



# Defensive CSS

Ahmad Shadeed

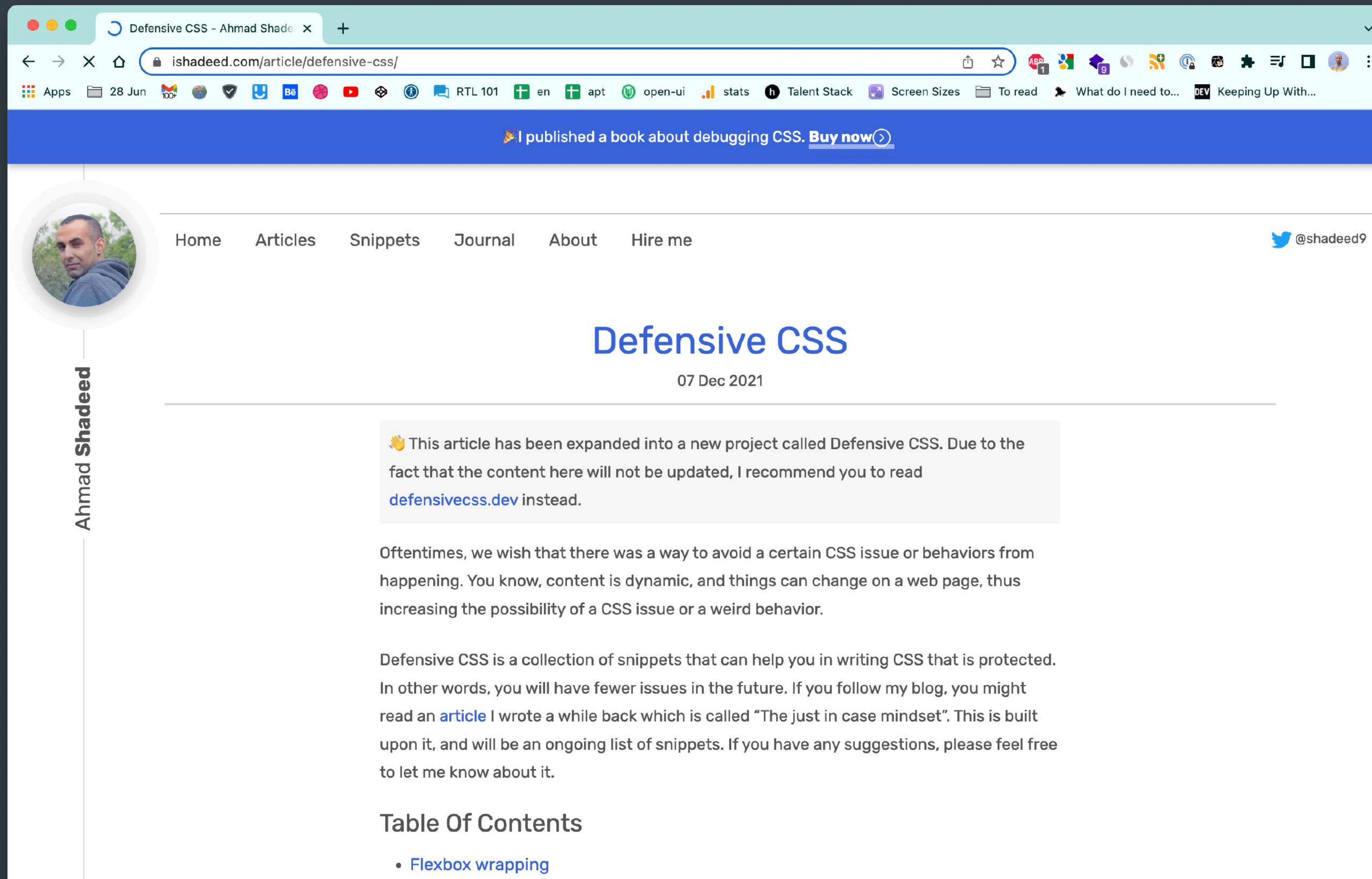
Paris Web, Oct 2022



Hello, I'm Ahmad! 🖐️

- UX Designer, Frontend Developer
- Author of Debugging CSS book
- Writer on [ishadeed.com](https://ishadeed.com)

# A bit of history



The screenshot shows a web browser window with the URL `ishadeed.com/article/defensive-css/`. The browser's address bar and tabs are visible at the top. Below the browser window, a blue banner contains the text: "I published a book about debugging CSS. Buy now >".

The main content area features a navigation menu with the following items: Home, Articles, Snippets, Journal, About, Hire me. A profile picture of Ahmad Shadeed is shown on the left, with his name "Ahmad Shadeed" written vertically below it. A Twitter handle "@shadeed9" is located in the top right corner of the content area.

## Defensive CSS

07 Dec 2021

🔥 This article has been expanded into a new project called Defensive CSS. Due to the fact that the content here will not be updated, I recommend you to read [defensivecss.dev](https://defensivecss.dev) instead.

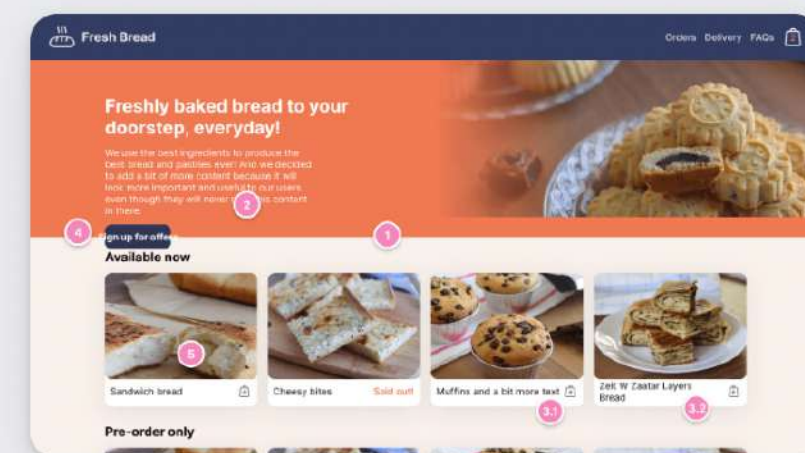
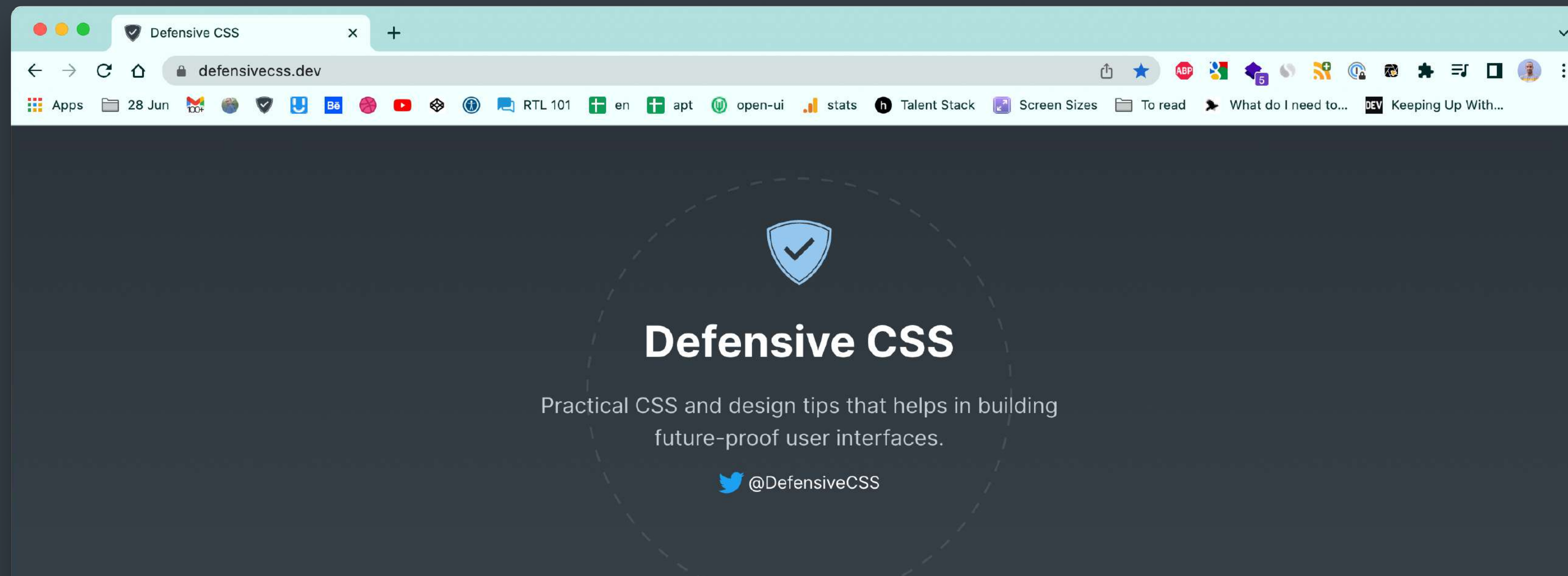
Oftentimes, we wish that there was a way to avoid a certain CSS issue or behaviors from happening. You know, content is dynamic, and things can change on a web page, thus increasing the possibility of a CSS issue or a weird behavior.

Defensive CSS is a collection of snippets that can help you in writing CSS that is protected. In other words, you will have fewer issues in the future. If you follow my blog, you might read an [article](#) I wrote a while back which is called "The just in case mindset". This is built upon it, and will be an ongoing list of snippets. If you have any suggestions, please feel free to let me know about it.

### Table Of Contents

- [Flexbox wrapping](#)

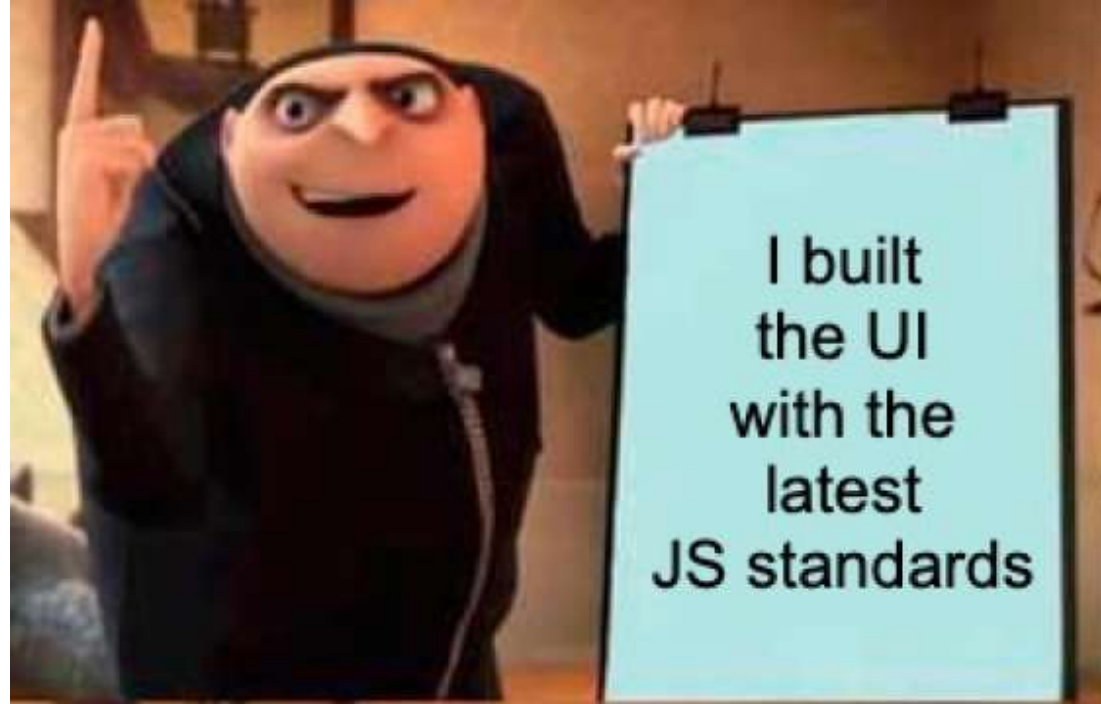
# A bit of history



## Introduction to Defensive CSS

An explanation of the concept of defensive CSS, what it means, why it's useful and how it applies to different areas in the design process.

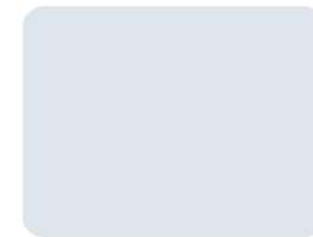
**Unknown content**  
can break layouts



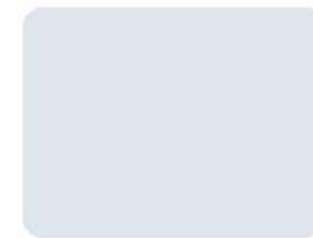
 **Ahmad Shadeed**  
Cool, I'm in . 2hrs

## Articles

[View all](#)



Two lines of placeholder text: a long dark blue line followed by a shorter light blue line.



Two lines of placeholder text: a short dark blue line followed by a medium-length light blue line.

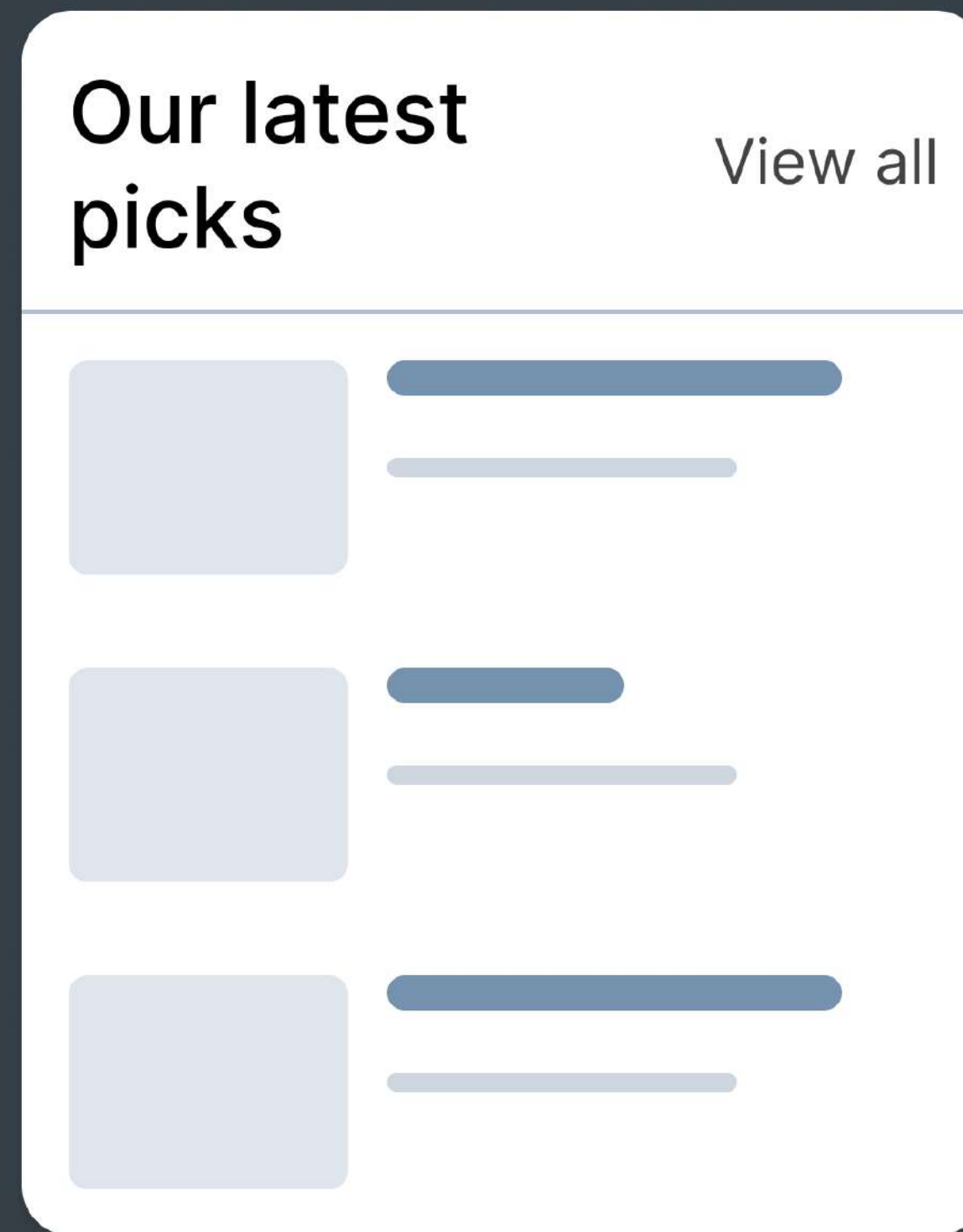


Two lines of placeholder text: a long dark blue line followed by a medium-length light blue line.

