



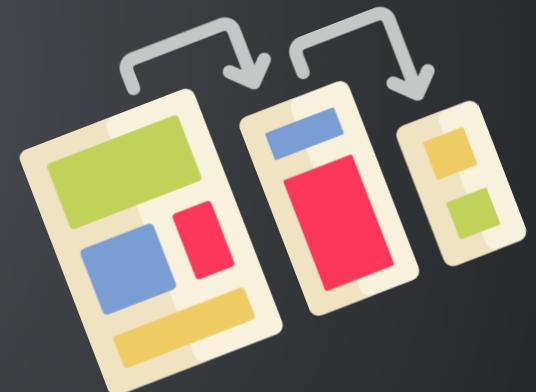
# Modern Layouts:

## Flexbox, CSS Grid, and Beyond

[michellejl.com](http://michellejl.com)

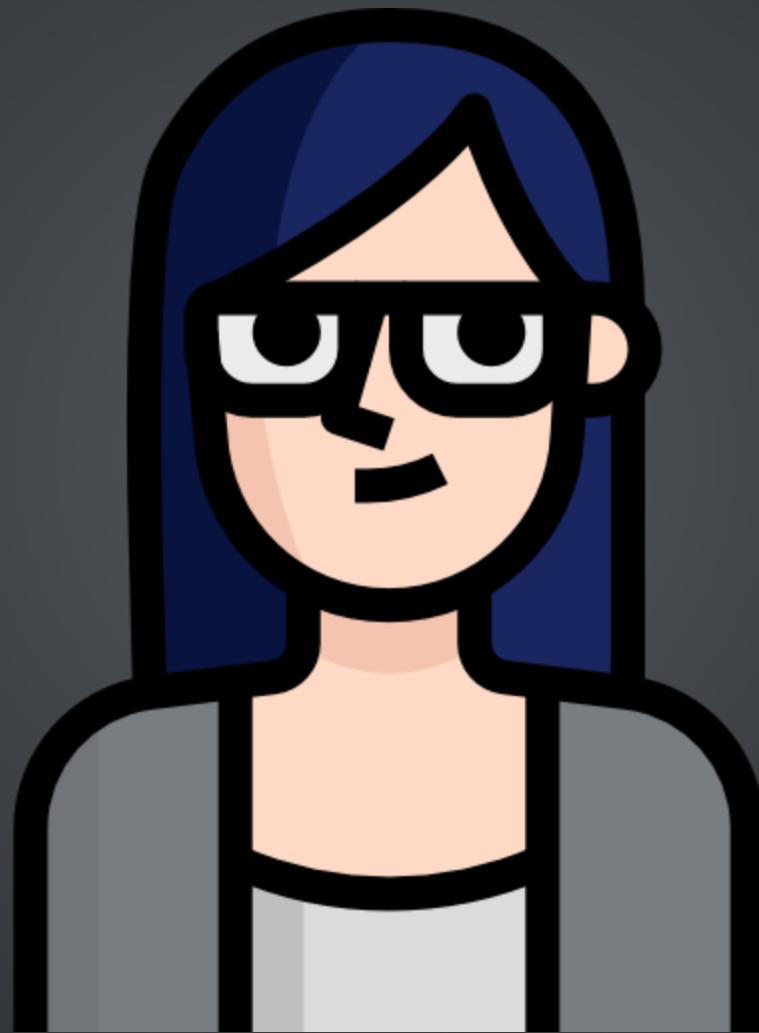
michelle@michellejl.com

 @michellejlevine



Who am I? Why Should You Listen to Me?

Who am I? Why Should You Listen to Me?



# Who am I? Why Should You Listen to Me?



# Who am I? Why Should You Listen to Me?



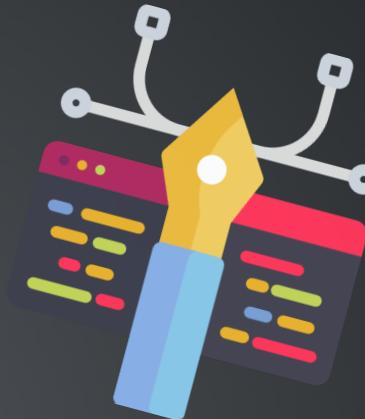
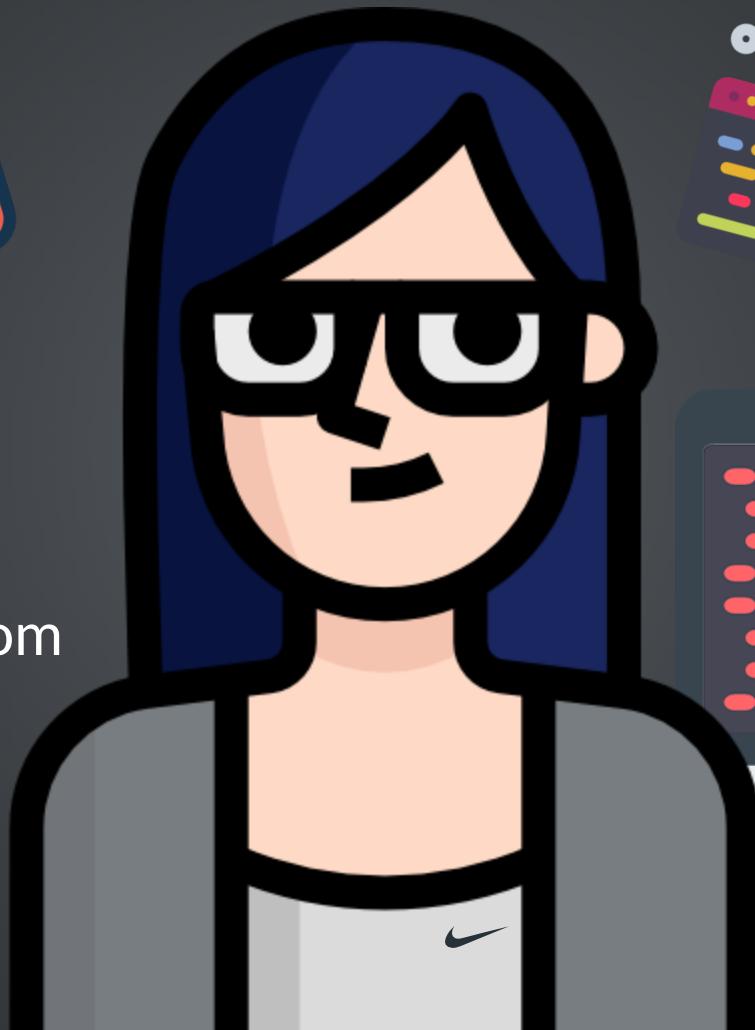
# Who am I? Why Should You Listen to Me?



# Who am I? Why Should You Listen to Me?



# Who am I? Why Should You Listen to Me?



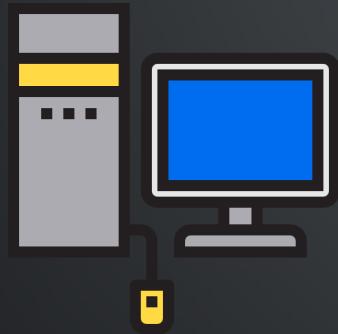
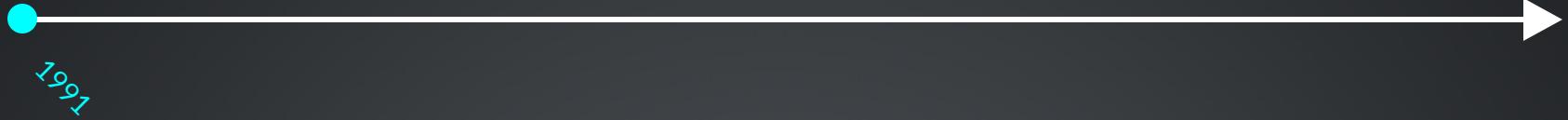
[michellejl.com](http://michellejl.com)

michelle@michellejl.com

 @michellejlevine

 @michellejl

# A Brief History of the Web



# A Brief History of the Web

1991



The World Wide Web project

## WORLD WIDE WEB

The WorldWideWeb (W3) is a wide-area hypermedia[1] information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary[2] of the project, Mailing lists[3] , Policy[4] , November's W3 news[5] , Frequently Asked Questions[6] .

What's out there?[7]Pointers to the world's online information, subjects[8] , W3 servers[9], etc.

Help[10]

on the browser you are using

Software Products[11]

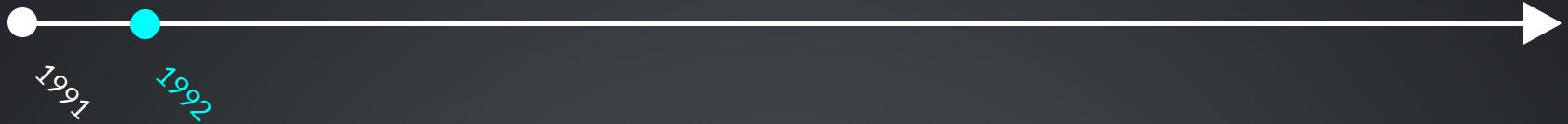
A list of W3 project components and their current state. (e.g. Line Mode[12] ,X11 Viola[13] , NeXTStep[14] , Servers[15] , Tools[16] , Mail robot[17] , Library[18] )

Technical[19]

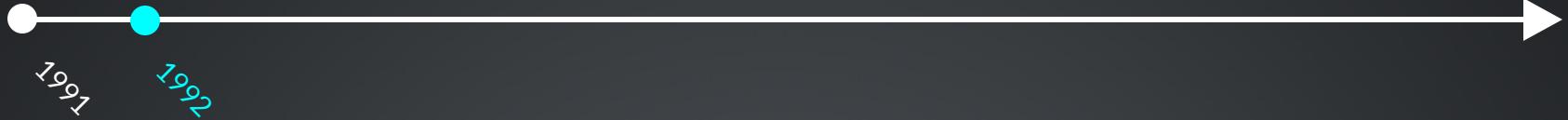
Details of protocols, formats, program internals etc

<ref.number>, Back, <RETURN> for more, or Help:

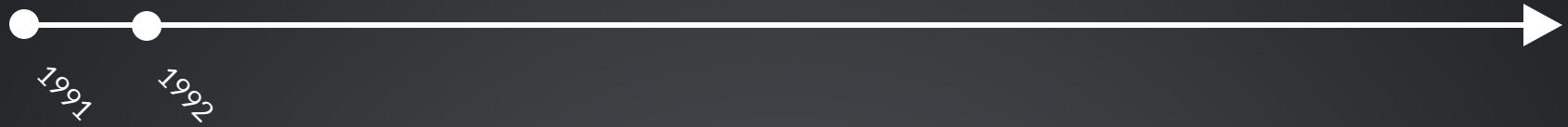
# A Brief History of the Web



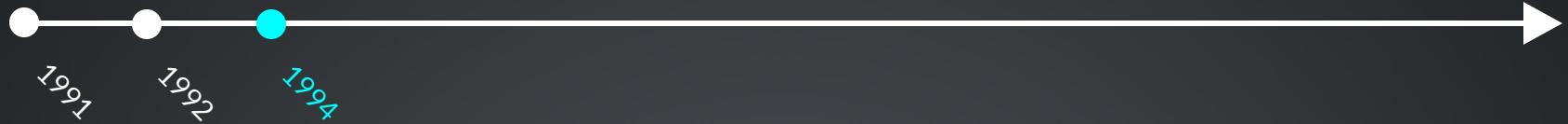
# A Brief History of the Web



# A Brief History of the Web



# A Brief History of the Web

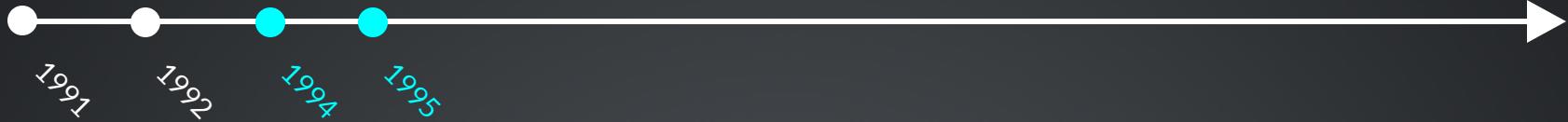


1994

Håkon Wium Lie published the first draft of the Cascading HTML Style Sheets proposal



# A Brief History of the Web



1994

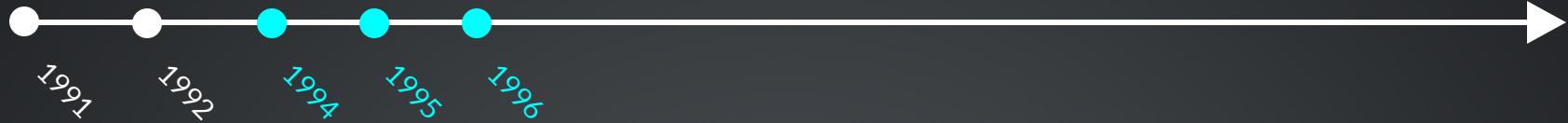
Håkon Wium Lie published the first draft of the Cascading HTML Style Sheets proposal

