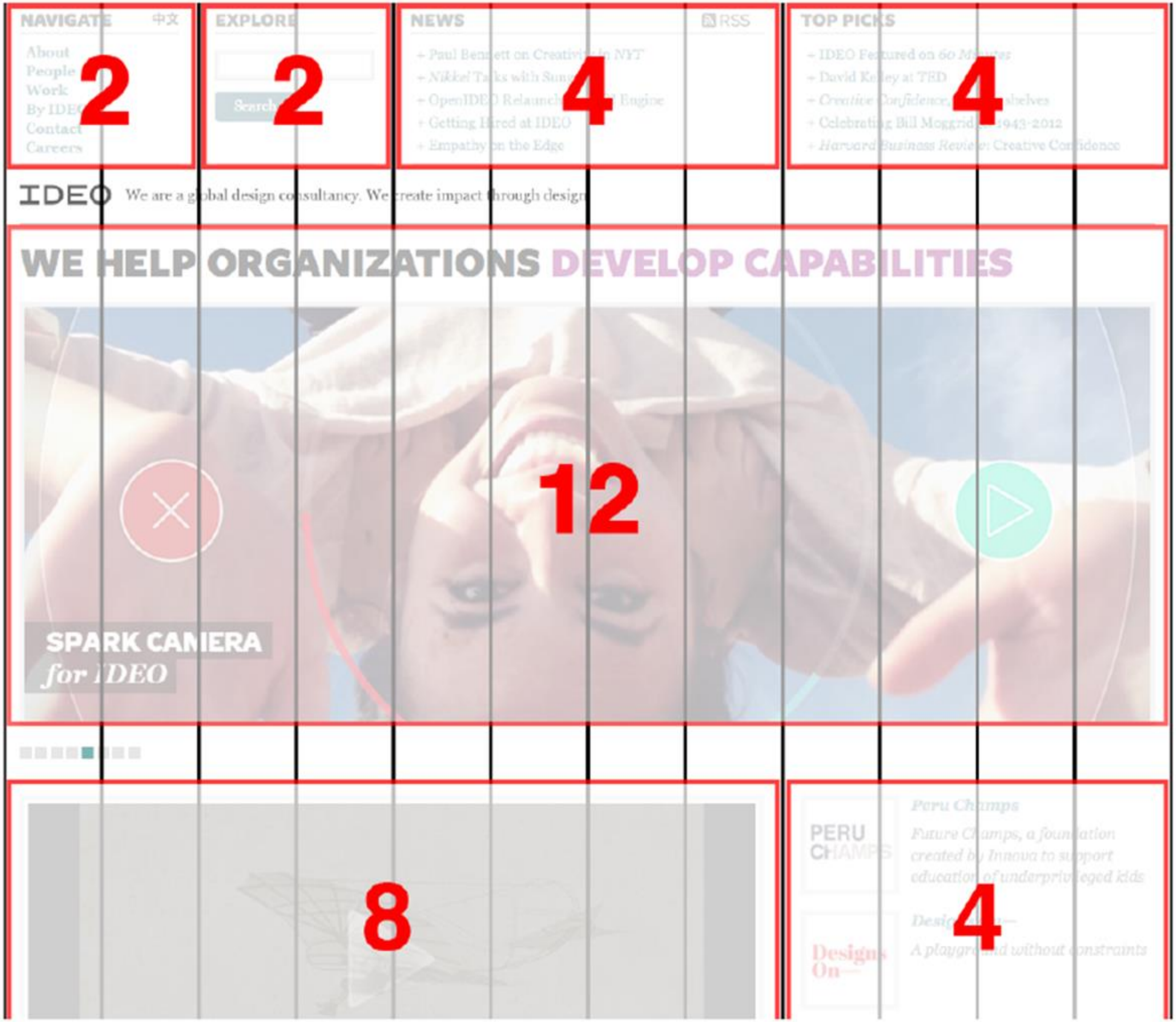

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# ...why 12?

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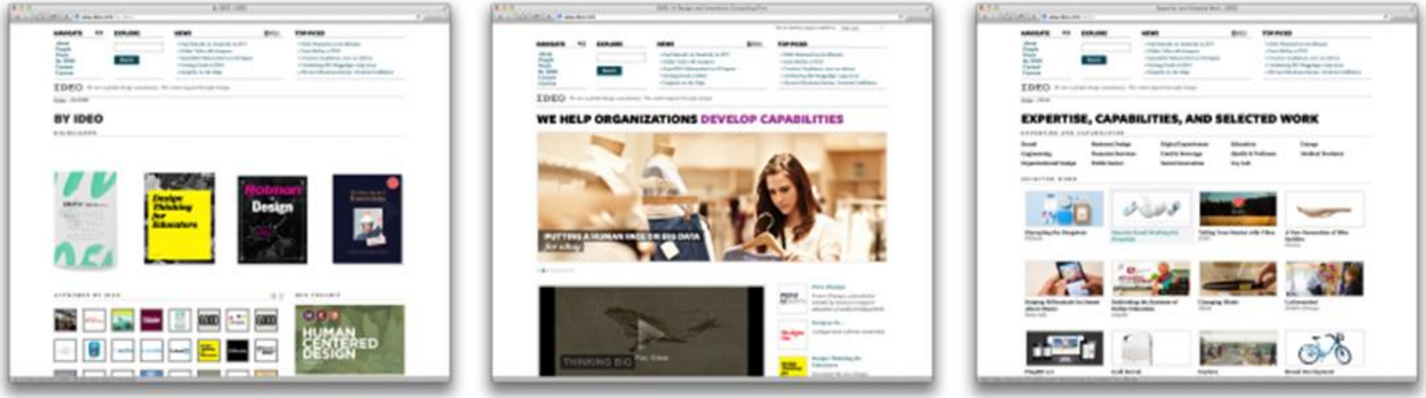

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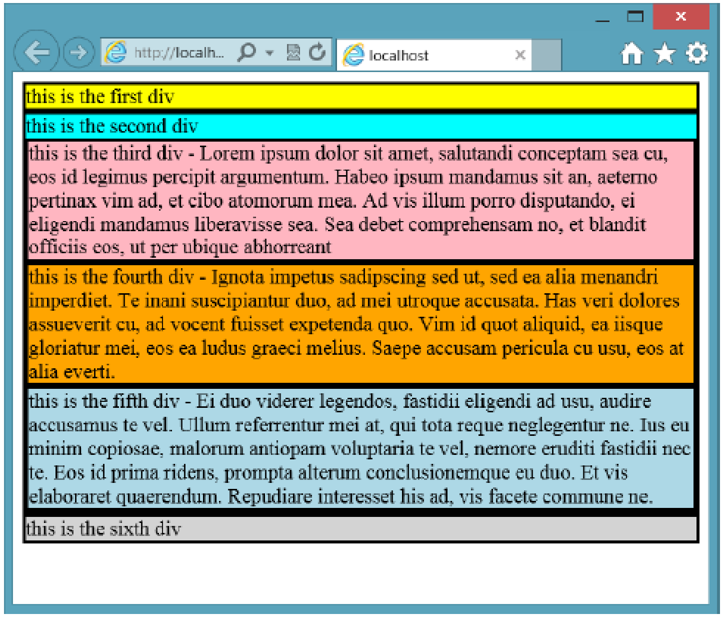
can achieve many different layouts

