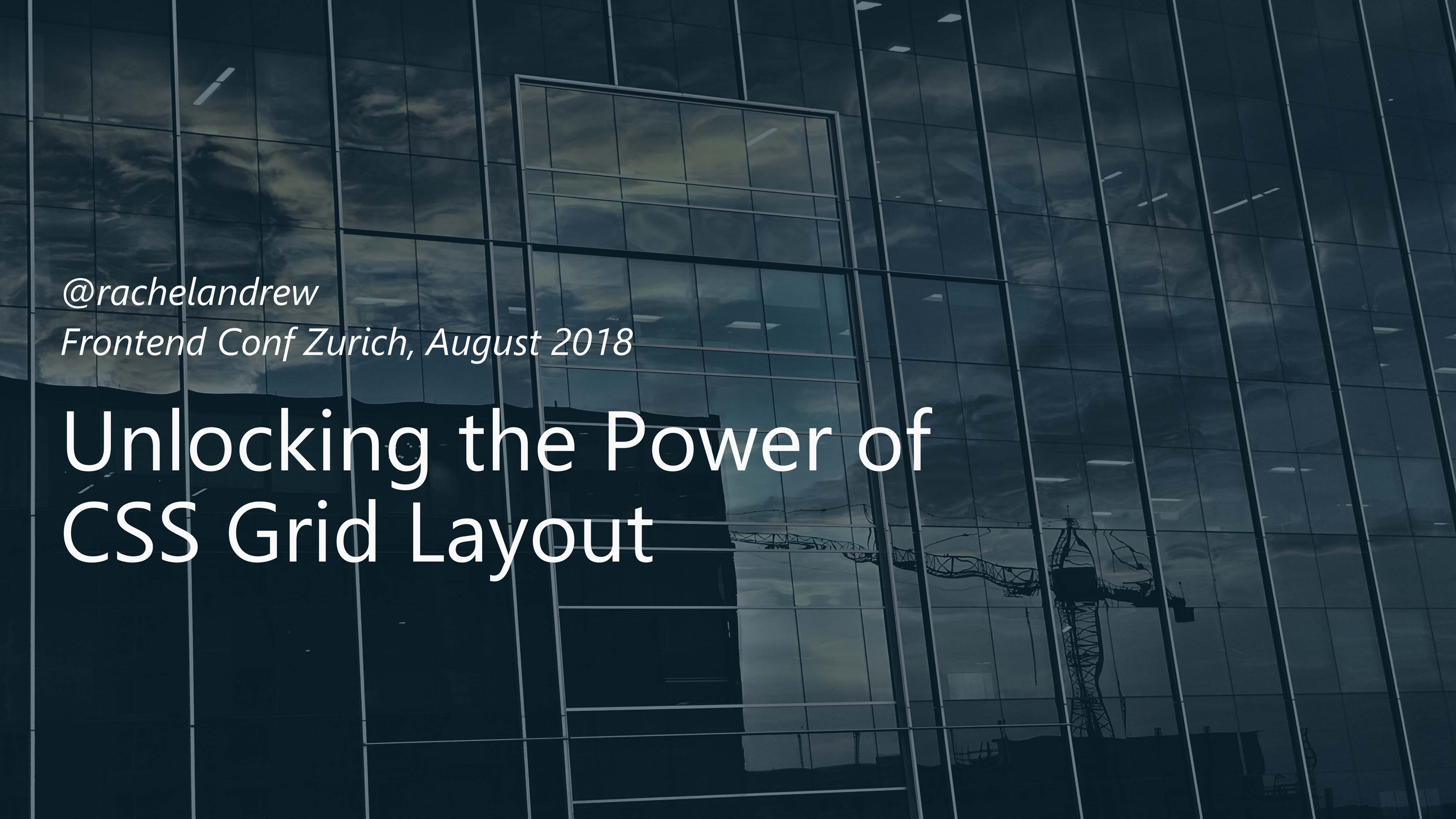


@rachelandrew
Frontend Conf Zurich, August 2018

Unlocking the Power of CSS Grid Layout

W3C Working Draft

TABLE OF CONTENTS

CSS Grid Layout Module Level 2

W3C Working Draft, 27 April 2018

This version:
https://www.w3.org/TR/2018/WD-css-grid-2-20180427/

Latest published version:
https://www.w3.org/TR/css-grid-2/

Editor's Draft:
https://drafts.csswg.org/css-grid-2/

Previous Versions:
https://www.w3.org/TR/2018/WD-css-grid-2-20180206/

Issue Tracking:
Inline In Spec
GitHub Issues

Editors:
Tab Atkins Jr. (Google)
Elika J. Etemad / fantasai (Invited Expert)
Rossen Atanassov (Microsoft)

Abstract

This CSS module defines a two-dimensional grid-based layout system, optimized for user interface design. In the grid layout model, the children of a grid container can be positioned into arbitrary slots in a predefined flexible or fixed-size layout grid. Level 2 expands Grid by adding “subgrid” capabilities for nested grids to participate in the sizing of their parent grids; and aspect-ratio–controlled gutters.

CSS is a language for describing the rendering of structured documents (such as HTML and XML) on screen, on paper, in speech, etc.

How big is that box?

A LIST APART

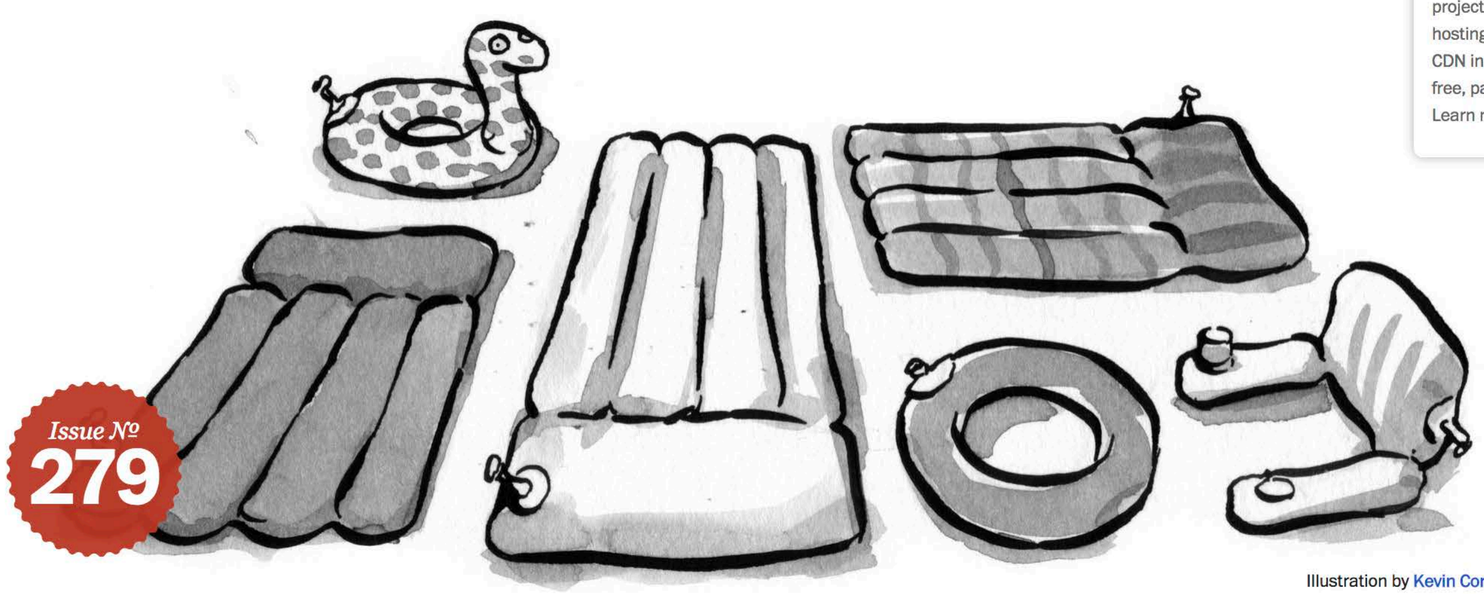


Illustration by Kevin Cornell

Fluid Grids

by **Ethan Marcotte** · March 03, 2009

Published in CSS, HTML, Graphic Design, Layout & Grids, Responsive Design

Early last year, I worked on the redesign of a rather content-heavy website. Design requirements were fairly light: the client asked us to keep the organization's existing logo and to improve the dense typography and increase legibility. So, early on in the design process, we spent a sizable amount of time planning a well-defined grid for a library of content modules.

https://twitter.com/devine_howest/status/959036561839960070

powered by: Devine howest

Devine
@devine_howest

Devine - Digital Design & Development, a 3 year bachelor degree powered by howest.be

Kortrijk
devine.be
Joined January 2010

Devine
@devine_howest

Follow

Today we are celebrating International box-sizing Awareness Day. Anyone wants some padding? 🍰 #devinehowest @chriscoyier @Real_CSS_Tricks @paul_irish css-tricks.com/international- …

4:11 AM - 1 Feb 2018 from Kortrijk, België

25 Retweets **58** Likes

3 25 58

css layout frameworks

All Images Videos News Maps More Settings Tools

About 12,200,000 results (0.60 seconds)

Bulma: a modern CSS framework based on Flexbox

https://bulma.io/

A single element for a Metro UI-style **CSS grid**. Vertical... Top tile ...tiles. Bottom tile. Middle tile. With an image. Wide tile. Aligned with the right tile. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin ornare magna eros, eu pellentesque tortor vestibulum ut. Maecenas non massa sem. Etiam finibus odio quis feugiat ...

Docs · Breadcrumb · Box · Container

Skeleton: Responsive CSS Boilerplate

getskeleton.com/

You should use Skeleton if you're embarking on a smaller project or just don't feel like you need all the utility of larger **frameworks**. Skeleton only styles a handful of standard HTML elements and includes a **grid**, but that's often more than enough to get started. In fact, this site is built on Skeleton and has ~200 lines of custom ...

Pure CSS

https://purecss.io/

A set of small, responsive **CSS** modules that you can use in every web project.

Grids · Layouts · Get Started · Forms

What are Frameworks? 22 Best Responsive CSS Frameworks for Web ...

https://www.awwwards.com/what-are-frameworks-22-best-responsive-css-frameworks...

20 Feb 2013 - Front-end **Frameworks** (or **CSS Frameworks**). Frontend **frameworks** usually consist of a package made up of a structure of files and folders of standardized code (HTML, **CSS**, JS documents etc.) The usual components are: **CSS** source code to create a **grid**: this allows the developer to position the different ...

Best CSS Frameworks of 2017 | Three29

https://three29.com/best-css-frameworks-2017/

31 Mar 2017 - Allow us to lend a hand in sorting through the what's what in **CSS frameworks** in 2017. For those who are less tech savvy, a quick rundown. Building a website is a complicated process that involves a lot of moving parts. One of those components is the visual style and **layout** of a site. That's where our friend ...

A key feature of Flexbox and Grid Layout is that they can deal with distributing available space between, around and inside grid and flex items. Quite often this *just works*, and we get the result we were hoping for without trying very hard. This is because the specifications attempt to default to the most likely use cases. Sometimes, however, you might wonder why something ends up the size that it is. Or, you might want to do something different to the default behavior. To do so, you need to know something of how the underlying algorithms figure out how to distribute space.

In this article, I'm going to share with you some interesting things about sizing boxes in CSS. I've picked out a few things from the specifications that I believe are vital in terms of understanding exactly how big that box is. Take some time to read through, and I think you'll find sizing in Grid a lot less mysterious!

JANUARY 16, 2018 • 8 COMMENTS

How Big Is That Box? Understanding Sizing In CSS Layout

CSS 236 # Layouts 36 # Browsers 30

TABLE OF CONTENTS

TAKING A CLOSER LOOK AT BFC

How big is a grid?

“Each track has specified minimum and maximum sizing functions (which may be the same).”

–11.1 Grid Sizing Algorithm

- Fixed sizing:
  lengths such as px or em, or a resolvable percentage
- An intrinsic sizing function
  auto, min-content, max-content, fit-content
- A flexible sizing function
  The fr unit

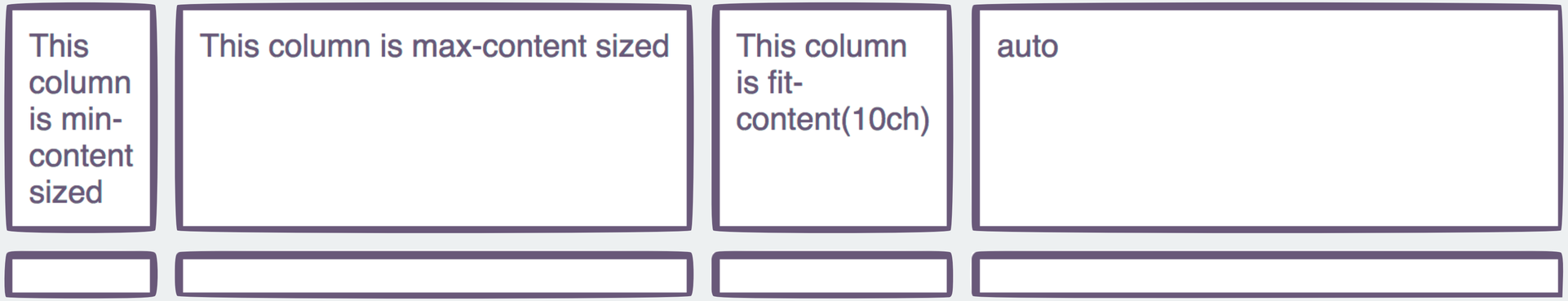
Intrinsic Sizing

auto

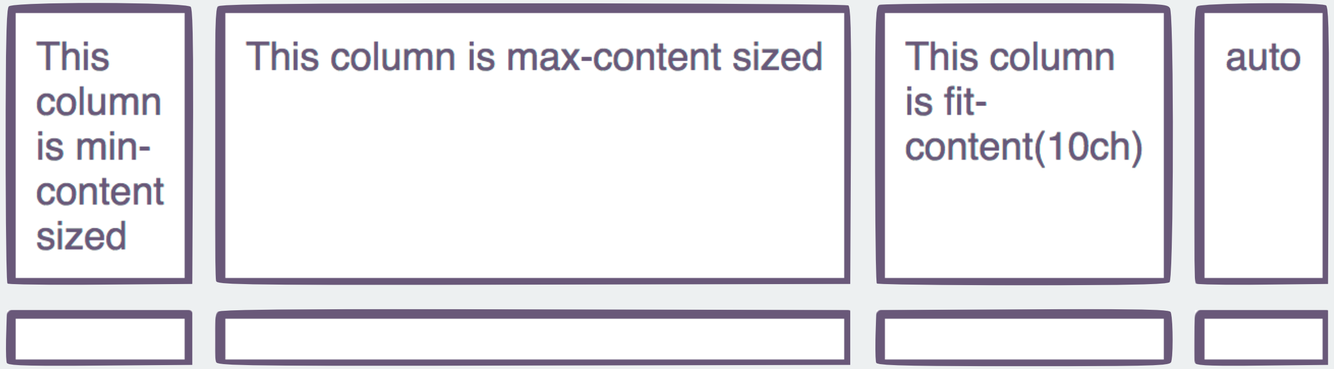
Default size of grid tracks. Tracks sized *auto* will stretch to take up space in the grid container.

https://codepen.io/rachelandrew/pen/ppYPZR

justify-content: stretch



justify-content: start



Intrinsic Sizing: auto

The auto-sized track will stretch in the inline direction.

Use justify-content: start to override the stretching behaviour.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns:
    min-content
    max-content
    fit-content(10ch)
    auto;
  justify-content: start;
}
```

Intrinsic Sizing

min-content

The smallest size the item can be, taking advantage of all soft-wrapping opportunities.

Intrinsic Sizing: min-content

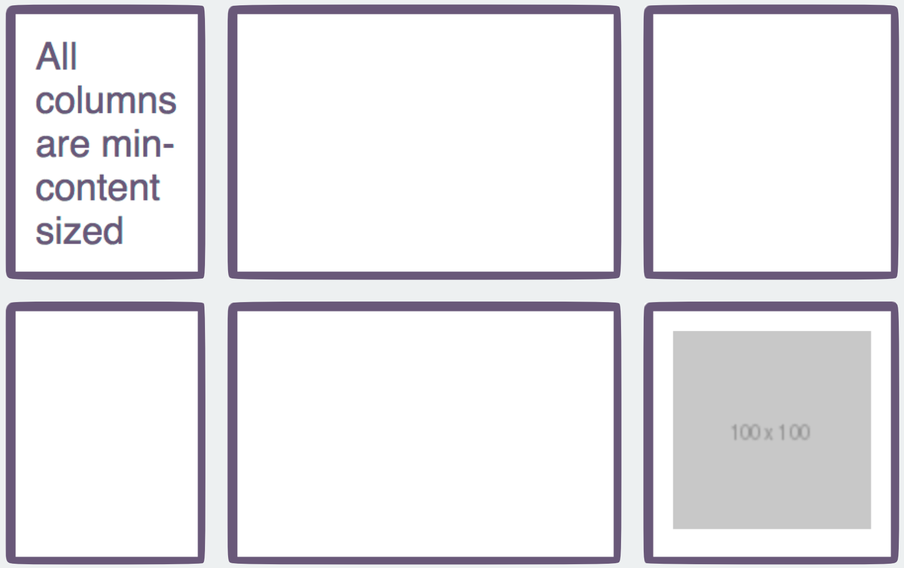
Grid tracks sized with min-content will become as small as they can without causing overflows.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns:
    min-content
    min-content
    min-content;
}
```

https://codepen.io/rachelandrew/pen/VyOpXj

The word ‘columns’ is defining the size of track 1.