1995

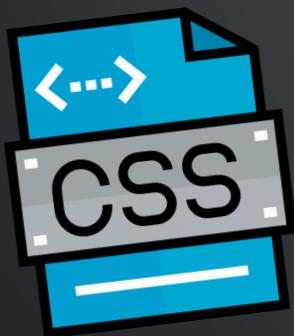
The World Wide Web Consortium (W3C) became operational



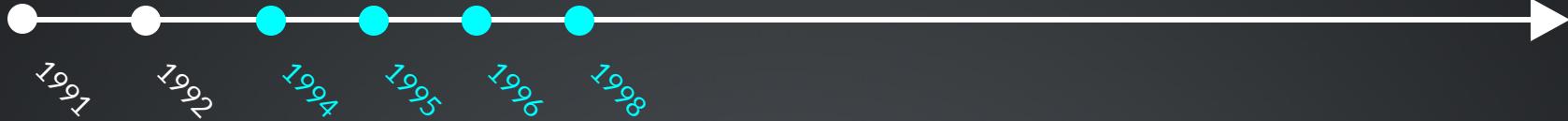
# A Brief History of the Web



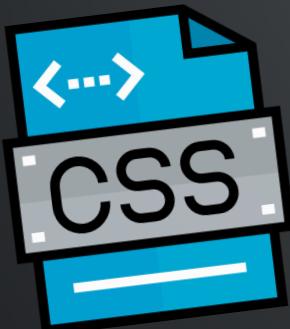
- 1994 Håkon Wium Lie published the first draft of the Cascading HTML Style Sheets proposal
- 1995 The World Wide Web Consortium (W3C) became operational
- 1996 CSS level 1 emerged as a W3C Recommendation



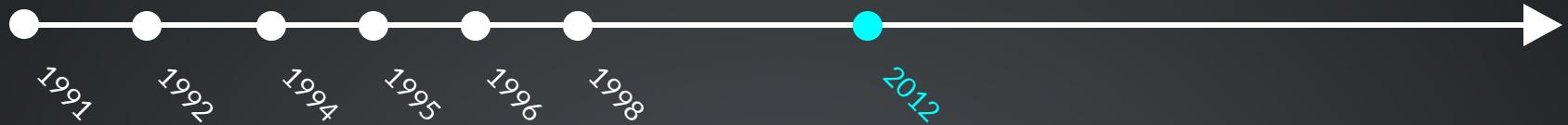
# A Brief History of the Web



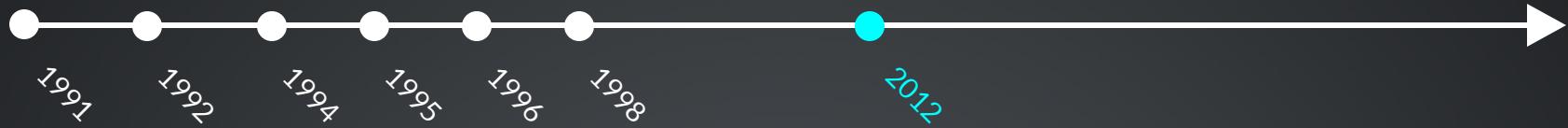
- 1994 Håkon Wium Lie published the first draft of the Cascading HTML Style Sheets proposal
- 1995 The World Wide Web Consortium (W3C) became operational 
- 1996 CSS level 1 emerged as a W3C Recommendation
- 1998 CSS level 2 accepted as W3C Recommendation



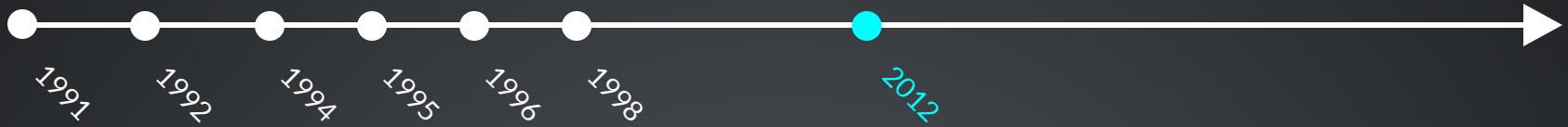
# A Brief History of the Web



# A Brief History of the Web

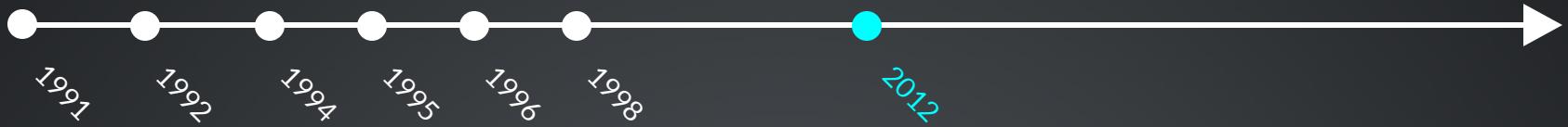


# A Brief History of the Web



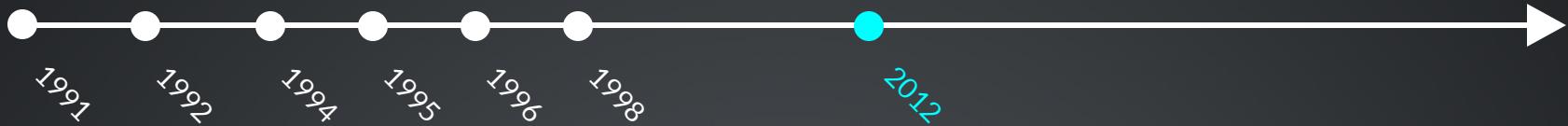
Color Level 3

# A Brief History of the Web



Color Level 3  
Namespaces

# A Brief History of the Web



Color Level 3  
Namespaces  
Selectors Level 3

Layouts are basically a mess

Layouts are basically a mess

<table>

Layouts are basically a mess

<table>

{ display : table }

Layouts are basically a mess

```
<table>
```

```
{ display : table }
```

```
{ float : right }
```

Layouts are basically a mess

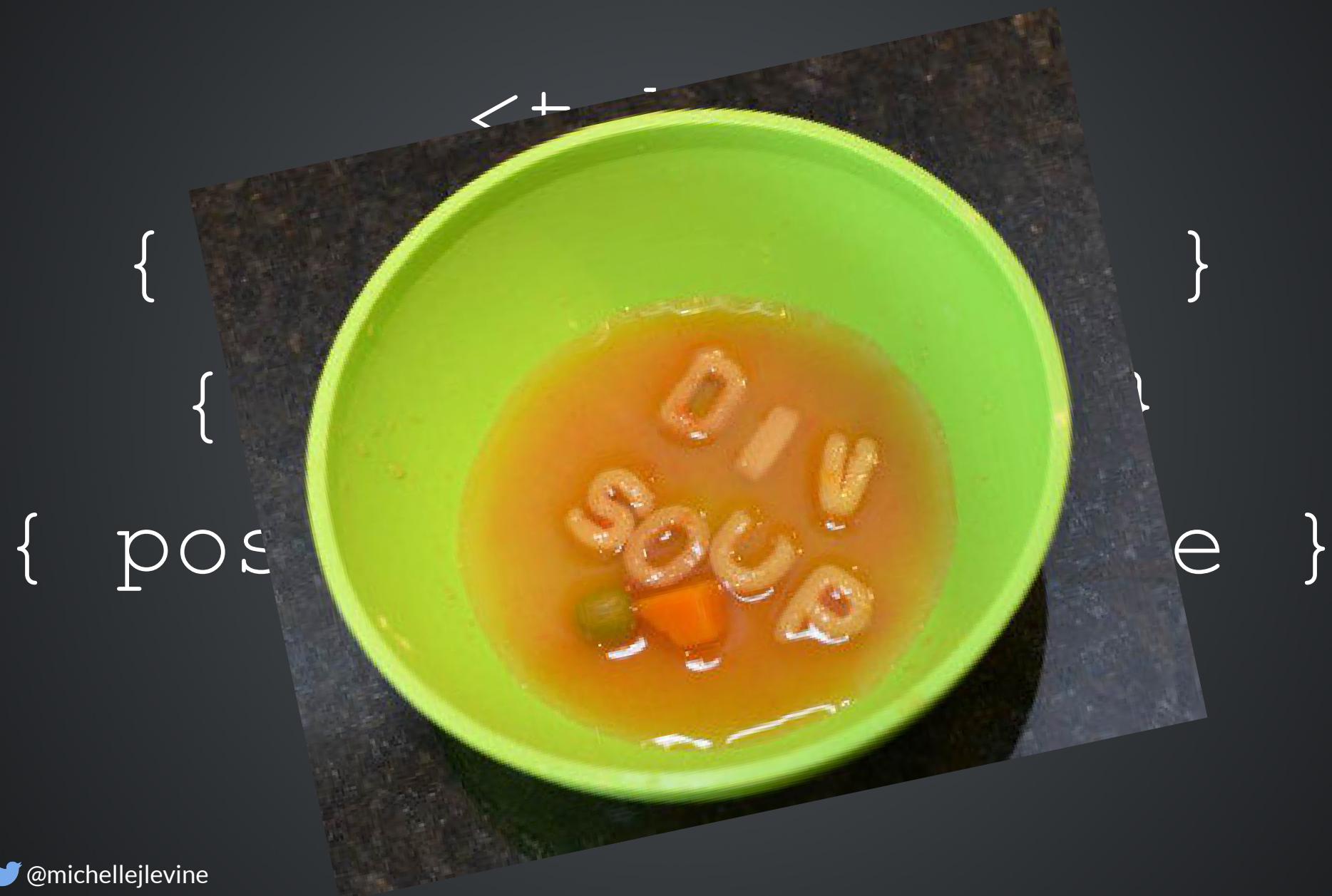
```
<table>
```

```
{ display : table }
```

```
{ float : right }
```

```
{ position : absolute }
```