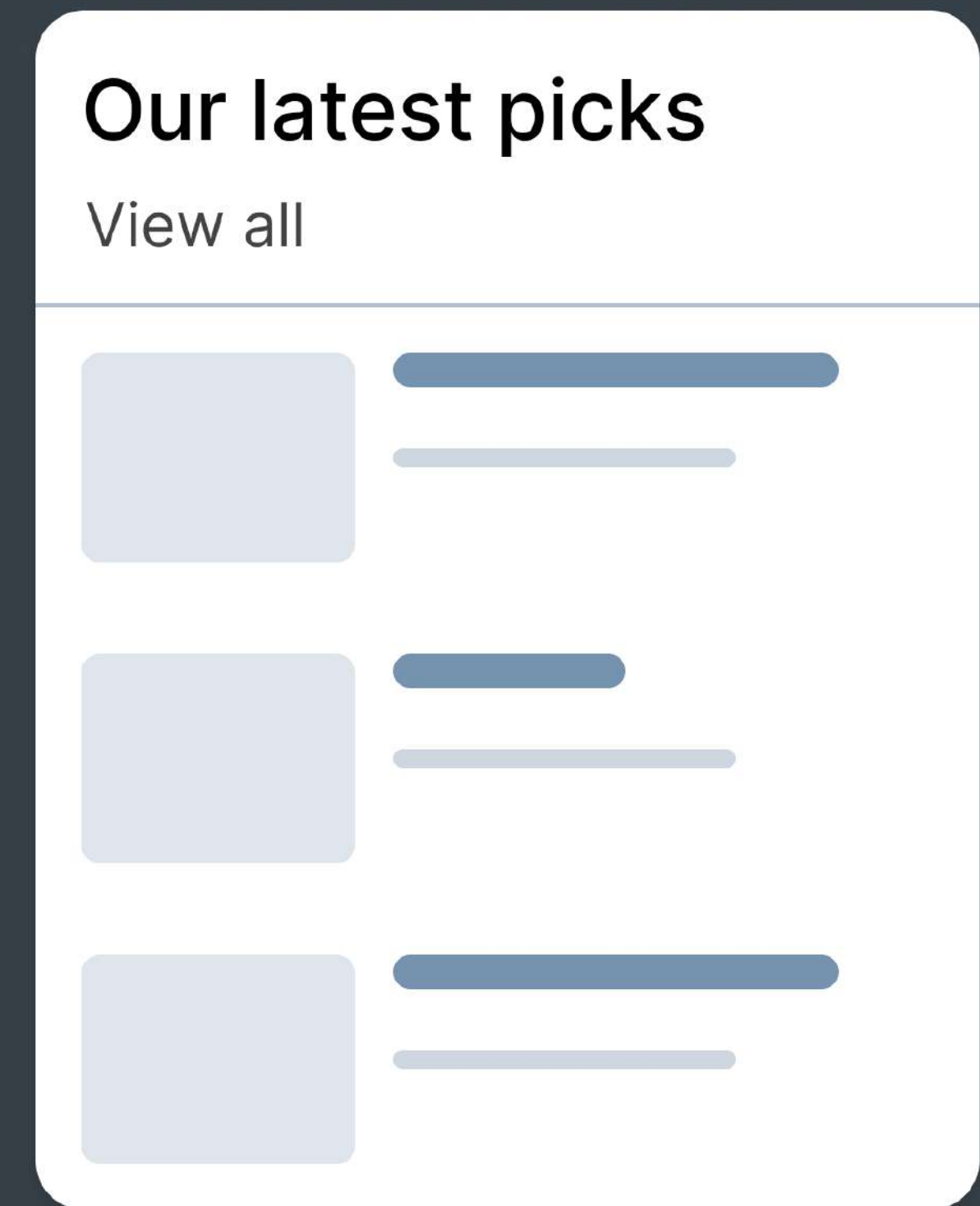
Original



Title is wrapped into a new line



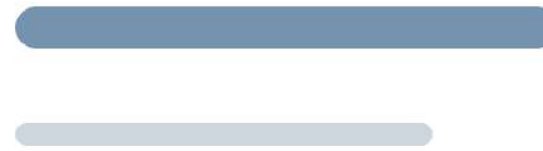
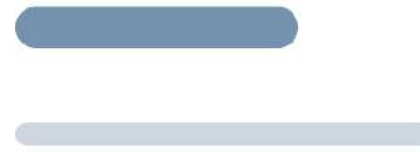
Pushed the link to a new line

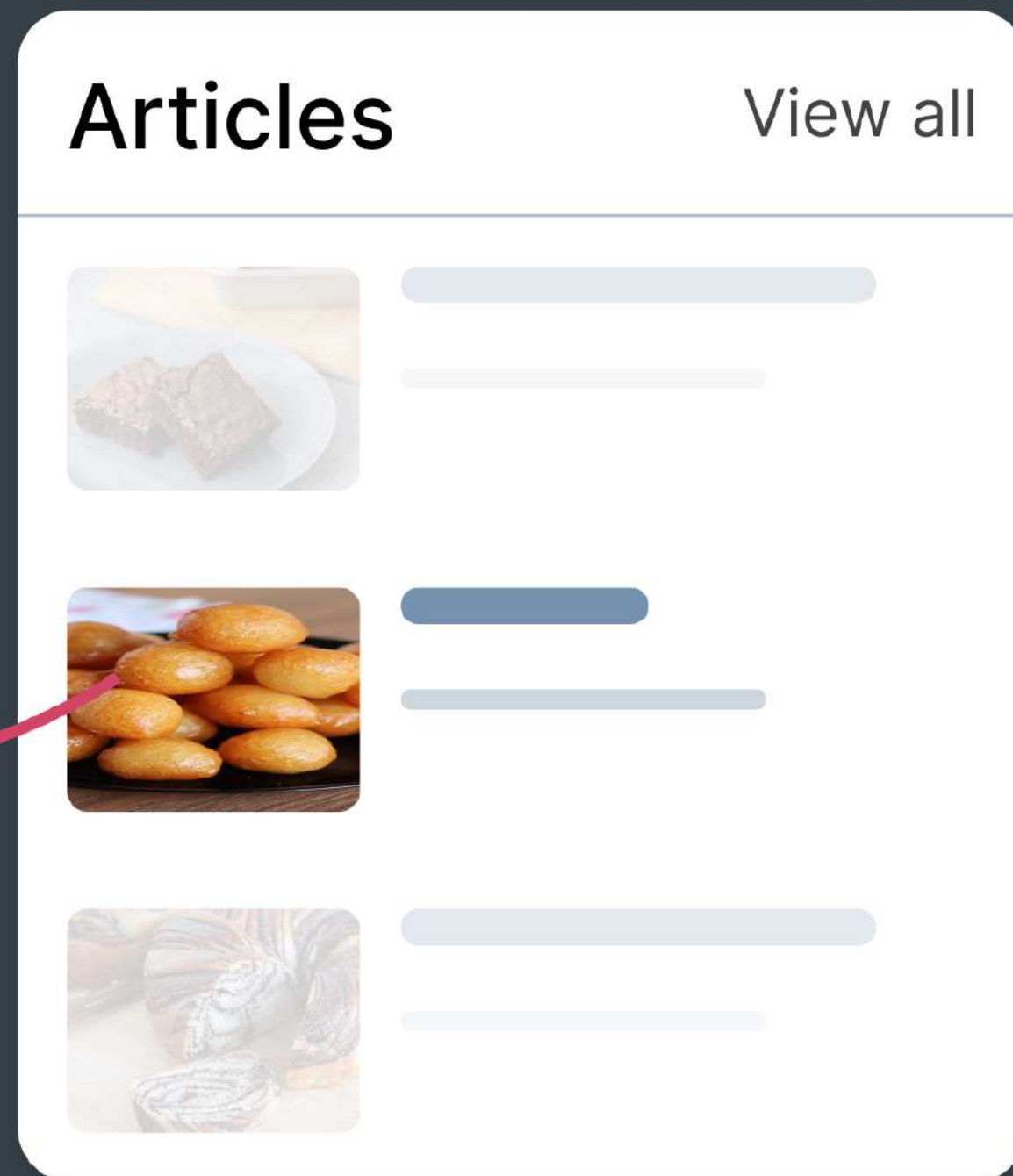




## Articles

[View all](#)





An image with a different aspect ratio

- Is the image coming from the backend always have a consistent aspect ratio?
- What will happen to the image when the title is too long?

## Articles

[View all](#)



Placeholder text for the first article.



Placeholder text for the second article.



Placeholder text for the third article.

An image with a different aspect ratio



**Modern CSS made our  
life easier**

CSS Grid

Flexbox

Logical Properties

Subgrid

Modern CSS made our life  
easier

:has

CSS Variables

Comparison Functions

Container Queries

**With all that, we still face layout  
issues**

*Not because of CSS, of course..*

# Perfect Design

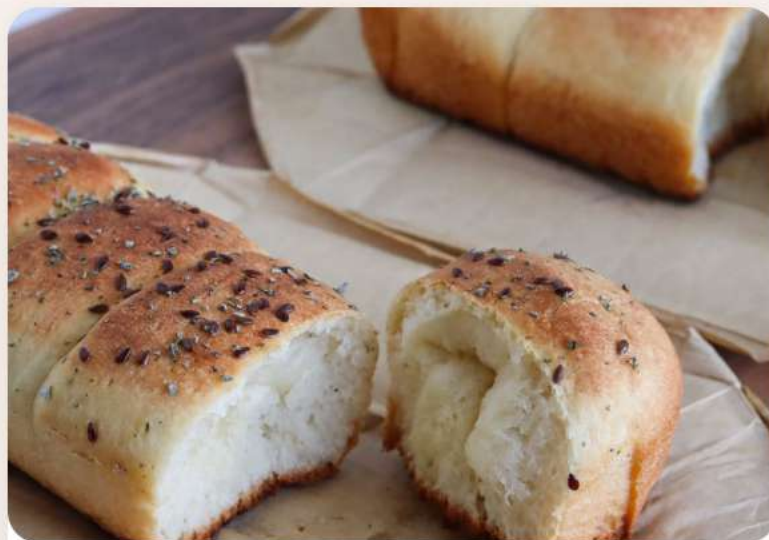
## Freshly baked bread to your doorstep, everyday!

We use the best ingredients to produce the best bread and pastries ever!

Order now



### Available now



Sandwich bread



Cheesy bites



Muffins



Zeit W Zaatar Layers



### Pre-order only



# Real Content

## Freshly baked bread to your doorstep, everyday!

We use the best ingredients to produce the best bread and pastries ever! And we decided to add a bit of more content because it will look more important and useful to our users even though they will never read this content in there.



4

Sign up for offers

Available now

1



Sandwich bread



5



Cheesy bites

Sold out!



Muffins and a bit more text



3.1



Zeit W Zaatar Layers Bread



3.2

Pre-order only





**Example Component**



Muffins



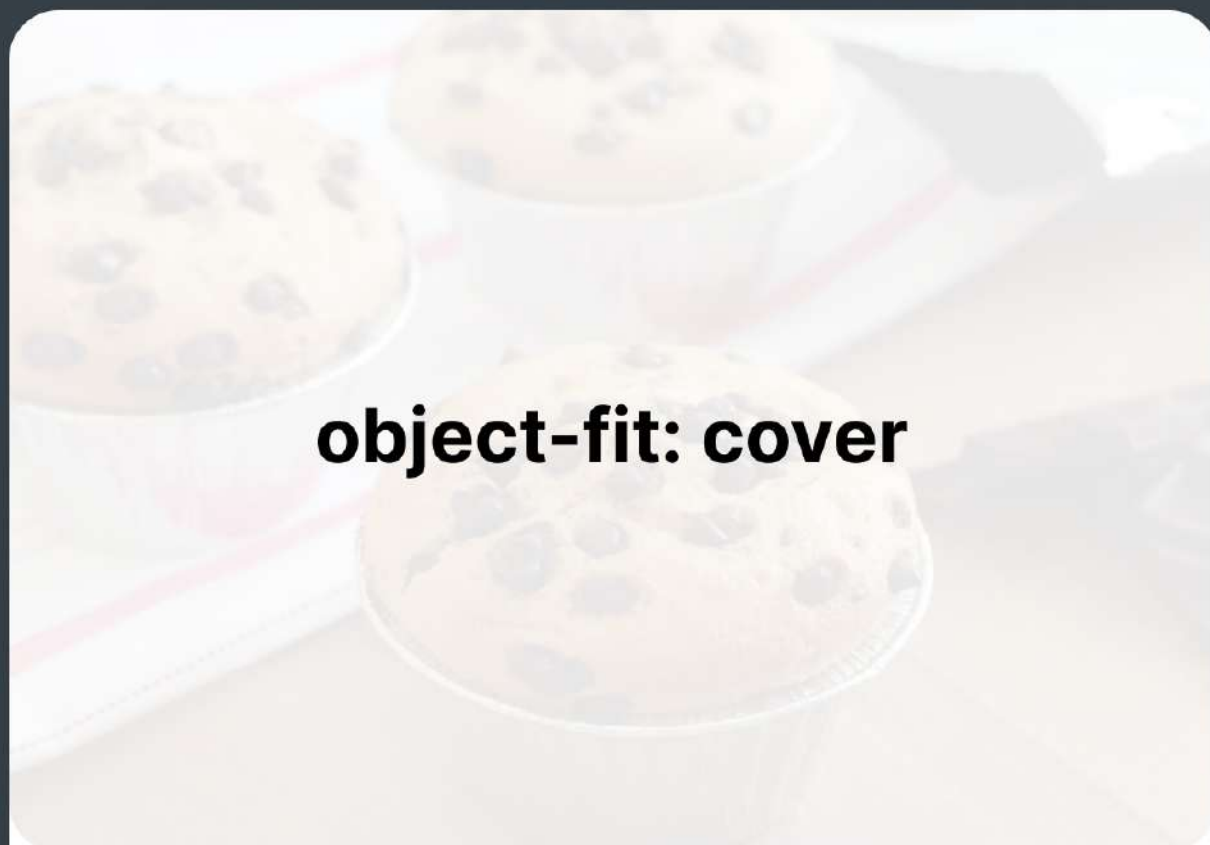


Short title



Title with sold out

**Sold out!**



**object-fit: cover**

Avoid the image being stretched



Padding from the right, or gap, are important





# Defensive CSS

Strategy to write bullet-proof CSS



# Defensive CSS

Strategy to write bullet-proof CSS

## Designers

Designing component with unknown content in mind

## Frontend Developers

It can act as an advanced CSS reset

## QA Engineers

Can be a checklist of common UI issues to test

Designers

# Designing UIs with unknown content in mind



# What if...?

CSS trouble maker

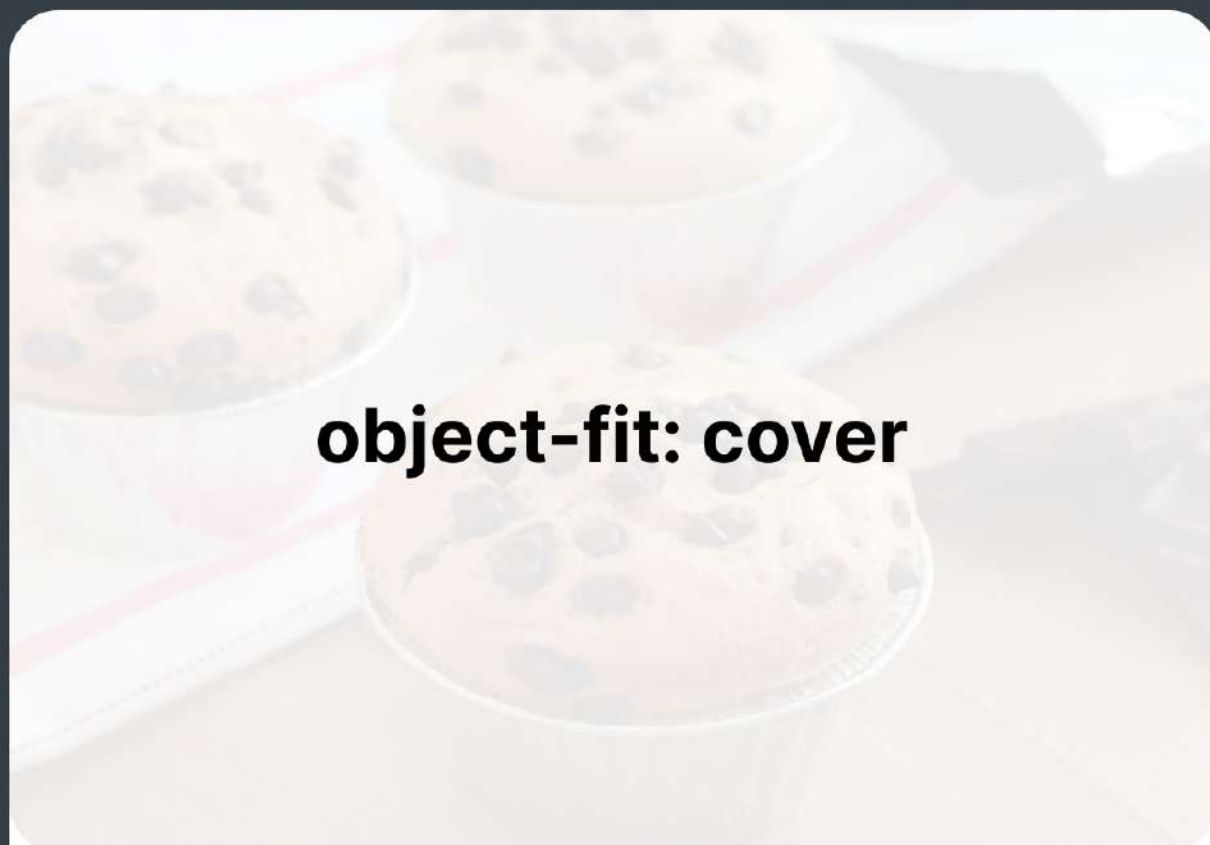


Short title



Title with sold out

**Sold out!**



**object-fit: cover**

Avoid the image being stretched



Padding from the right, or gap, are important





Frontend Developers

**Think of it as a CSS Reset**



```
/* [1] Break words when there is enough space */  
h1, h2, h3, h4, h5, h6, p, a {  
    overflow-wrap: break-word; /* [1] */  
}  
  
/*  
[1] Set a maximum width for an image  
[2] Let the image cover its bounding box to avoid distortion.  
*/  
img {  
    max-width: 100%; /* [1] */  
    object-fit: cover; /* [2] */  
}
```