A 100px image defines the size of track 3



This item has a width which defines the size of track 2

Intrinsic Sizing

max-content

The largest size the track can be, no soft-wrapping will occur. Overflows may happen.

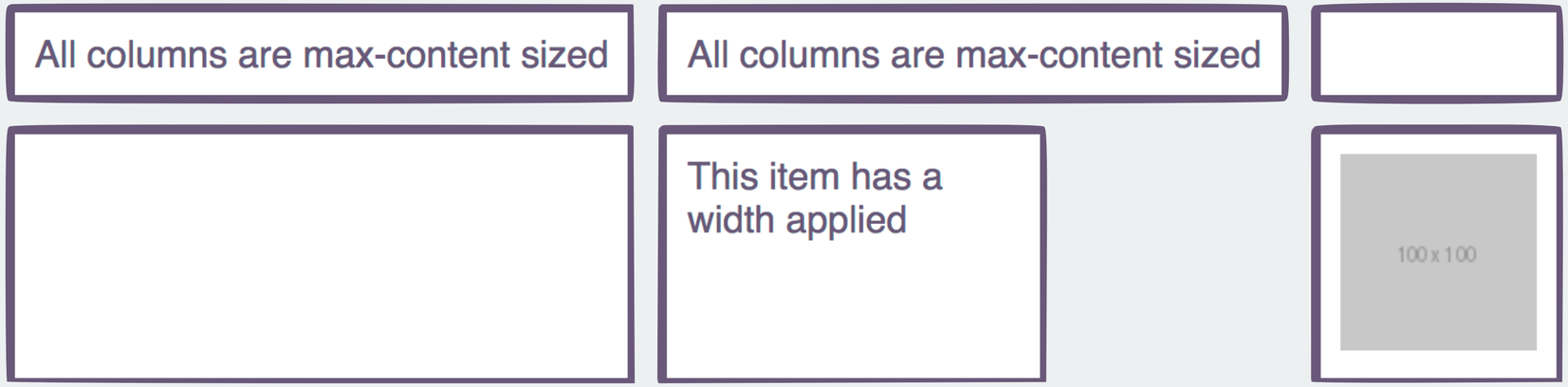
Intrinsic Sizing: max-content

Grid tracks sized with max-content will become as large as needed, and may overflow the grid container.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns:
    max-content
    max-content
    max-content;
}
```

Tracks 1 and 2 need to be wide enough to fit the unwrapped text.

A 100px image defines the size of track 3



Intrinsic Sizing

fit-content

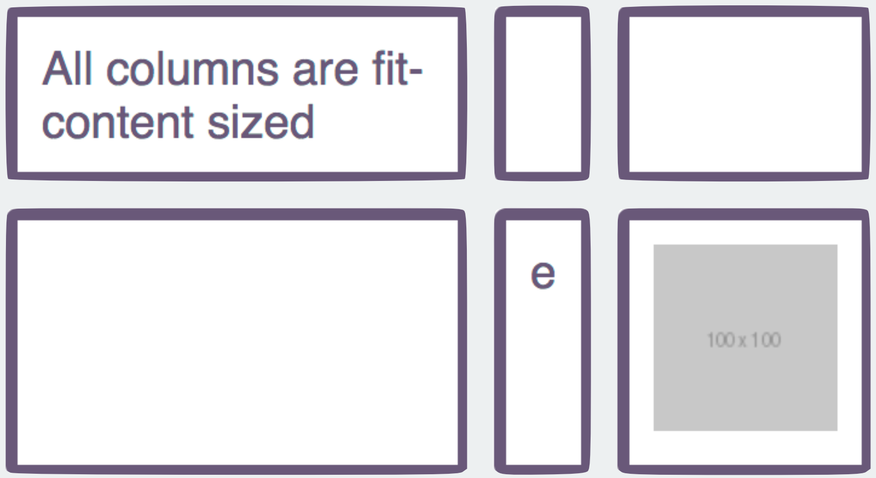
Act like max-content until it reaches the passed in value.

Intrinsic Sizing: fit-content

Grid tracks sized with fit-content will act like max-content until they hit the limit given.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns:
    fit-content(10em)
    fit-content(10em)
    fit-content(15ch);
}
```

Columns 1 and 2 are both fit-content(10em). Track 1 wraps at 10em. Track 2 is max-content.



Track 3 is fit-content(15ch)

Flexible lengths

Sizing with fr units

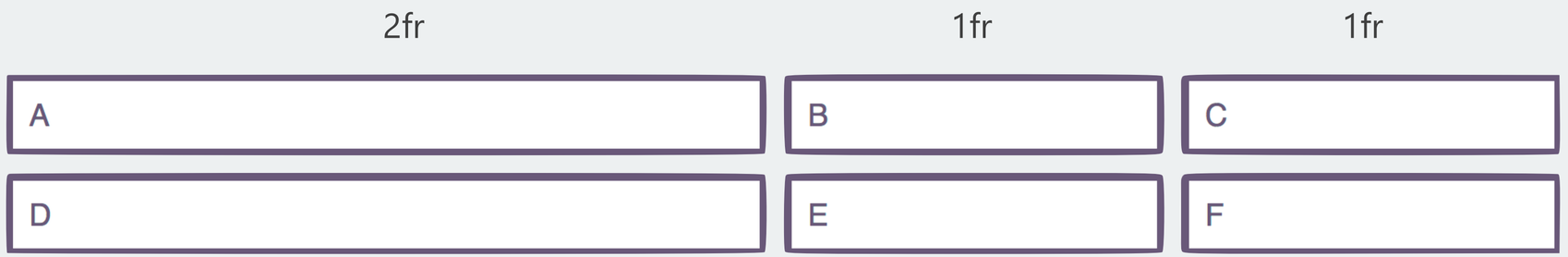
The fr unit describes a flexible length

Flexible lengths

The fr unit is a <flex> unit and represents a portion of the available space in the Grid Container.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns: 2fr 1fr 1fr;
}
```

https://codepen.io/rachelandrew/pen/QaXvPe



Minimum & Maximum sizing functions

minmax()

Minimum Sizing Function

The minimum size for these two tracks is 100px, and 10em.

```
.grid {
  display: grid;
  grid-template-columns:
    minmax(100px, auto)
    minmax(10em, 20em);
}
```

Minimum Sizing Function

The minimum size of these two tracks is auto.

```
.grid {
  display: grid;
  grid-template-columns:
    10fr
    fit-content(10em);
}
```

Minimum Sizing Function

The minimum size of the first track is 100px, the second track is 50px (10% of 500).

```
.grid {
  width: 500px;
  display: grid;
  grid-template-columns:
    100px
    10%;
}
```

Maximum Sizing Function

The maximum size for these two tracks is 400px, and 20em.

```
.grid {
  display: grid;
  grid-template-columns:
    minmax(100px, 400px)
    minmax(10em, 20em);
}
```

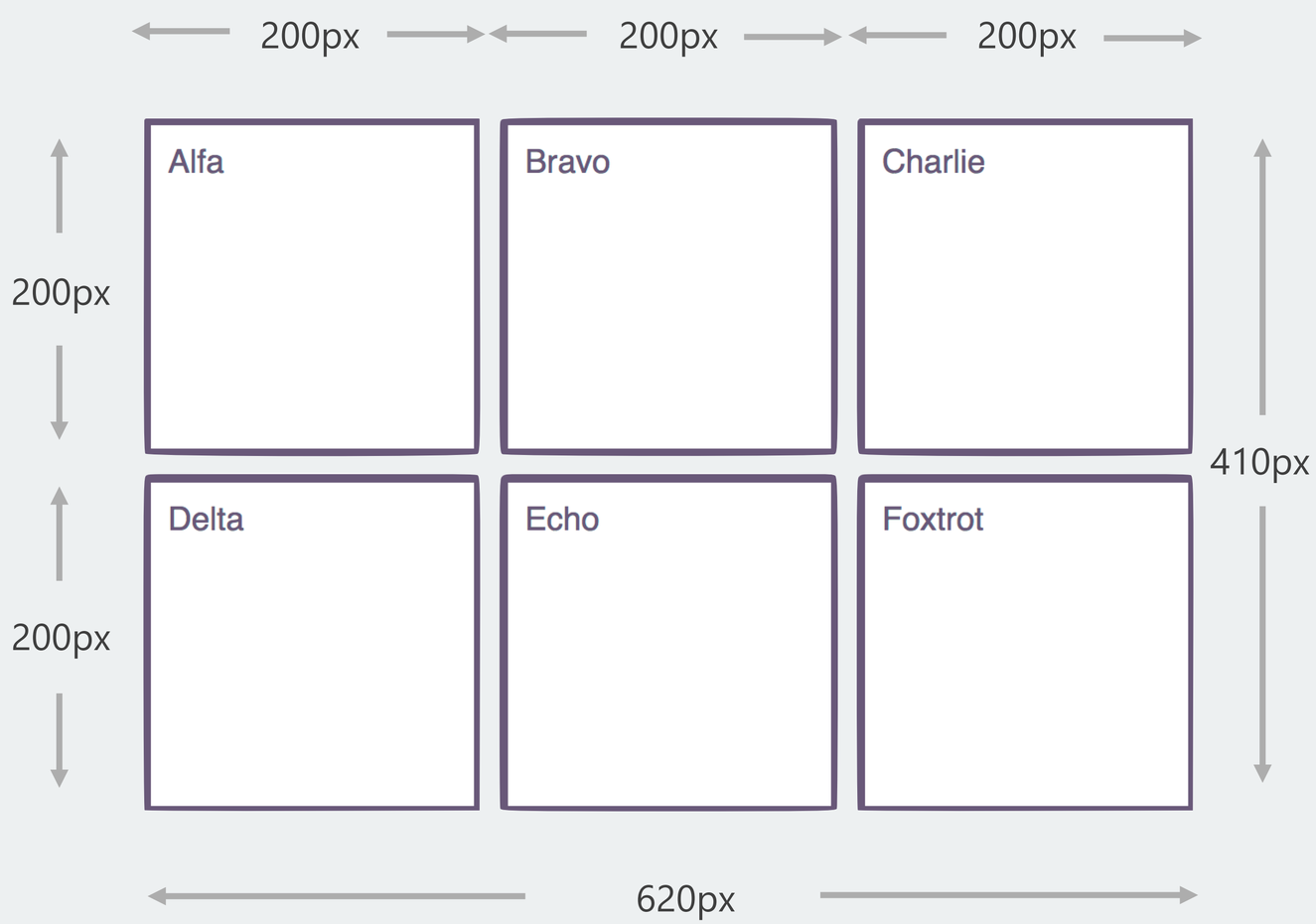
Maximum Sizing Function

The maximum size for the first track is max-content.

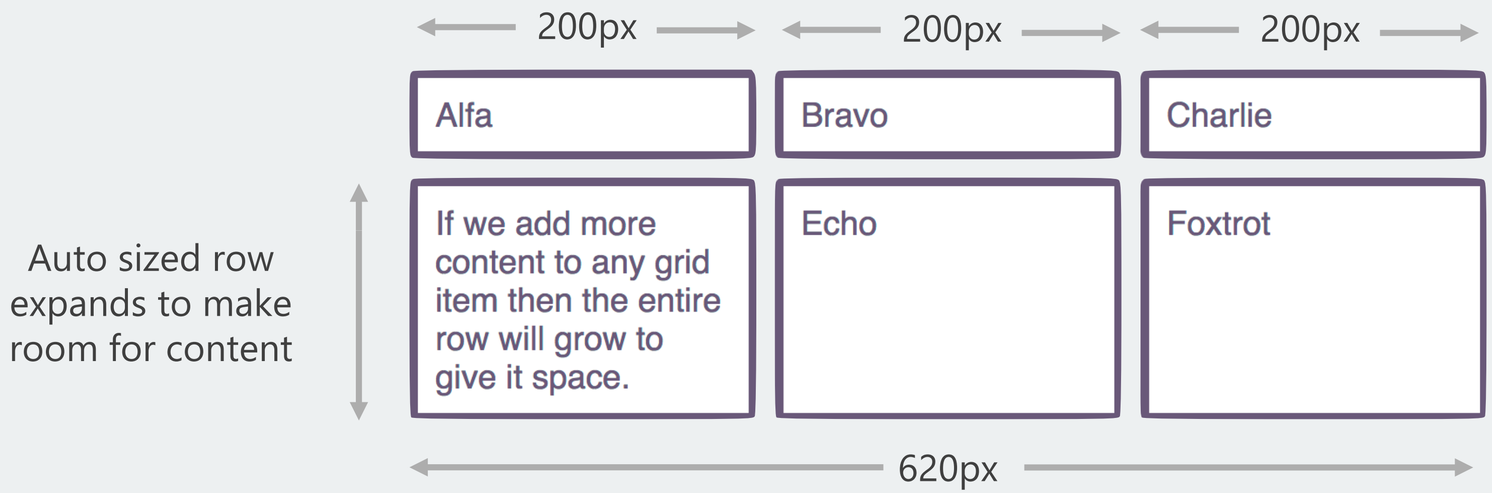
For the second track the maximum is 10em.

```
.grid {
  display: grid;
  grid-template-columns:
    auto
    fit-content(10em);
}
```

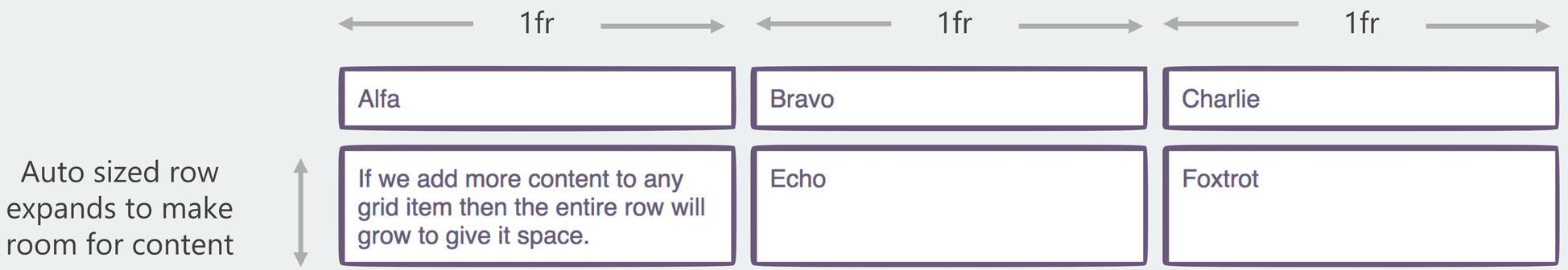
https://codepen.io/rachelandrew/pen/aEgwKY



https://codepen.io/rachelandrew/pen/goNRVp



https://codepen.io/rachelandrew/pen/BJgdKL



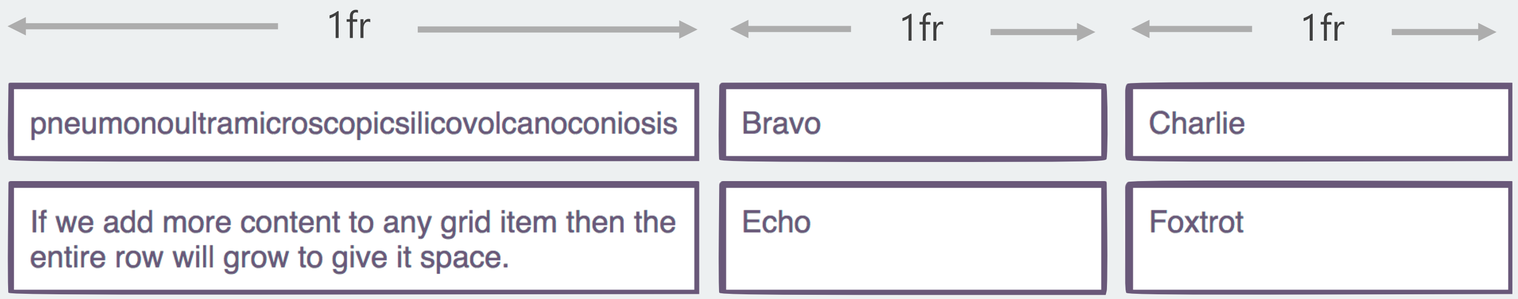
What is a fr unit anyway?

A track sized with 1fr, is actually sized minmax(auto, 1fr).

The minimum size is auto.