# Positioning <div> elements

The **div** element represents a rectangular block of content. Consider the HTML document at http://www2.macs.hw.ac.uk/~santiago/F27WD/html/divs.html which when used with the http://www2.macs.hw.ac.uk/~santiago/F27WD/html/divs.css style sheet, renders the <*div*> elements below one another



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this is the sixth div

*The default behaviour of the <div> element is such that it consumes the entire width of the screen, which forces the next <div> element to render on the next line.*

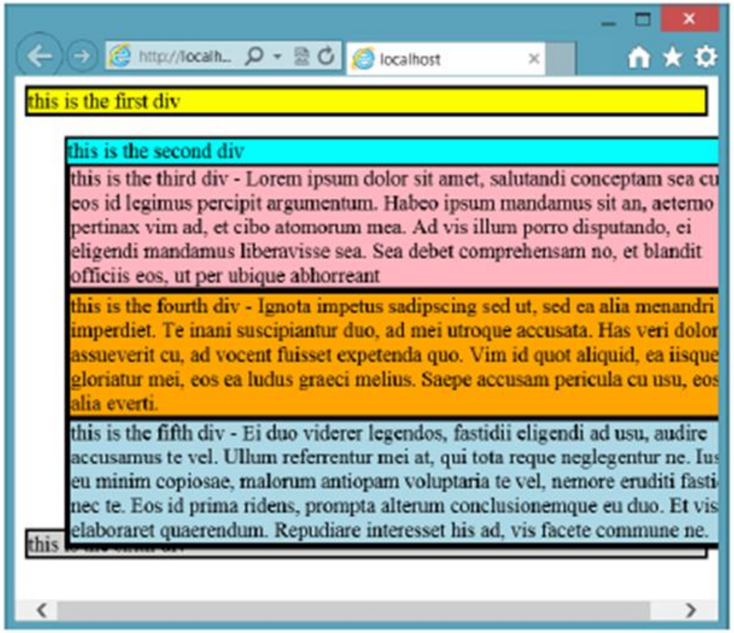
# Positioning <div> elements

You can use the *position* property to set the <*div*> elements to a determined location and size to help you gain control of the placement of the <*div*> elements. The *position* property, can be set to static, relative, absolute, or fixed.

**The static position:** The element is displayed where it would normally appear in the HTML flow. This is the default setting.

**The relative position** The element can be offset from where it normally appears in the HTML flow. In our example, we can change the rule for div2 as follows.

```
#div2 {
    background-color: cyan;
    position: relative;
    top: 15px;
    left: 30px;
}
```



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After using relative positioning to move *div2* and its contents

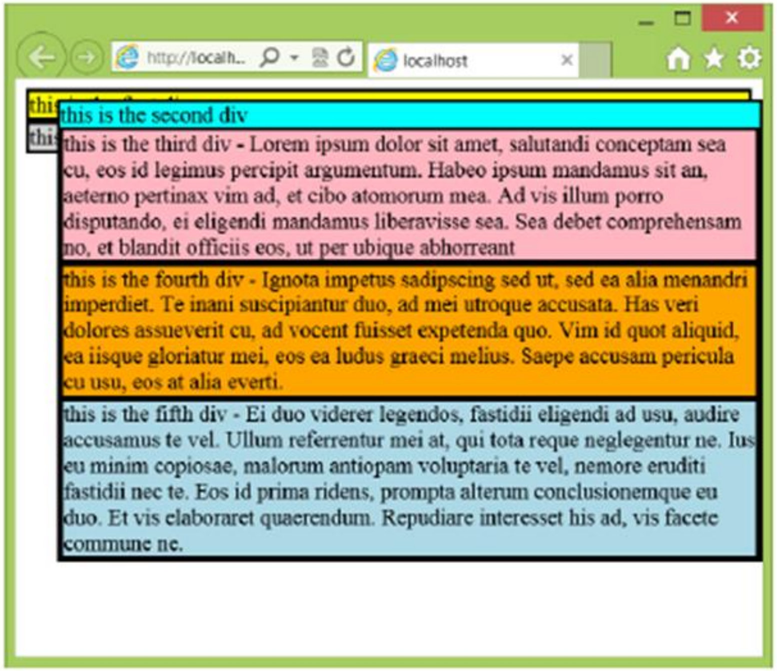
# Positioning <div> elements

**The absolute position** The element is removed from the HTML flow and positioned within the first non-static element. If all parent elements are static (the default), then the element is positioned within the browser window.

Example:

```
#div2 {
     background-color: cyan;
    position: absolute;
    top: 15px;
    left: 30px;
}
```

With the top set to 15 pixels, div2 and its contents will be pushed down 15 pixels, not from its normal location, but from the top of the browser window. The left setting of 30 pixels will push div2 and its contents to the right by 30 pixels, from the left side of the browser window.



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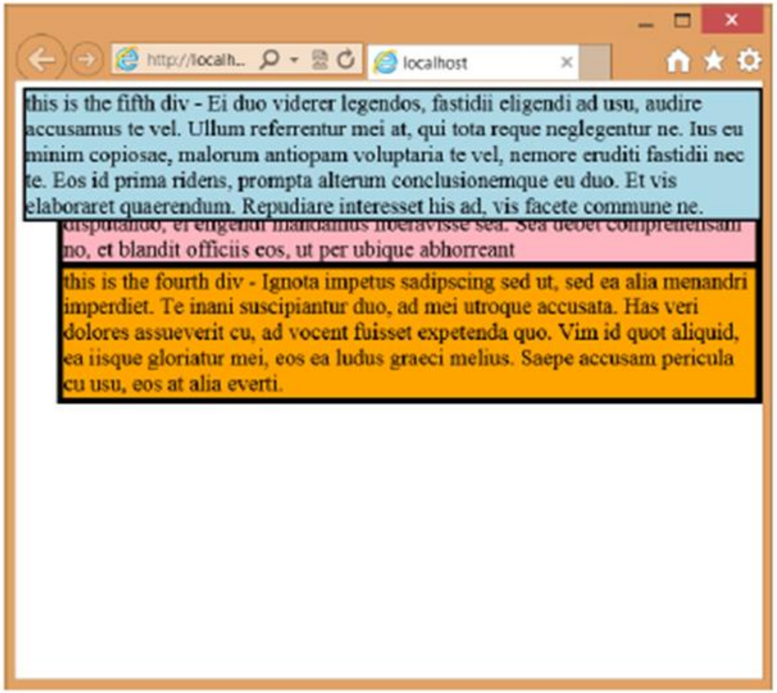
After using absolute positioning to move *div2* and its contents

# Positioning <div> elements

**The fixed position** The element position is calculated much like it is with absolute positioning, but this is always in relation to the browser window. From the previous example, the style rule for div5 is changed to the following.

```
#div5 {
    background-color: lightblue;
    position: fixed;
    top: 5px;
    left: 5px;
}
```

With the position set to fixed, div5 is positioned relative to the browser window, as shown in the figure.