QA Engineers

# Checklist to common UI issues to test



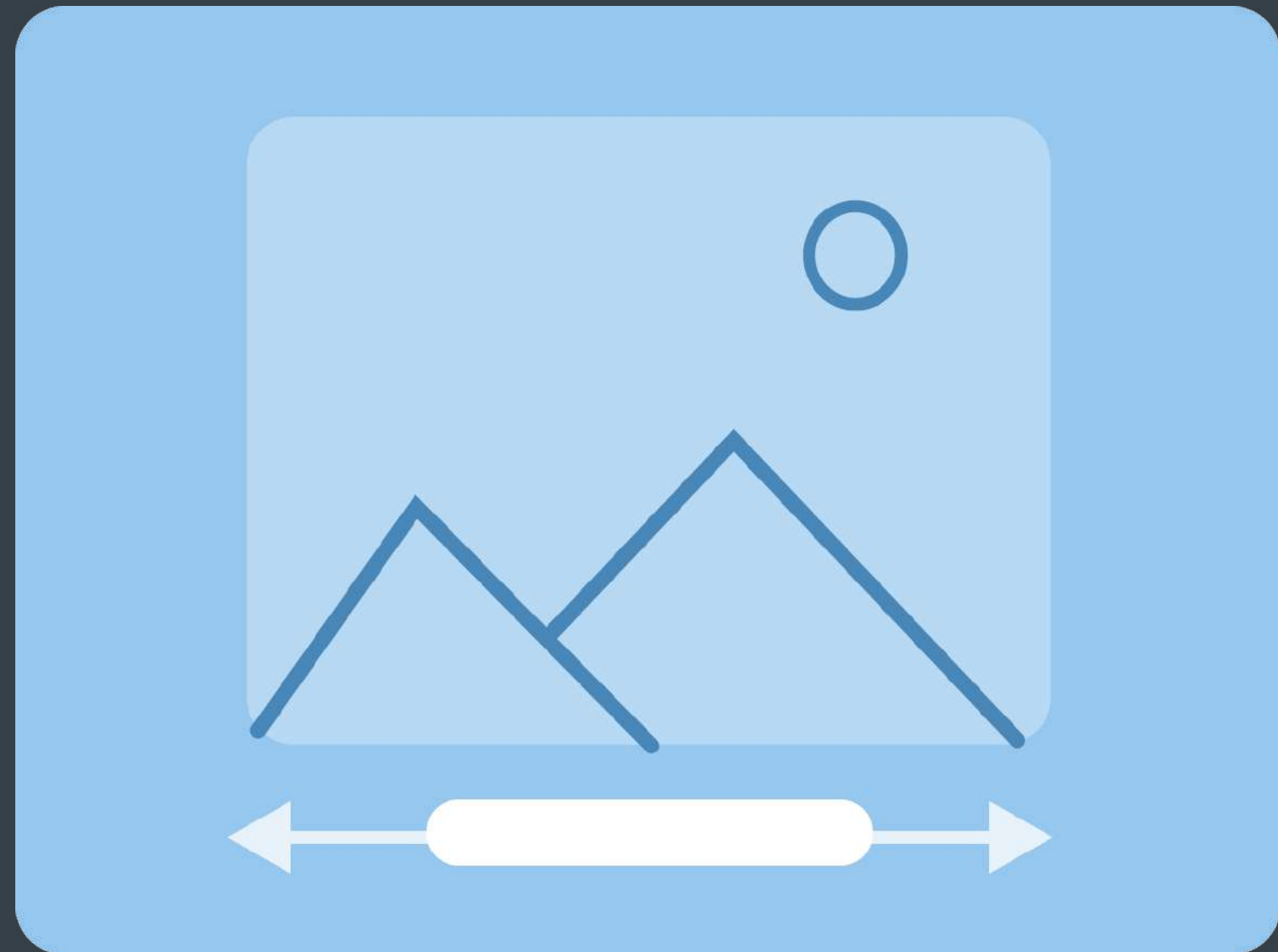
# Defensive CSS Properties

- flex-wrap
- object-fit
- overflow-break
- padding
- min-width
- min-height
- max-width
- max-height
- overscroll-behaviour
- scrollbar-gutter
- overflow
- Background colors
- Media queries
- Border



# Defensive Tips

**Images**



Defensive Tips

Image maximum width

With max-width

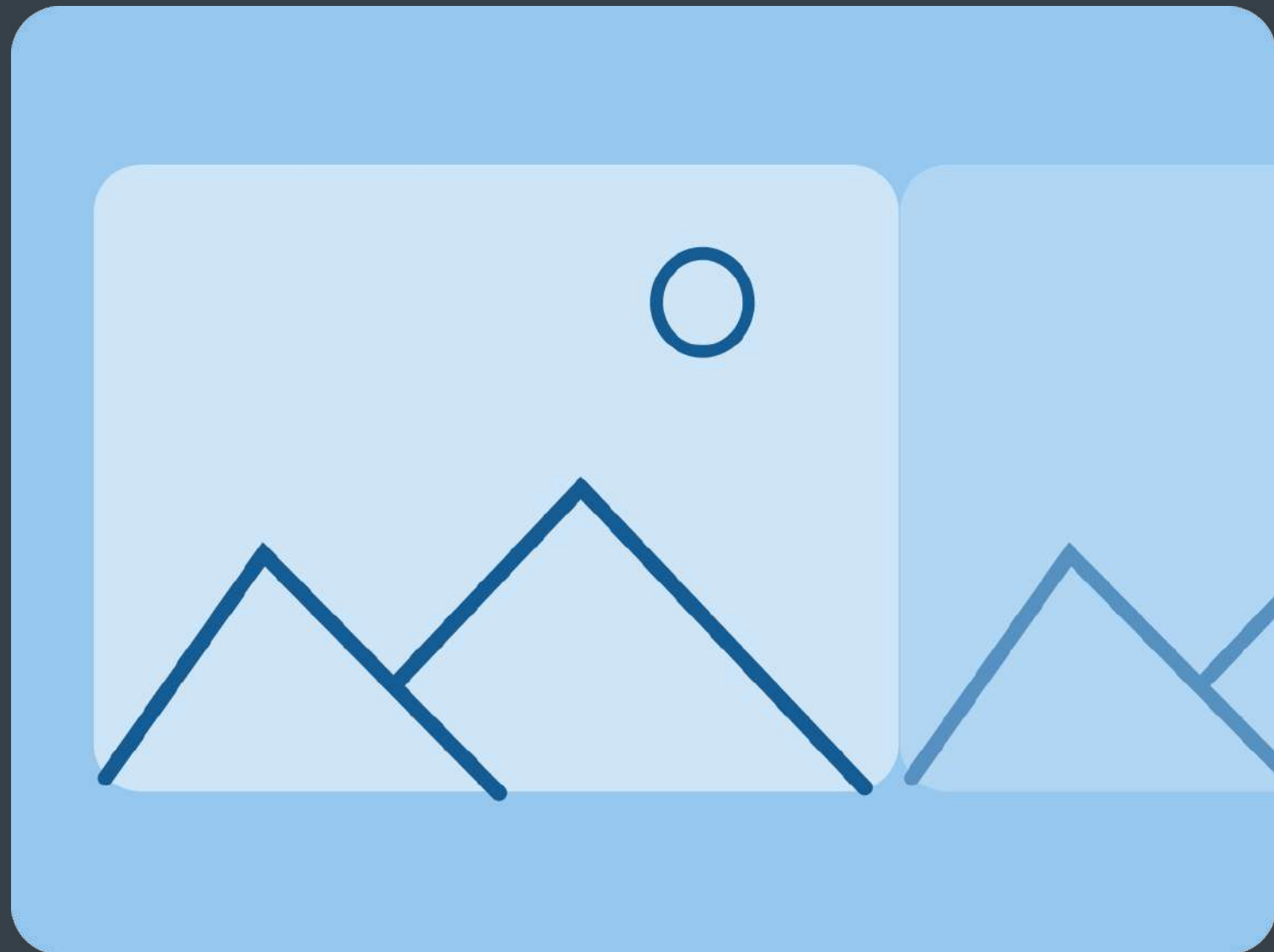


w/o max-width





```
img {  
    max-width: 100%;  
    object-fit: cover;  
}
```



Defensive Tips

Background repeat

Defensive tips / **Background repeat**

Small screen



Large screen



The image is repeating 🤖

```
.hero {  
  background-image: url('..');  
  background-repeat: no-repeat;  
}
```



Resize me

Toggle Defensive





Defensive Tips

**Image Distortion**



### **Dawood Basha**

Meat balls with tomato sauce

Good & healthy photo



Squeezed photo



**Chocolate Bread**

Delicious and easy recipe



```
.card__thumb {  
  object-fit: cover;  
}
```



### **Chocolate Bread**

Delicious and easy recipe



Resize me



Toggle Defensive





Defensive Tips

**Text over image**



**Brownies**

Defensive tips / **Text over image**

```
.card__img {  
  background-color: #2a3137;  
}
```

Default

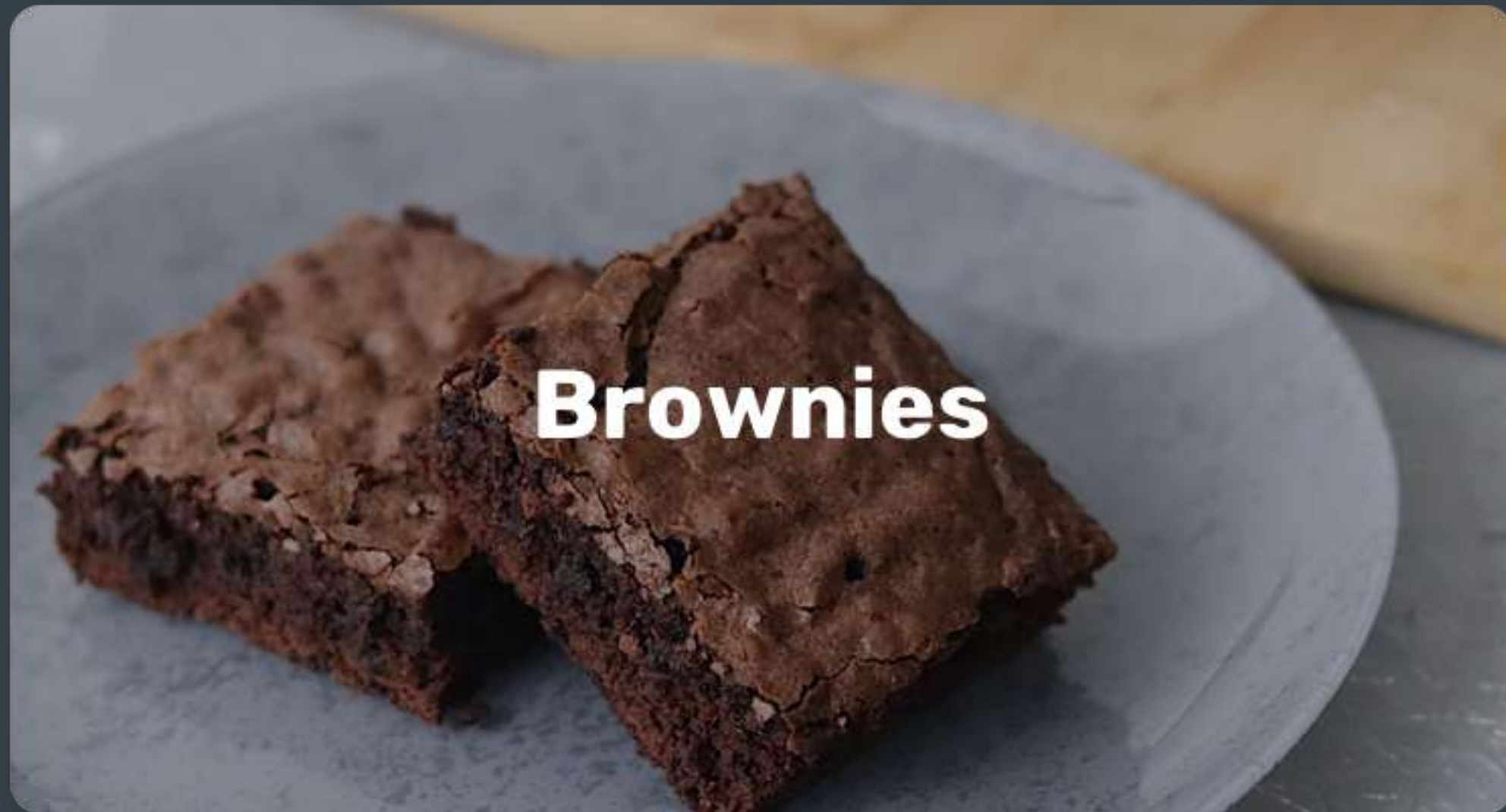
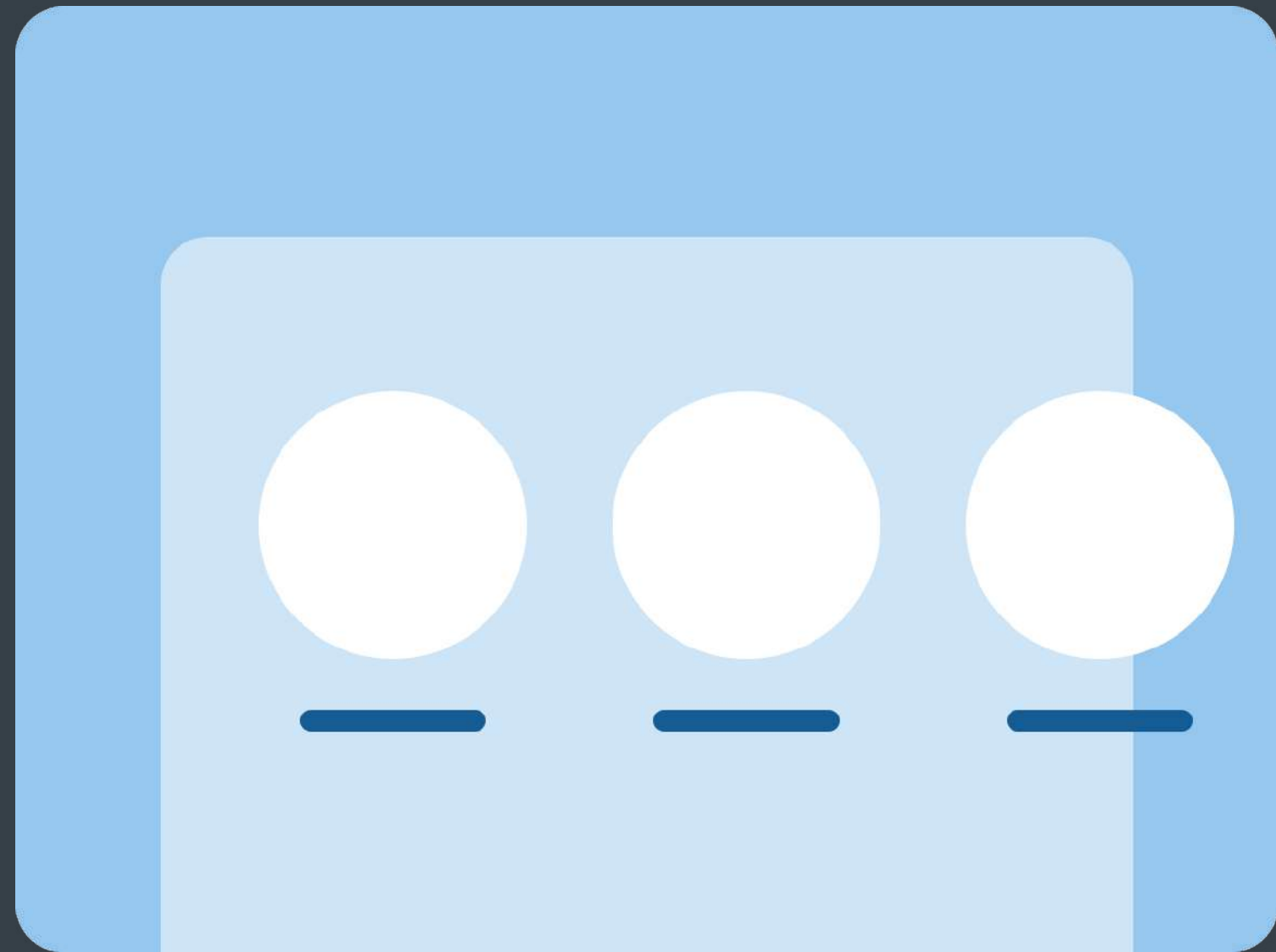