Layouts are basically a mess

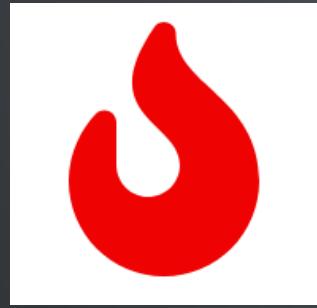


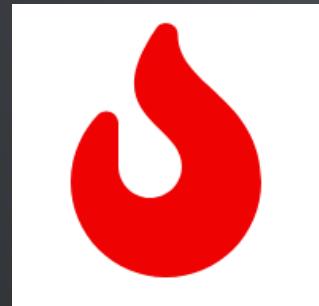




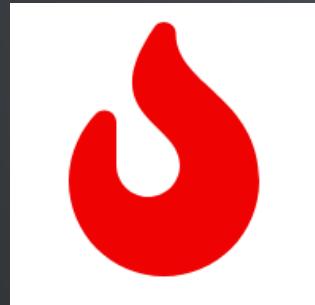






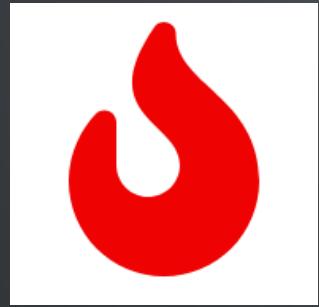


Milligram



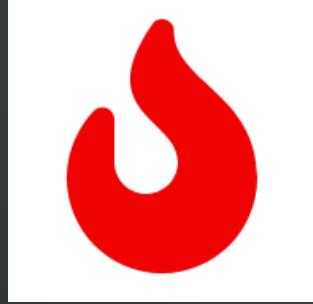
P  
css Pure.CSS

Milligram





# Bourbon



P  
css Pure.CSS



Milligram



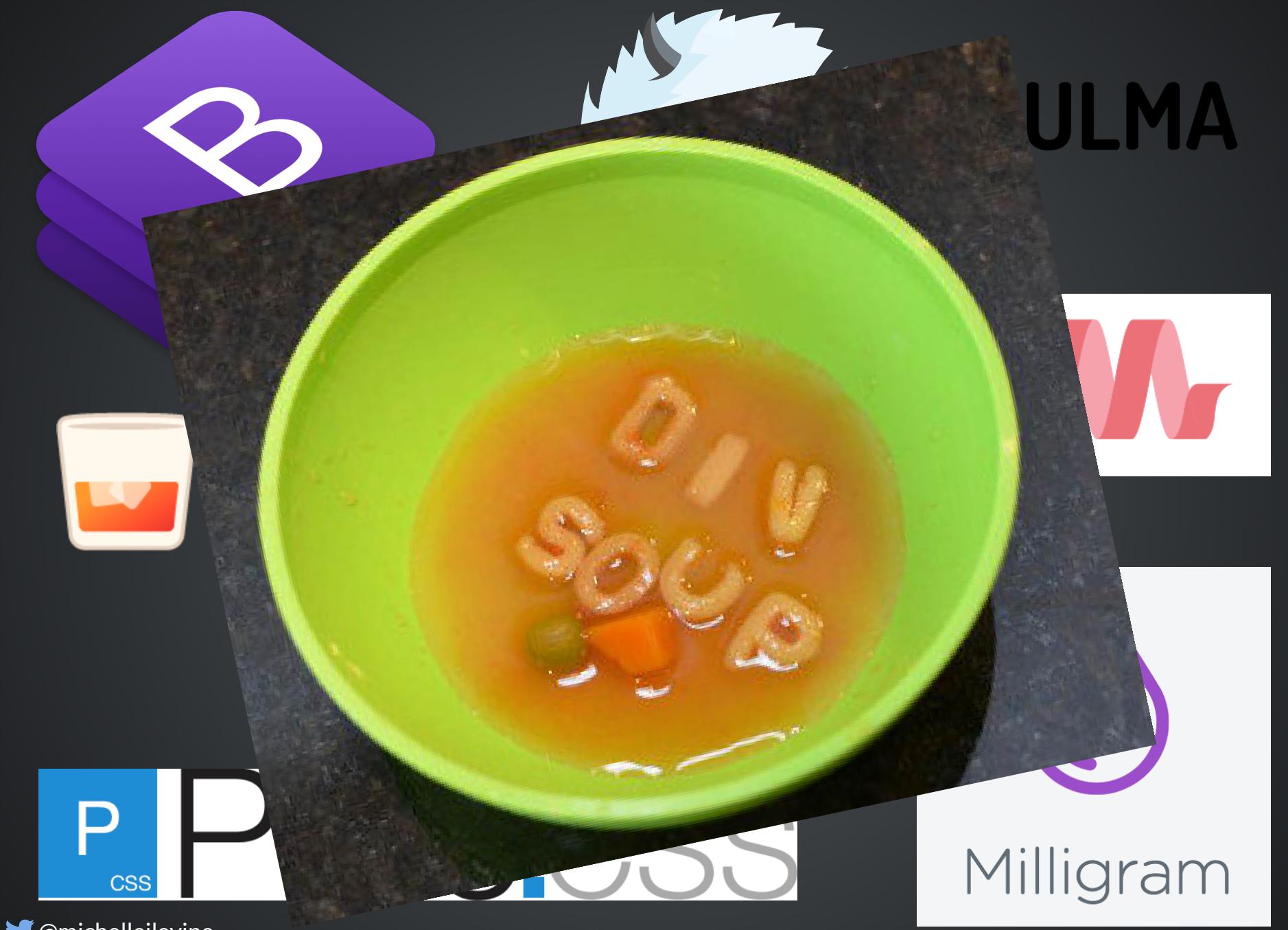
# Bourbon



P  
css **Pure.CSS**



Milligram



How can we  
avoid div soup?

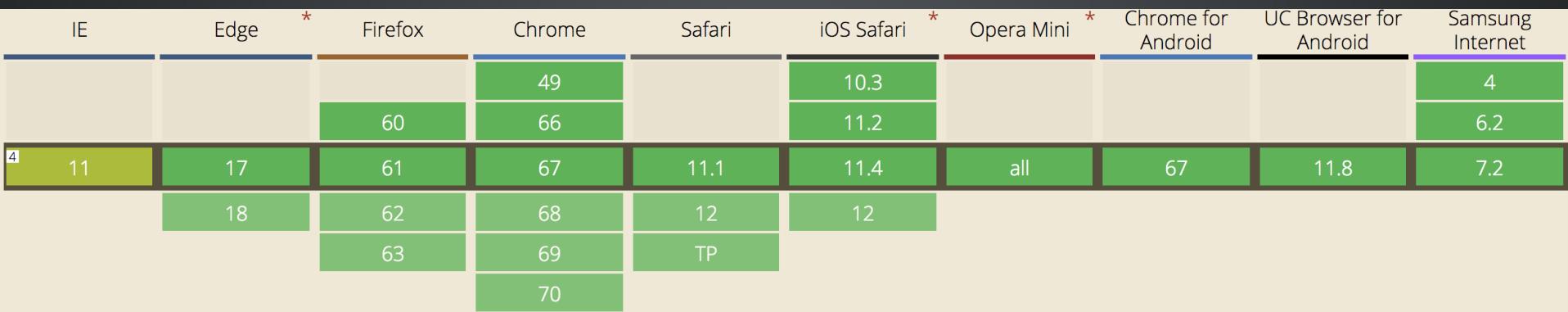
{ display: flex }

# { display: flex }

The Flexible Box Module, usually referred to as **flexbox**, was designed as a **one-dimensional layout model**, and as a method that could offer space distribution between items in an interface and powerful alignment capabilities.

# Can I Start Today?

<https://caniuse.com/#search=flexbox>



IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android
6	12	56	62	9	48	9.2		1 4
7	13	57	63	9.1	49	9.3		1 4.1
8	14	58	64	10	50	10.2		1 4.3
9	15	59	65	10.1	51	10.3		4.4
2 4 10	16	60	66	11	52	11.2		4.4.4
4 11	17	61	67	11.1	53	11.4	all	67
	18	62	68	12		12		
		63	69	TP				
			70					

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android
6	12	56	62	9	48	9.2		1 4
7	13	57	63	9.1	49	9.3		1 4.1
8	14	58	64	10	50	10.2		1 4.3
9	15	59	65	10.1	51	10.3		4.4
10	16	60	66	11	52	11.2		4.4.4
11	17	61	67	11.1	53	11.4	all	67

18	62	68	12		12
63		69	TP		
		70			

Usage % of all users ▾

Global	93.2%	+ 3.47% =	96.68%
unprefixed:	92.92%	+ 2.75% =	95.67%

# Flexbox Vocabulary



# Flexbox Vocabulary



```
.container {  
  display: flex;  
  flex-direction: row | column;  
  flex-wrap: wrap;  
  justify-content: space-between;  
  align-items: stretch;  
}
```

# Flexbox Vocabulary



```
.container {  
  display: flex;  
  flex-direction: row | column;  
  flex-wrap: wrap;  
  justify-content: space-between;  
  align-items: stretch;  
}
```

```
.item {  
  order: 1;  
  flex-grow: 4;  
  flex-shrink: 1;  
  flex-basis: 5em;  
  align-self: flex-end;  
}
```

# Flexbox Vocabulary



```
.container {  
  display: flex;  
  flex-direction: row | column;  
  flex-wrap: wrap;  
  justify-content: space-between;  
  align-items: stretch;  
}
```

```
.item {  
  order: 1;  
  flex-grow: 4;  
  flex-shrink: 1;  
  flex-basis: 5em;  
  align-self: flex-end;  
}  
  
flex: 0 1 auto;
```

# Let's Try It!

[bit.ly/michellejl-grid](https://bit.ly/michellejl-grid)

Flexbox NavBar

# More Flexbox!

[css-tricks.com/snippets/css/a-guide-to-flexbox/](https://css-tricks.com/snippets/css/a-guide-to-flexbox/)

[flexboxfroggy.com/](http://flexboxfroggy.com/)

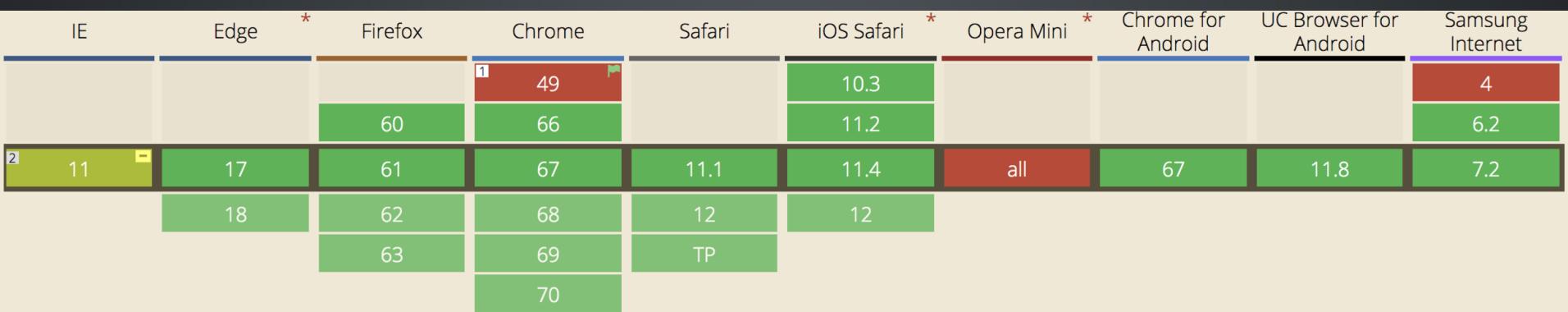
[bennettfeely.com/flexplorer/](http://bennettfeely.com/flexplorer/)

{ display: grid }

# { display: grid }

CSS Grid Layout excels at dividing a page into major regions or defining the relationship in terms of size, position, and layer, between parts of a control built from HTML primitives. Grid is for working in **two-dimensions**.

Can I Start  
Today?



IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android
6	2 12	56	62	9	48	9.2		4
7	2 13	57	63	9.1	49	9.3		4.1
8	2 14	58	64	10	50	10.2		4.3
9	2 15	59	65	10.1	51	10.3		4.4
2 10	16	60	66	11	52	11.2		4.4.4
2 11	17	61	67	11.1	53	11.4	all	67
		18	62	68	12	12		
			63	69	TP			
				70				

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android
6	2 12	56	62	9	48	9.2		4
7	2 13	57	63	9.1	49	9.3		4.1
8	2 14	58	64	10	50	10.2		4.3
9	2 15	59	65	10.1	51	10.3		4.4
2 10	16	60	66	11	52	11.2		4.4.4
2 11	17	61	67	11.1	53	11.4	all	67
	18	62	68	12		12		
		63	69	TP				
			70					

Usage

Global

unprefixed:

% of all users

84.53% + 3.2% = 87.73%

84.53%

# Fallbacks for Older Browsers

LayoutLand: Resilient CSS

```
.grid {  
  display: grid;  
}
```

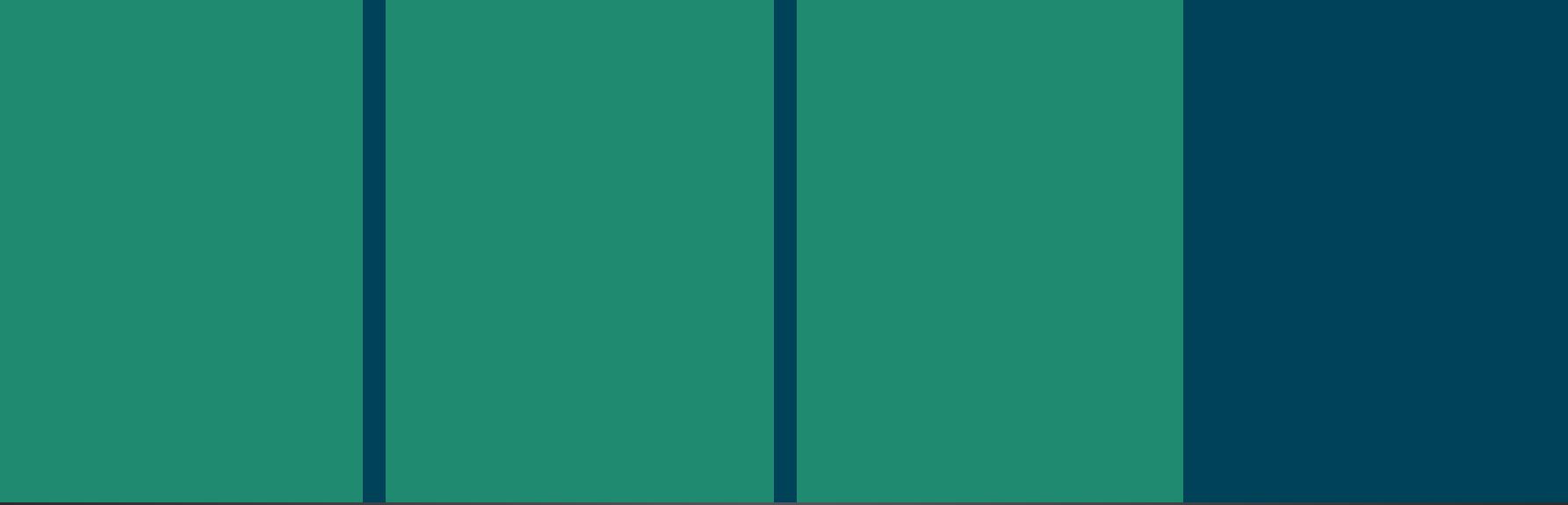
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
}
```



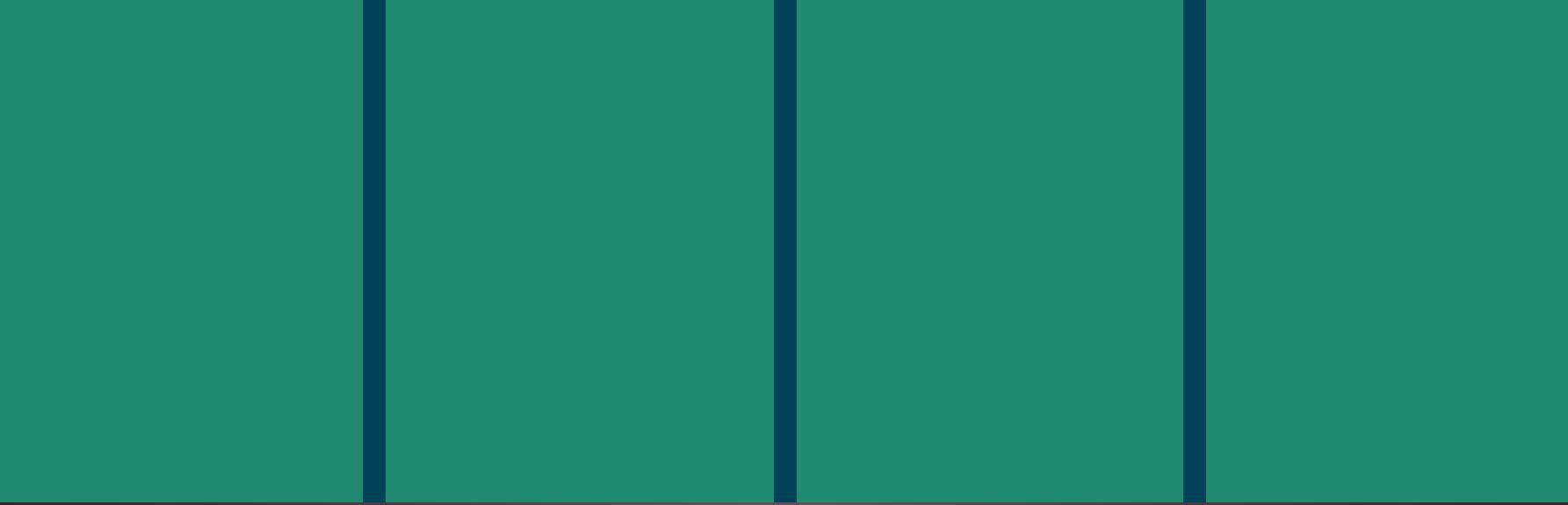
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
}
```