```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr;
}
```

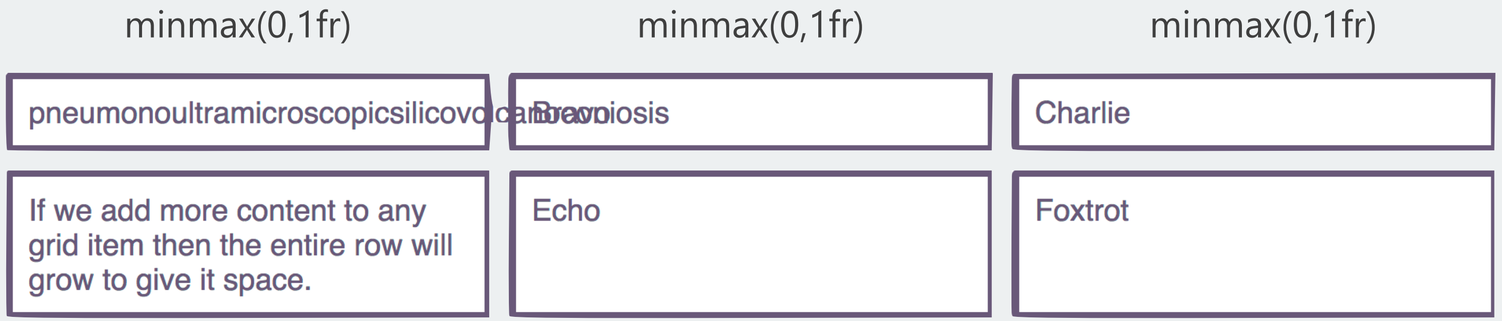
https://codepen.io/rachelandrew/pen/BJgdKL

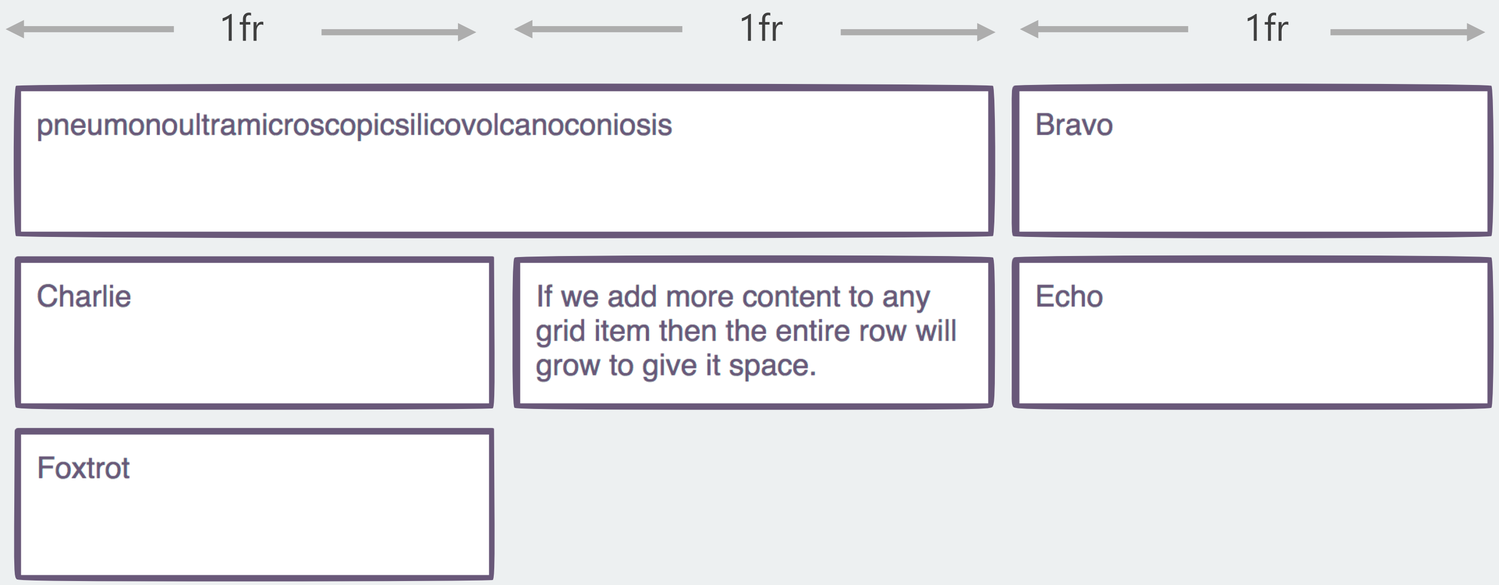


What is a fr unit anyway?

Make the minimum size 0, to force three equal width columns - even if that means overflows.

```
.grid {
  display: grid;
  grid-template-columns:
    minmax(0,1fr)
    minmax(0,1fr)
    minmax(0,1fr);
}
```


minmax(0,1fr)
minmax(0,1fr)
minmax(0,1fr)
pneumonoultramicroscopicsilicovolcanoconiosis
Bravo
Charlie
If we add more content to any grid item then the entire row will grow to give it space.
Echo
Foxtrot


1fr
1fr
1fr
pneumonoultramicroscopicsilicovolcanoconiosis
Bravo
Charlie
If we add more content to any grid item then the entire row will grow to give it space.
Echo
Foxtrot

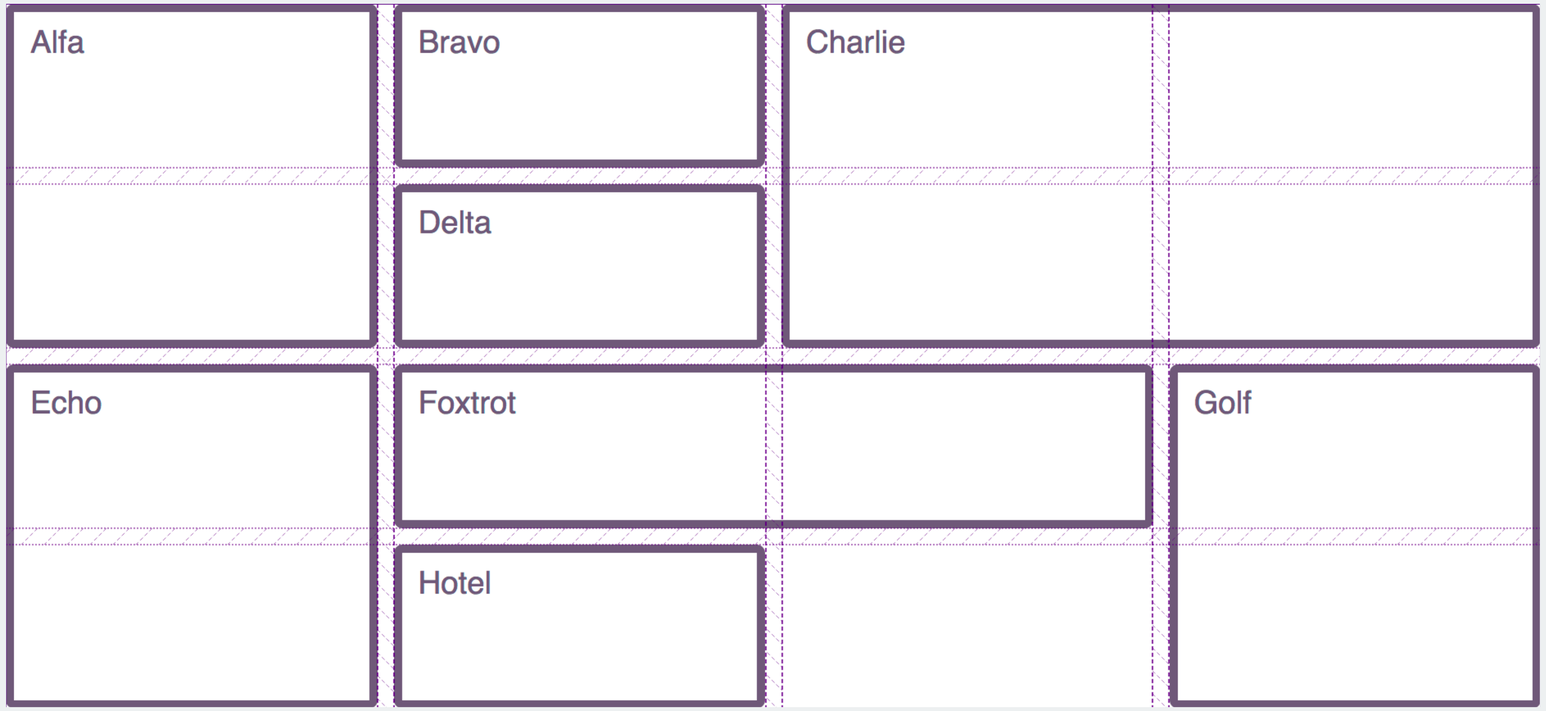
https://codepen.io/rachelandrew/pen/WdVjdg

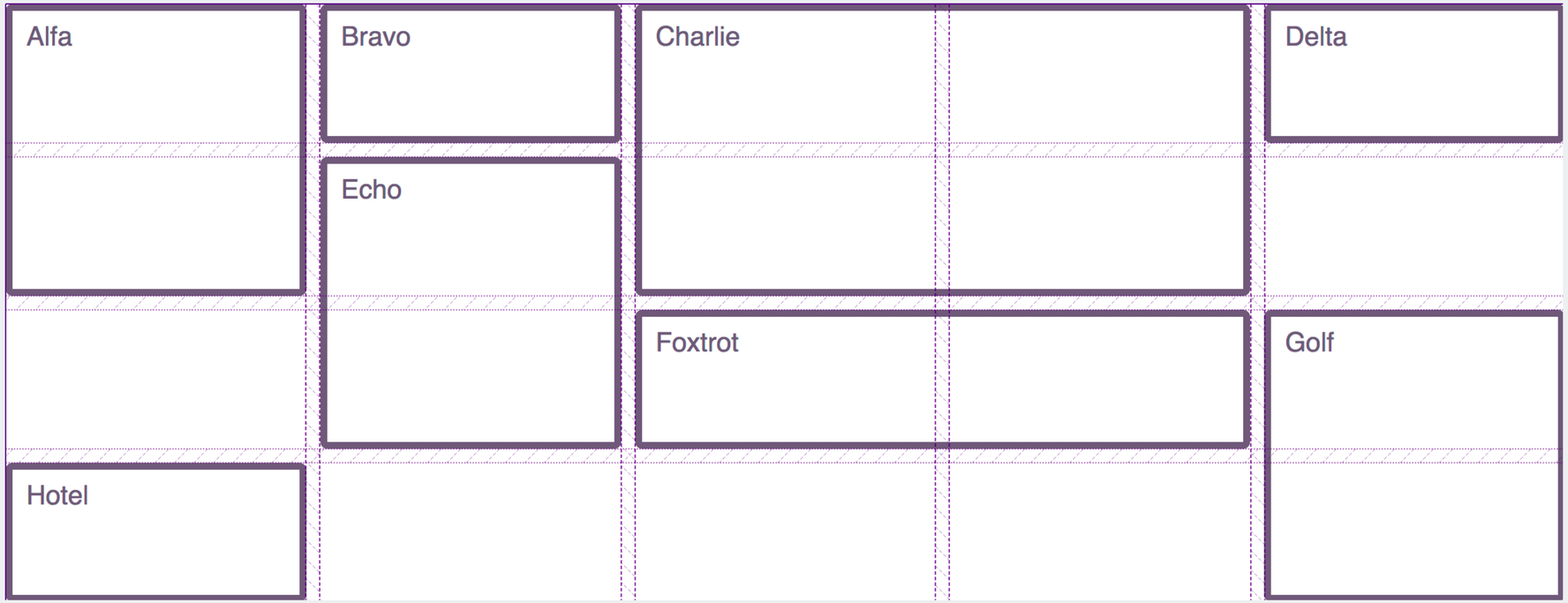
As many flexible columns as will fit

Use auto-fill or auto-fit along with repeat and minmax, to create as many flexible columns with a minimum size as will fit into the container.

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

https://codepen.io/rachelandrew/pen/WdVjdg

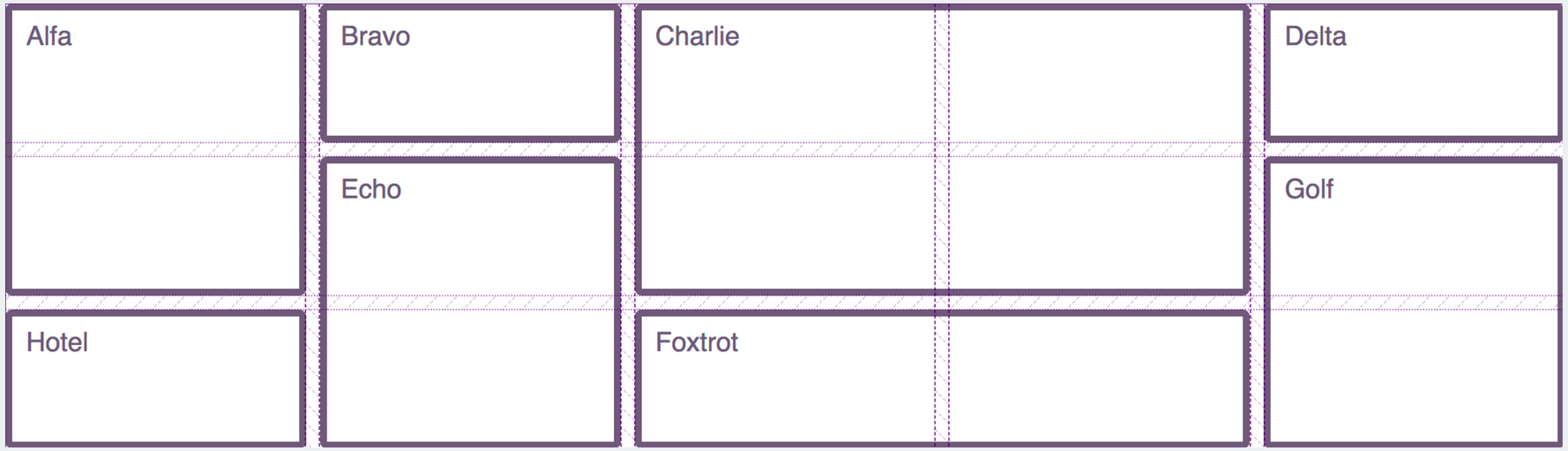



Alfa
Bravo
Charlie
Delta
Echo
Foxtrot
Golf
Hotel

Dense Packing Mode

Using the value dense for grid-auto-flow will cause items to be displayed out of document order.