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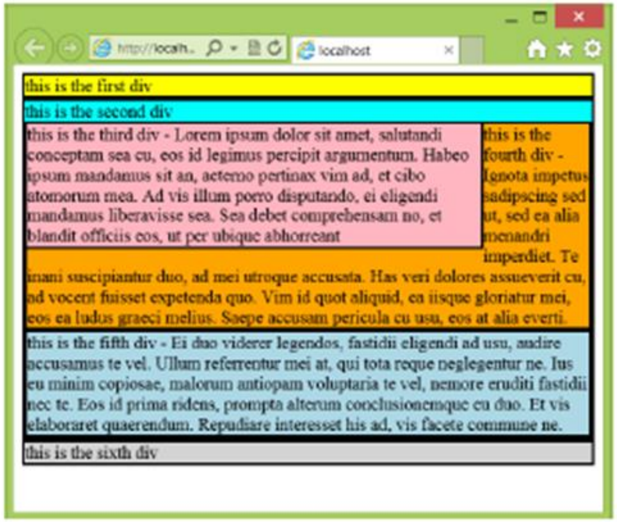
Setting the position to fixed to set the positioning relative to the browser window

# Positioning <div> elements

**Using the float property**

Layouts can be a bit brittle when using the position property only because by removing <*div*> elements from the HTML document flow makes difficult to size and place them side by side to produce columns. If the <*div*> elements are not removed from the HTML document flow, *div6* will automatically stay at the bottom. The float property can be set to allow an element to float to the left or right. An element can be floated only horizontally, not vertically, and will float as far to the left or right as it can. Elements after the floating element flow around the floating element. Elements before the floating element are not affected. The figure shows divs.html when using the floats.css style sheet:

http://www2.macs.hw.ac.uk/~santiago/F27WD/html/floats.css



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this is the sixth div

Floating elements with wrapping

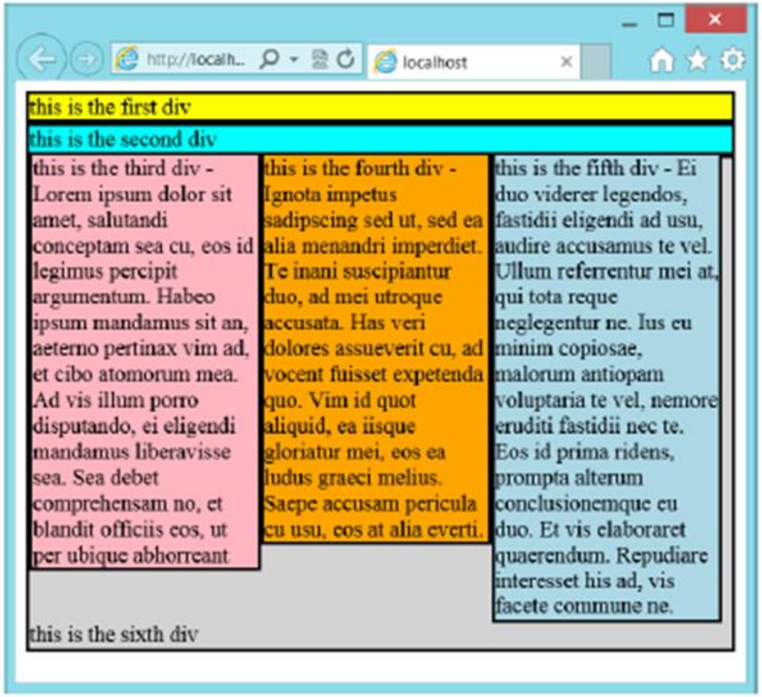
# Positioning <div> elements

When multiple elements’ **float** property is set to the same direction, the elements stack horizontally.

This behaviour can be used to create columns.

In our example, the **float** property of div3, div4, and div5 is set to left, and their width property is set to 33 percent, using the style rules set by

http://www2.macs.hw.ac.uk/~santiago/F27WD/html/cols.css



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this is the sixth div

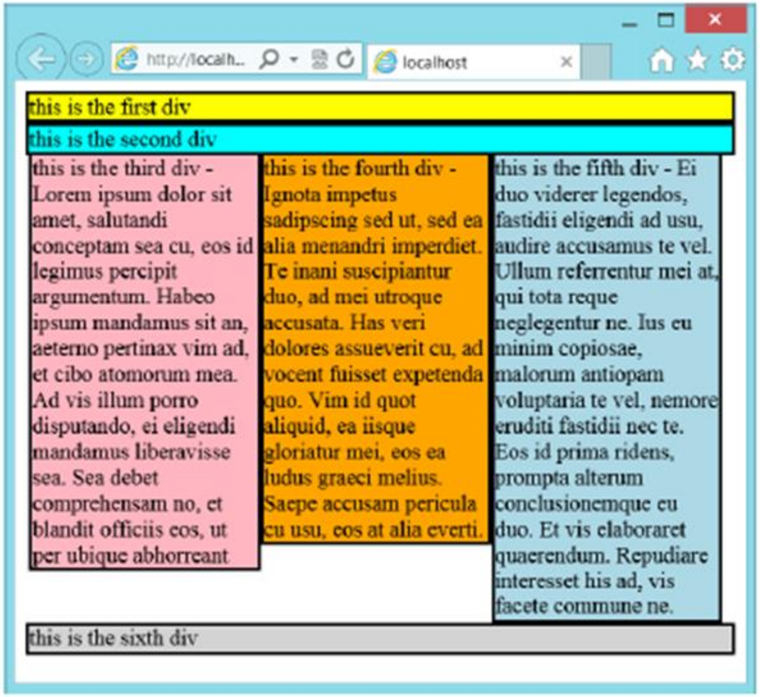
Using the ***float*** property to create columns

# Positioning <div> elements

**The clear property**

With all three columns rendering side by side and inside div2, borders use a total of 14px. If the width is set to 33 percent, the last column won’t fit and will be pushed under div3 because setting the width to 32 percent causes a sliver to be available on the right side, and div6 fills the void. How can div6 be styled to show just at the bottom? With the clear property, which instructs the browser to place the clear element after the floating elements. Set the clear property to both, as shown in the following style rule for div6.

```
#div6 {
    background-color: lightgray;
    clear: both;
}
```