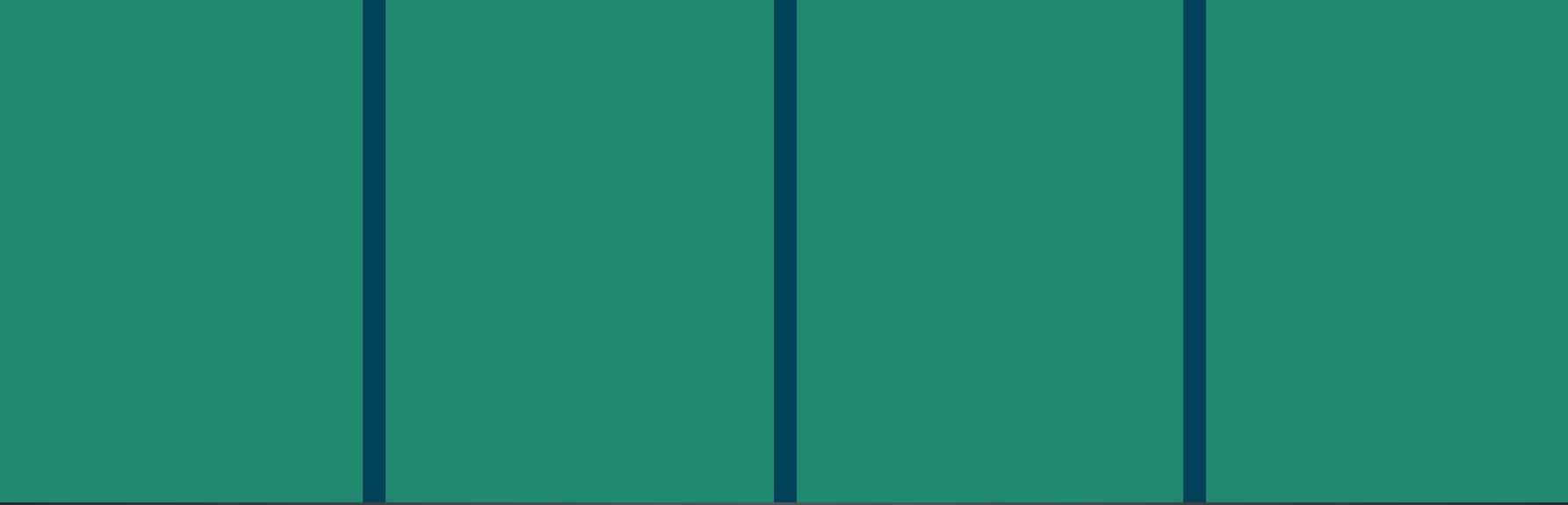
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
}
```



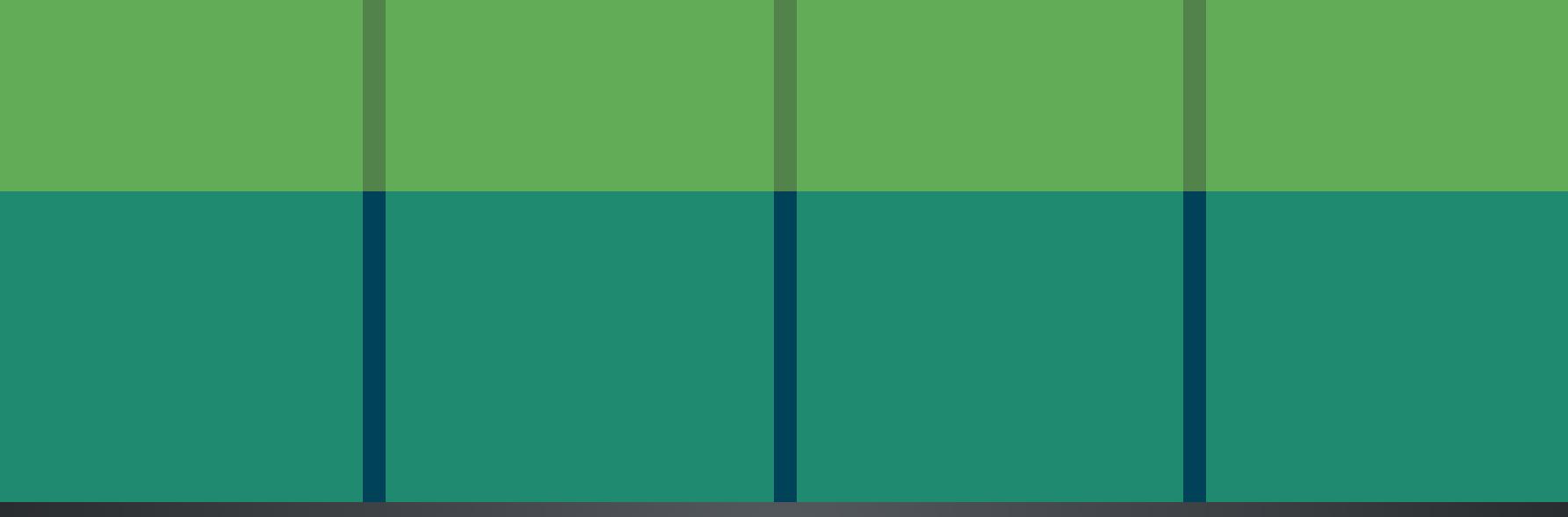
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
}
```



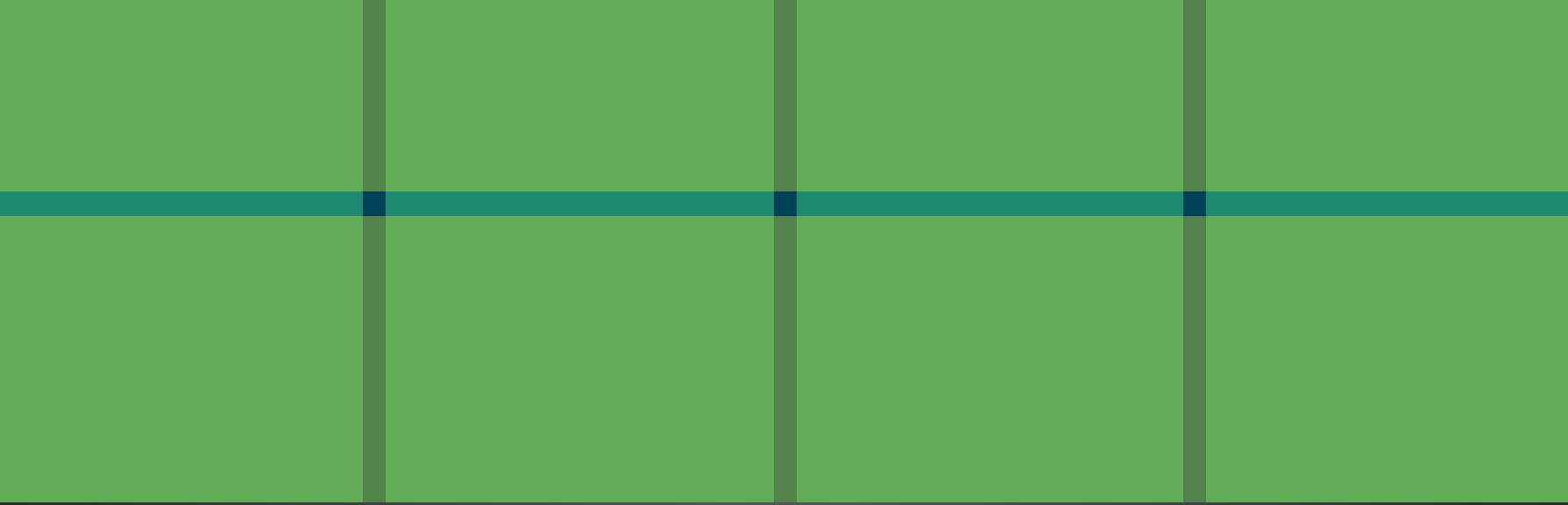
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
}
```



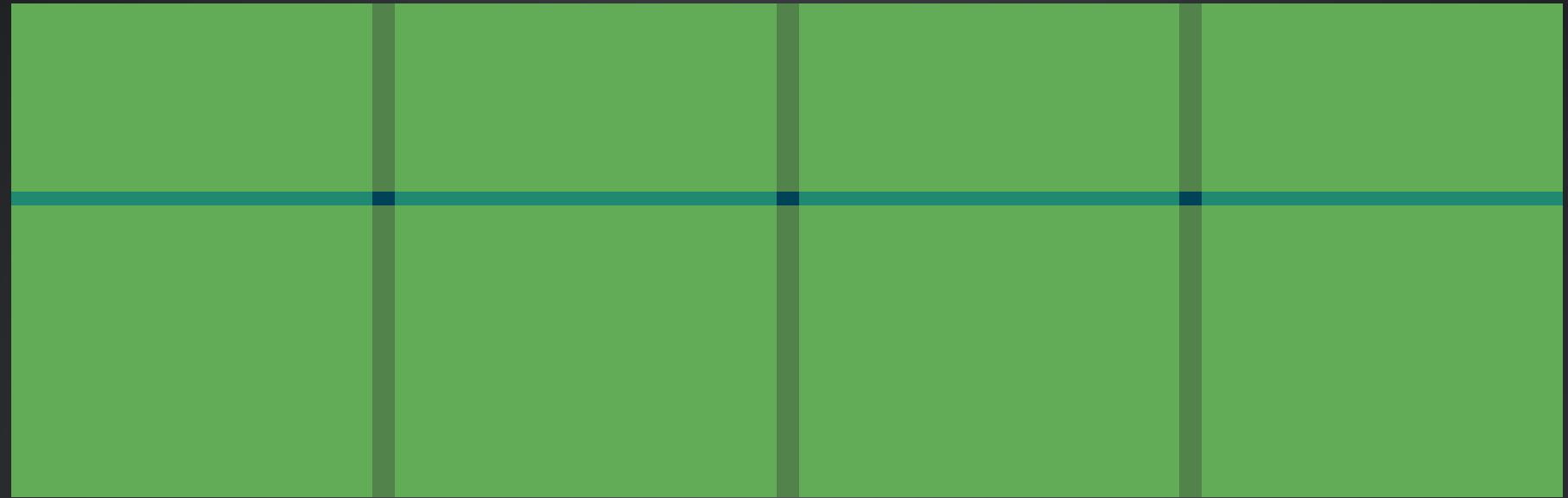
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
}
```