Image didn't load



# CSS Flexbox



Defensive Tips

## Flexbox Wrapping

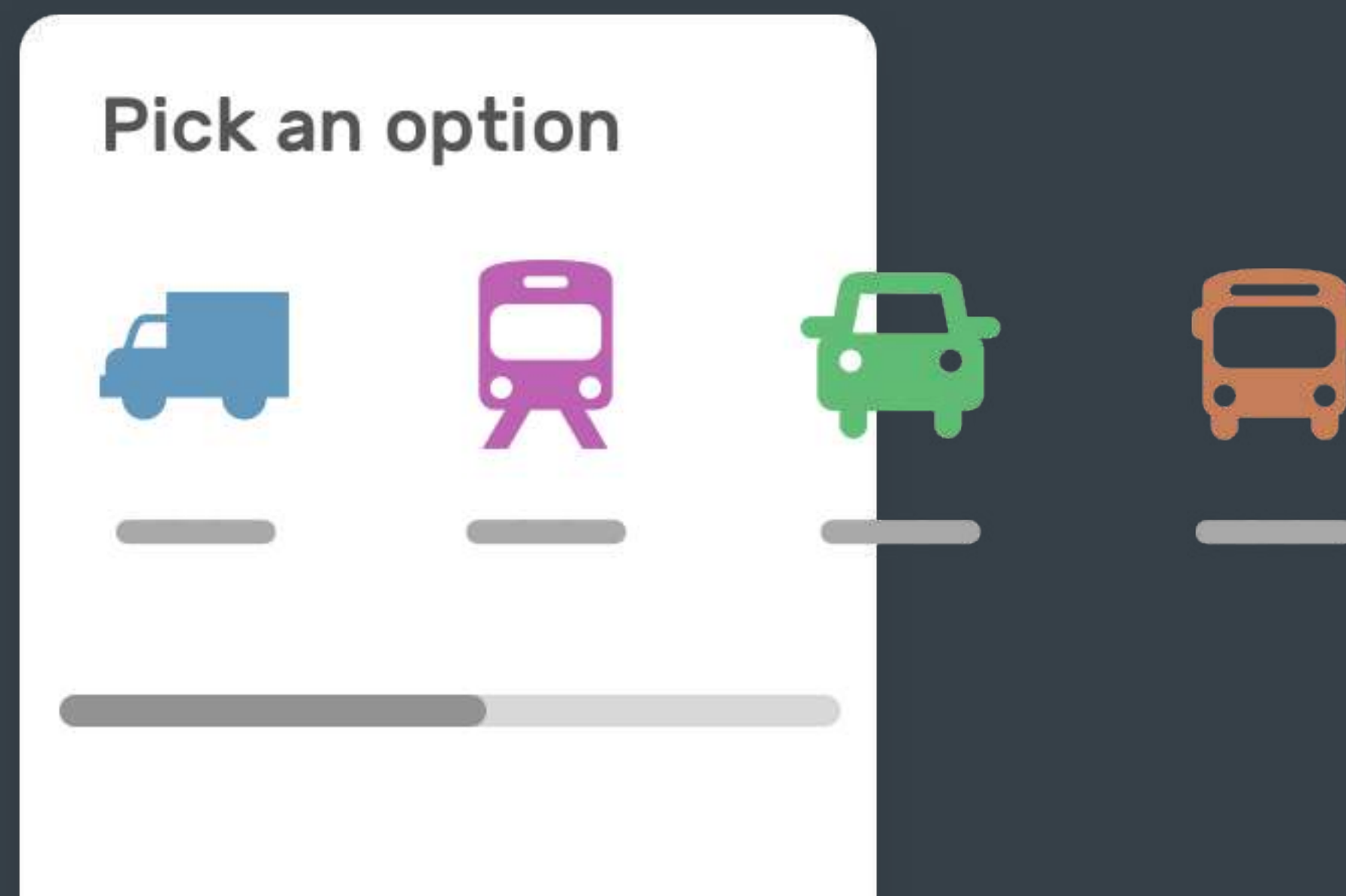


```
.options-list {  
  display: flex;  
}
```

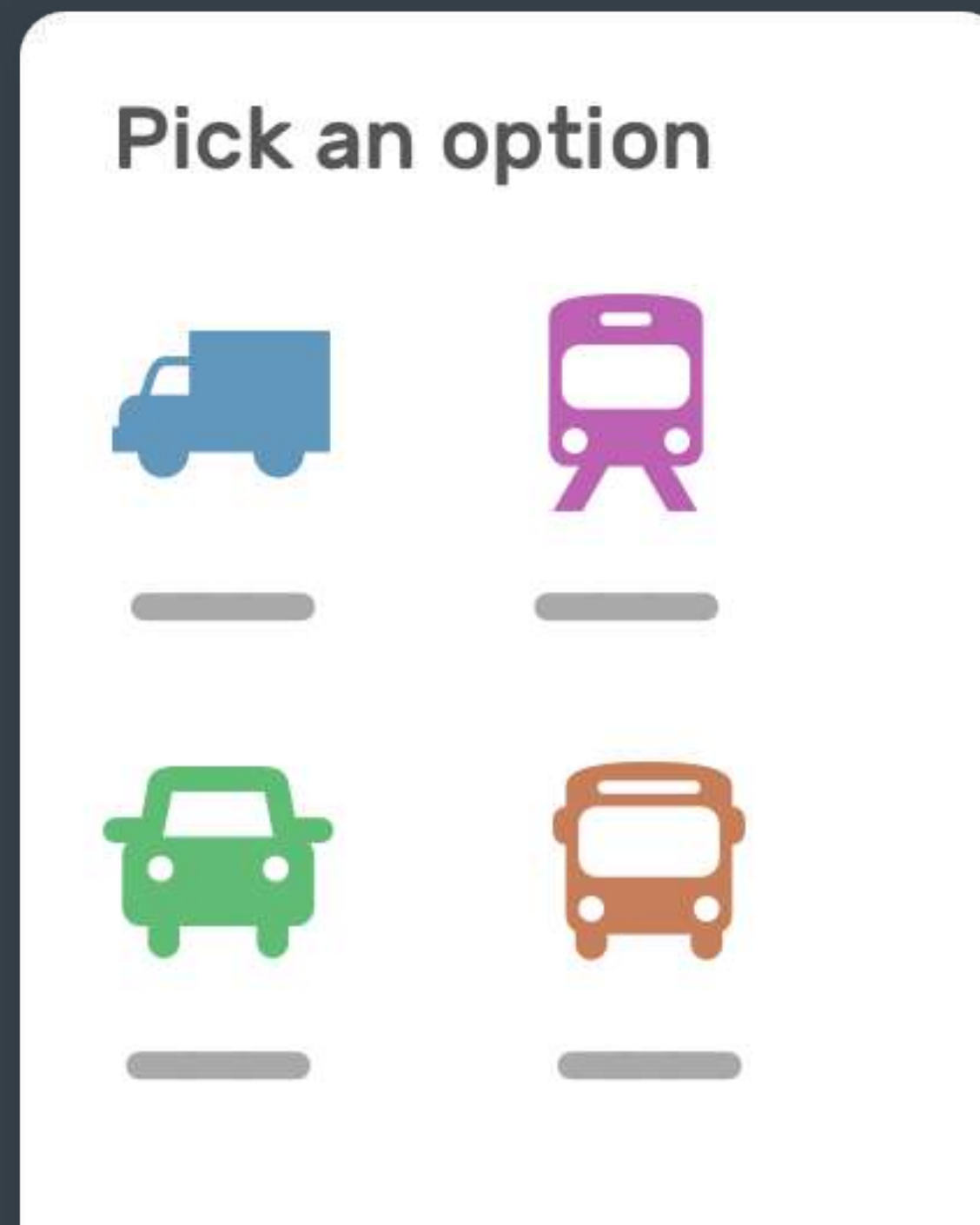
Pick an option



```
.options-list {  
  display: flex;  
}
```



```
.options-list {  
  display: flex;  
  flex-wrap: wrap;  
}
```



Home

>

Articles

>

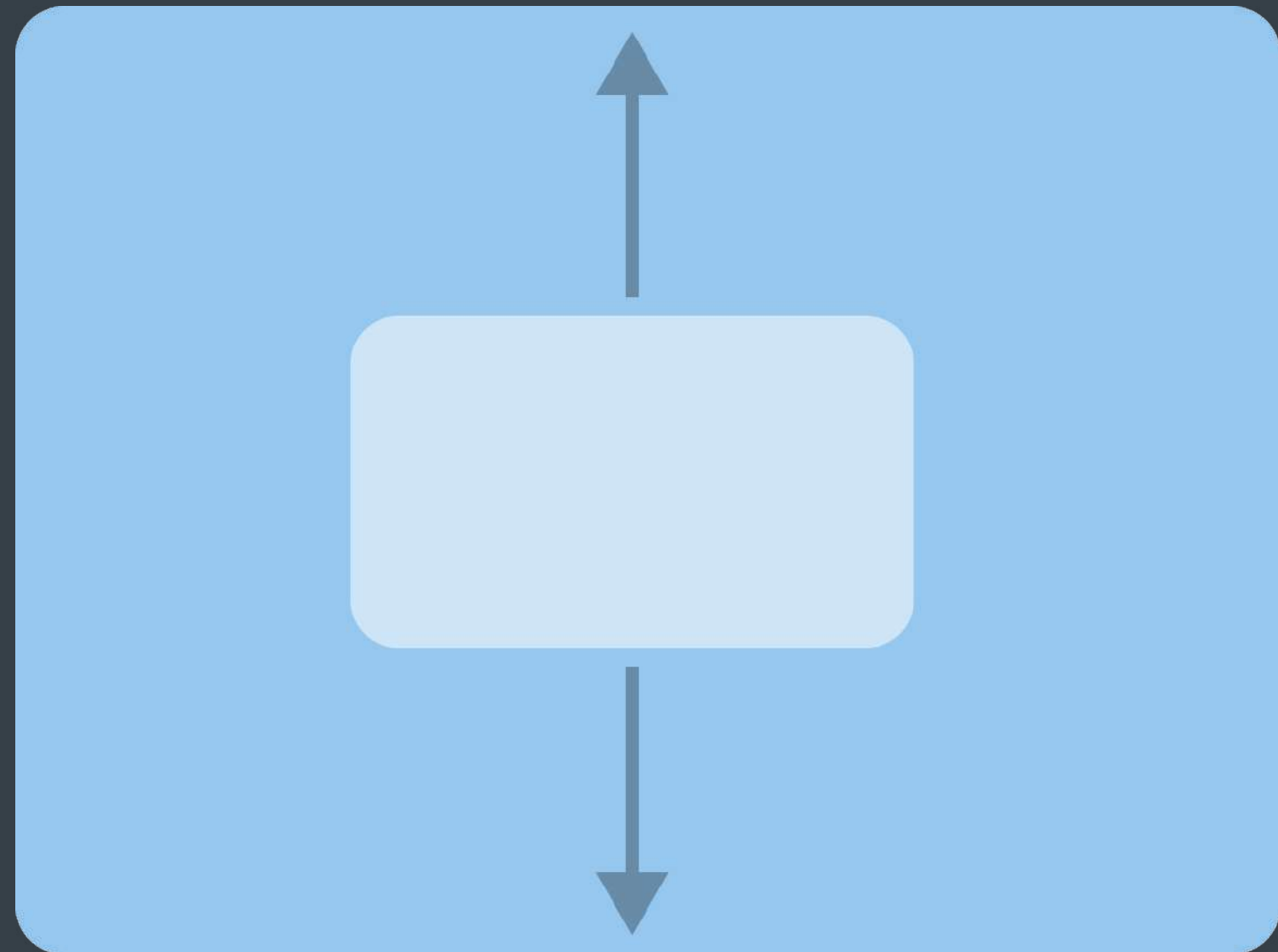
Defensive

CSS

Resize me



Toggle Defensive



Defensive Tips

Default flexbox stretching

```
<div class="person">
  
  <div class="person__content">
    <h3>Ahmad Shadeed</h3>
    <p><!-- Description goes here.. --></p>
  </div>
</div>
```

```
.person {
  display: flex;
}
```