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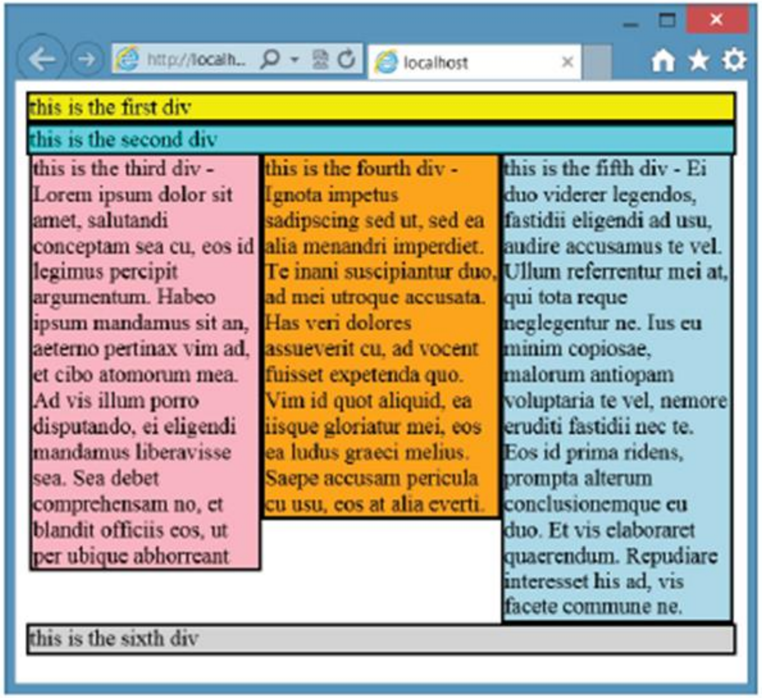
this is the sixth div

The clear property set to both . Notice the location of div6. Using this approach keeps div6 from consuming space beside the columns.

# Positioning <div> elements

**The box-sizing property**
The previous example looks good except for the space on the right side. The gap on the right side is because the width of the columns is set to 32% as the width is based on the content of the element, not including the border. The problem can be solved by setting the box-sizing property on div3, div4, and div5.
The box sizing has the following valid values.
**content-box** The default setting; calculates the width based on the content width only.
**border-box** Calculates the width based on the border, padding, and content width.
**padding-box** Calculates the width based on the padding and content width.



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this is the sixth div

Using the box-sizing property to control width calculations

In our *divs.html* example, the columns' box sizing is set to border-box, and then the width of the columns is set to 33 percent, 34 percent, and 33 percent, by this new style sheet: http://www2.macs.hw.ac.uk/~santiago/F27WD/html/boxes.css

# Alternatives to <div>

You should use **HTML semantic elements** instead of *div* tags, as much as possible. *main*, *article*, *header*, *nav*, *aside* are examples of HTML semantic elements

http://html5doctor.com/downloads/h5d-sectioning-flowchart.png

# Alternative properties

You can create sophisticated layouts with **div** (for example *bootstrap*) but web layouts don’t need to be done using <*div*> only. CSS offers two other elements and properties that are well suited for styling web pages.

**Flexbox**
It is a layout module that was designed to create mobile pages (webpages that display well on small devices such as smartphones).

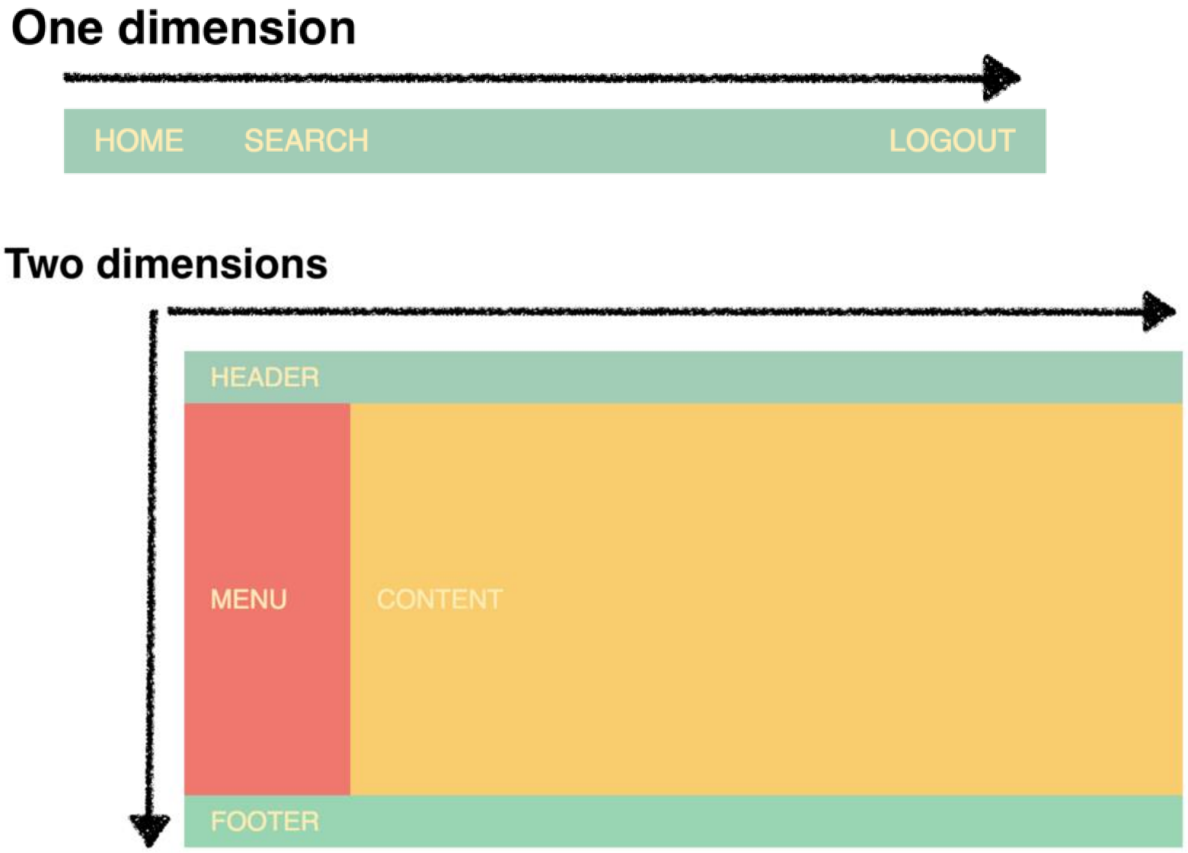
**Grid Layout**
It is layout module created to manipulate HTML pages as grids. It introduces 17 new CSS properties.

Both, Flexbox and Grid make easier the design web pages without having to use floats and positioning, as in the case of using <*div*>s.

Both work with the concept of ***container*** and by setting the display property to new values as well as using new properties that have been introduced in CSS3.