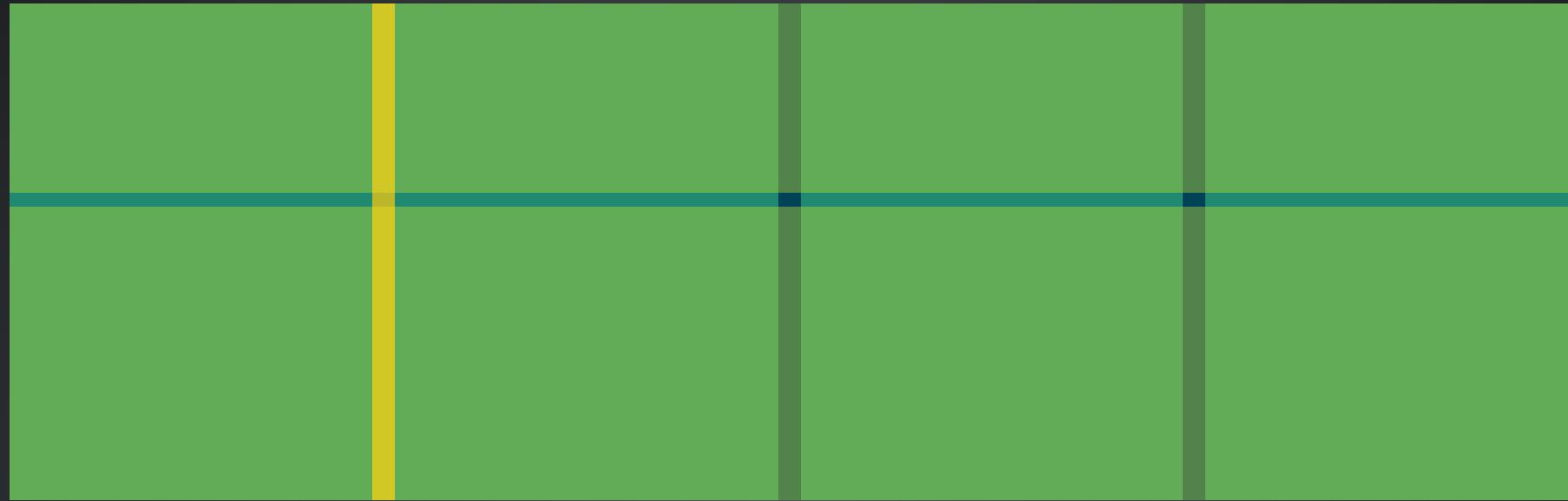
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
}
```



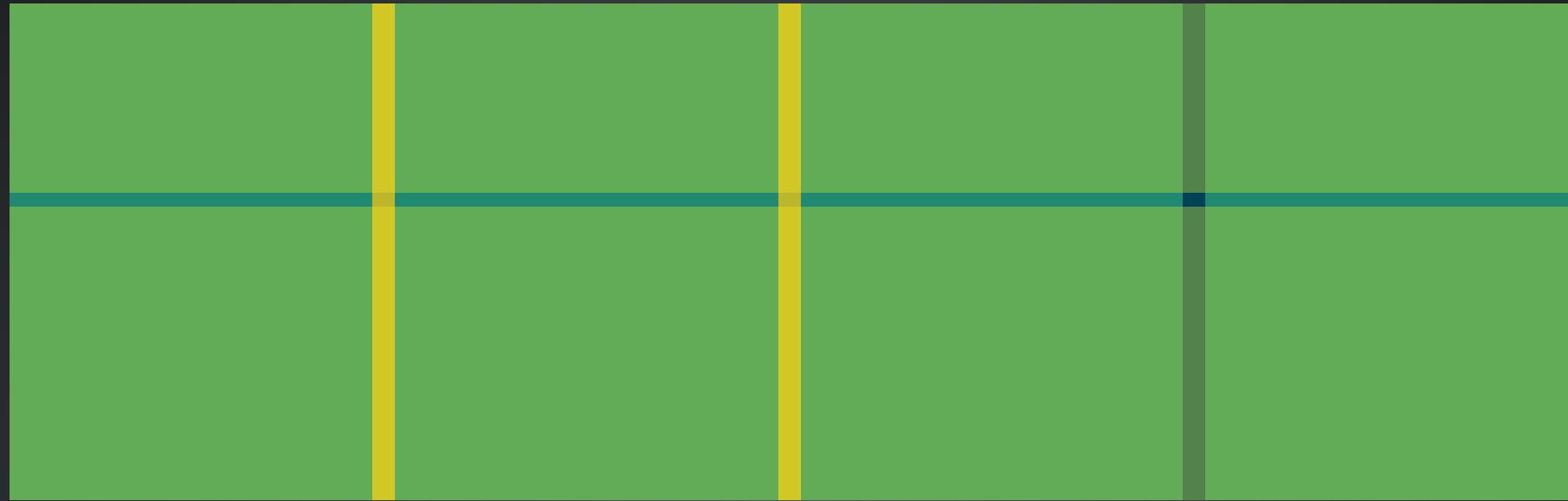
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
}
```