```
.grid {
  display: grid;
  grid-gap: 10px;
  grid-template-columns:
    repeat(auto-fill, minmax(200px, 1fr));
  grid-auto-rows: 100px;
  grid-auto-flow: dense;
}
```


Alfa
Bravo
Charlie
Delta
Echo
Golf
Hotel
Foxtrot

Upside down and back to front

The grid-area property

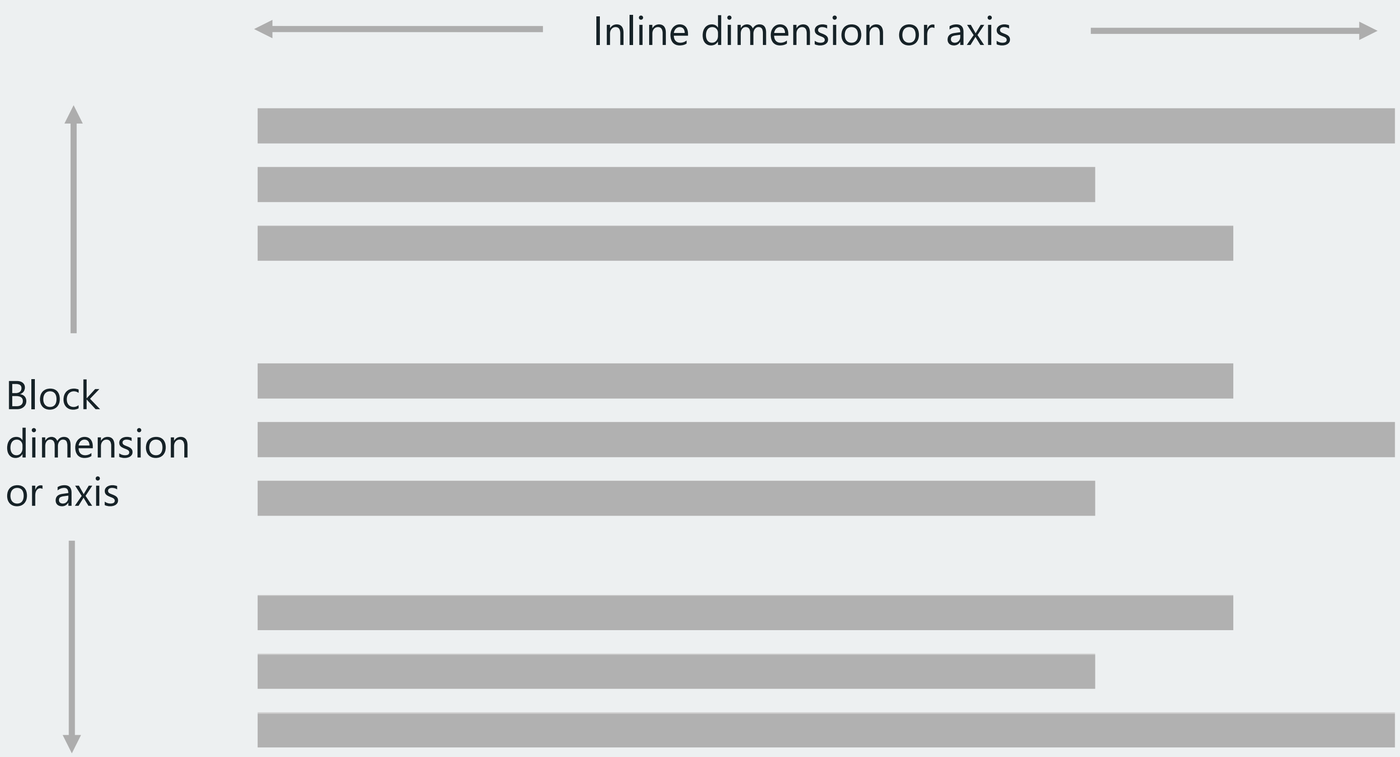
Order of the lines:

- grid-row-start
- grid-column-start
- grid-row-end
- grid-column-end

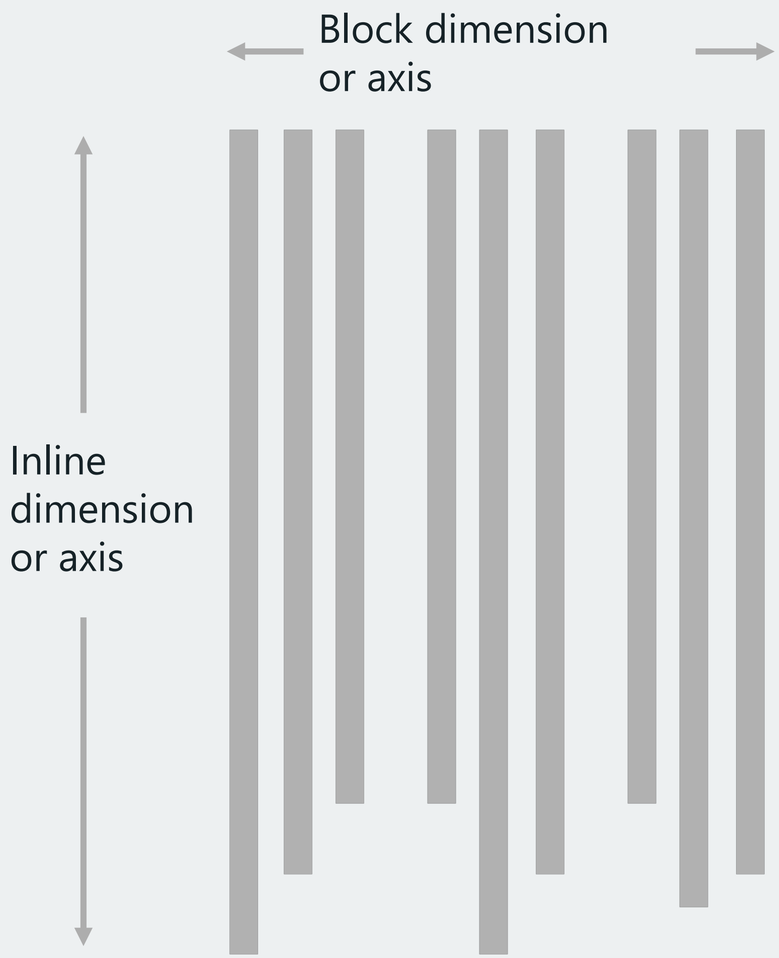
```
.item {
  grid-area: 1 / 2 / 3 / 4;
}
```

Logical Properties and Writing Modes

Horizontal Writing Mode

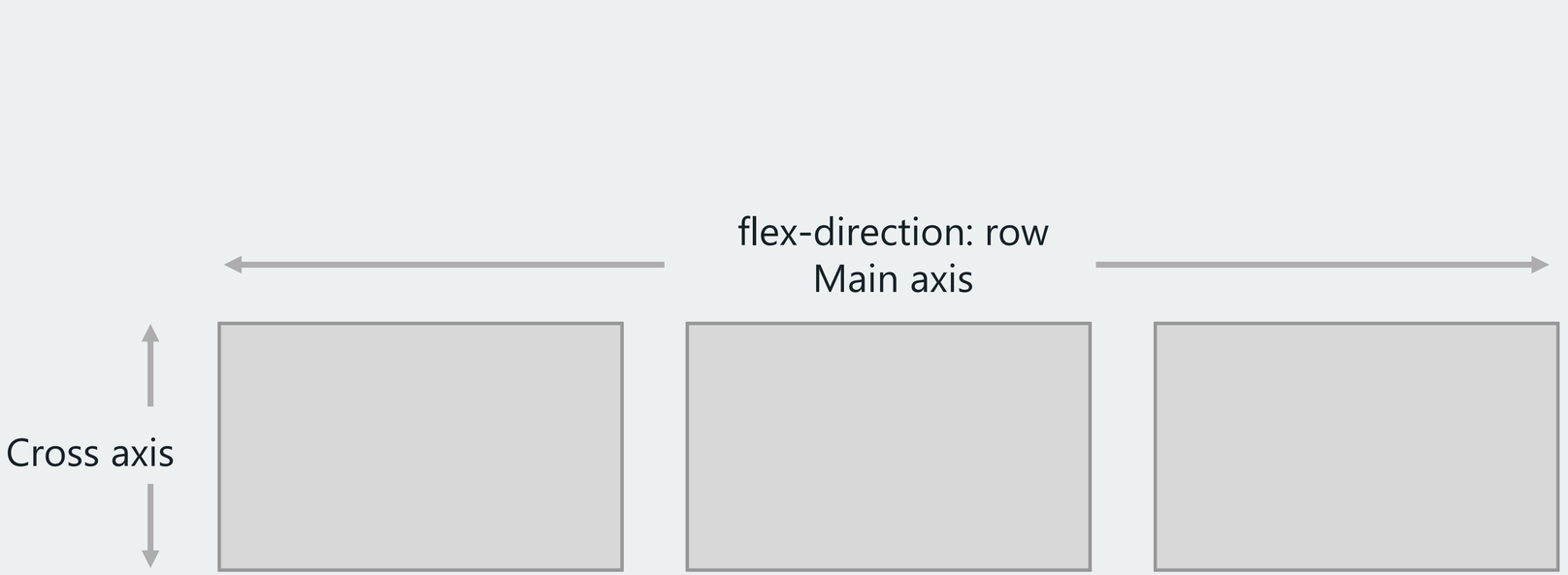


Vertical Writing Mode

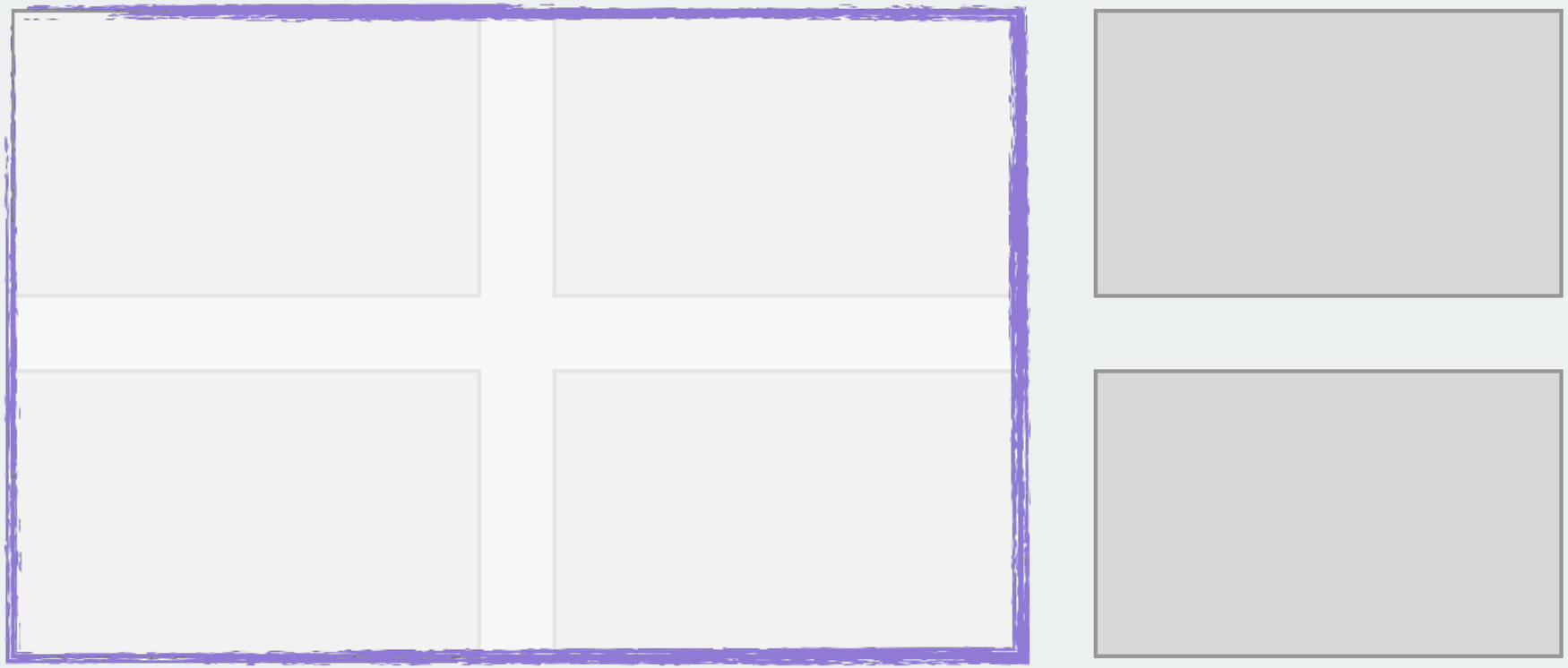


Grid Layout in Horizontal Writing Mode

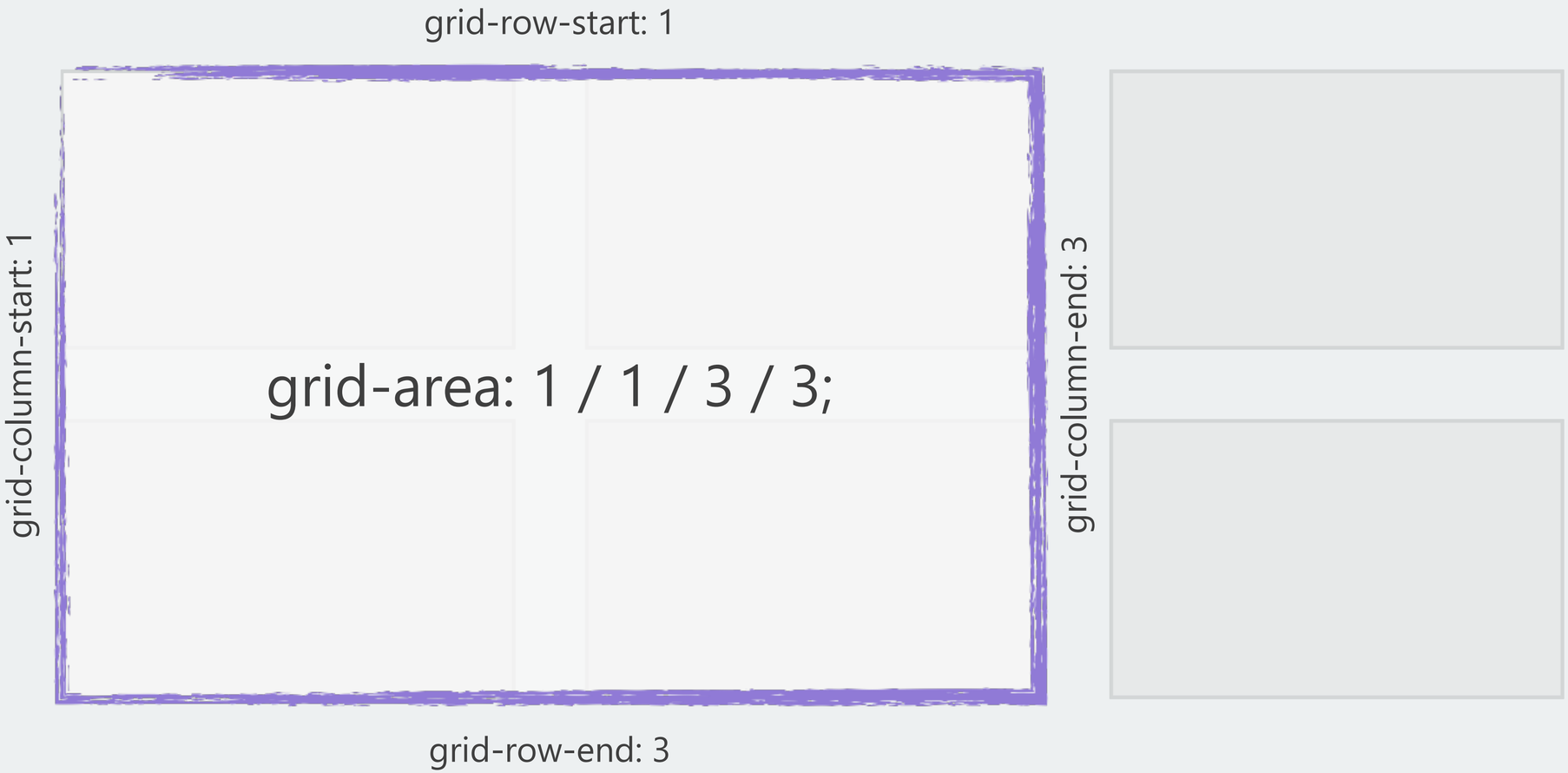
Flex Layout in Horizontal Writing Mode



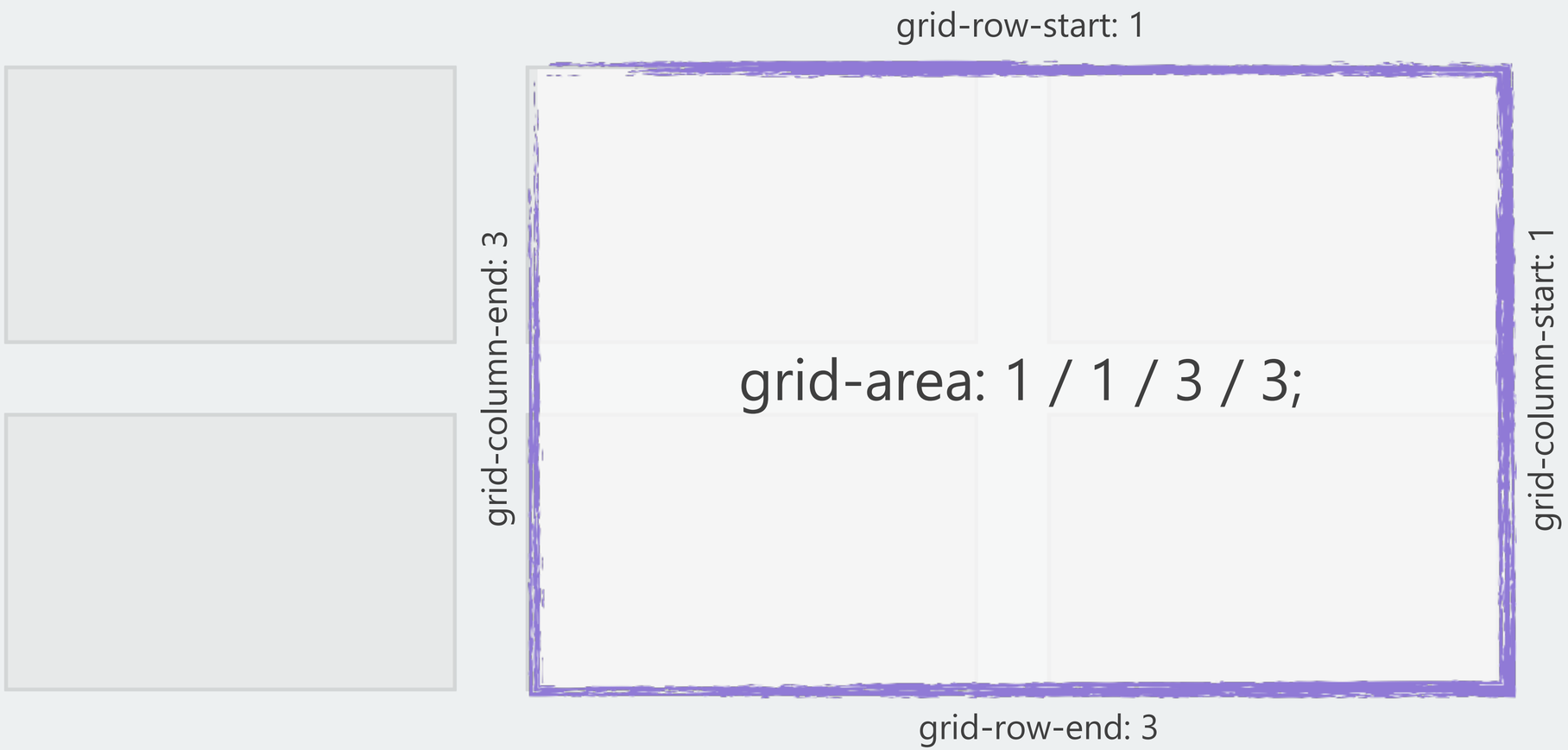
Horizontal LR



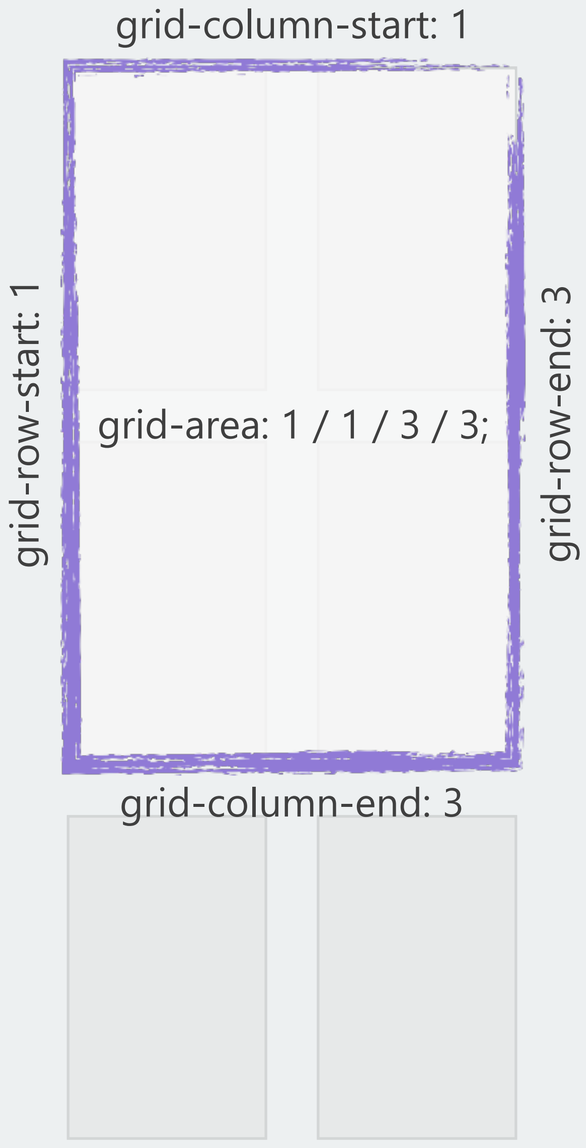
Horizontal LR

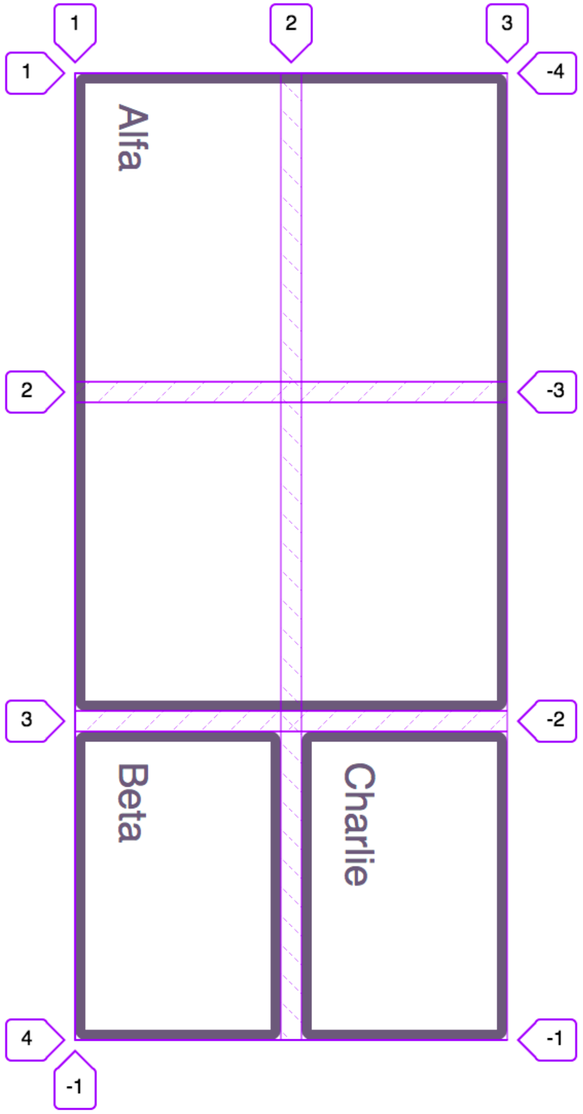


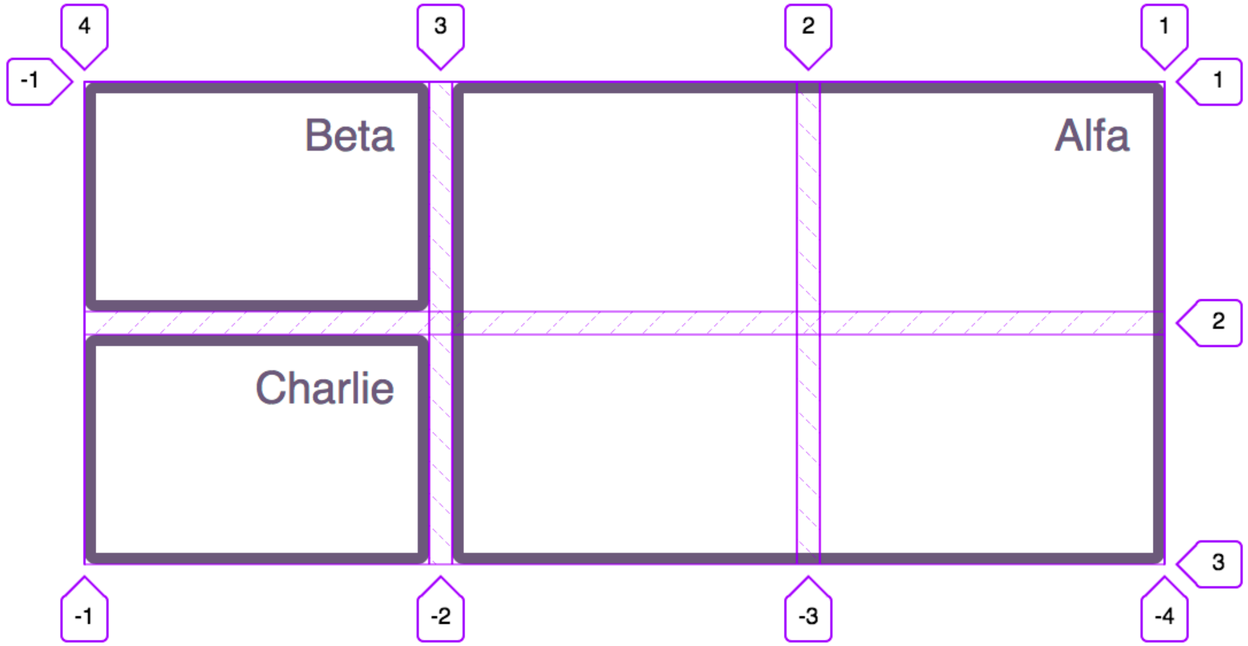
Horizontal RL



Vertical LR


grid-column-start: 1
grid-row-start: 1
grid-area: 1 / 1 / 3 / 3;
grid-row-end: 3
grid-column-end: 3


1
2
3
1
-4
Alfa
2
-3
3
-2
Beta
Charlie
4
-1
-1


4
3
2
1
-1
1
Beta
Alfa
Charlie
2
3
-1
-2
-3
-4

Alignment and the Grid

- Align the tracks:
  this requires extra space in the grid container
- Align the items
  move content around inside the area it has been placed into

https://www.w3.org/TR/css-align-3/

Box Alignment Specification

https://codepen.io/rachelandrew/pen/RMMqLd

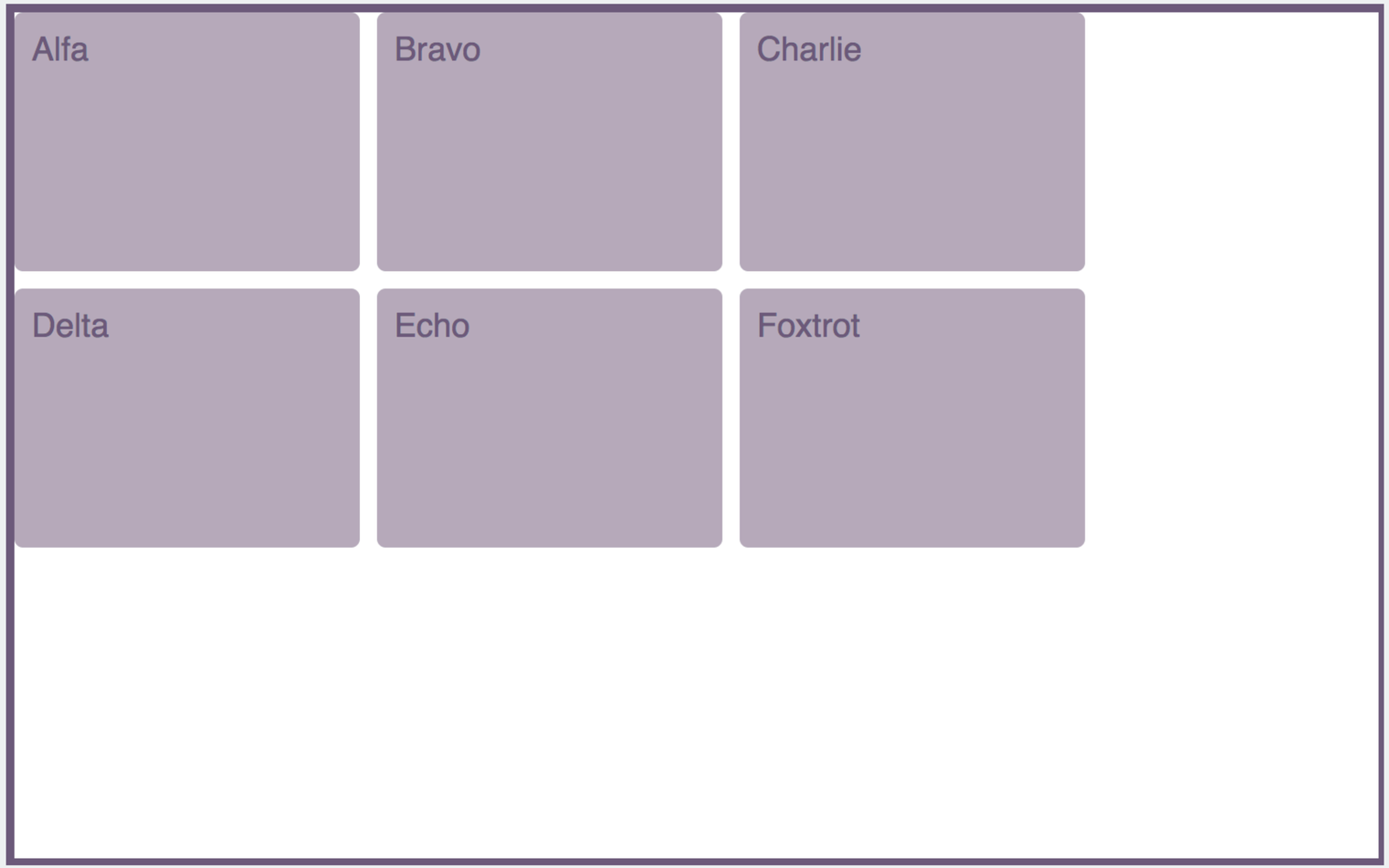
Aligning tracks

The tracks created on this grid do not fill the width and height defined on the grid container.