# Alternative properties

**Flexbox** is made for one dimensional layouts and **Grid** is made for two dimensional layouts

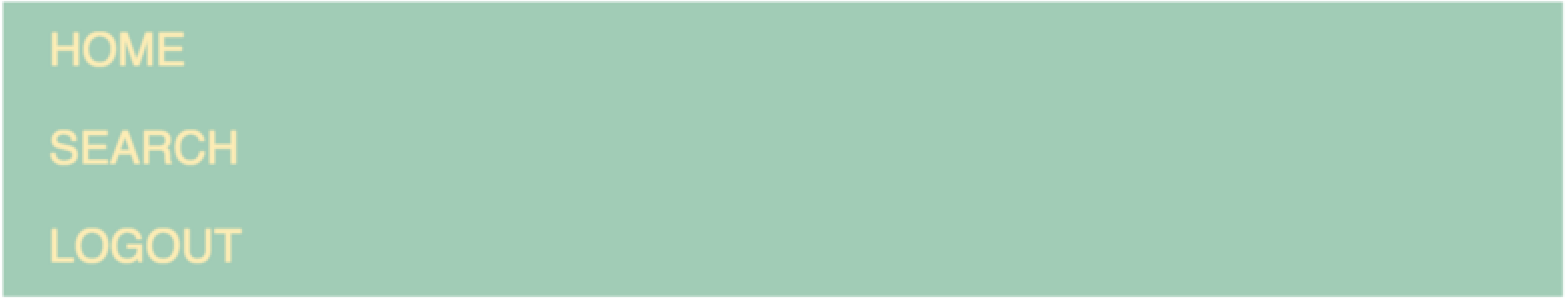


# Flexbox example

HTML example:

```
<header>
    <div>Home</div>
    <div>Search</div>
    <div>Logout</div>
</header>
```

Before we turned it into a Flexbox layout these div’s are stacked on top of each other like this:



HOME

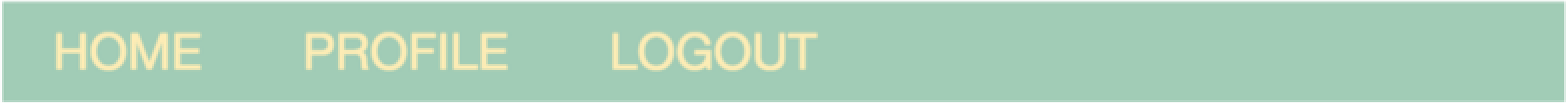
SEARCH

LOGOUT

# Flexbox example

When we give it a CSS display: flex; the items will be places nicely on a line.

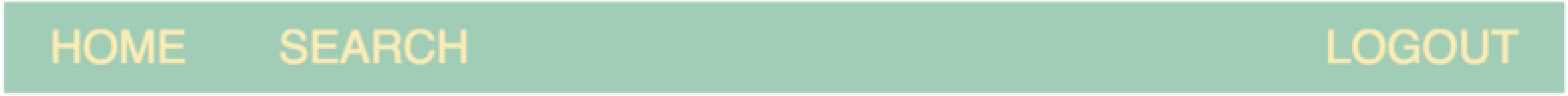
```
header {
    display: flex;
}
```



To move the *logout* button to the far right side, we'll simply target that element and give it a margin:

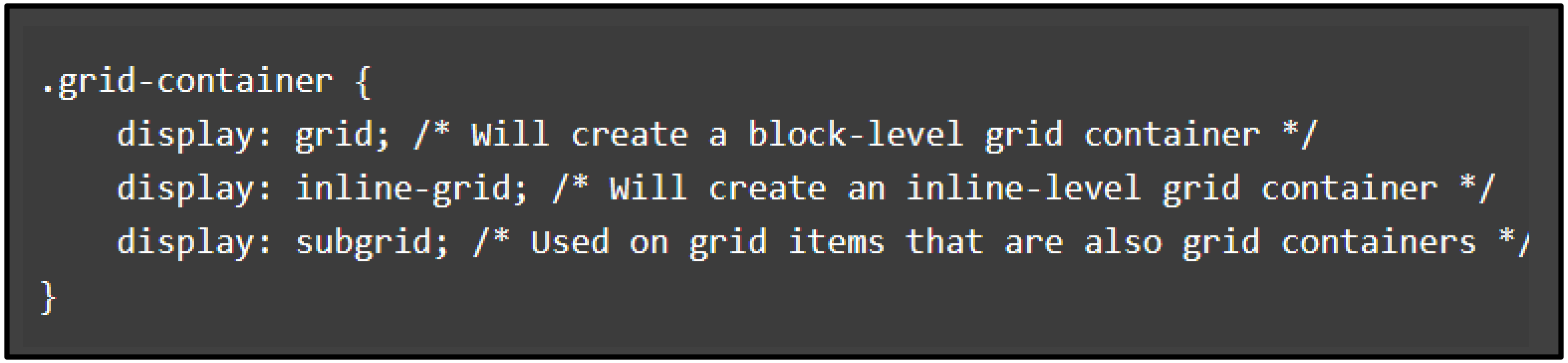
```
header > div:nth-child(3) {
      margin-left: auto;
}
```

Which results in the following:



# Grid Layout

A Grid starts with the **grid container**. This is the element that contains the elements of the grid. A grid container is created by setting the *display* property to any of the following values:



```
.grid-container {
    display: grid; /* Will create a block-level grid container */
    display: inline-grid; /* Will create an inline-level grid container */
    display: subgrid; /* Used on grid items that are also grid containers */
}
```

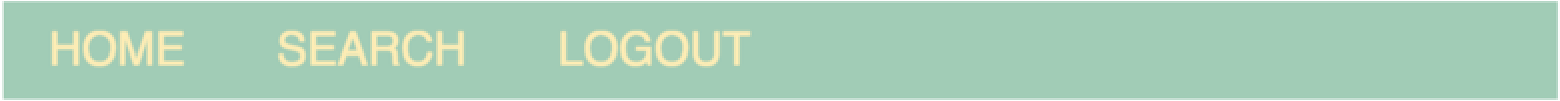
A grid container establishes a **grid formatting context** for its child elements, which are called **grid items**. A grid layout consists of a parent element, with one or more child elements. All direct children of the grid container automatically become *grid items*.