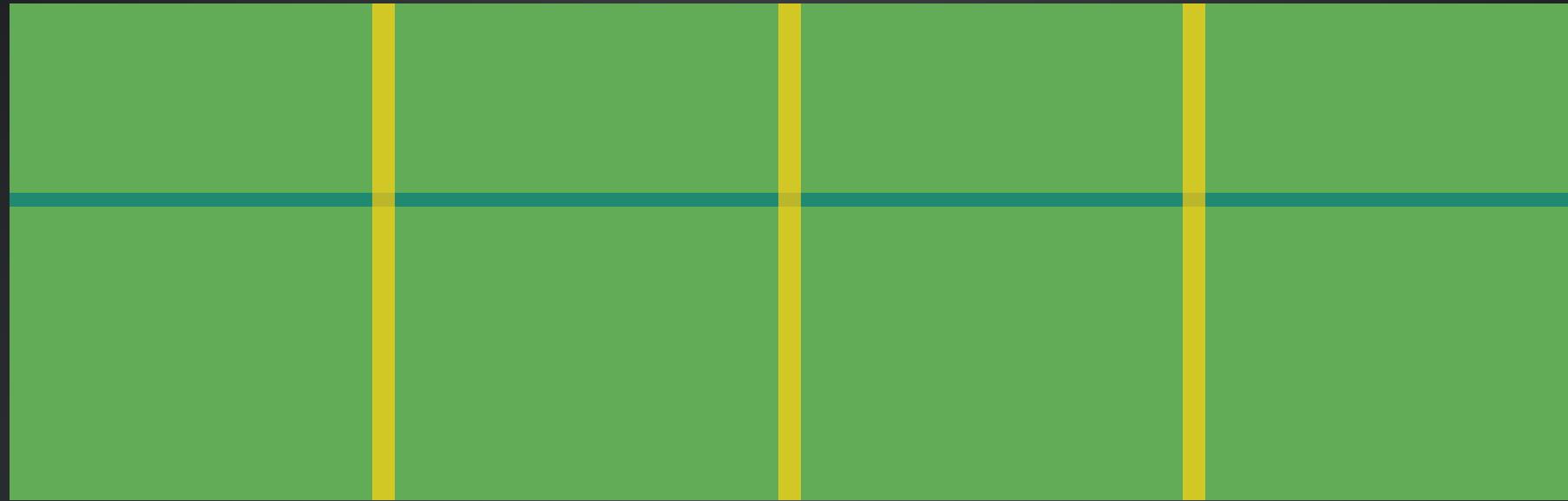
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
  grid-gap-columns: 10px;  
  grid-gap-rows: 5px;  
}
```



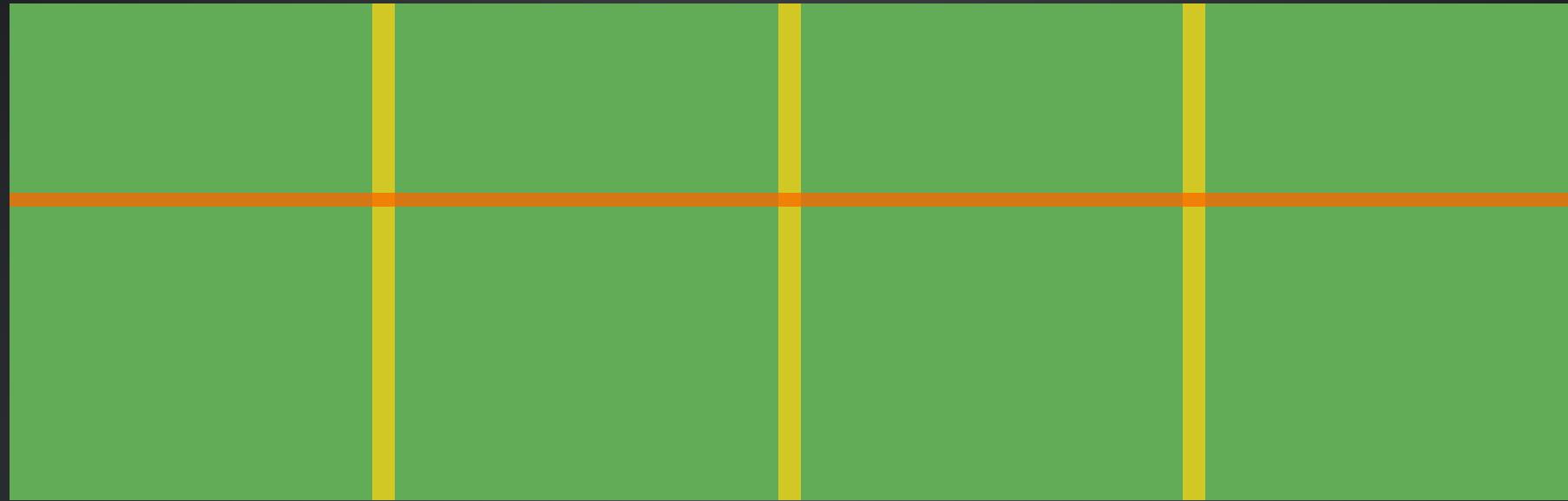
```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
  grid-gap-columns: 10px;  
  grid-gap-rows: 5px;  
}
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
  grid-gap-columns: 10px;  
  grid-gap-rows: 5px;  
}
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
  grid-gap-columns: 10px;  
  grid-gap-rows: 5px;  
}
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(4, 1fr);  
  grid-template-rows: 100px 200px;  
  grid-gap-columns: 10px;  
  grid-gap-rows: 5px;  
}
```

# Let's Try It!

[bit.ly/michellejl-grid](https://bit.ly/michellejl-grid)

Grid Layout 1

# New Grid Units

# New Grid Units

min-content

# New Grid Units

min-content

max-content

# New Grid Units

min-content

max-content

fr

# New Grid Units

min-content

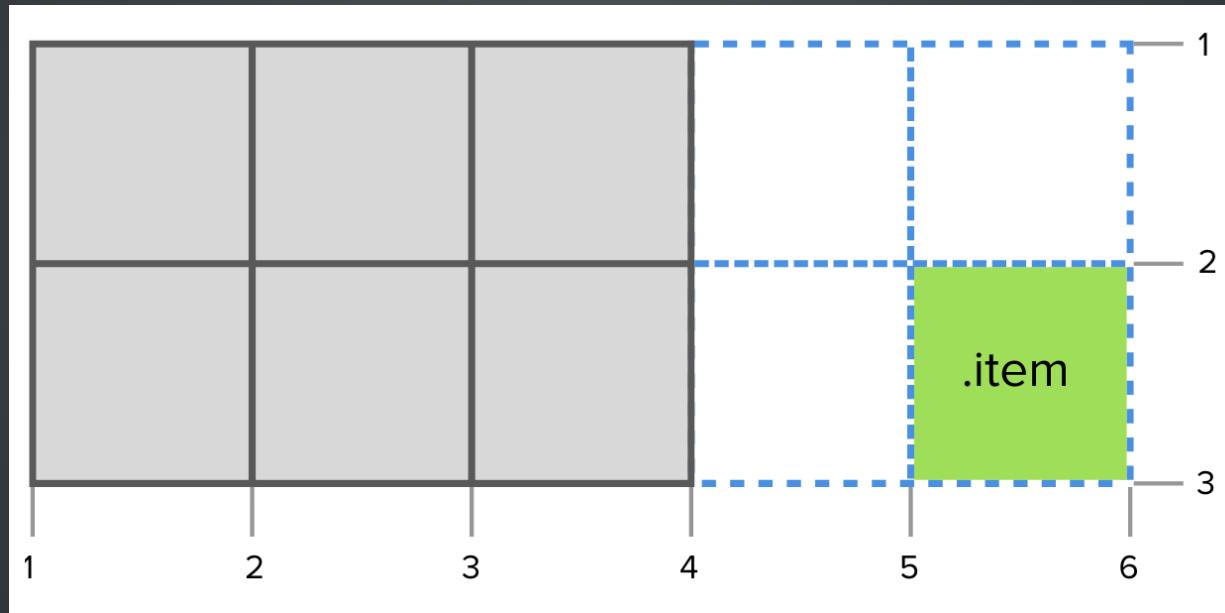
max-content

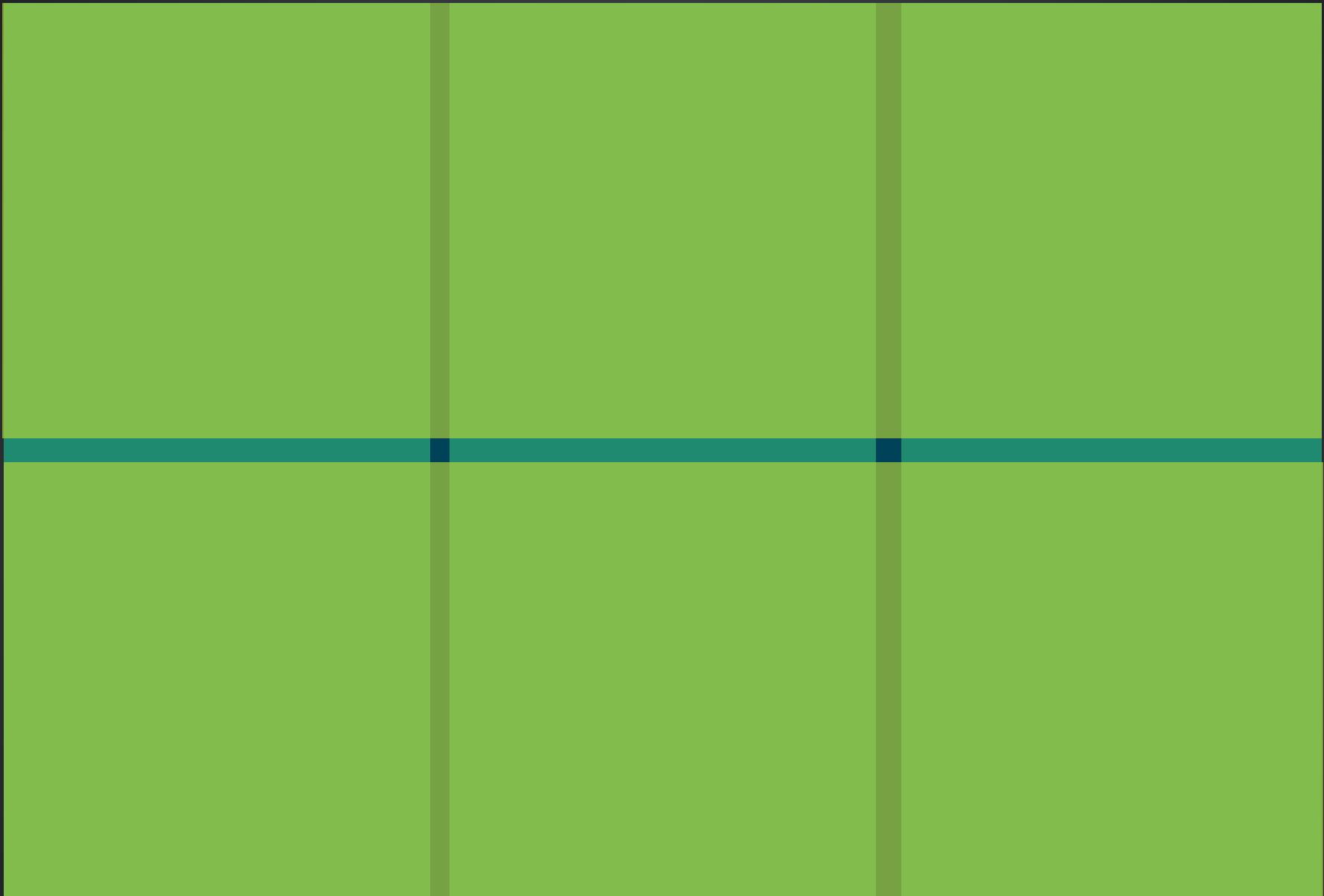