Default



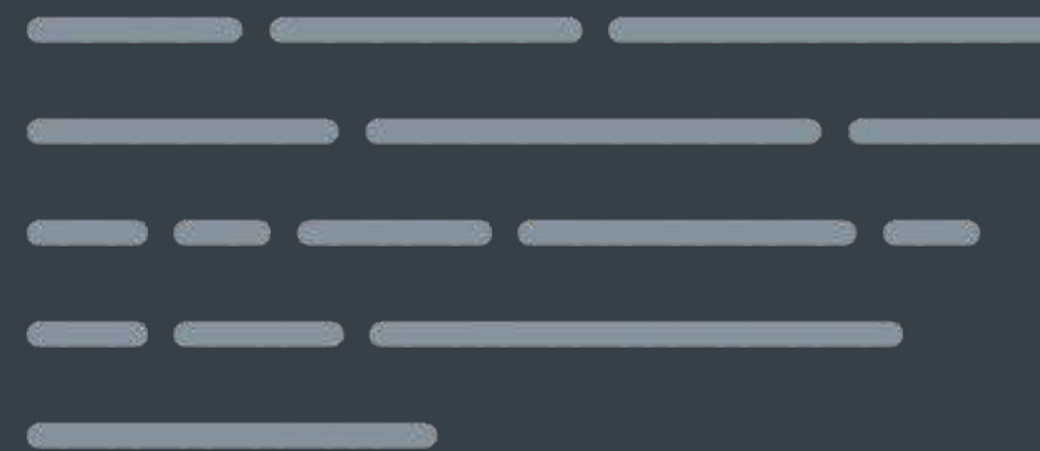
**Ahmad Shadeed**



Long content



**Ahmad Shadeed**



```
.person__avatar {  
    /* other styles */  
    align-self: start;  
}
```



Default



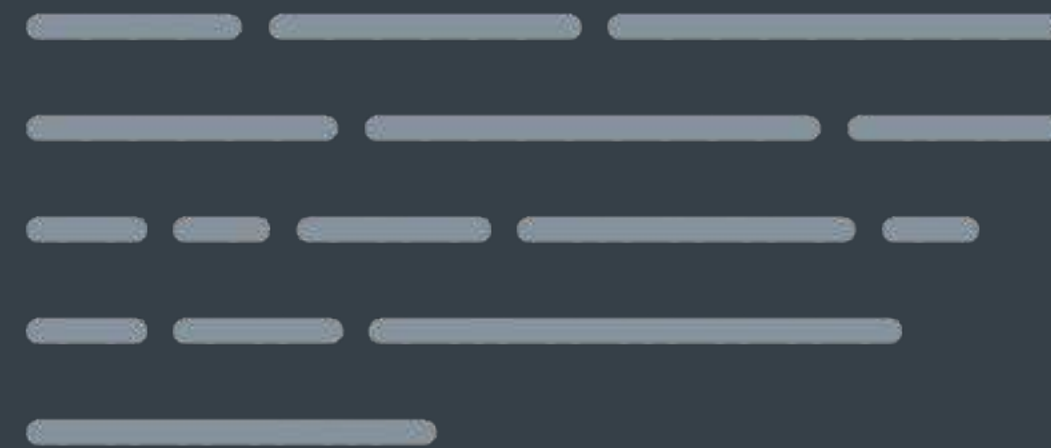
**Ahmad Shadeed**



Long content



**Ahmad Shadeed**



Default



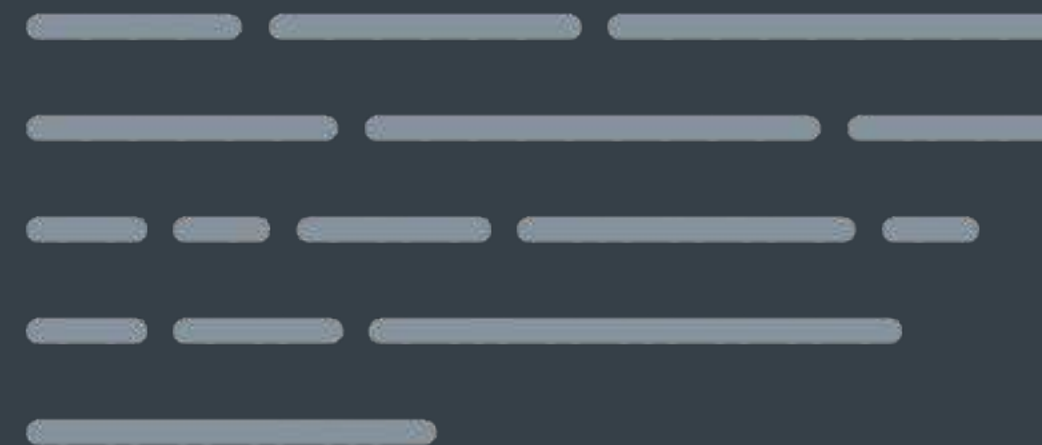
**Ahmad Shadeed**



Long content



**Ahmad Shadeed**

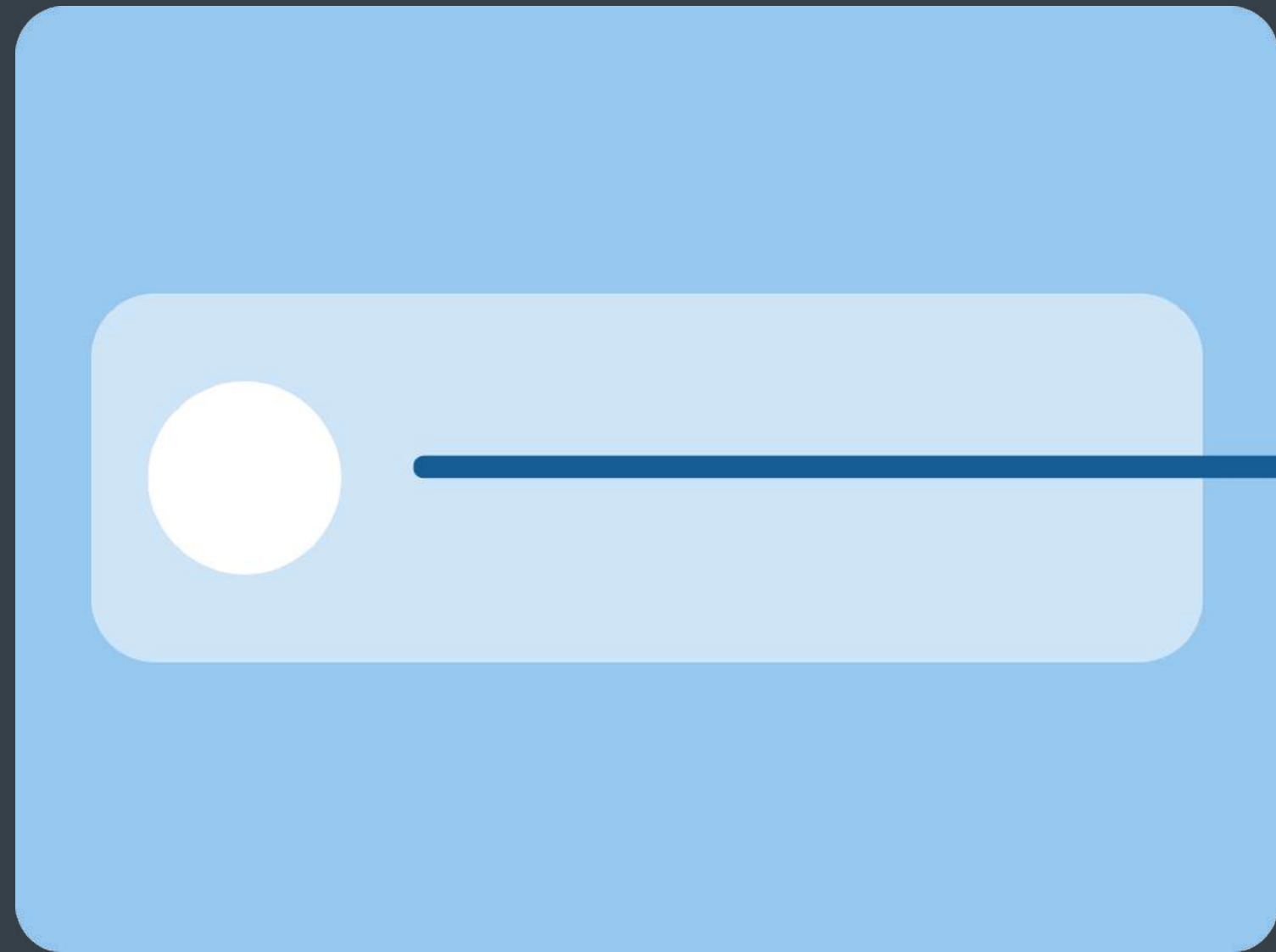




Lorem ipsum, dolor sit amet consectetur  
adipiscing elit. Doloremque harum est eum  
aperiam sed ut soluta quia nisi asperiores  
autem. Corporis consectetur amet  
sapiente necessitatibus veritatis aut quia  
maiores. Enim. t soluta quia nisi asperiores  
autem. Corporis consectetur amet  
sapiente necessitatibus veritatis aut quia  
maiores. Enim

Resize me

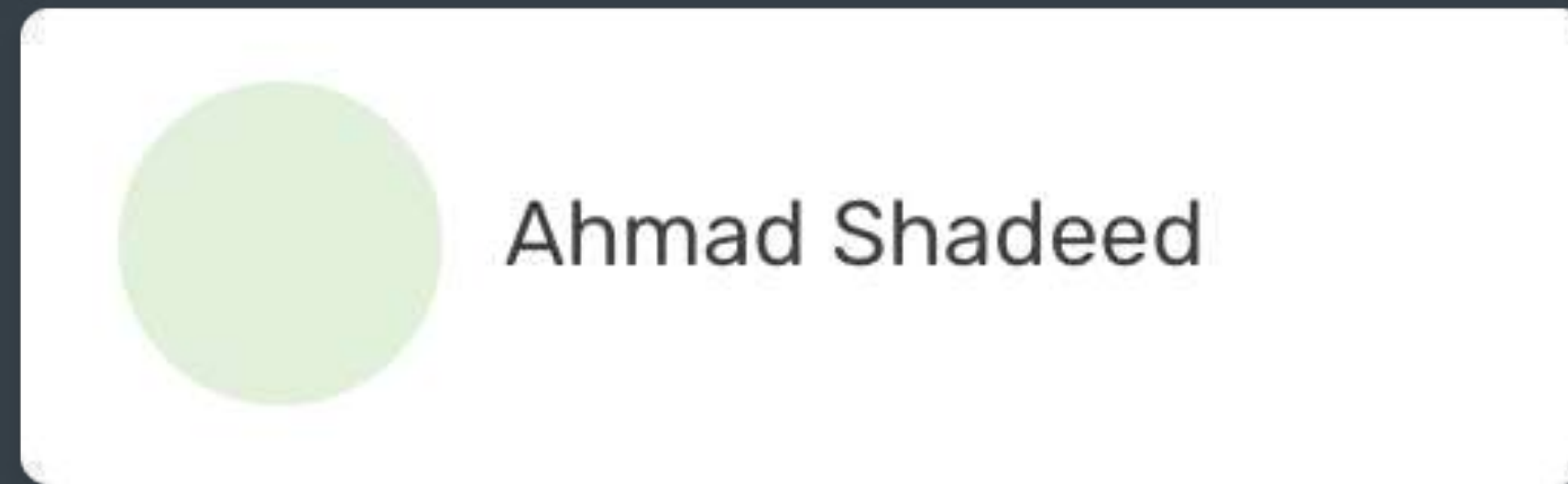
Toggle Defensive



Defensive Tips

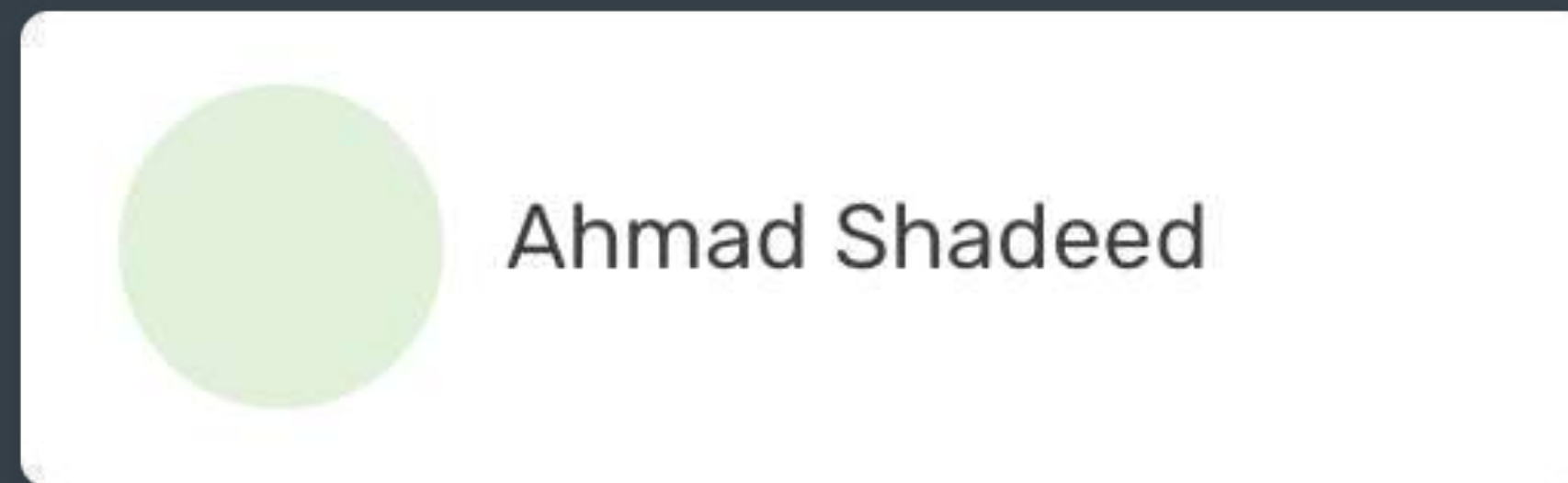
Flexbox Minimum Content Size

```
.card {  
  display: flex;  
}
```



```
.card__title {  
  overflow-wrap: break-word;  
}
```

✗ won't have an effect



```
.card__title {  
  overflow-wrap: break-word;  
  min-width: 0;  
}
```



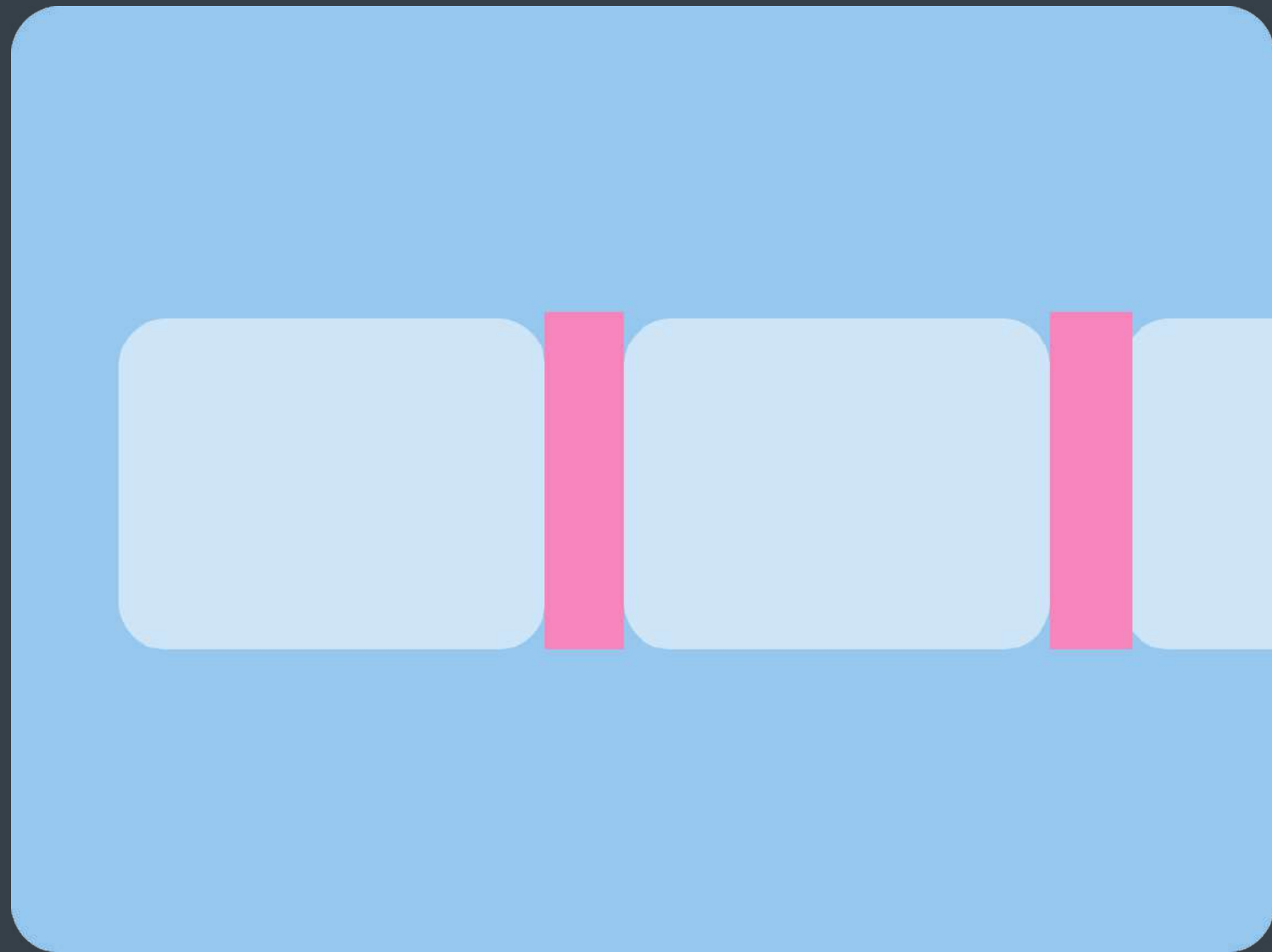
Here is a title with a very  
long word

This is a  
sampletitlethatisabiglong

Resize me

Toggle Defensive





Defensive Tips

Avoiding space-between

```
justify-content: space-between
```



```
justify-content: space-between
```



```
.wrapper {  
  display: flex;  
  flex-wrap: wrap;  
  gap: 1rem;  
}
```



A light blue rectangular panel with rounded corners. At the top, there are five grey squares arranged horizontally. Below them, on the left side, is a checkbox labeled "Toggle Defensive". On the right side, there is a vertical line with the text "Resize me" written vertically next to it. A mouse cursor is pointing at the bottom right corner of the panel.