```
.grid {
  display: grid;
  width: 800px;
  height: 500px;
  grid-gap: 10px;
  grid-template-columns: 200px 200px 200px;
  grid-template-rows: 150px 150px;
}
```

start

start



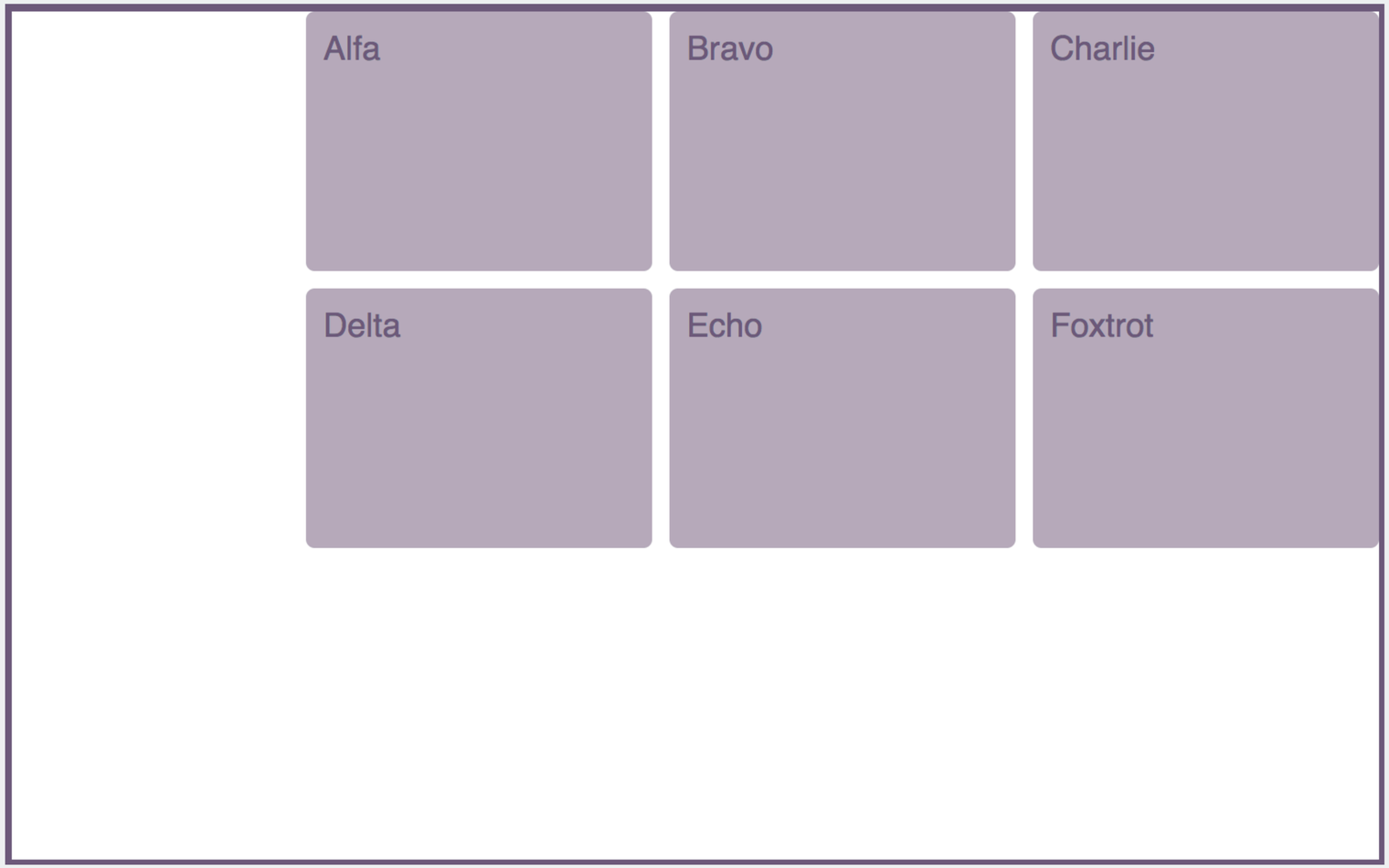
align-content and justify-content

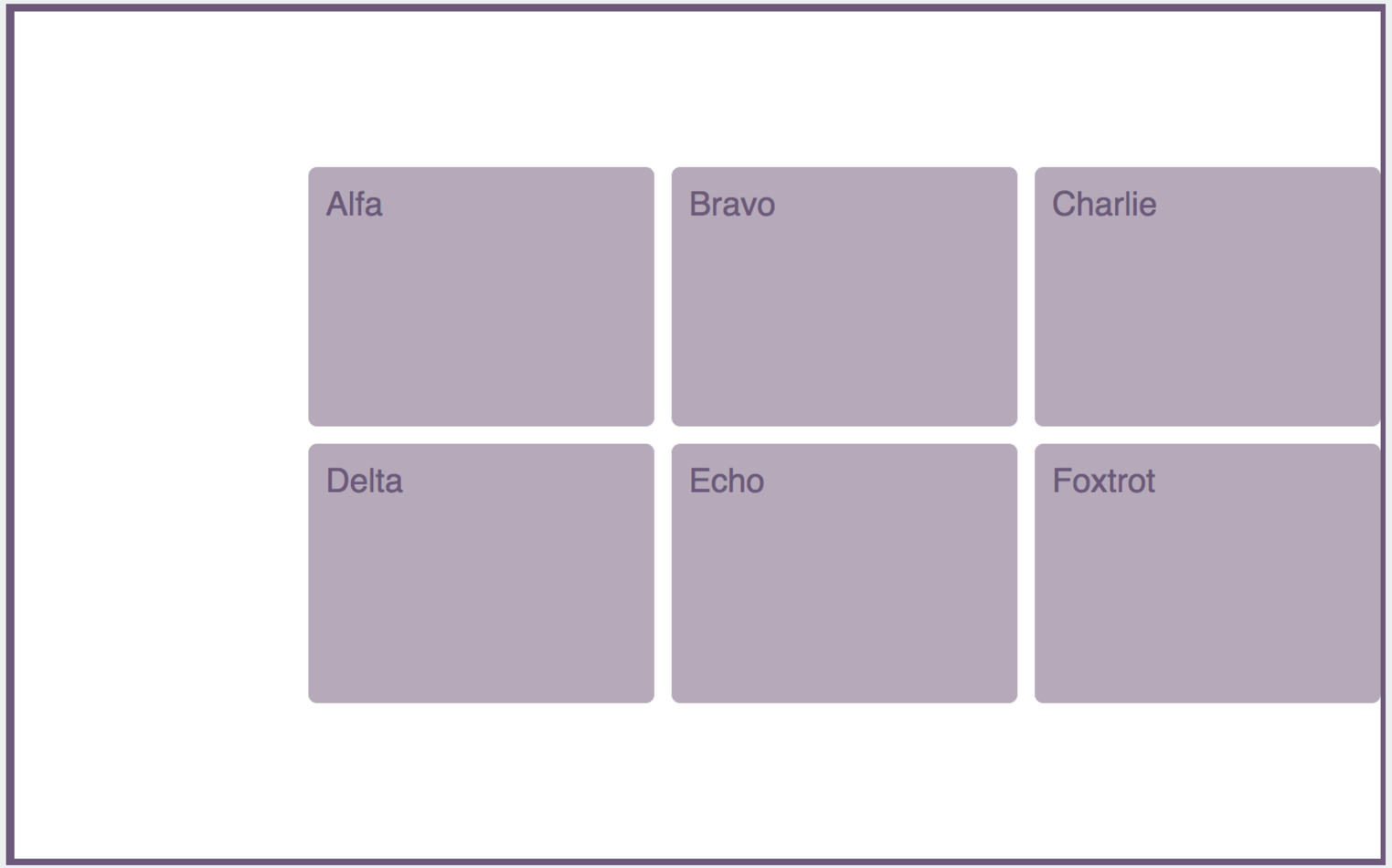
Aligning tracks

What should I do with free space in the Grid Container?

- align-content
  align tracks in the Block Dimension
- justify-content
  align tracks in the Inline Dimension

justify-content: end
Inline axis

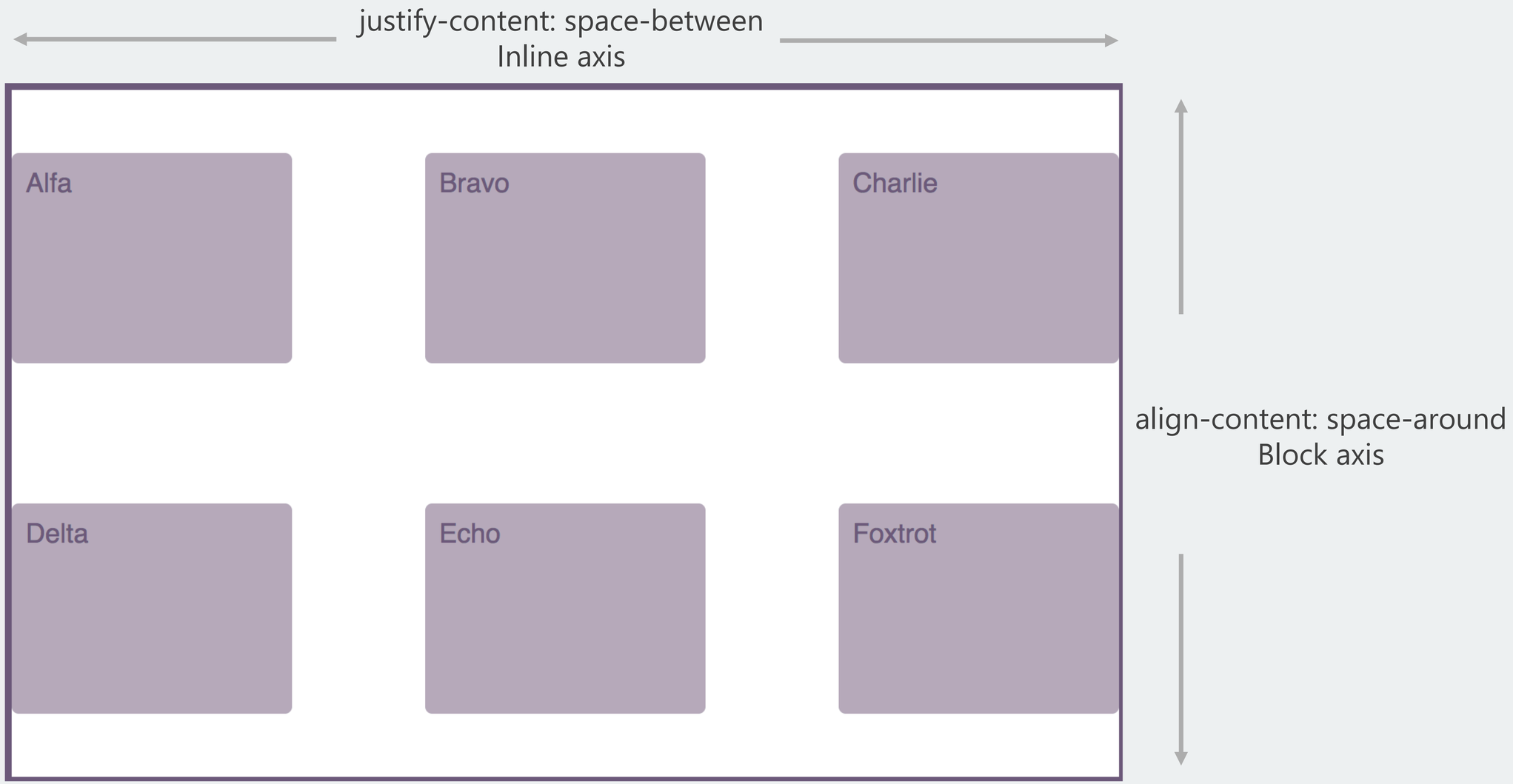



Alfa
Bravo
Charlie
Delta
Echo
Foxtrot
align-content: center
Block axis

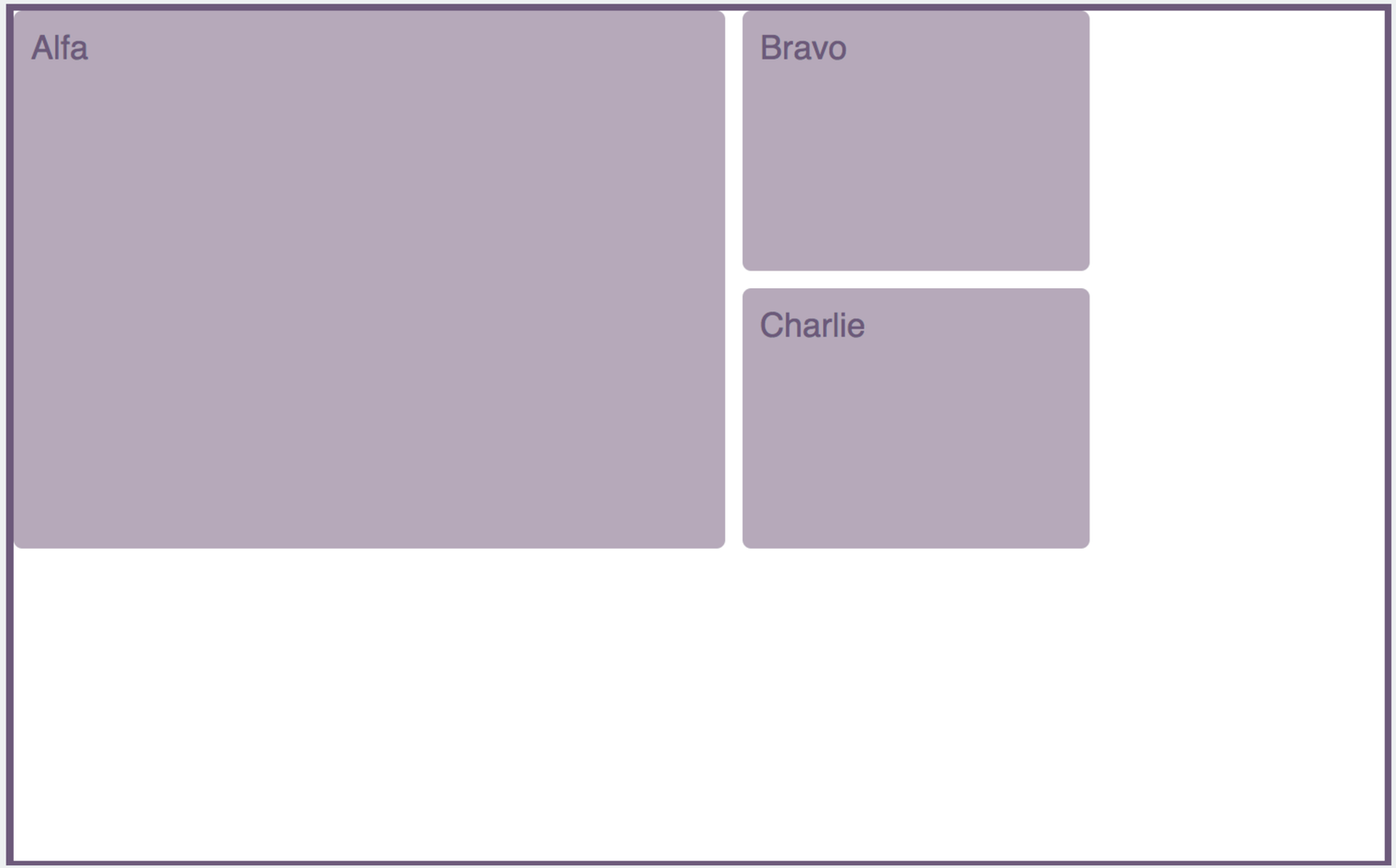
Keyword values

- space-between
- space-around
- space-evenly

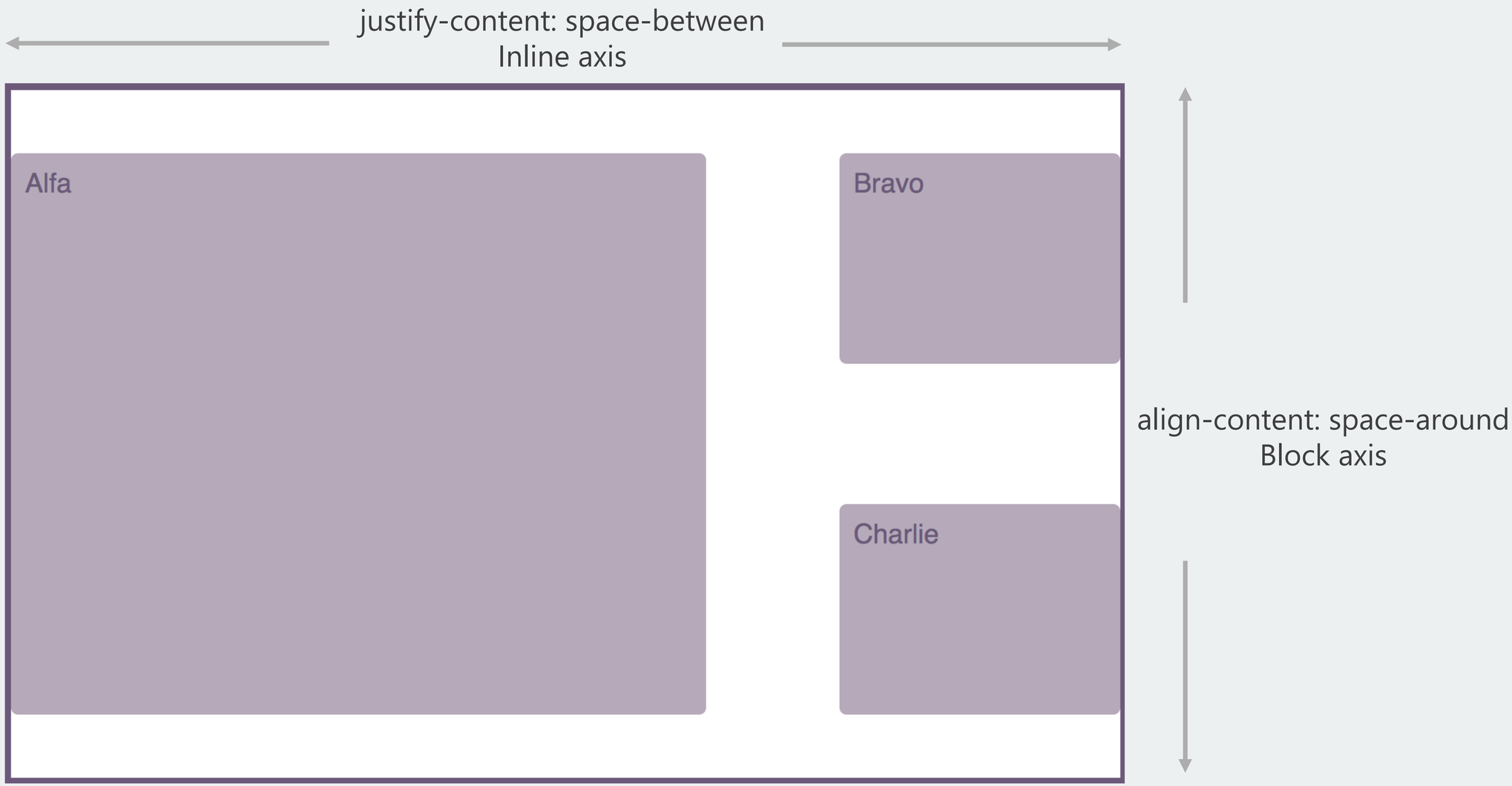
```
.grid {
  display: grid;
  width: 800px;
  height: 500px;
  grid-gap: 10px;
  grid-template-columns: 200px 200px 200px;
  grid-template-rows: 150px 150px;
  justify-content: space-between;
  align-content: space-around;
}
```


justify-content: space-between
Inline axis
Alfa
Bravo
Charlie
Delta
Echo
Foxtrot
align-content: space-around
Block axis

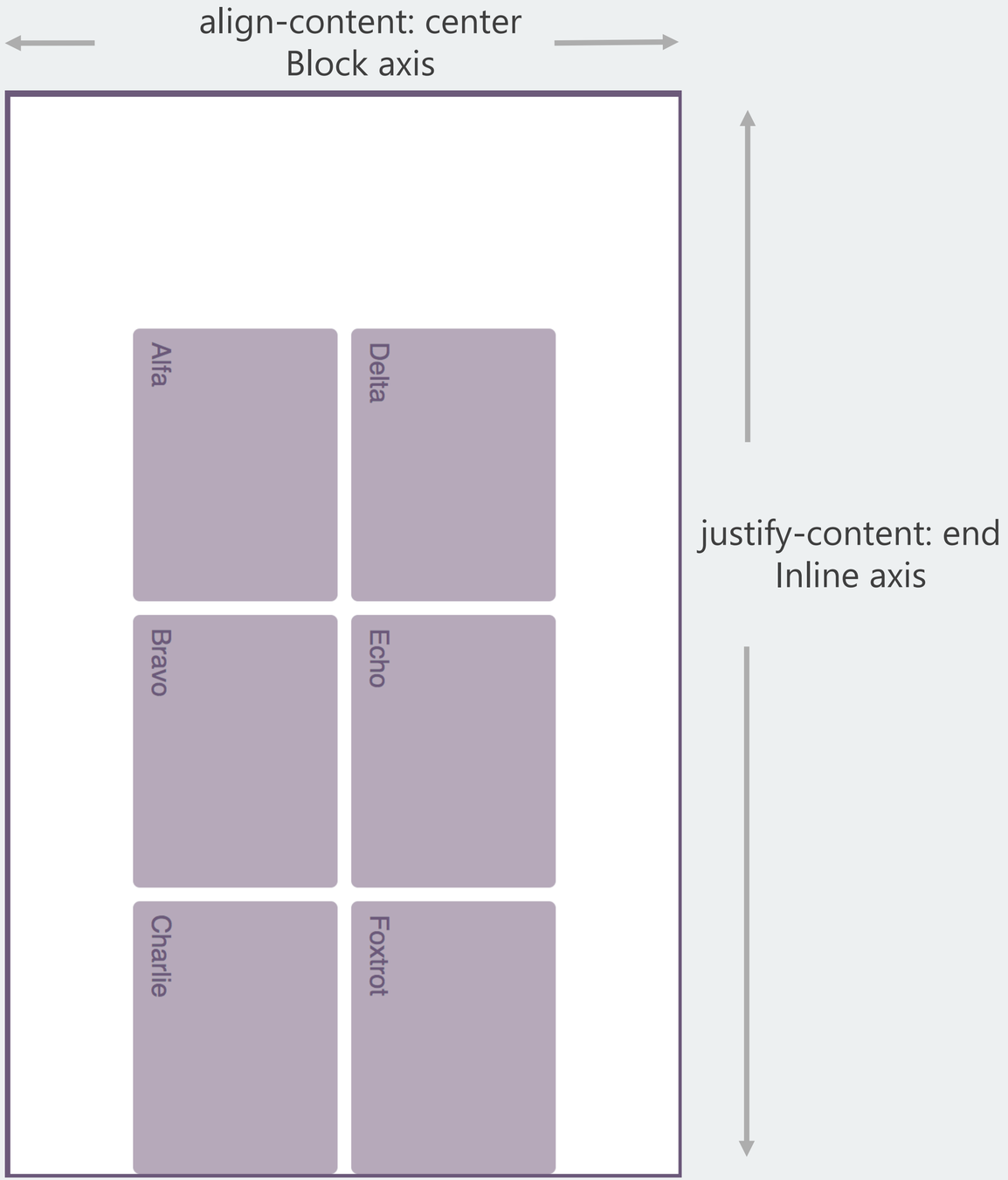
https://codepen.io/rachelandrew/pen/QmmzYx



https://codepen.io/rachelandrew/pen/QmmzYx



https://codepen.io/rachelandrew/pen/wmmNaj



Writing Modes

Once again the grid works the same way whichever way up it is.