fr

minmax()

# Explicit Grid vs. Implicit Grid

# Explicit Grid vs. Implicit Grid



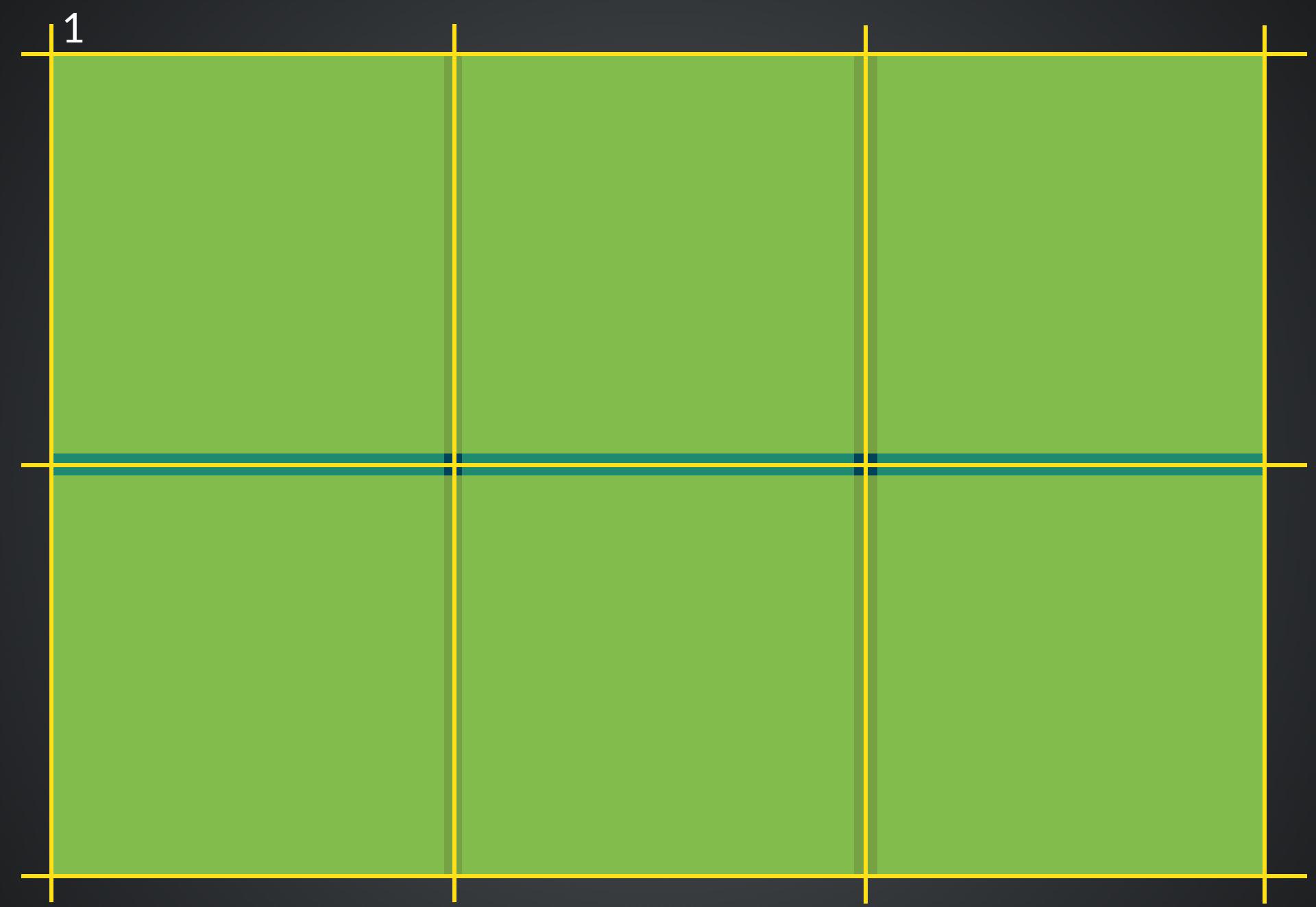




@michellejlevine



@michellejlevine



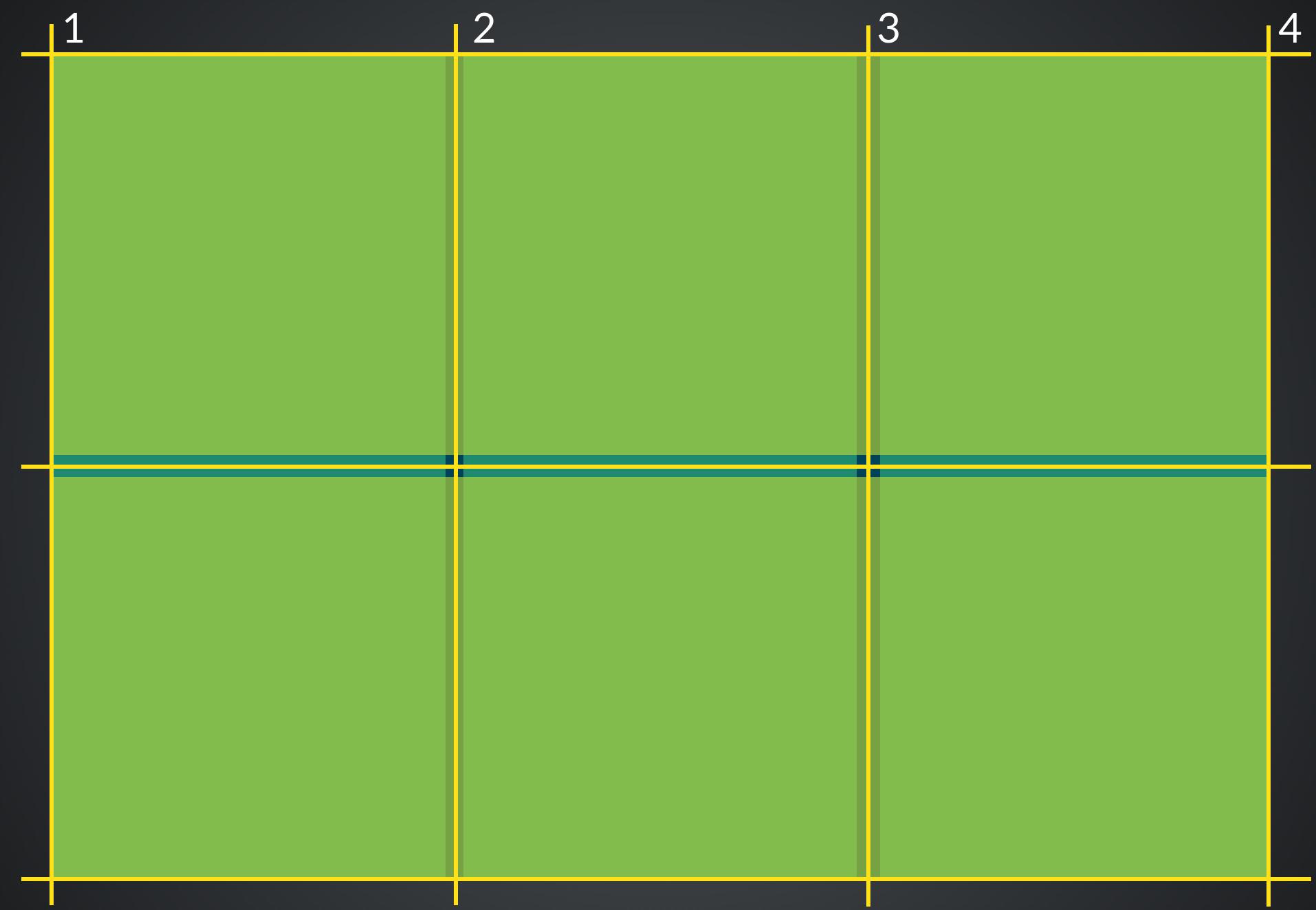
1

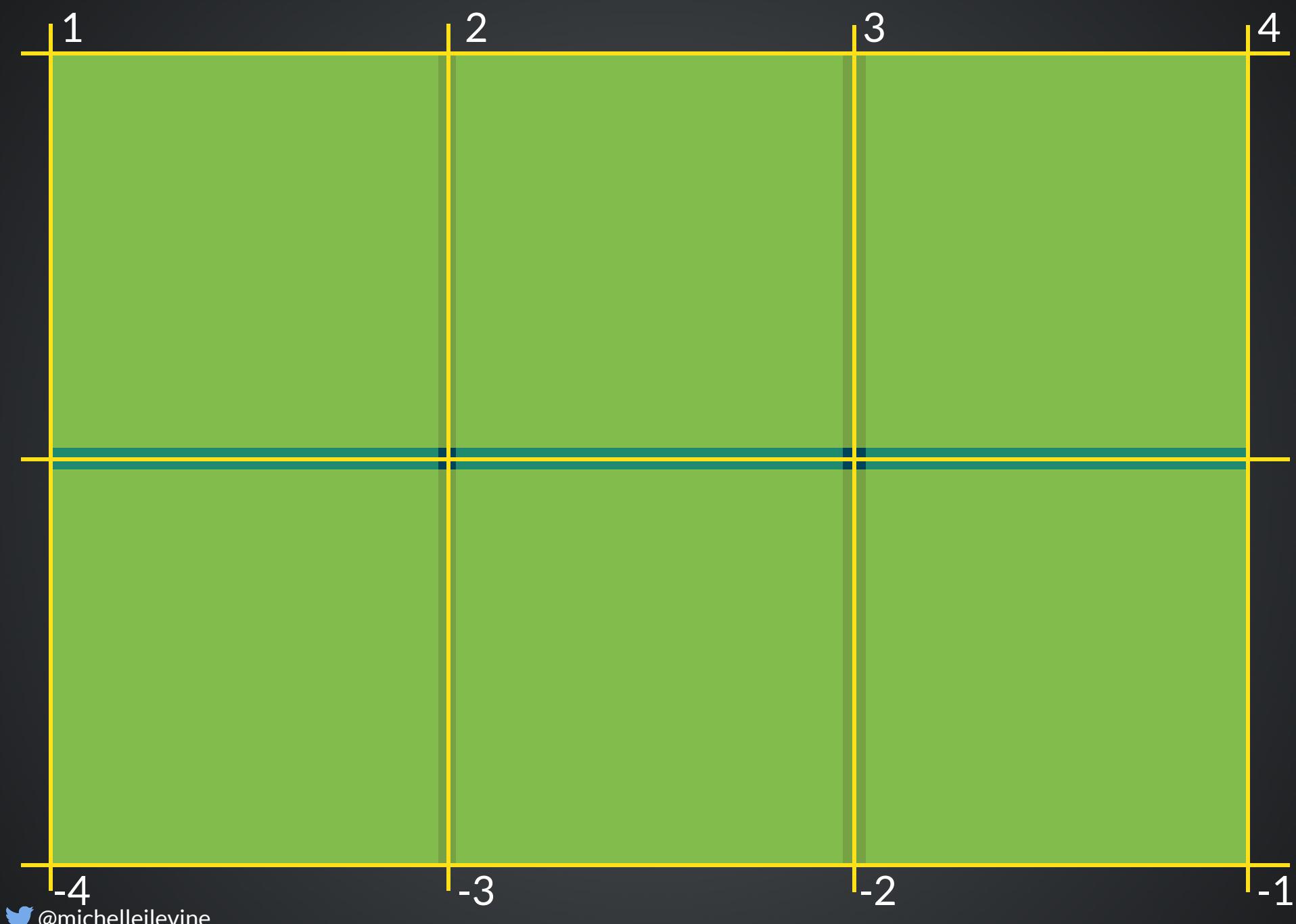
2

1

2

3





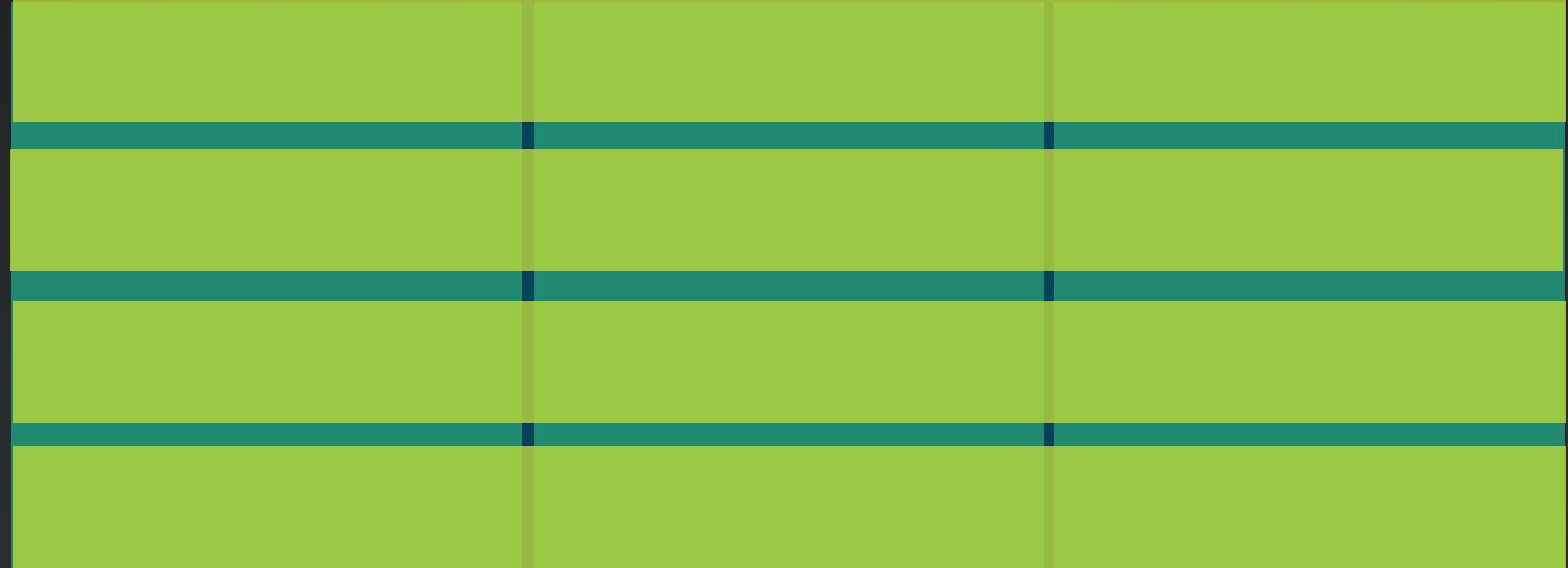
# Let's Try It!

[bit.ly/michellejl-grid](https://bit.ly/michellejl-grid)

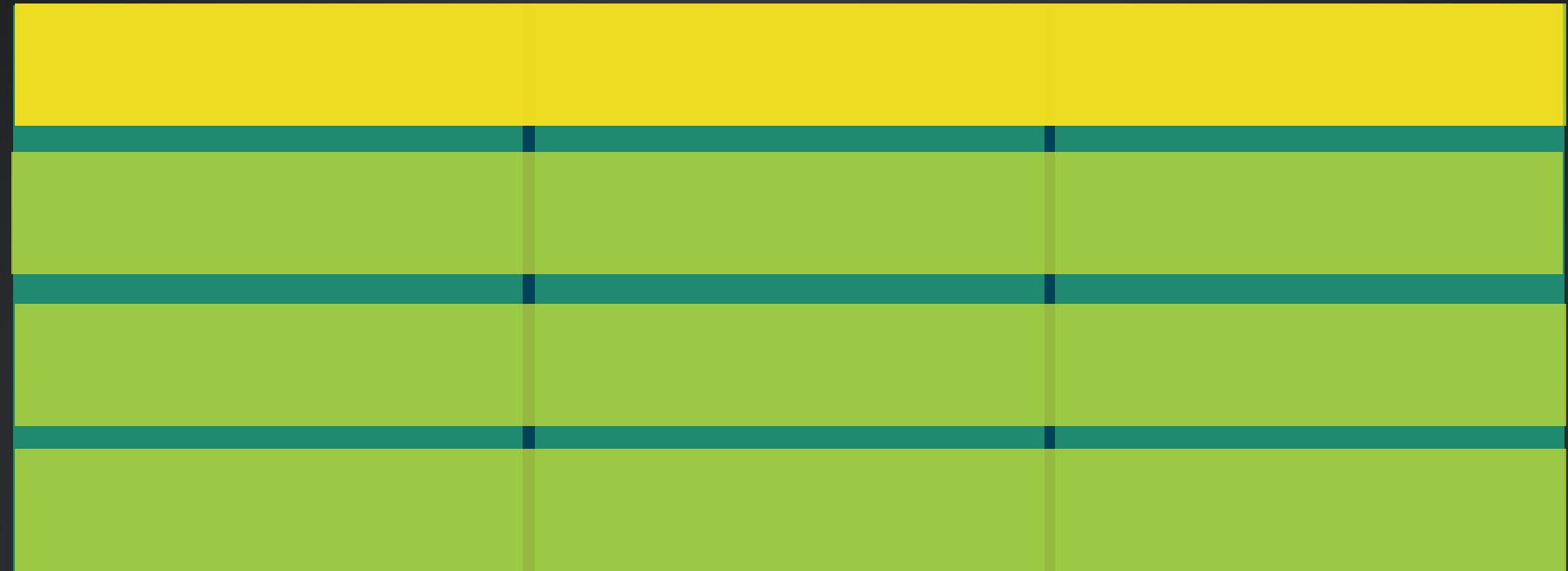
Grid Layout 2: Cells

Grid Layout 3: Named Lines

Grid Layout 5: Overlay



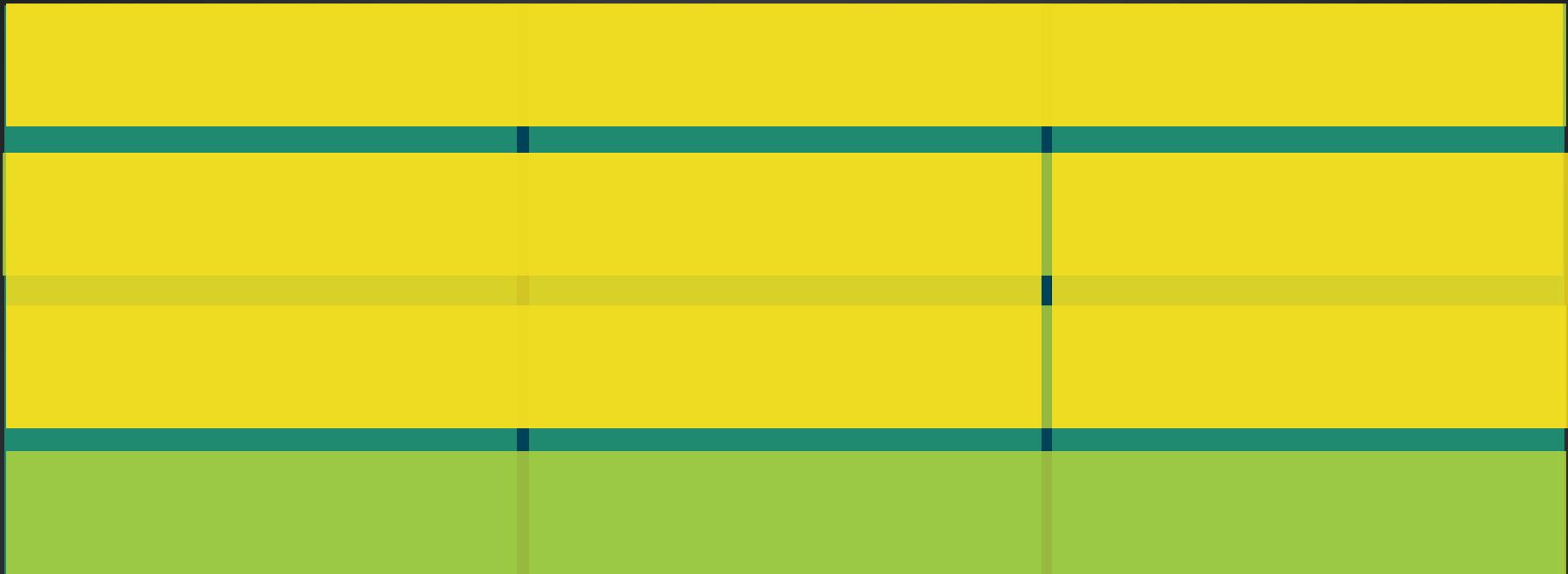
```
.grid {  
    display: grid;  
    grid-template-columns: repeat(3, 1fr);  
    grid-template-rows: repeat(4, 25px);  
    grid-template-areas: "a a a"  
                        "b b c"  
                        "b b c"  
                        "d d d";
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(3, 1fr);  
  grid-template-rows: repeat(4, 25px);  
  grid-template-areas: "a a a"  
                      "b b c"  
                      "b b c"  
                      "d d d";
```