# CSS Grid



Defensive Tips

CSS Grid Minimum Content Size

## HTML

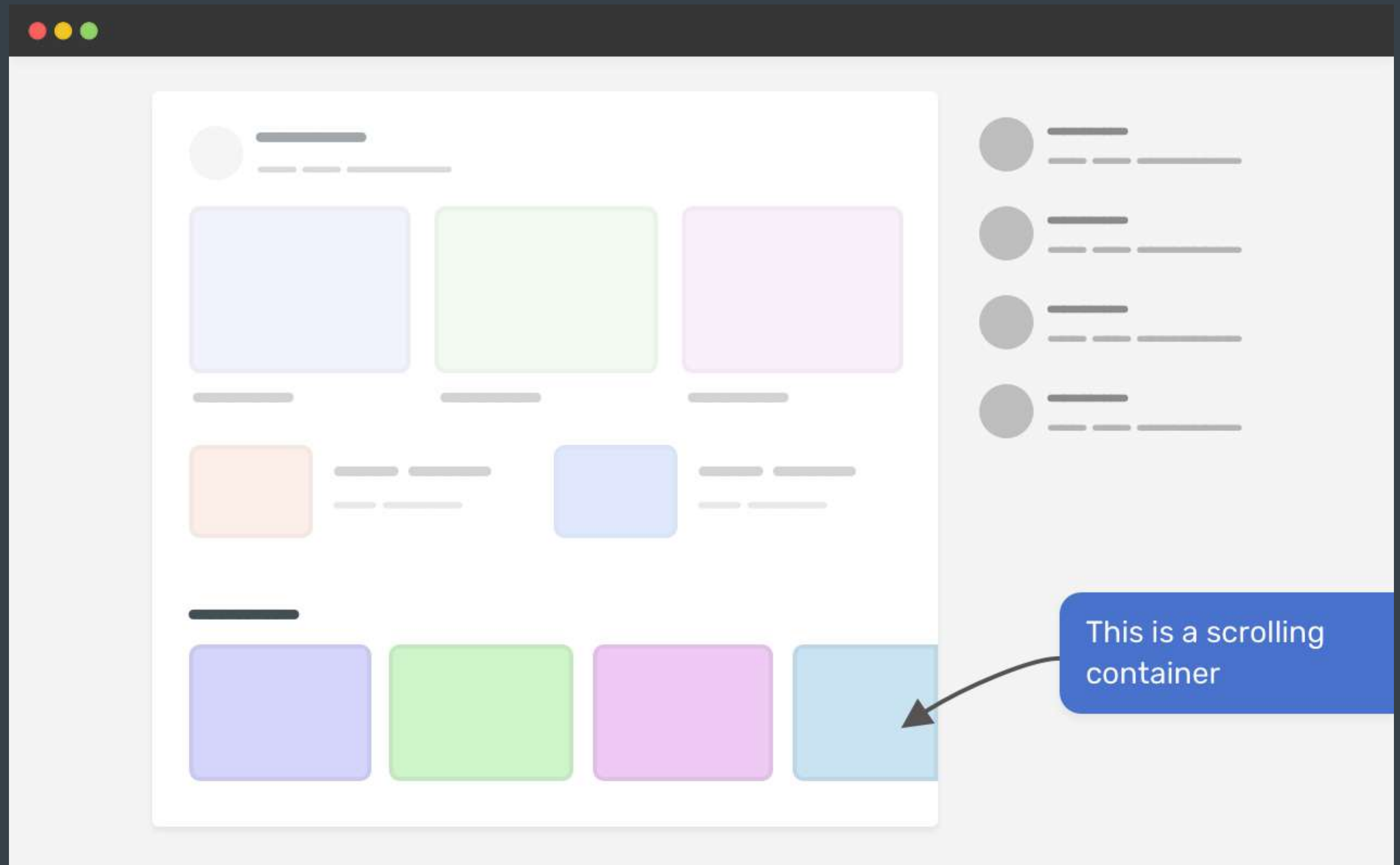
```
<div class="wrapper">
  <main>
    <section class="section"></section>
  </main>
  <aside></aside>
</div>
```

## CSS

```
@media (min-width: 1020px) {
  .wrapper {
    display: grid;
    grid-template-columns: 1fr 248px;
    grid-gap: 40px;
  }
}
```



```
.section {  
  display: flex;  
  overflow-x: auto;  
}
```



```
.section {  
  display: flex;  
  overflow-x: auto;  
}
```

main 1221 \* 2500



Elements

```
▼ <div class="wrapper">  
  <main class="main"></main>  
  <aside class="sidebar"></aside>  
</div>
```

Styles

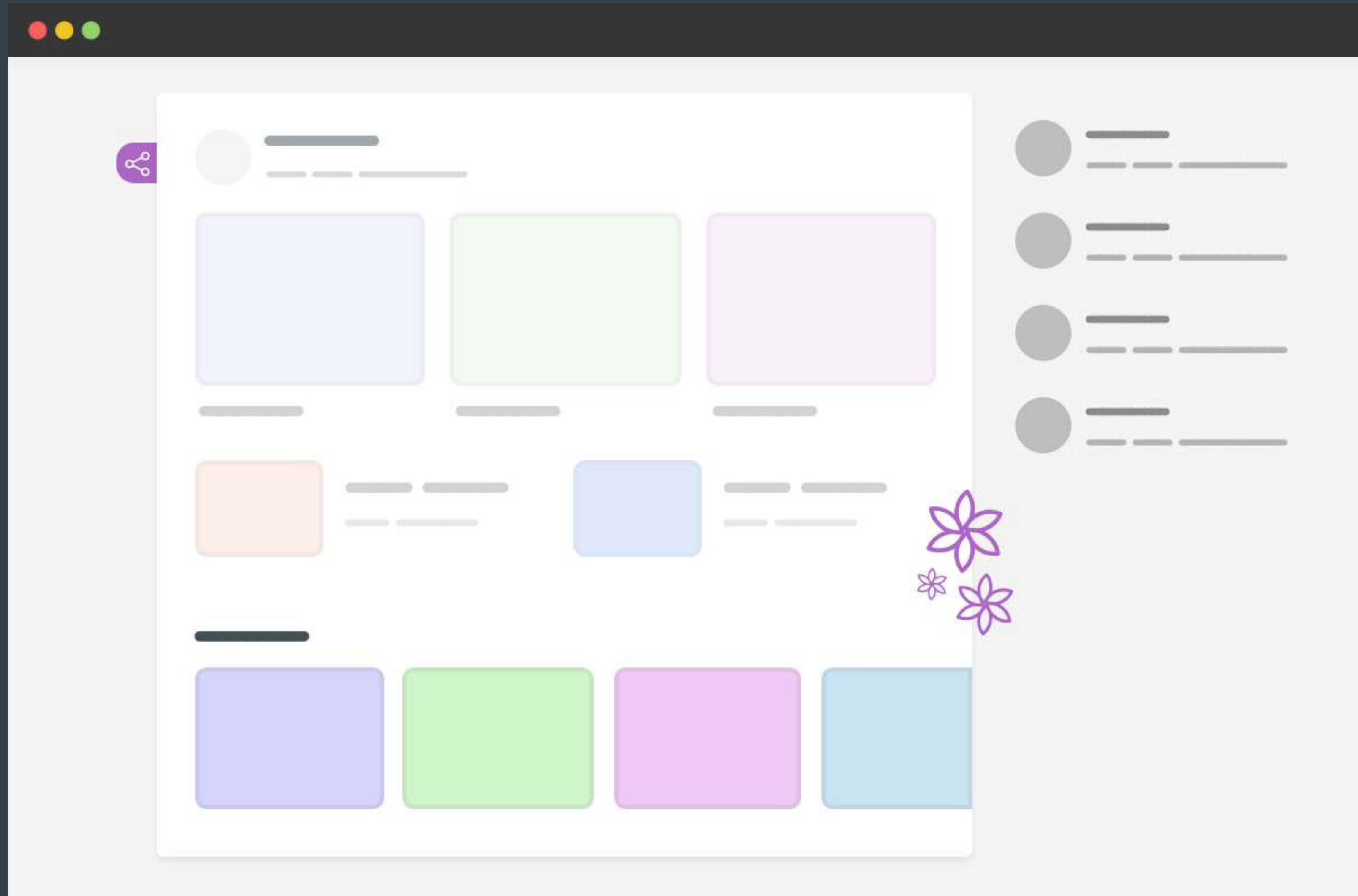
```
filter  
  
.main {
```

**On the parent level:**

- Replace 1fr with `minmax(0, 1fr)`

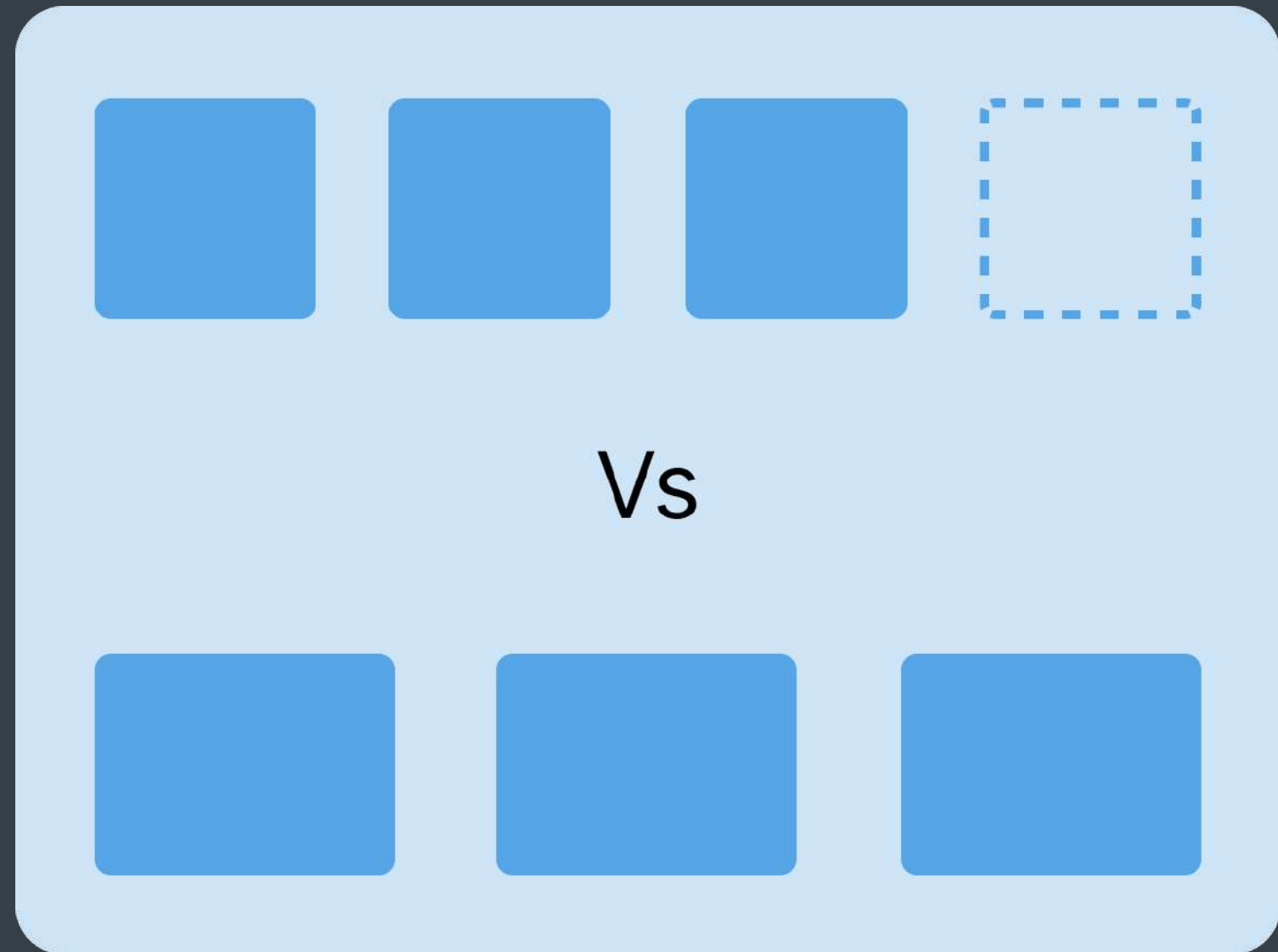
**On the grid item level:**

- Set `min-width: 0` on the grid item
- Set `overflow: hidden`



A blue-bordered interface element. The main content area is white and contains seven orange squares arranged horizontally. To the right of this area is a vertical label 'A' above the text 'Resize me'. At the bottom left, there is a checkbox labeled 'Toggle Defensive'. A mouse cursor is visible at the bottom center of the interface.

Toggle Defensive



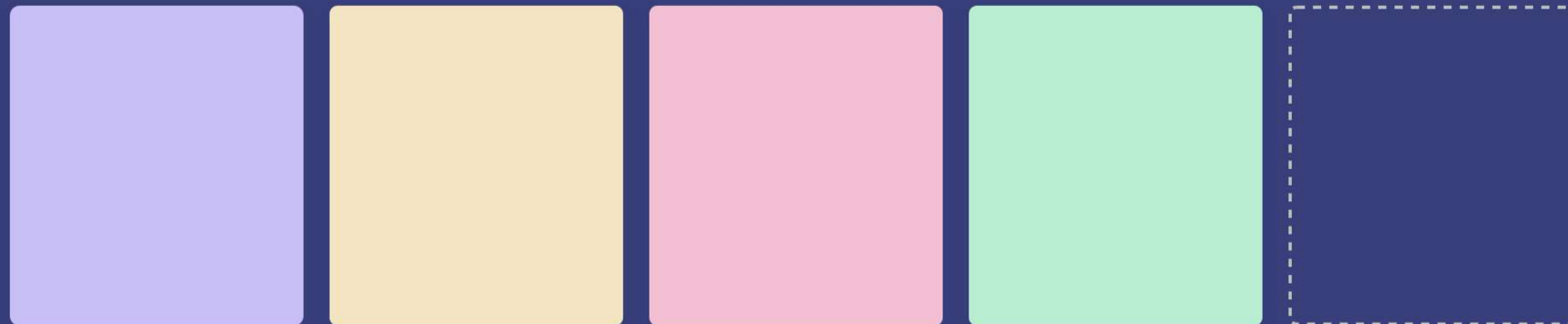
Defensive Tips

Auto-fit Vs Auto-fill

auto-fill

```
repeat(auto-fill, minmax(200px, 1fr));
```

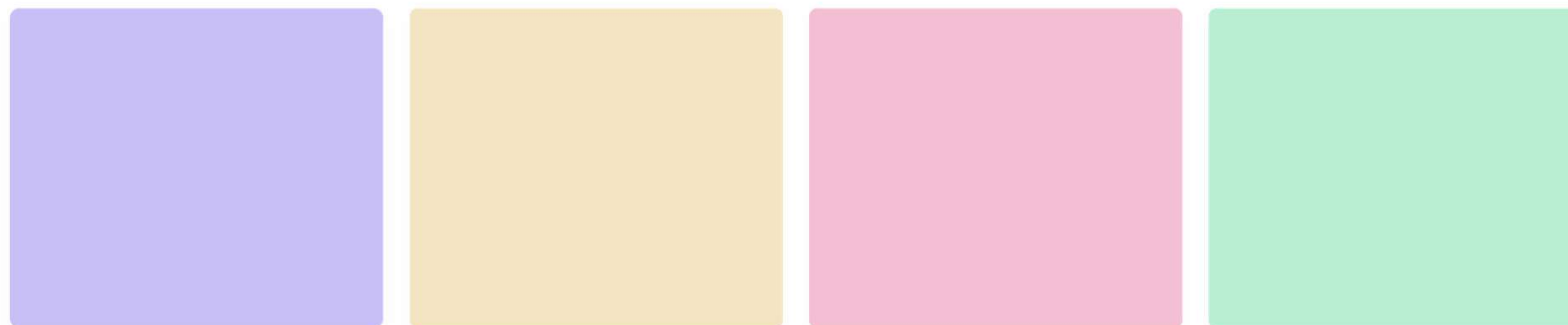
Don't auto expand the cols when more space is available



auto-fit

```
repeat(auto-fit, minmax(200px, 1fr));
```

Expand the cols when more space is available

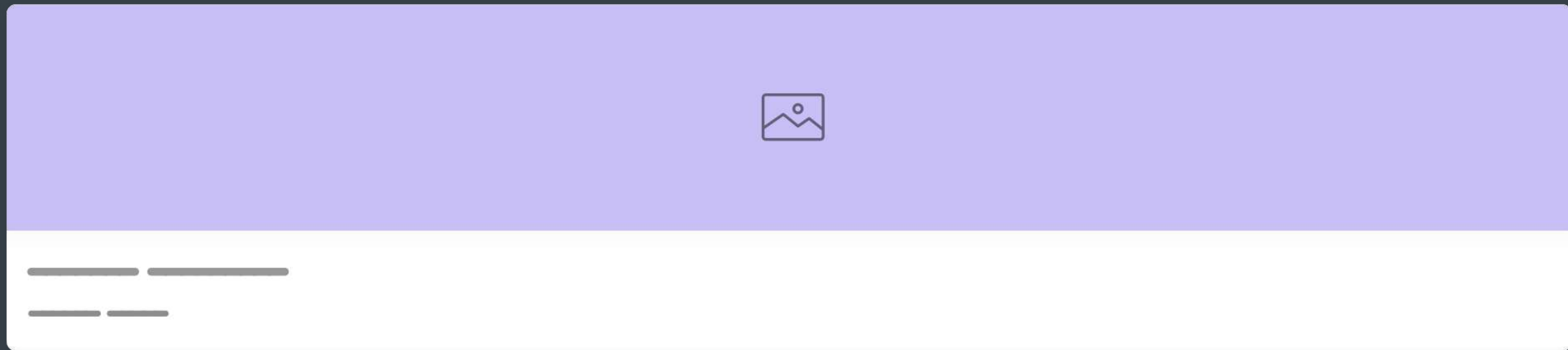


```
.wrapper {  
  display: grid;  
  grid-template-columns: repeat(auto-fit, minmax(250px, 1fr));  
  grid-gap: 1rem;  
}
```