```
.grid {
  display: grid;
  inline-size: 800px;
  block-size: 500px;
  grid-gap: 10px;
  grid-template-columns: 200px 200px 200px;
  grid-template-rows: 150px 150px;
  justify-content: end;
  align-content: center;
  writing-mode: vertical-lr;
}
```

In the past, CSS has tied itself to physical dimensions and directions, physically mapping the placement of elements to the left, right and top and bottom. We `float` an element `left` or `right`, we use the positioning offset properties `top`, `left`, `bottom` and `right`. We set margins, padding, and borders as `margin-top` and `padding-left`. These physical properties and values make sense if you are working in a horizontal, top to bottom, left to right writing mode and direction.

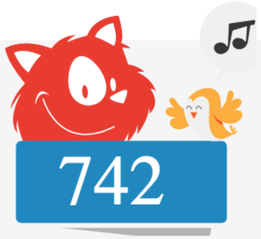
They make less sense if you use a vertical writing mode, whether for your entire layout or for some elements. In this article, I'm going to explain how CSS is changing to support writing modes, and in doing so, I'll clear up some of the things that might confuse you about Flexbox and Grid.

When I first began working with CSS Grid and explaining the new specification to people, I noted that the `grid-area` property could be used as a one-line shorthand for setting all four lines. Therefore, the three examples below would result in the same item placement. The first uses the longhand properties, the second specifies start and end lines for each dimension, and the third uses `grid-area`

MARCH 29, 2018 • 4 COMMENTS

Understanding Logical Properties And Values

CSS 241 # Layouts 39 # Browsers 33



align-items and justify-items

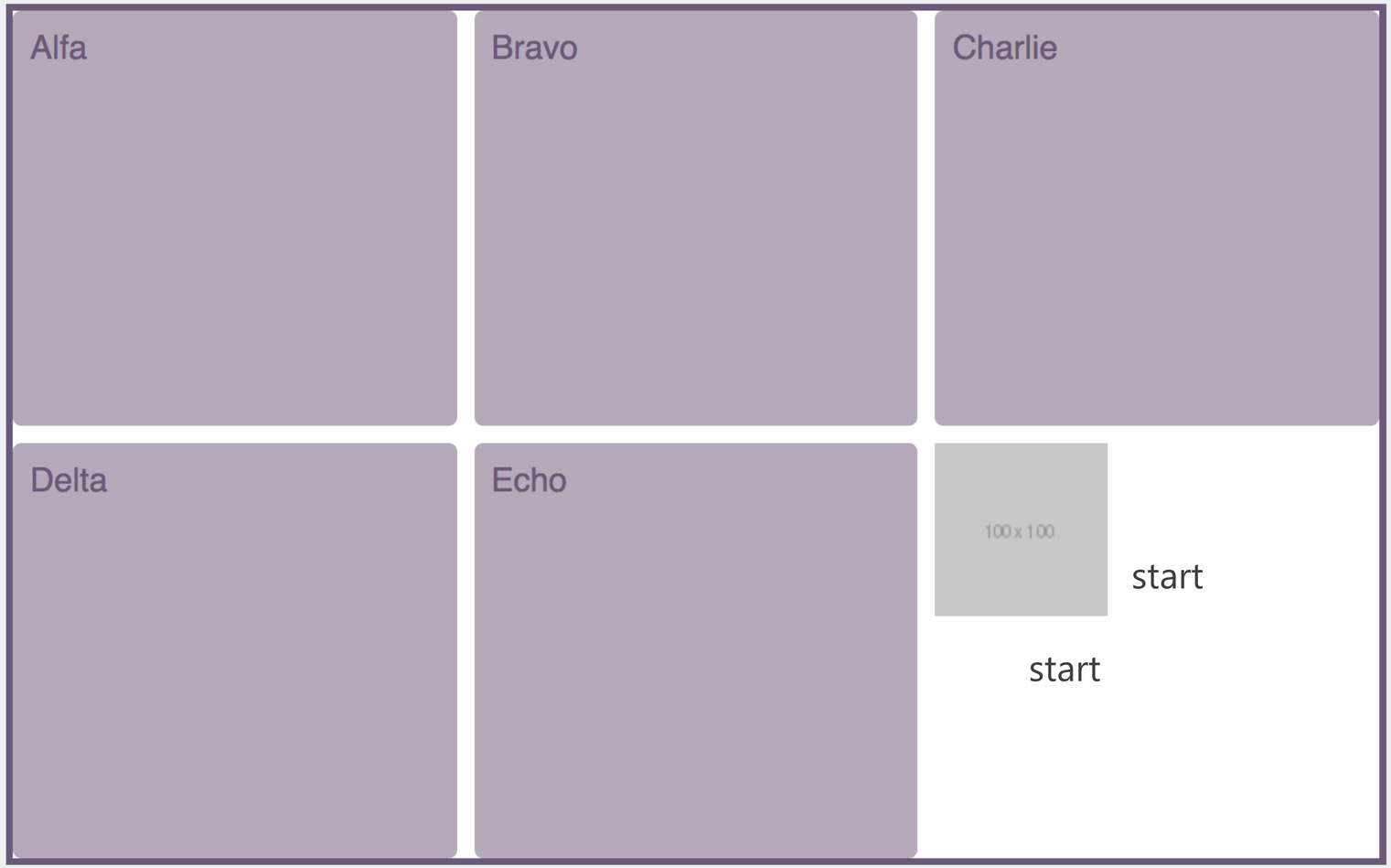
Aligning items

Setting the align-self and justify-self values of individual Grid Items.

- align-items / align-self
  set alignment of items in the Block Dimension
- justify-items / justify-self
  set alignment of items in the Inline Dimension

https://codepen.io/rachelandrew/pen/dmmQVg

stretch

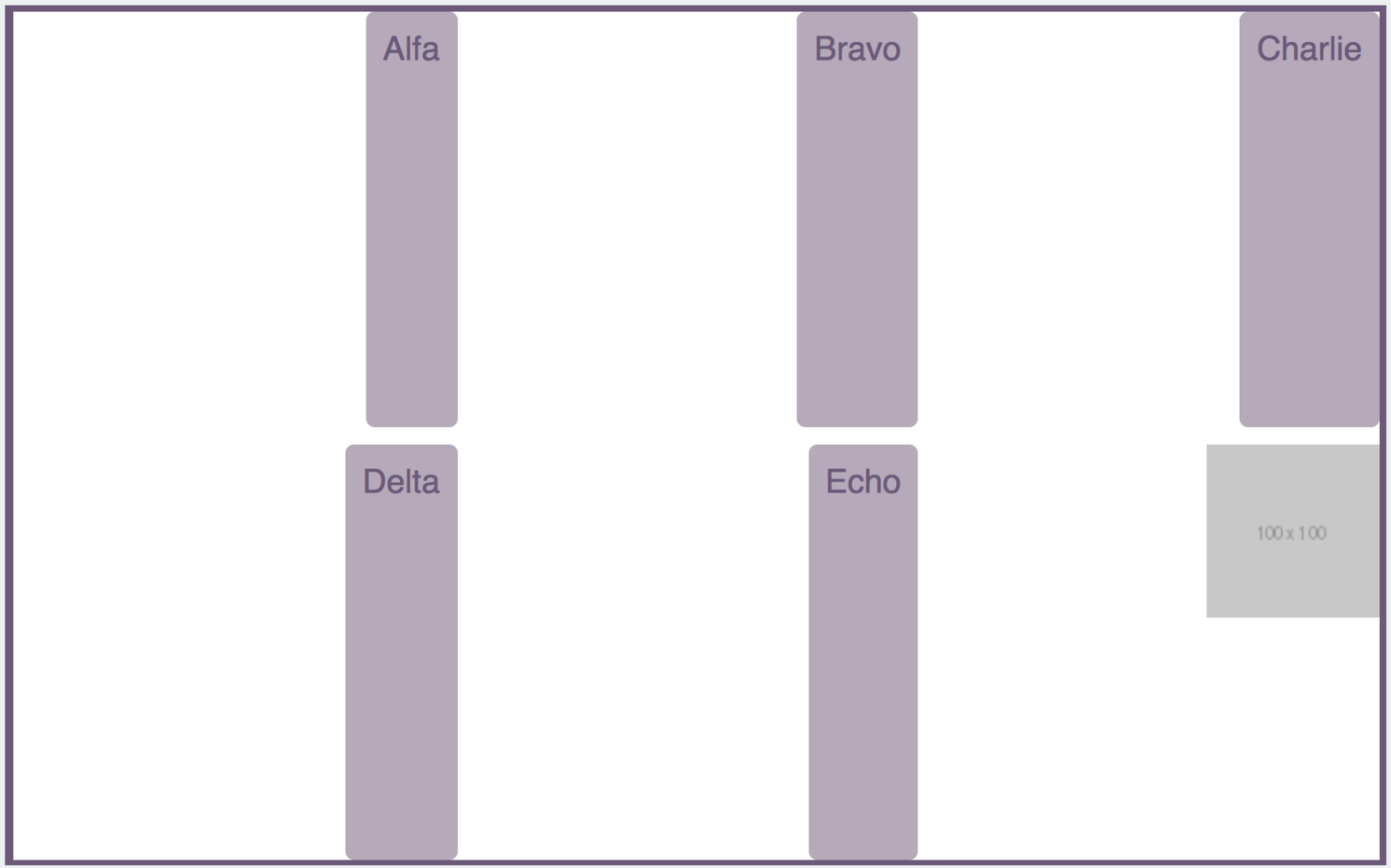


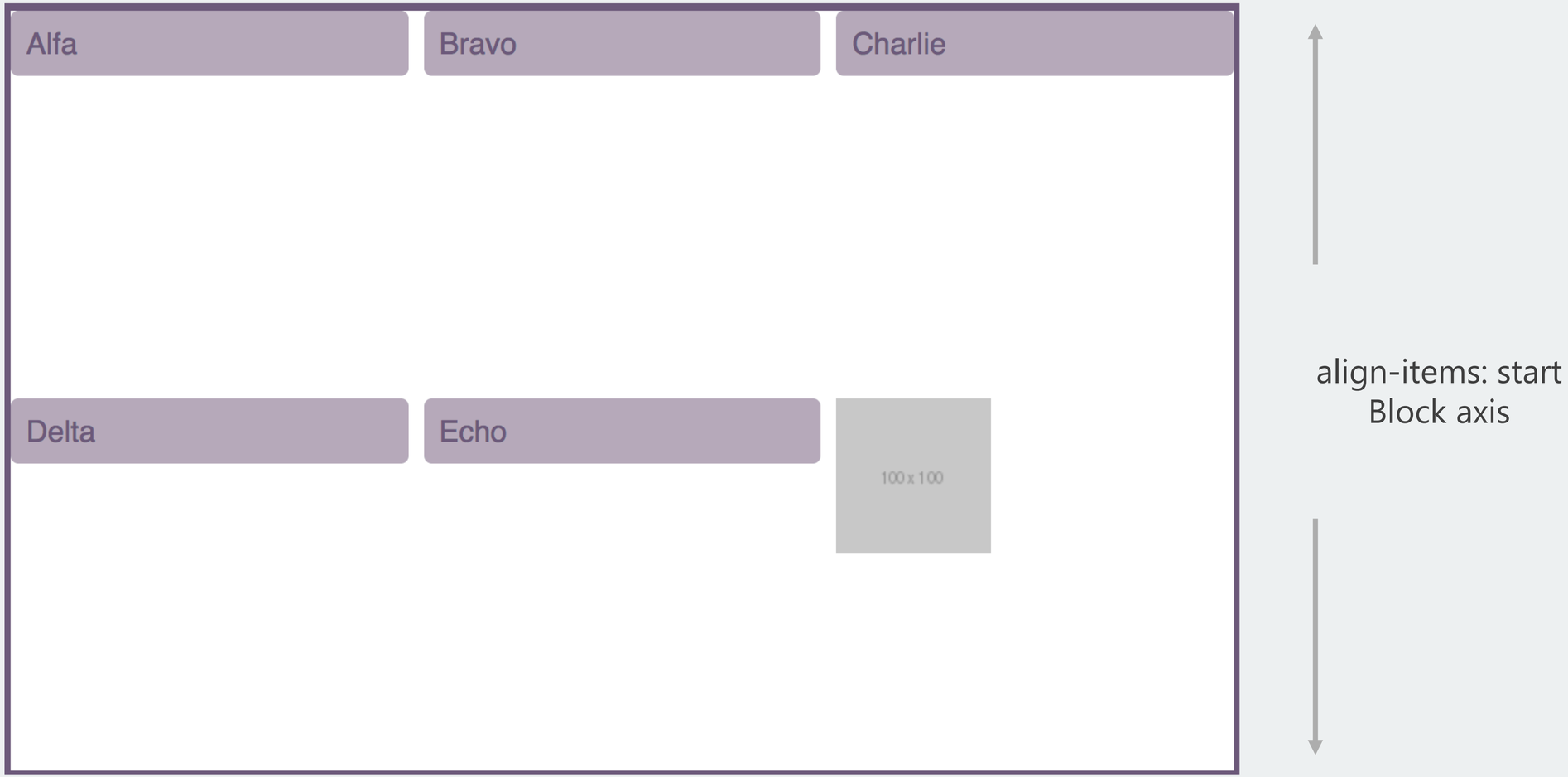
stretch

start

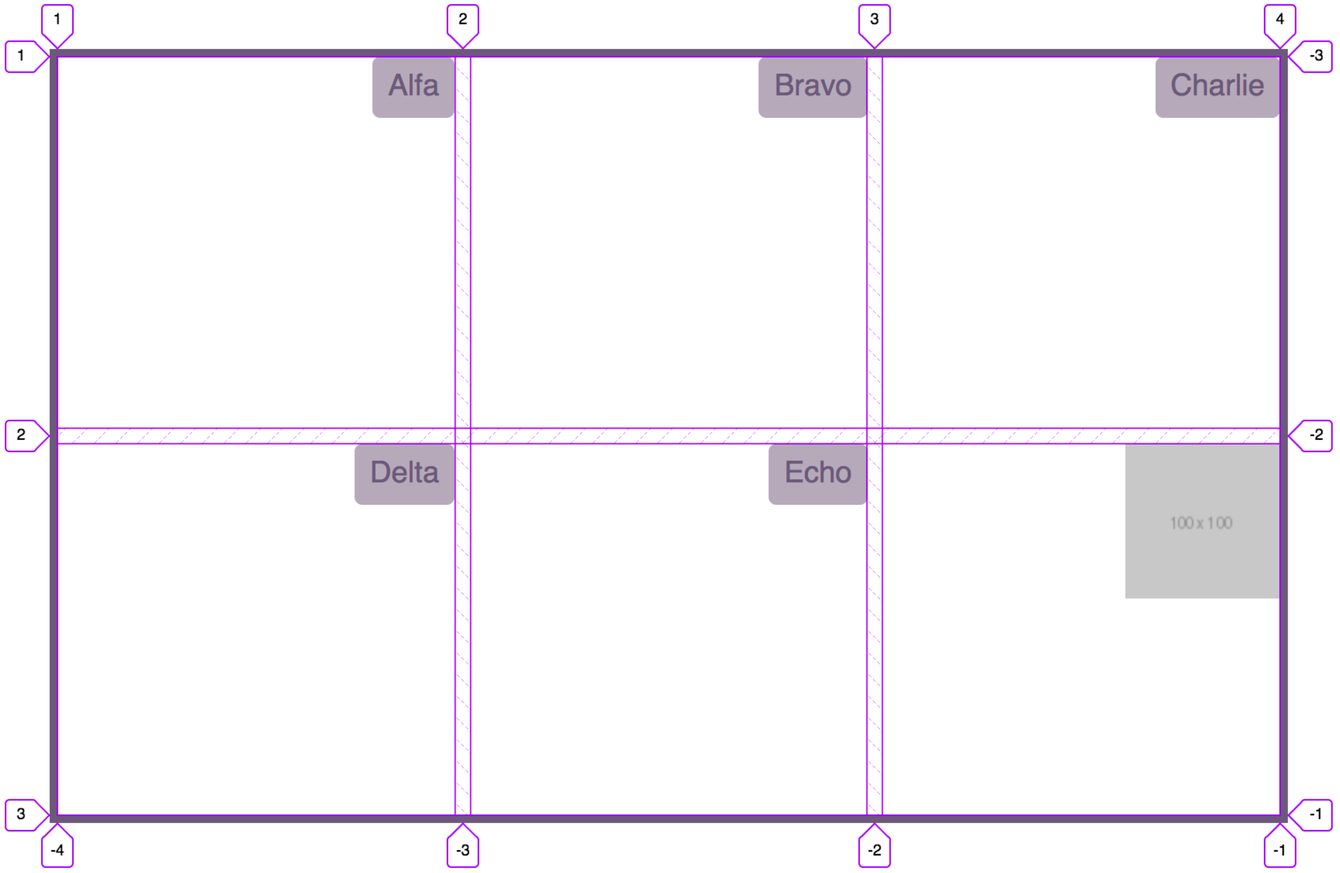
start

justify-items: end
Inline axis




Alfa
Bravo
Charlie
Delta
Echo
100 x 100
align-items: start
Block axis

https://codepen.io/rachelandrew/pen/dmmQVg



Inspector | Console | Debugger | Style Editor | Performance | Memory | Network | Storage

Search HTML

Rules | Computed | Layout | Animations | Fonts