```
.grid {  
    display: grid;  
    grid-template-columns: repeat(3, 1fr);  
    grid-template-rows: repeat(4, 25px);  
    grid-template-areas: "a a a"  
                        "b b c"  
                        "b b c"  
                        "d d d";
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(3, 1fr);  
  grid-template-rows: repeat(4, 25px);  
  grid-template-areas: "a a a"  
                      "b b c"  
                      "b b c"  
                      "d d d";
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(3, 1fr);  
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```

# Let's Try It!

[bit.ly/michellejl-grid](https://bit.ly/michellejl-grid)

Grid Layout 4: Grid Area

# Let's Try It!

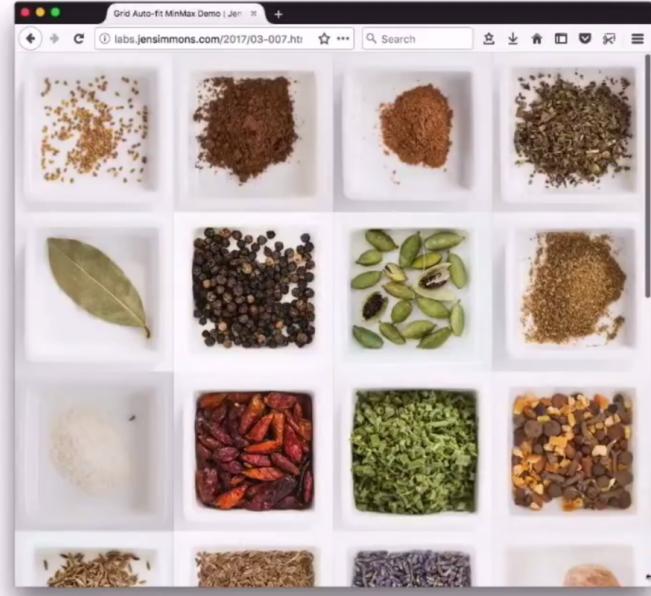
[bit.ly/michellejl-grid](https://bit.ly/michellejl-grid)

Grid Layout 4: Grid Area

# No More Media Queries?

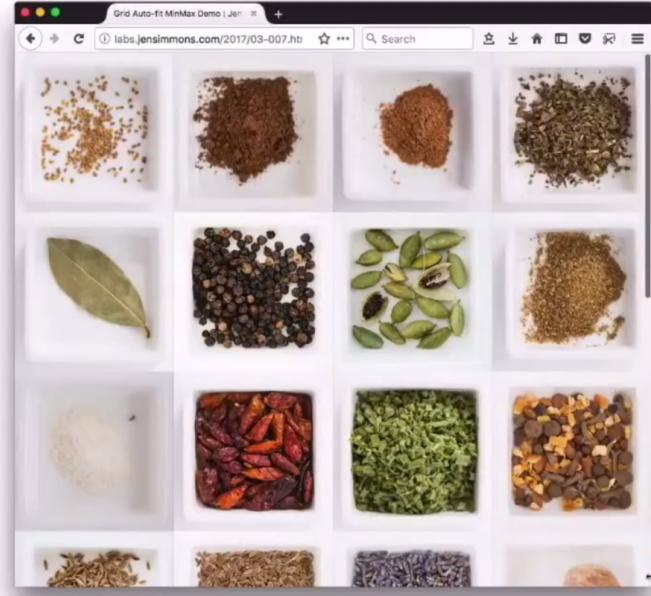
<http://labs.jensimmons.com/2016/examples/spices-1.html>

```
* {  
  box-sizing: border-box;  
}  
  
body {  
  margin: 0;  
  background: #F0F0F0;  
}  
  
main {  
  display: grid;  
  grid-template-columns: repeat(auto-fit  
    minmax(200px, 1fr));  
}  
  
img {  
  display: block;  
  width: 100%;  
  box-shadow: -1px 0px 0px  
    rgba(0,0,0,0.06);  
}
```



<http://labs.jensimmons.com/2016/examples/spices-1.html>

```
* {  
  box-sizing: border-box;  
}  
  
body {  
  margin: 0;  
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}  
  
main {  
  display: grid;  
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  box-shadow: -1px 0px 0px  
    rgba(0,0,0,0.06);  
}
```



<http://labs.jensimmons.com/2016/examples/spices-1.html>

# Grid or Flexbox?

# Grid or Flexbox? or floats??

# Real Examples Please!

# THE EXPERIMENTAL LAYOUT LAB OF JEN SIMMONS

LAYOUT LAND VIDEOS  
LAYOUT LAND WEBSITE  
LEARN HOW TO USE CSS GRID  
REVOLUTIONIZE YOUR PAGE:  
WEB ART DIRECTION ON THE  
PROGRESSING OUR LAYOUTS  
MODERN LAYOUTS: GETTING  
OUT OF OUR RUTS  
JENSIMMONS.COM  
WORKSHOP EXAMPLES

FIREFOX GRID INSPECTOR  
FIREFOX SHAPE PATH EDITOR  
FIREFOX NIGHTLY

Follow @JENSIMMONS on Twitter for more as it happens.  
Sign up for LAYOUT LAND, a place for us to show off new ideas for layout.



## JAZZ AT LINCOLN CENTER SPRING 2007

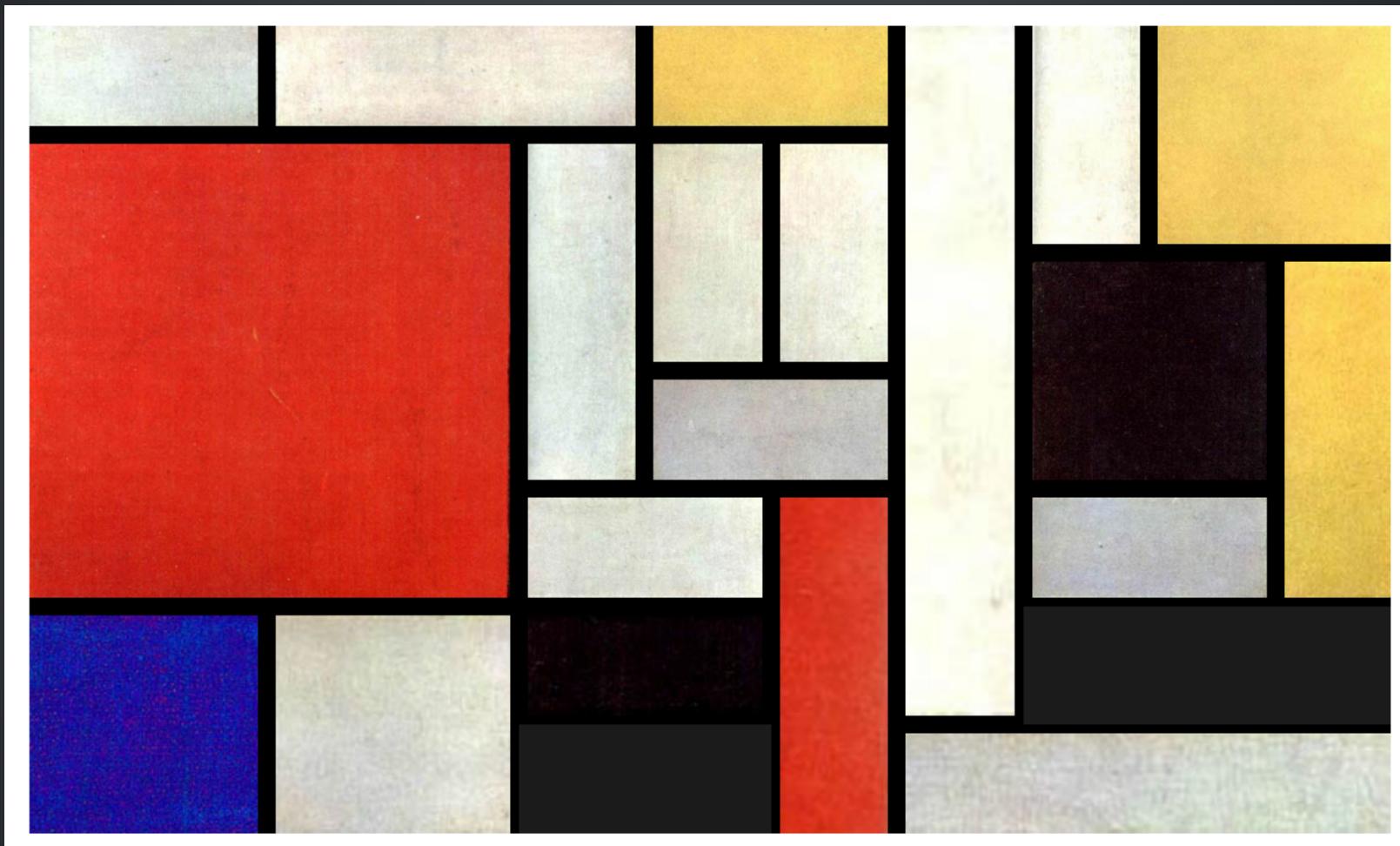
**Dr. Michael White Quartet**  
With clarinetist Dr. Michael White, banjo player Seva Venet, trumpeter Gregg Stafford, and bassist Vince Giordano  
**March 13, 7:30pm**

**Bebop Lives!**  
Celebrating the best of Dizzy Gillespie and Charlie Parker  
**January 26–27, 8pm**

**Jazz and Art**  
The Jazz at Lincoln Center Orchestra with Wynton Marsalis & special guest Mark O'Connor  
**February 22–24, 8pm**

**New York Youth Symphony: Dedicated to Diz**  
with special guest Jon Faddis  
**March 14, 8pm**

**Sinne Eeg**  
With vocalist Sinne Eeg, pianist Jacob Christoffersen, drummer Clarence Penn, and bassist Johannes Weidenmueller  
**March 15, 2:30pm**



# More CSS Grid in the Wild:

<https://cssgrid.design/>

Rachel Andrew

[rachelandrew.co.uk/](http://rachelandrew.co.uk/)

@rachelandrew

[gridbyexample.com/](http://gridbyexample.com/)

[thecssworkshop.com/](http://thecssworkshop.com/)

[csslayout.news/](http://csslayout.news/)

Jen Simmons

[jensimmons.com/](http://jensimmons.com/)

@jensimmons

[youtube.com/layoutland](http://youtube.com/layoutland)

Know these humans. They are AMAZING.

Read their blogs, newsletters, and books,  
checkout their code, learn from their videos.



**Rachel Andrew**  
@rachelandrew

Following



I'm excited to share my new @skillshare online class which covers the essentials of CSS Grid and will give you the basics you need to begin trying it out for yourself. Join free today with a two-month trial [skl.sh/rachel](https://skl.sh/rachel)

2:30 AM - 17 Jul 2018

[skl.sh/rachel](https://skl.sh/rachel)

# Icons from [www.flaticon.com](http://www.flaticon.com)



Freepik



Freepik



Freepik



Freepik



Freepik



Freepik



Freepik



Freepik



monkik



Smashicons



Prosymbols



Smashicons



Alfredo  
Hernandez



prettycons



srip



photo3idea\_  
studio

# Links

## A Brief History of the Web

CERN: Birth of the Web --> <https://home.cern/topics/birth-web>

First Website --> <http://info.cern.ch/>

Line Mode Browser --> <http://line-mode.cern.ch/>

A brief history of CSS until 2016 --> <https://www.w3.org/Style/CSS20/history.html>

World Wide Web Consortium --> <https://www.w3.org/>

W3C Recommendation Track --> <https://www.w3.org/2004/02/Process-20040205/tr.html>

## CSS Frameworks

Bootstrap --> <https://getbootstrap.com/>

Zerb Foundation --> <https://foundation.zurb.com/>

Materialize --> <https://materializecss.com/>

Bulma --> <https://bulma.io/>

PureCSS --> <https://purecss.io/>

Milligram --> <https://milligram.io/>

Blaze UI --> <https://www.blazeui.com/>

Bourbon --> <https://bourbon.io/>

Bourbon Neat --> <https://neat.bourbon.io/>

# Links

## Flexbox

Complete Guide to Flexbox --> <https://css-tricks.com/snippets/css/a-guide-to-flexbox/>

MDN Flexbox Concepts --> [https://developer.mozilla.org/en-US/docs/Web/CSS/CSS\\_Flexible\\_Box\\_Layout/Basic\\_Concepts\\_of\\_Flexbox](https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Flexible_Box_Layout/Basic_Concepts_of_Flexbox)

MDN Flexbox Intro --> [https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS\\_layout/Flexbox](https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout/Flexbox)

CSS Reference --> <https://cssreference.io/flexbox/>

W3C Flexible Box Specs --> <https://www.w3.org/TR/css-flexbox-1/>

Course: What The Flexbox? --> <https://flexbox.io/>

Flexbox Froggy --> <https://flexboxfroggy.com/>

# Links

## CSS Grid

Complete Guide to CSS Grid --> <https://css-tricks.com/snippets/css/complete-guide-grid/>

MDN Grid Layout --> [https://developer.mozilla.org/en-US/docs/Web/CSS/CSS\\_Grid\\_Layout](https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Grid_Layout)

CSS Reference --> <https://cssreference.io/css-grid/>

W3C Grid Layout Specs --> <https://www.w3.org/TR/css-grid-1/>

Course: CSS Grid --> <https://cssgrid.io/>

Grid Garden --> <https://cssgridgarden.com/>

Learn CSS Grid --> <https://learncssgrid.com/>

Grid By Example --> <https://gridbyexample.com/>

Layout Land --> <https://www.youtube.com/layoutland>

Flexbox or Grid --> <https://rachelandrew.co.uk/archives/2016/03/30/should-i-use-grid-or-flexbox/>

Implicit & Explicit Grid --> <https://css-tricks.com/difference-explicit-implicit-grids/>