Four items



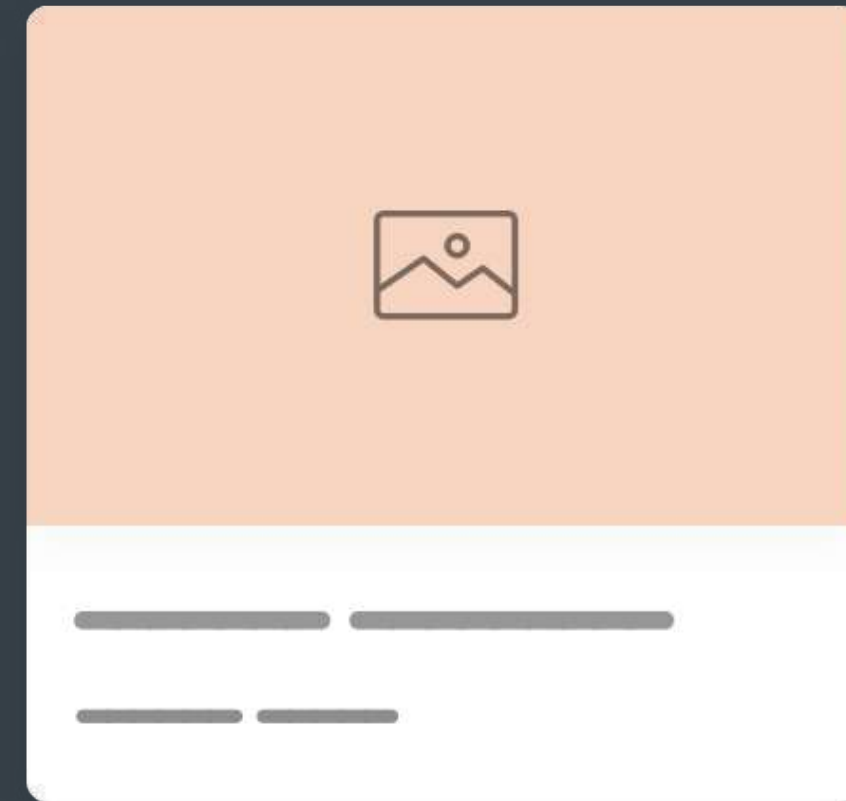
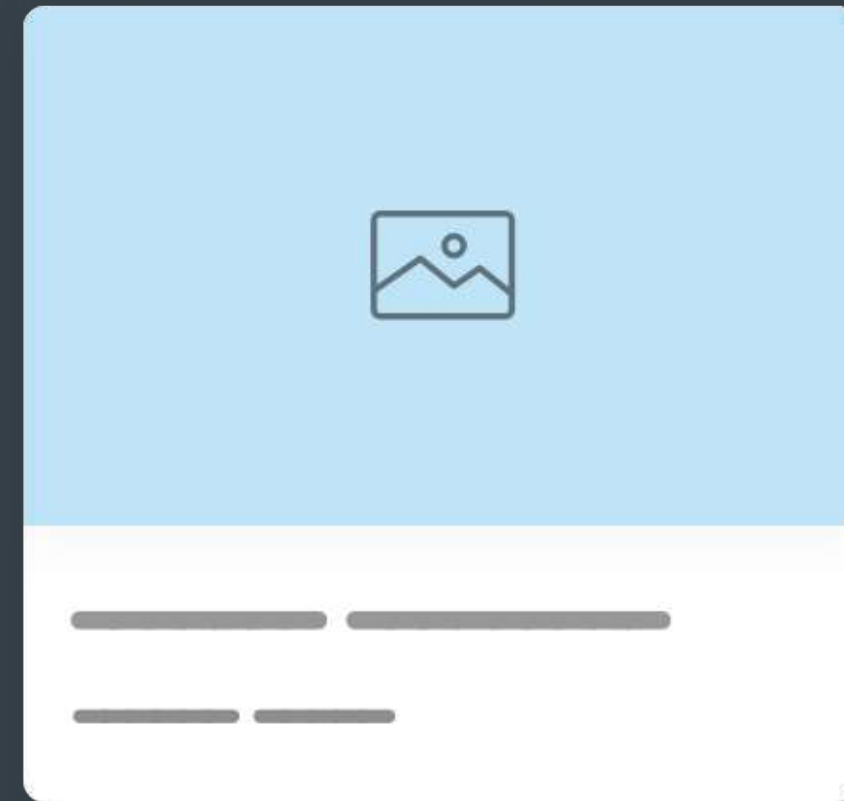
One item



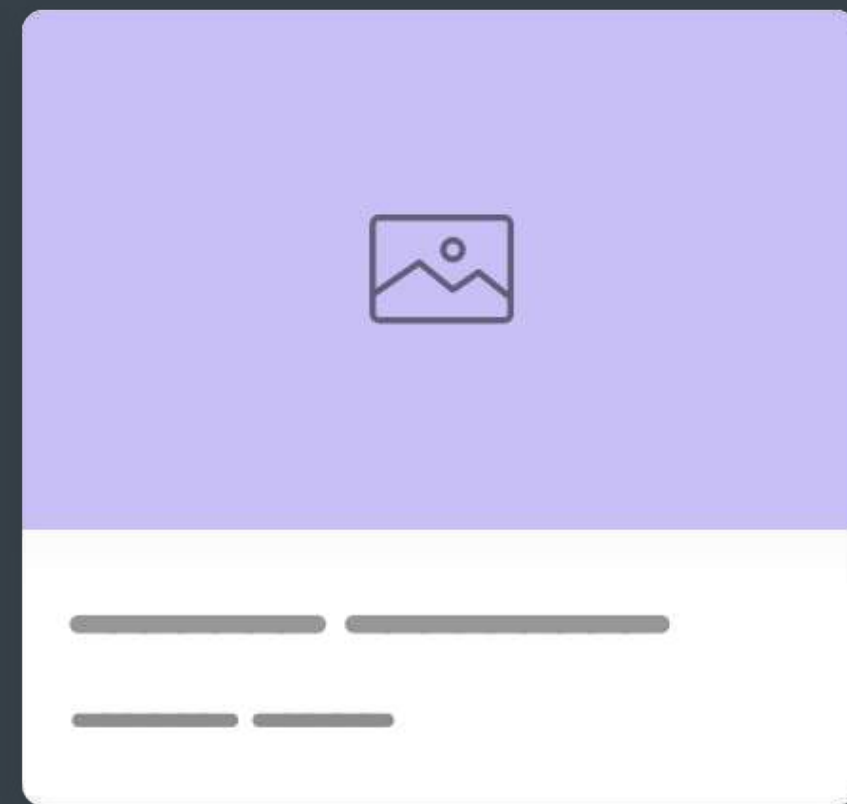


```
.wrapper {  
  display: grid;  
  grid-template-columns: repeat(auto-fill, minmax(250px, 1fr));  
  grid-gap: 1rem;  
}
```