```
<iframe id="result" class="result-iframe" src="https://s.codepen.io/rachelandrew/fullpage/dmmQVg" sandbox="allow-same-origin allow-scripts allow-pointer-lock allow-popups allow-modals allow-forms" allow="geolocation; microphone; camera; midi; vr" allowtransparency="true" allowfullscreen="true">
  #document
    <!DOCTYPE html>
    <html lang="en">
      <head>…</head>
      <body translate="no">
        <div class="grid">…</div> grid
      </body>
```

Grid

Overlay Grid

div.grid

Grid Display Settings

Display line numbers

Display area names

Extend lines infinitely

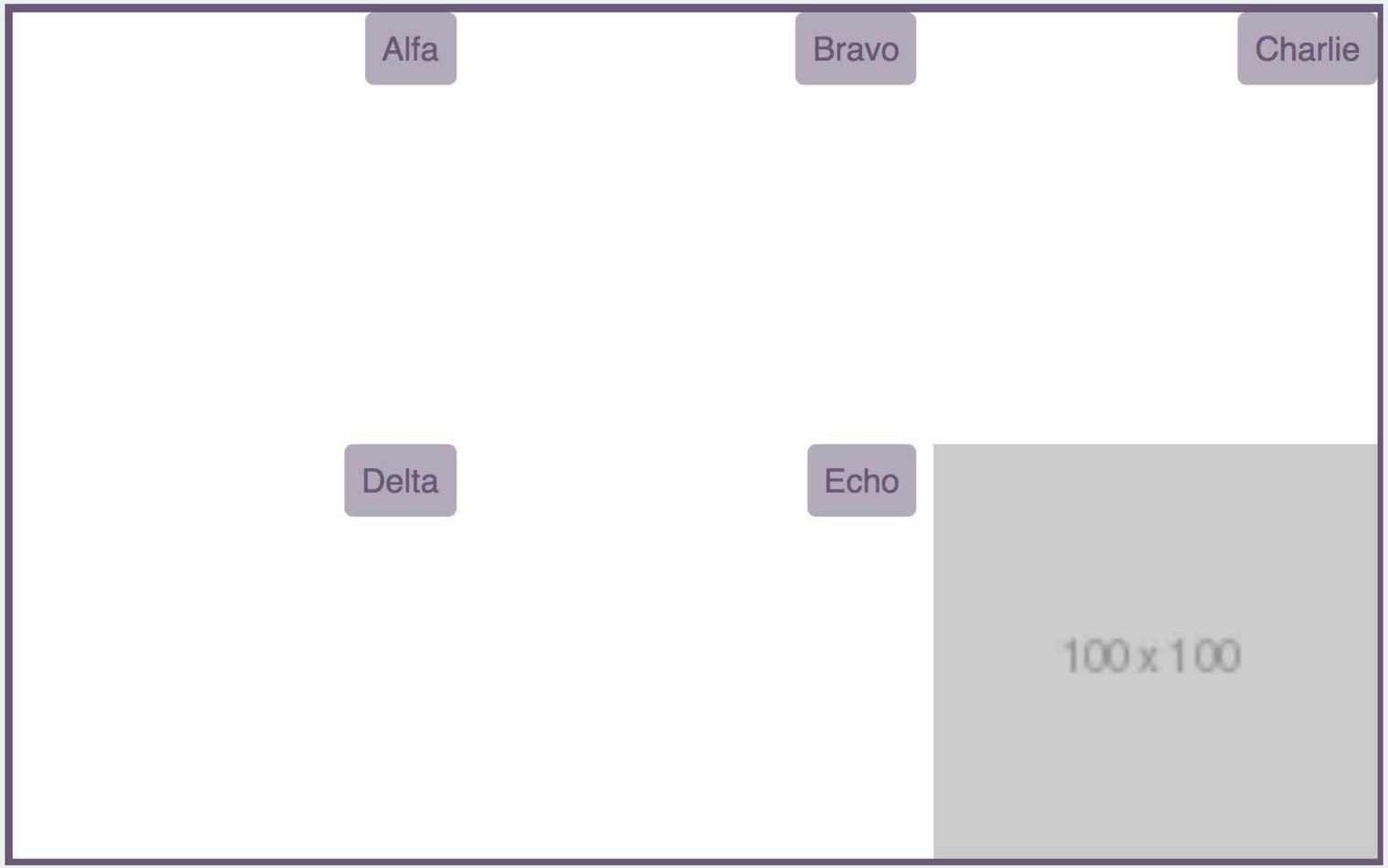
html › body.fullpage.logged-in › div#result-iframe-wrap › iframe#result.result-iframe › html › body › div.grid

align-self and justify-self

Target individual items to set alignment.