# Grid example

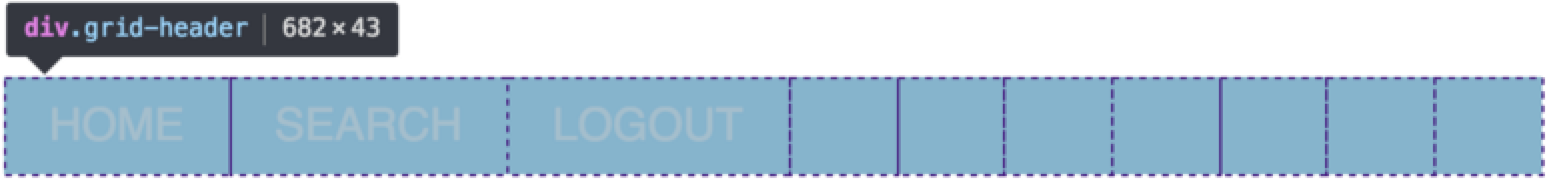
We can create the previous HTML example using a grid with ten columns, each being one fraction unit wide.

```
header {
    display: grid;
    grid-template-columns: repeat(10, 1fr);
}
```

The result will look identical to the Flexbox solution.



However, using the Chrome inspector  you can peak under the hood to see what's different. The menu has 10 column lines:

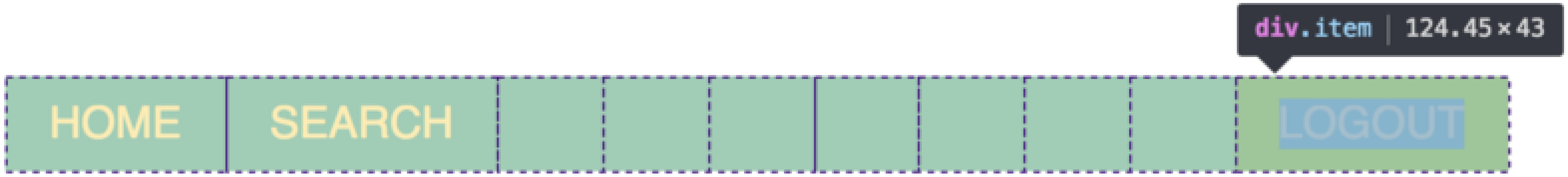


# Grid example

The key difference with regarding using Flex is that with Grid we had to define the columns — the layout — first. We start with defining the width of the columns, and *then* we place the content in the available grid cells.
Unless we change the grid, we’re stuck with ten columns. A limitation we wouldn’t have had to deal with in Flexbox.
In order to change the *logout* to the far right hand side, we’ll place it in the tenth column, like this:

```
header > div:nth-child(3) {
        grid-column: 10;
}
```

Here’s how that looks when we’re inspecting the grid:



# Creating themes with style

- http://www.wordpress.com
- https://www.w3schools.com/w3css/w3css_color_themes.asp
- http://www2.macs.hw.ac.uk/~santiago/F27WD/no_dejavu.html

# External CSS
# in action

wordpress.com

csszengarden.com

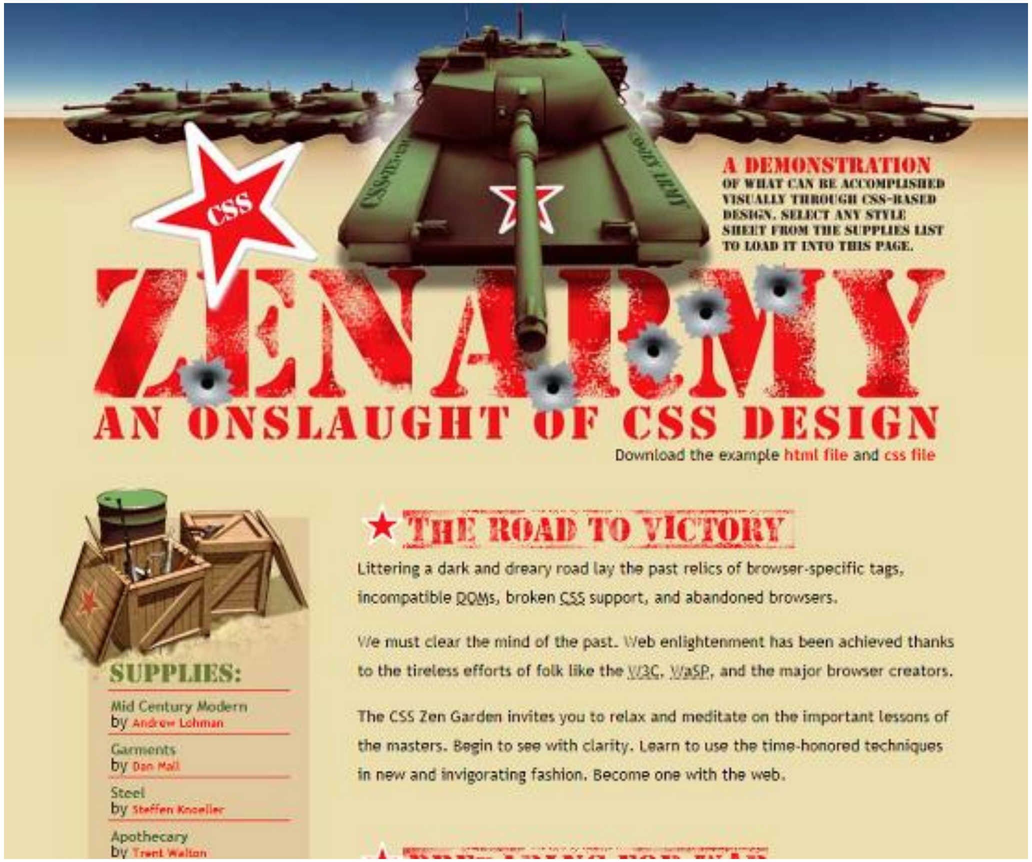
http://www.theoreticallycorrect.com/cssZenGarden/

**The "HWU déjà vu" webpage without style:**

http://www2.macs.hw.ac.uk/~santiago/F27WD/no_dejavu.html

# CSS Zen Garden

csszengarden.com



A DEMONSTRATION OF WHAT CAN BE ACCOMPLISHED VISUALLY THROUGH CSS-BASED DESIGN. SELECT ANY STYLE SHEET FROM THE SUPPLIES LIST TO LOAD IT INTO THIS PAGE.