```
.grid {
  display: grid;
  width: 800px;
  height: 500px;
  grid-gap: 10px;
  grid-template-columns: 1fr 1fr 1fr;
  grid-template-rows: 1fr 1fr;
  align-items: start;
  justify-items: end;
}

.grid img {
  align-self: stretch;
  justify-self: stretch;
}
```

https://codepen.io/rachelandrew/pen/dmmQVg



“Where is my magic Grid Polyfill?”

Please stop asking me this question.

CSS Grid Layout - CR

Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Usage % of all users

Global 84.14% + 3.42% = 87.56%

unprefixed: 84.14%

Current aligned | Usage relative | Date relative | Show all

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	IE Mobile	UC Browser for Android	Samsung Internet	QQ Browser	Baidu Browser
			1 49			9.3										
		4 52	63			10.2										
		58	64			10.3		4.4						4		
2 11	16	59	65	11	50	11.2	all	62	37	64	57	2 11	11.8	6.2	1 1.2	7.12
	17	60	66	11.1	51	11.3										
		61	67	TP	52											
			68													

Notes | Known issues (2) | Resources (13) | Feedback

1 Enabled in Chrome through the "experimental Web Platform features" flag in chrome://flags

2 Partial support in IE refers to supporting an older version of the specification.

4 There are some bugs with overflow (1356820, 1348857, 1350925)

To polyfill grid is to force expensive JavaScript onto the slowest browsers and devices.

New CSS can help you create better experiences in browsers that don’t support new CSS.

A 12 column layout

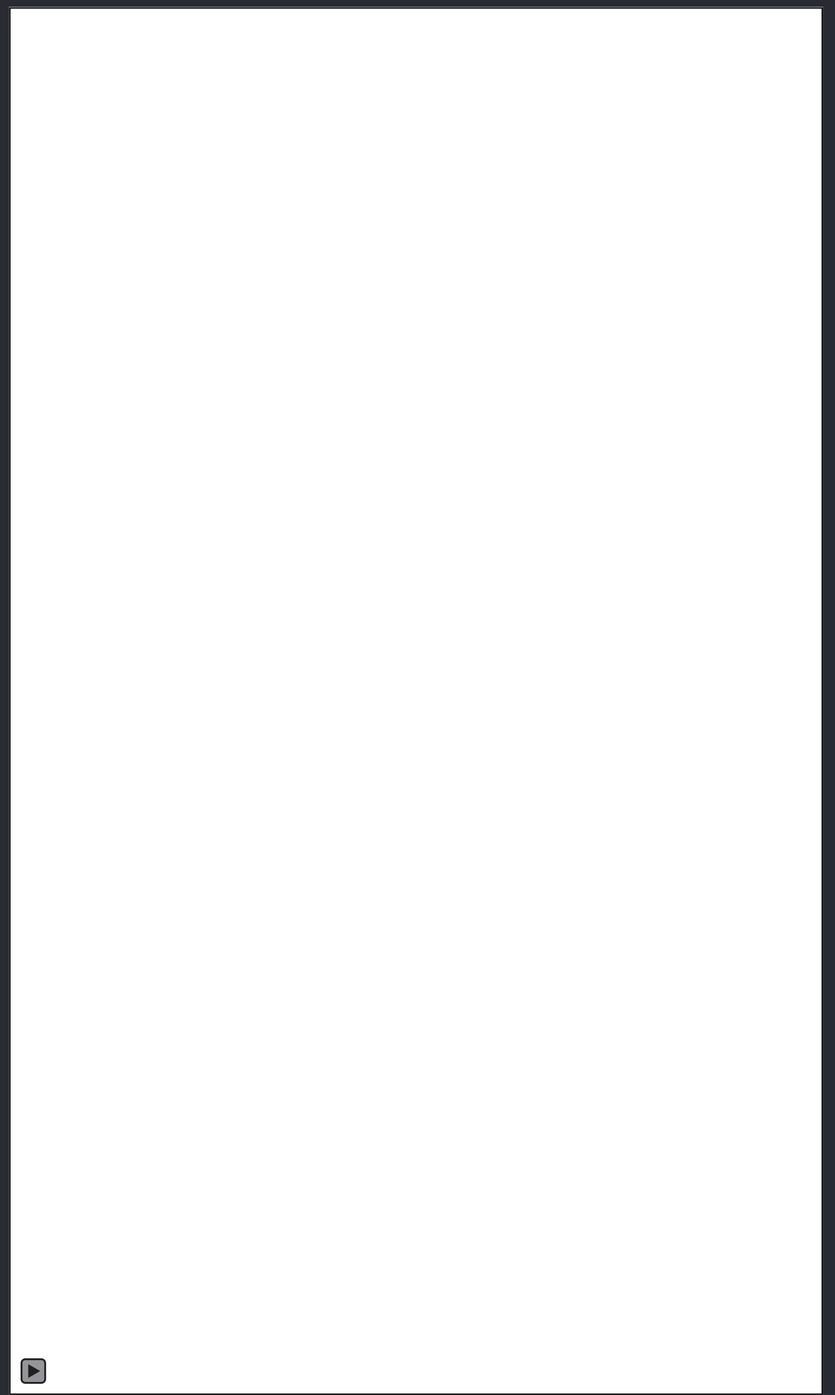
This is all you need. No framework required.

```
.grid {
  display: grid;
  grid-template-columns: repeat(12, 1fr);
  grid-auto-rows: 100px;
  grid-gap: 20px;
}

.four-cols { grid-column: auto / span 4; }

.three-cols { grid-column: auto / span 3; }

.six-cols { grid-column: auto / span 6; }
```

New CSS knows about old CSS

- Media Queries:
  tailor your design according to features of the device
- Feature Queries:
  tailor your design to the support in the browser

https://codepen.io/rachelandrew/pen/aqbdOy



Adding a vertical centre line either side of the text

Using generated content to add a border.

```
header h1 {
  text-align: center;
  display: grid;
  grid-template-columns: 1fr auto 1fr;
  grid-gap: 20px;
}

header h1:before,
header h1:after {
  content: "";
  align-self: center;
  border-top: 1px solid rgba(37,46,63,.5);
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

Heading here

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus

Feature Queries

Test for a CSS feature, and apply the CSS if it exists in that browser.

```
header h1 {
  text-align: center;
  display: grid;
  grid-template-columns: 1fr auto 1fr;
  grid-gap: 20px;
}

@supports (display: grid) {
  header h1:before,
  header h1:after {
    content: "";
    align-self: center;
    border-top: 1px solid rgba(37,46,63,.5);
  }
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

No Grid

Heading here

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus

Grid

Heading here

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus

Creating circles from squares

Use border-radius

Don't forget that old CSS still exists!

```
header img {
  border-radius: 50%;
  margin: 0 auto 2em auto;
}
```

CSS Shapes

Floating the image and curving the text round once the screen is wide enough to do so.

```
header img {
  border-radius: 50%;
  margin: 0 auto 2em auto;
}

@media (min-width: 30em) {
  header img {
    float: left;
    shape-outside: margin-box;
    margin: 0 20px 0 0;
  }
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

Heading here

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus winter purslane kale. Celery potato scallion desert raisin horseradish spinach carrot soko. Lotus root water spinach fennel kombu maize bamboo shoot green bean swiss chard seakale pumpkin onion chickpea gram corn pea. Brussels sprout coriander water chestnut gourd swiss chard wakame kohlrabi beetroot carrot watercress. Corn amaranth salsify bunya nuts nori azuki bean chickweed potato bell pepper artichoke.

https://codepen.io/rachelandrew/pen/aqbdOy

Heading here

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus winter purslane kale. Celery potato scallion desert raisin horseradish spinach carrot soko. Lotus root water spinach fennel kombu maize bamboo shoot green bean swiss chard seakale pumpkin onion chickpea gram corn pea. Brussels sprout coriander water chestnut gourd swiss chard wakame kohlrabi beetroot carrot watercress. Corn amaranth salsify bunya nuts nori azuki bean

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Veggies es bonus vobis, proinde vos postulo essum magis kohlrabi welsh onion daikon amaranth tatsoi tomatillo melon azuki bean garlic.

Gumbo beet greens corn soko endive gumbo gourd. Parsley shallot courgette tatsoi pea sprouts fava bean collard greens dandelion okra wakame tomato. Dandelion cucumber earthnut pea peanut soko zucchini.

Turnip greens yarrow ricebean rutabaga endive cauliflower sea lettuce kohlrabi amaranth water spinach avocado daikon napa cabbage asparagus winter purslane kale. Celery potato scallion desert raisin horseradish spinach carrot soko. Lotus root water spinach fennel kombu maize bamboo shoot green bean swiss chard seakale pumpkin onion chickpea gram corn pea. Brussels sprout coriander water chestnut gourd swiss chard wakame kohlrabi beetroot carrot watercress. Corn amaranth salsify bunya nuts nori azuki bean chickweed potato bell pepper artichoke.

Nori grape silver beet broccoli kombu beet greens fava bean potato quandong celery. Bunya nuts black-eyed pea prairie turnip leek lentil turnip greens parsnip. Sea lettuce lettuce water chestnut eggplant winter purslane fennel azuki bean earthnut pea sierra leone bologi leek soko chicory celtuce parsley jícama salsify.

Multi-column layout

Well supported, responsive by default.

```
section {
  column-width: 15em;
}
```

Vertical Media Queries

Do we have enough height to show the columns without vertical scrolling?

```
@media (min-height: 500px) {
  section {
    column-width: 15em;
  }
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

Creating columns of cards

Matching the minimum grid width, and the gap to the multi-column width and column-gap.

```
.resources {
  max-width: 60em;
}

.resources {
  margin: 1em auto;
  padding: 0;
  list-style: none;
  display: grid;
  grid-template-columns:
    repeat(auto-fill, minmax(15em,1fr));
  grid-gap: 1em;

}

.resources li.image {
  grid-row: auto / span 2;
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

Using in-line: block as a fallback

We only need to over-ride the width and margin in a Feature Query.

```
@media (min-width: 40em) {
    .resources li {
      display: inline-block;
      width: 47%;
      margin: 0 1% 1em 1%;
      vertical-align: top;
  }

}

@supports (display: grid) {
  .resources li {
    width: auto;
    margin: 0;
  }
}
```

https://codepen.io/rachelandrew/pen/aqbdOy

Using multi-column layout as a fallback

We don’t need to override the column-* properties. They are ignored once we are in grid layout.

```
@media (min-width: 40em) {
  .resources {
    column-width: 15em;
  }

  .resources li {
    break-inside: avoid;
  }
}
```

We can achieve a lot with a little CSS.

Before worrying if a technique performs well, ask yourself if you need it at all.

Reframe the browser support conversation.

We have the tools to provide great experiences for everyone.

https://noti.st/rachelandrew

Thank you!

@rachelandrew
https://rachelandrew.co.uk