ZEN ARMY

AN ONSLAUGHT OF CSS DESIGN

Download the example html file and css file

SUPPLIES:

Mid Century Modern
by Andrew Lohman

Garments
by Dan Mall

Steel
by Steffen Knoeller

Apothecary
by Trent Walton

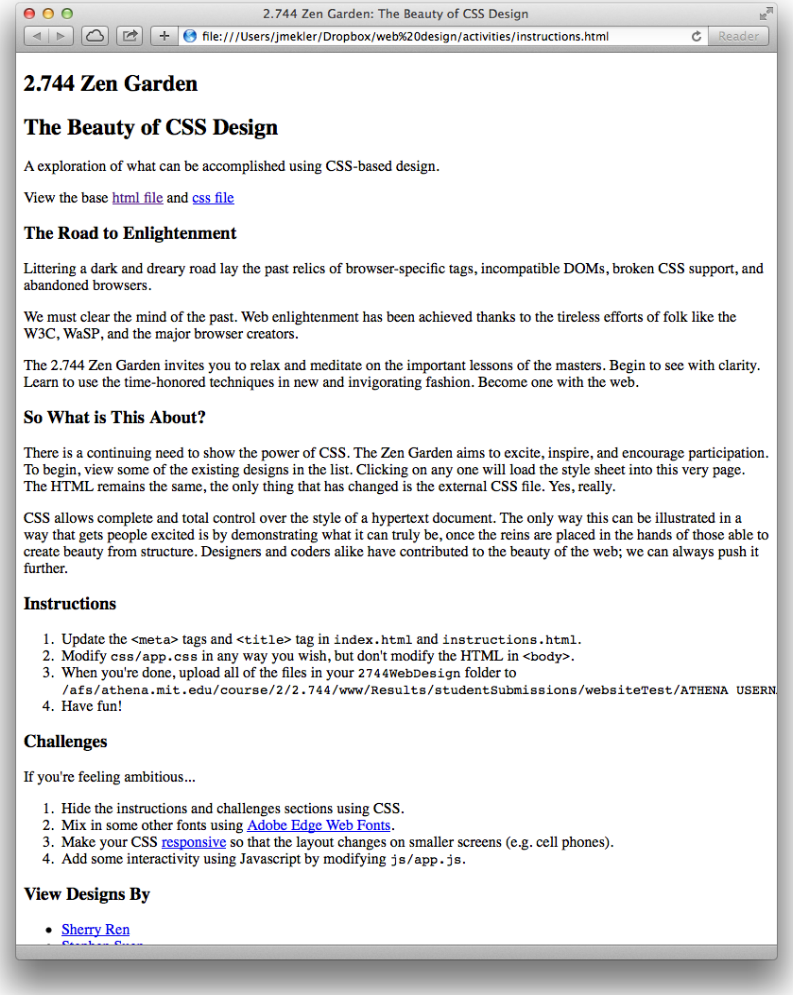
THE ROAD TO VICTORY

Littering a dark and dreary road lay the past relics of browser-specific tags, incompatible DOMs, broken CSS support, and abandoned browsers.

We must clear the mind of the past. Web enlightenment has been achieved thanks to the tireless efforts of folk like the W3C, WaSP, and the major browser creators.

The CSS Zen Garden invites you to relax and meditate on the important lessons of the masters. Begin to see with clarity. Learn to use the time-honored techniques in new and invigorating fashion. Become one with the web.

# 2.744 Zen Garden


2.744 Zen Garden: The Beauty of CSS Design
file:///Users/jmekler/Dropbox/web%20design/activities/instructions.html
Reader

### 2.744 Zen Garden

### The Beauty of CSS Design

A exploration of what can be accomplished using CSS-based design.

View the base html file and css file

#### The Road to Enlightenment

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#### So What is This About?

There is a continuing need to show the power of CSS. The Zen Garden aims to excite, inspire, and encourage participation. To begin, view some of the existing designs in the list. Clicking on any one will load the style sheet into this very page. The HTML remains the same, the only thing that has changed is the external CSS file. Yes, really.

CSS allows complete and total control over the style of a hypertext document. The only way this can be illustrated in a way that gets people excited is by demonstrating what it can truly be, once the reins are placed in the hands of those able to create beauty from structure. Designers and coders alike have contributed to the beauty of the web; we can always push it further.

#### Instructions

1. Update the `<meta>` tags and `<title>` tag in `index.html` and `instructions.html`.
2. Modify `css/app.css` in any way you wish, but don't modify the HTML in `<body>`.
3. When you're done, upload all of the files in your `2744WebDesign` folder to `/afs/athena.mit.edu/course/2/2.744/www/Results/studentSubmissions/websiteTest/ATHENA USERN`
4. Have fun!

#### Challenges

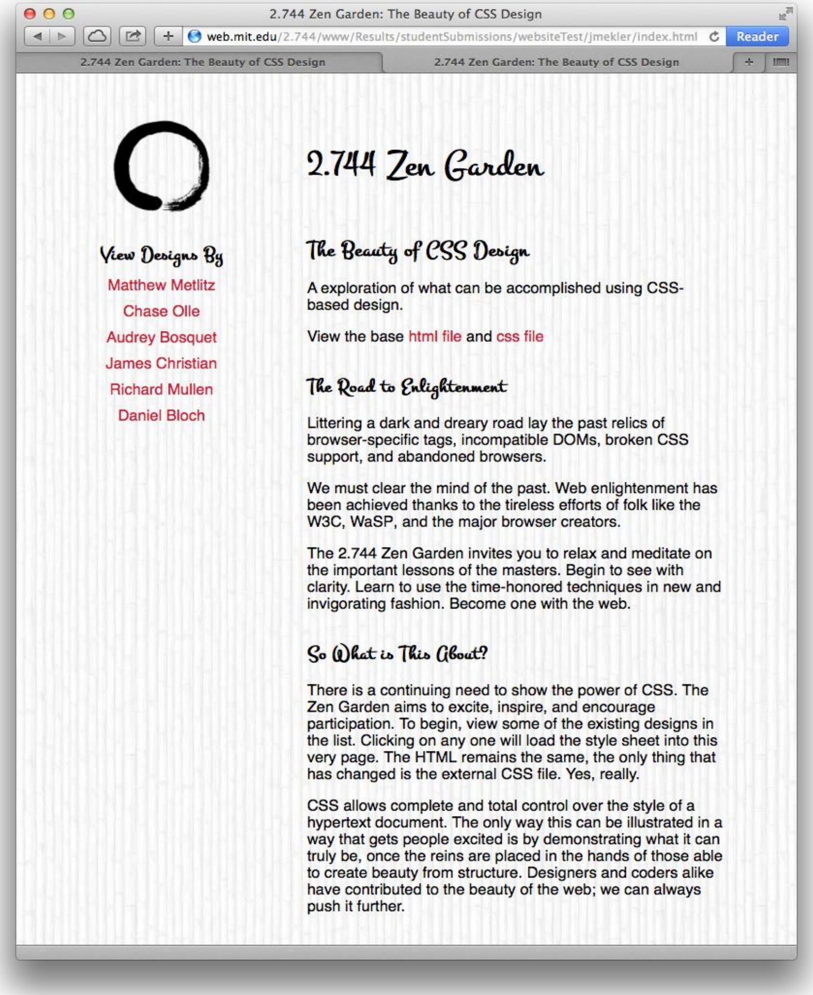
If you're feeling ambitious...

1. Hide the instructions and challenges sections using CSS.
2. Mix in some other fonts using Adobe Edge Web Fonts.
3. Make your CSS responsive so that the layout changes on smaller screens (e.g. cell phones).
4. Add some interactivity using Javascript by modifying `js/app.js`.

#### View Designs By

- Sherry Ren

Without CSS


2.744 Zen Garden: The Beauty of CSS Design
web.mit.edu/2.744/www/Results/studentSubmissions/websiteTest/jmekler/index.html
Reader
2.744 Zen Garden: The Beauty of CSS Design
2.744 Zen Garden: The Beauty of CSS Design

View Designs By

- Matthew Metlitz
- Chase Olle
- Audrey Bosquet
- James Christian
- Richard Mullen
- Daniel Bloch

### 2.744 Zen Garden

### The Beauty of CSS Design

A exploration of what can be accomplished using CSS-based design.

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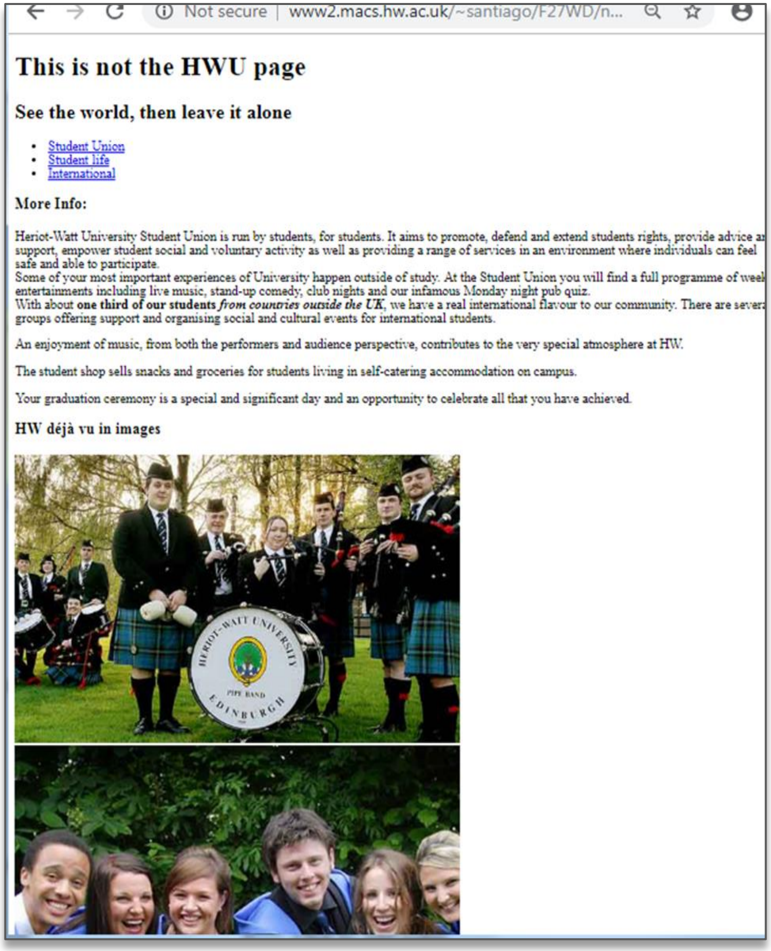
With CSS

# The CSS Challenge

http://www2.macs.hw.ac.uk/~santiago/F27WD/no_dejavu.html



## This is not the HWU page

### See the world, then leave it alone

- Student Union
- Student life
- International

#### More Info:

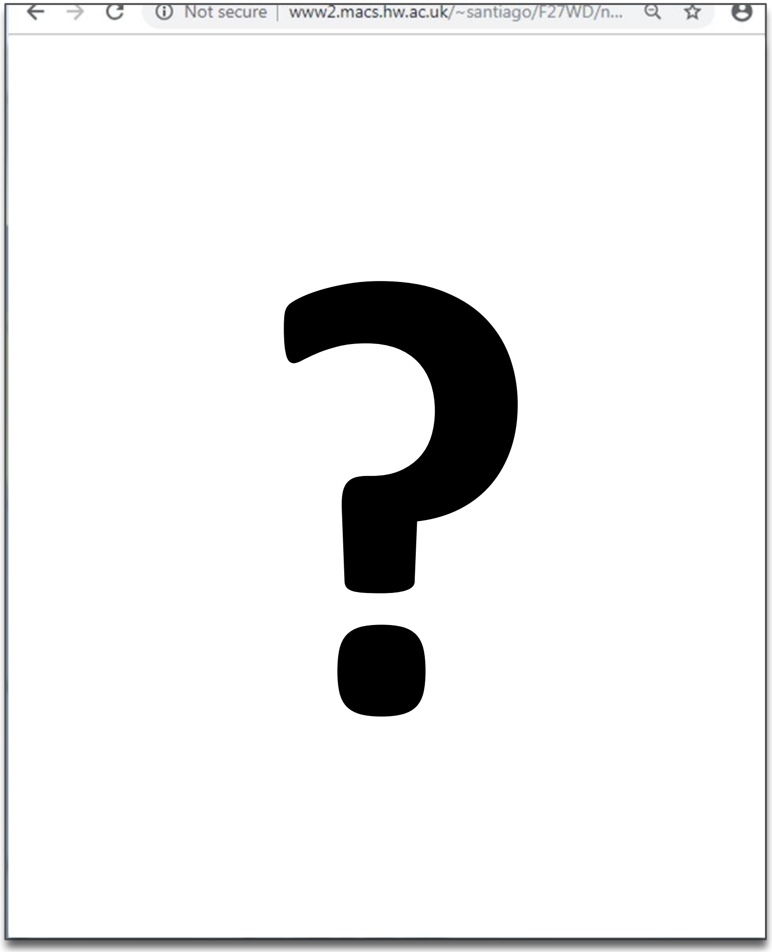
Heriot-Watt University Student Union is run by students, for students. It aims to promote, defend and extend students rights, provide advice a
support, empower student social and voluntary activity as well as providing a range of services in an environment where individuals can feel safe and able to participate.
Some of your most important experiences of University happen outside of study. At the Student Union you will find a full programme of week
entertainments including live music, stand-up comedy, club nights and our infamous Monday night pub quiz.
With about **one third of our students** ***from countries outside the UK***, we have a real international flavour to our community. There are sever
groups offering support and organising social and cultural events for international students.

An enjoyment of music, from both the performers and audience perspective, contributes to the very special atmosphere at HW.

The student shop sells snacks and groceries for students living in self-catering accommodation on campus.

Your graduation ceremony is a special and significant day and an opportunity to celebrate all that you have achieved.

#### HW déjà vu in images



Without CSS

With your CSS Style

SHOW &TELL

(HTML, CSS)

your *Alpha* version

# Lab 3

MONDAY 28th January 2019
at 13:15h Room EM2.50

**Mark: 1% out of 20% of CW1**

Your team is required to attend the lab session and:

✓ show the HTML and CSS external files of your *alpha* version (0.75%)

✓ the files of your alpha version are located at (0.25%)

http://www2.macs.hw.ac.uk/~[YOUR_USERNAME]

*PS: At least **three members** of your team must be present in the lab for your team to be awarded marks.*

You don’t need to upload anything to VISION