Four items



One item

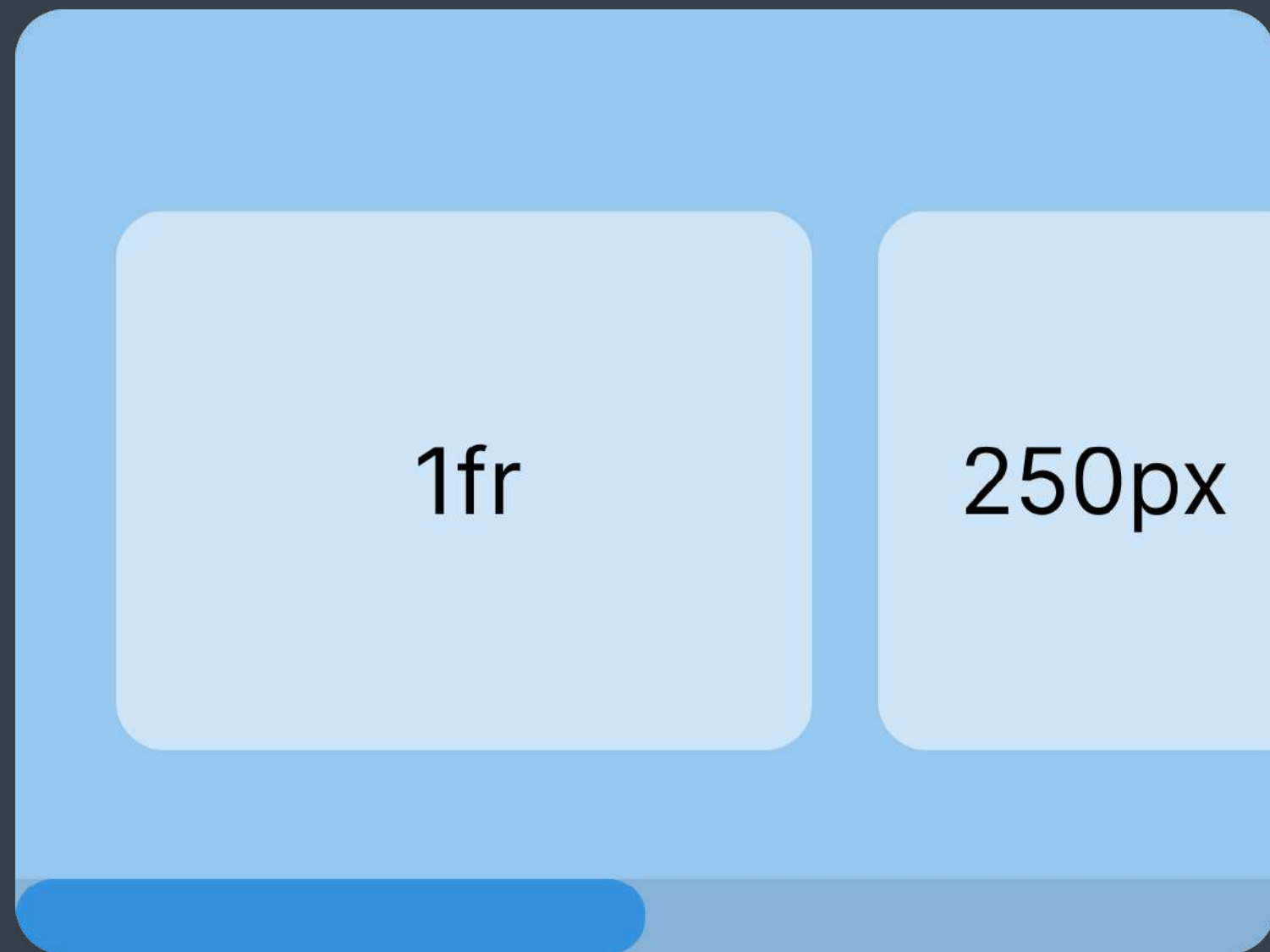


CSS is awesome

CSS is awesome

Resize me

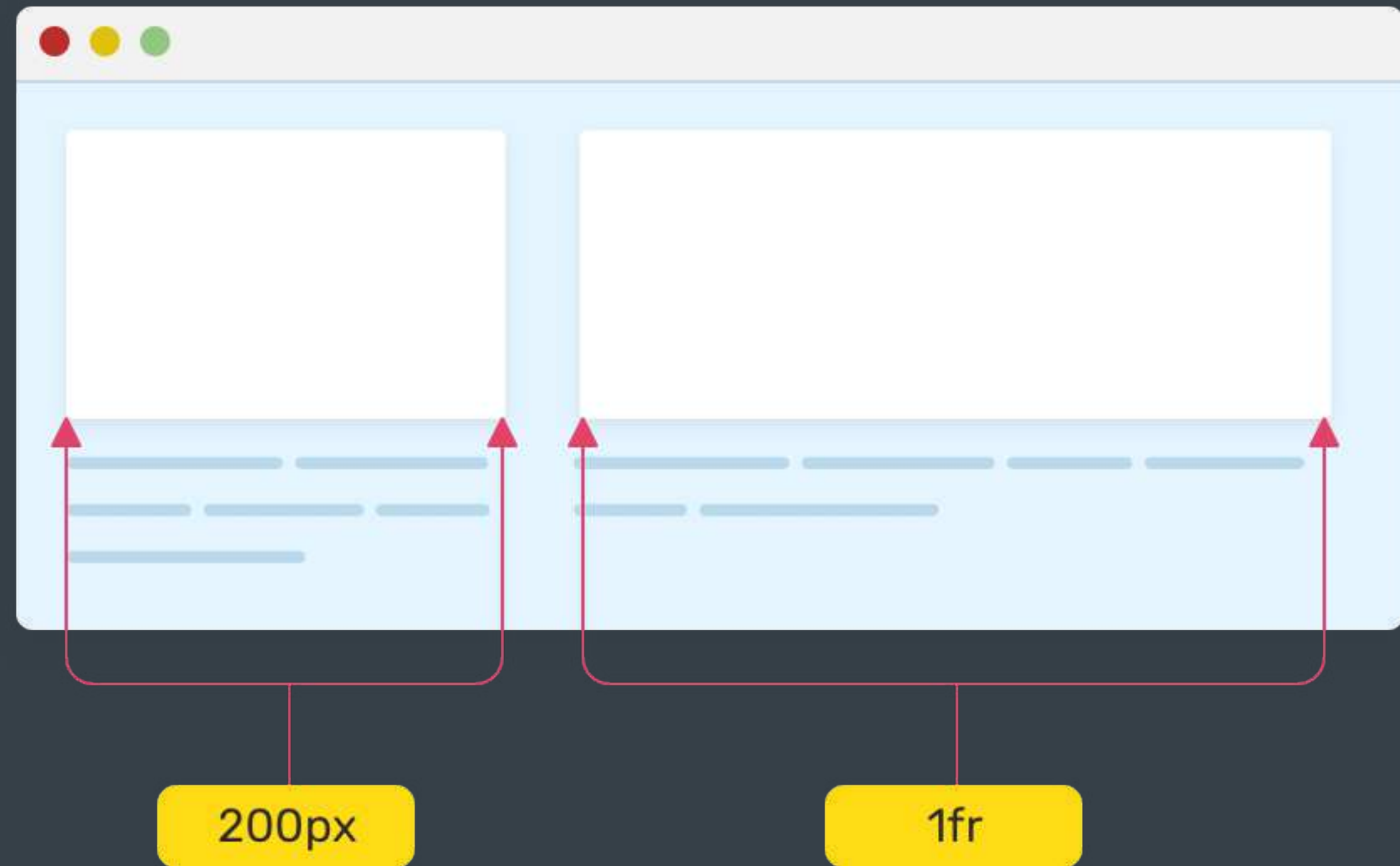
Toggle Defensive



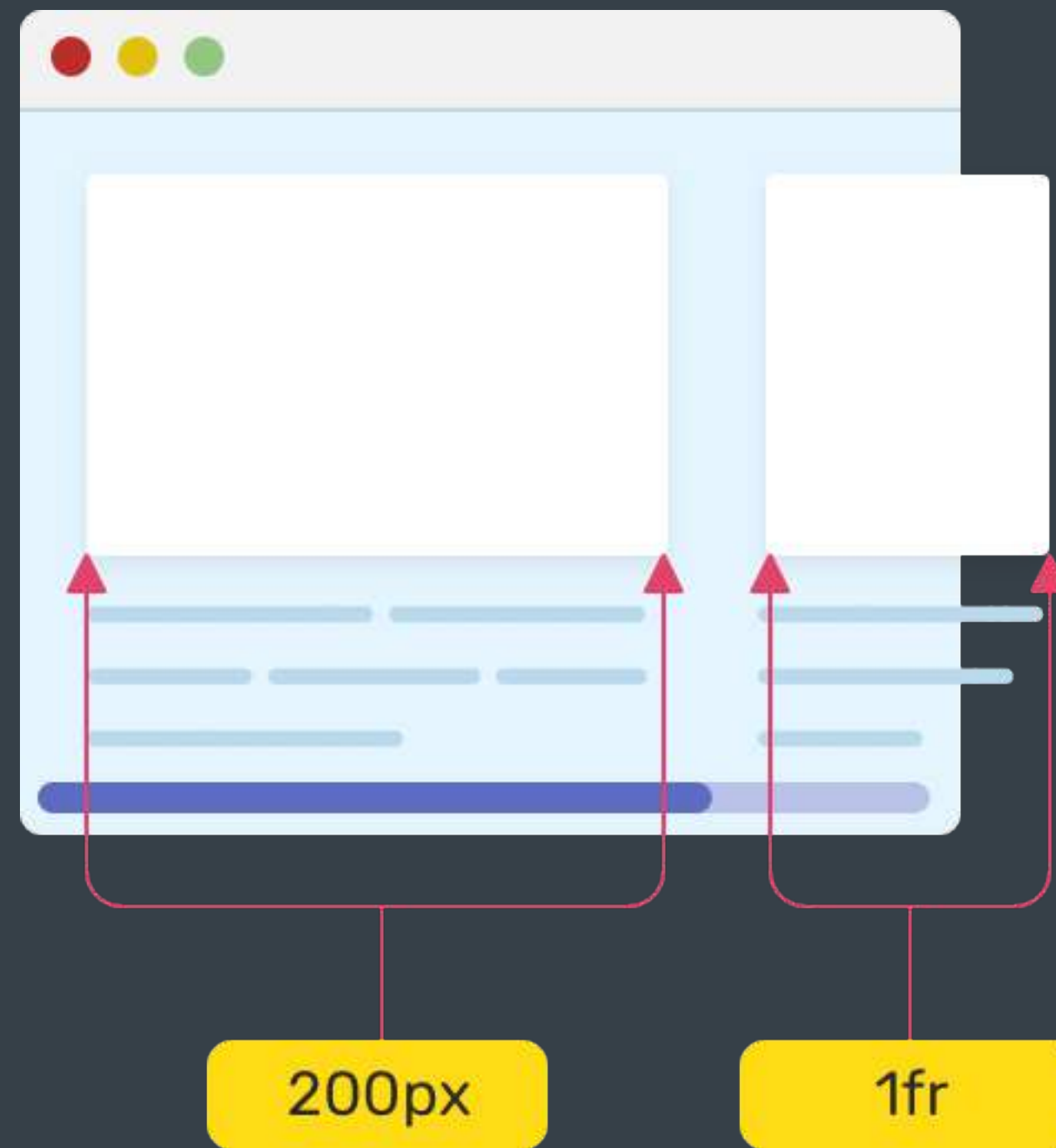
Defensive Tips

CSS grid fixed values

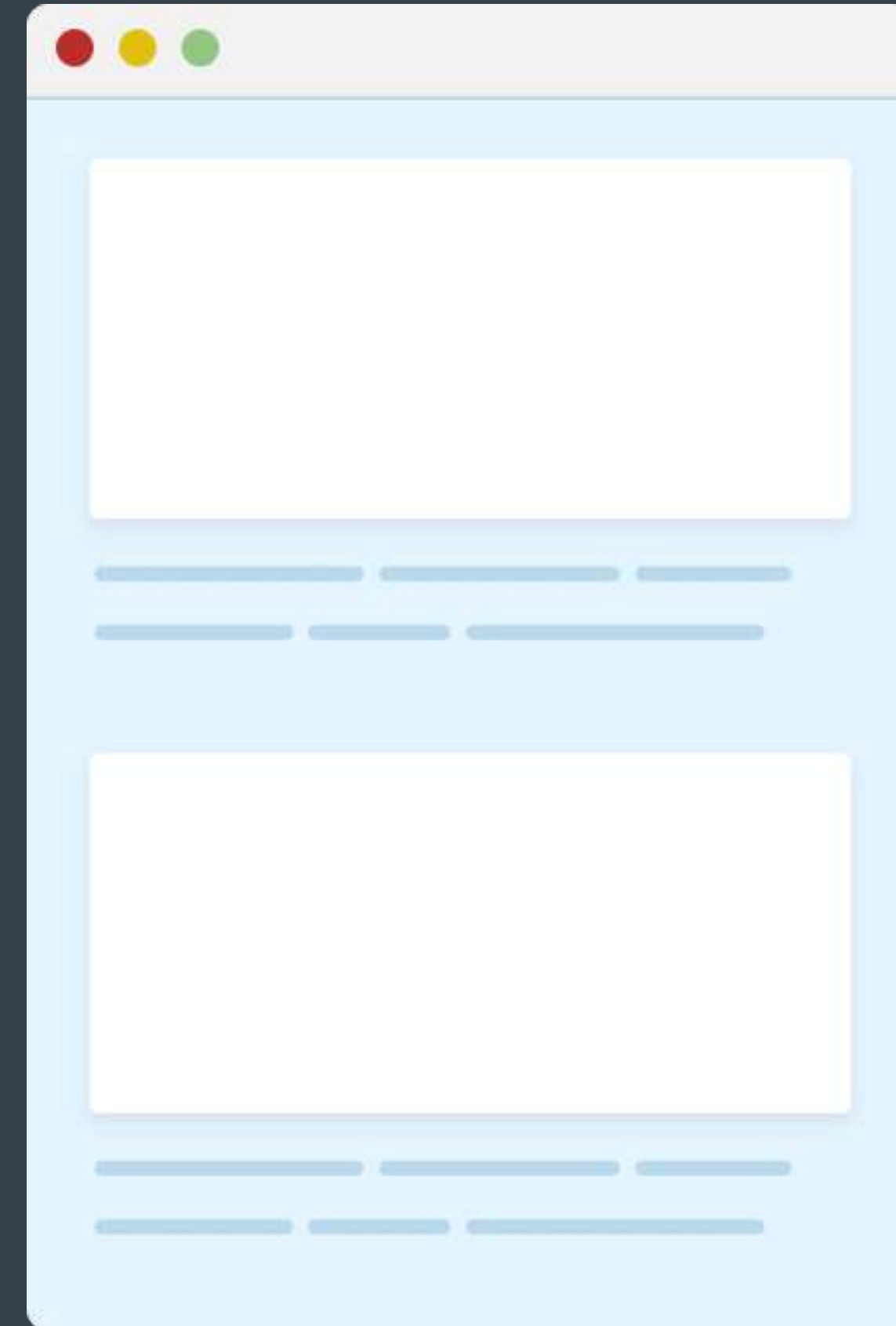
```
.wrapper {  
  display: grid;  
  grid-template-columns: 200px 1fr;  
  gap: 1rem;  
}
```



Be careful of fixed values in CSS grid. They will break on mobile

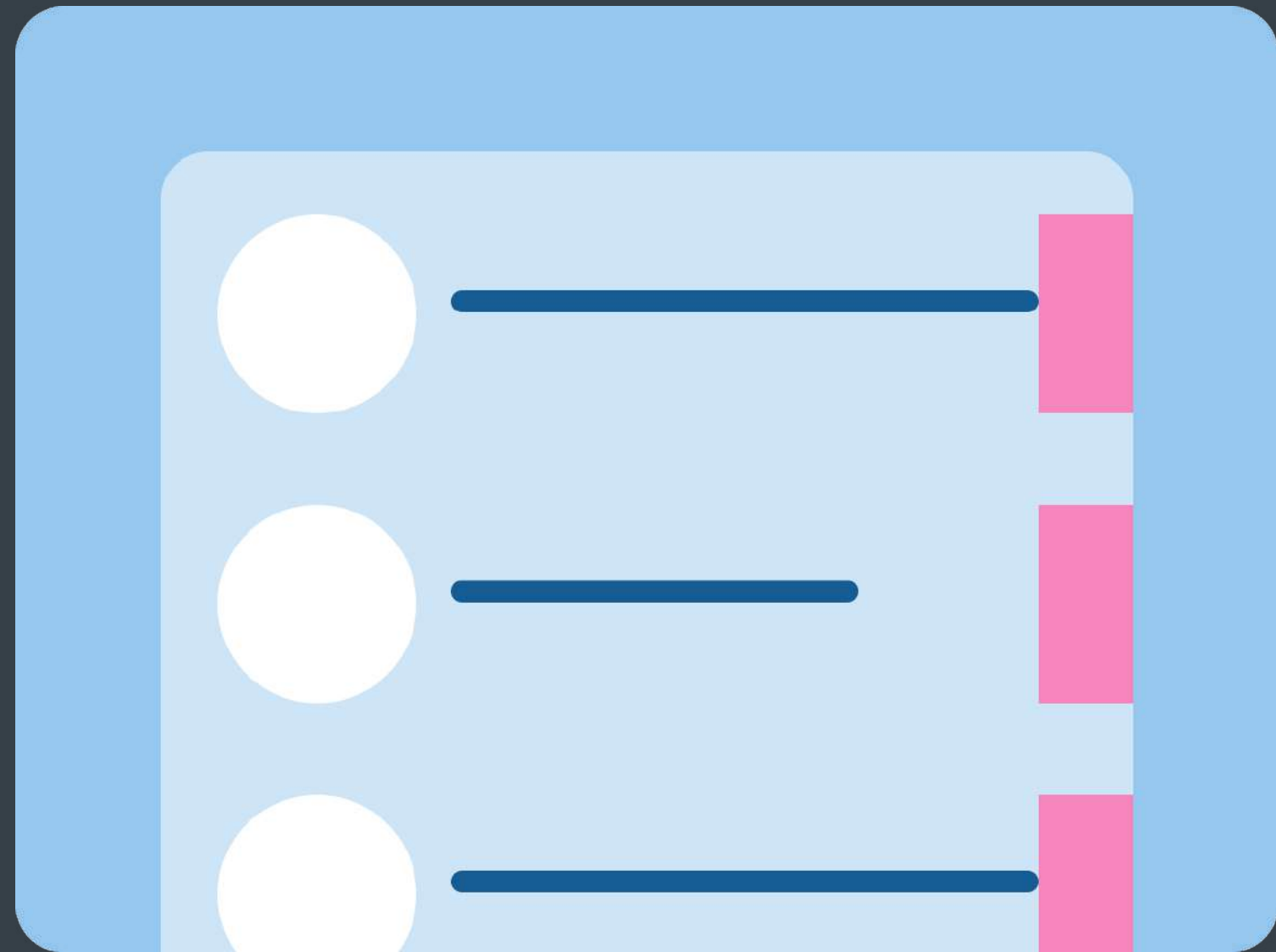


```
.wrapper {  
  display: grid;  
  grid-template-columns: 1fr;  
  gap: 1rem;  
}  
  
@media (min-width: 600px) {  
  .wrapper {  
    grid-template-columns: 250px 1fr;  
  }  
}
```



# Unknown Content

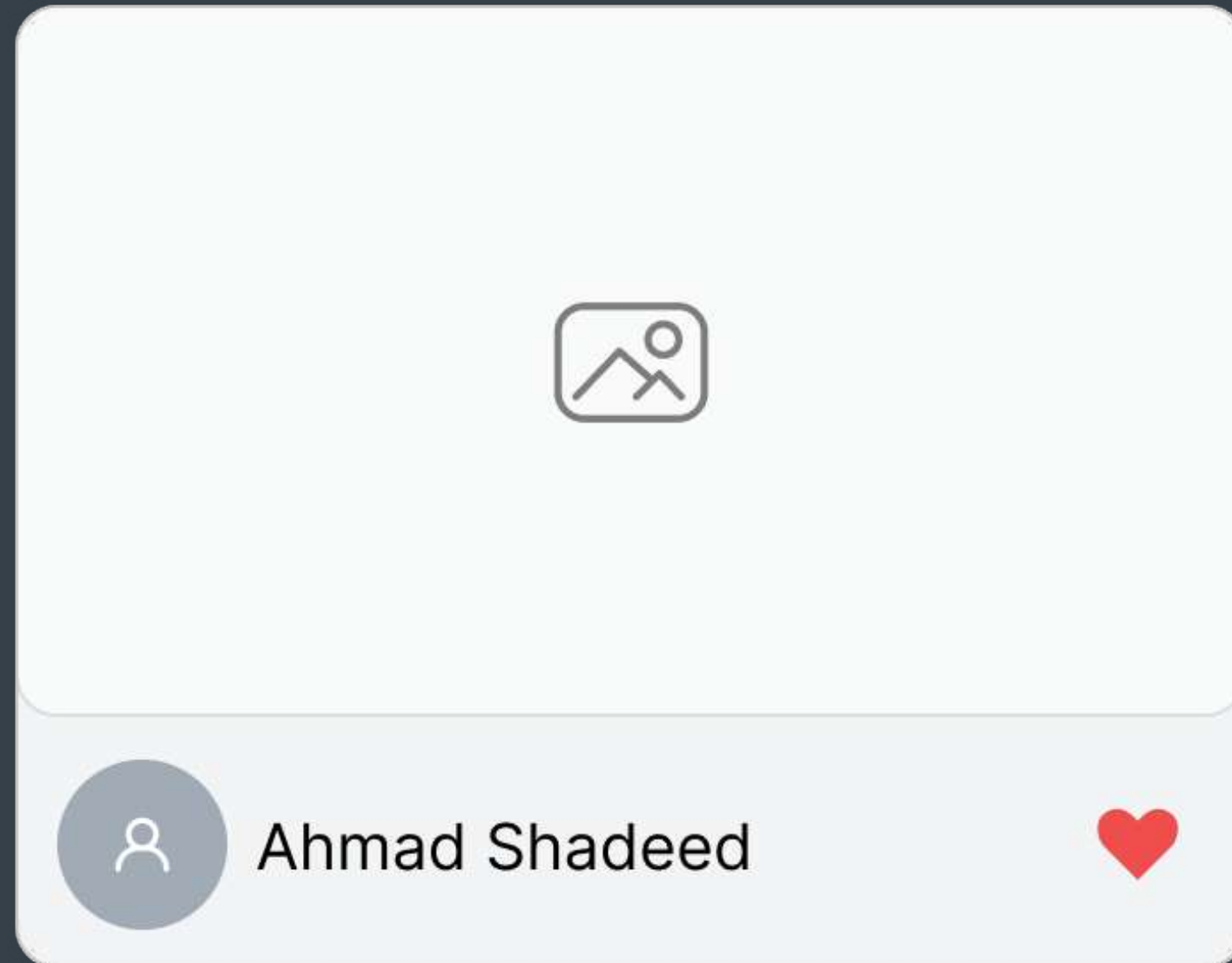




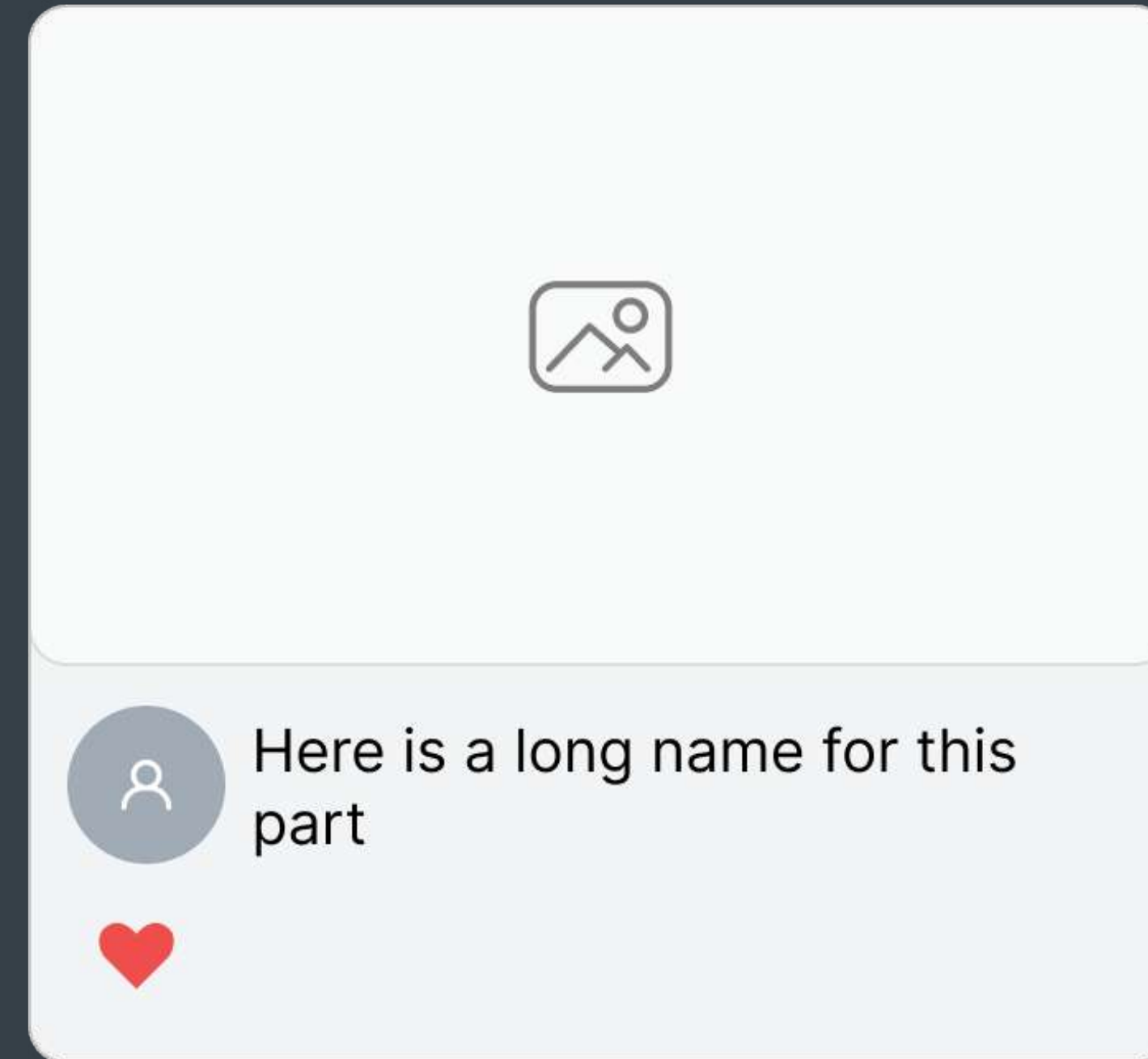
Defensive Tips

Long Content

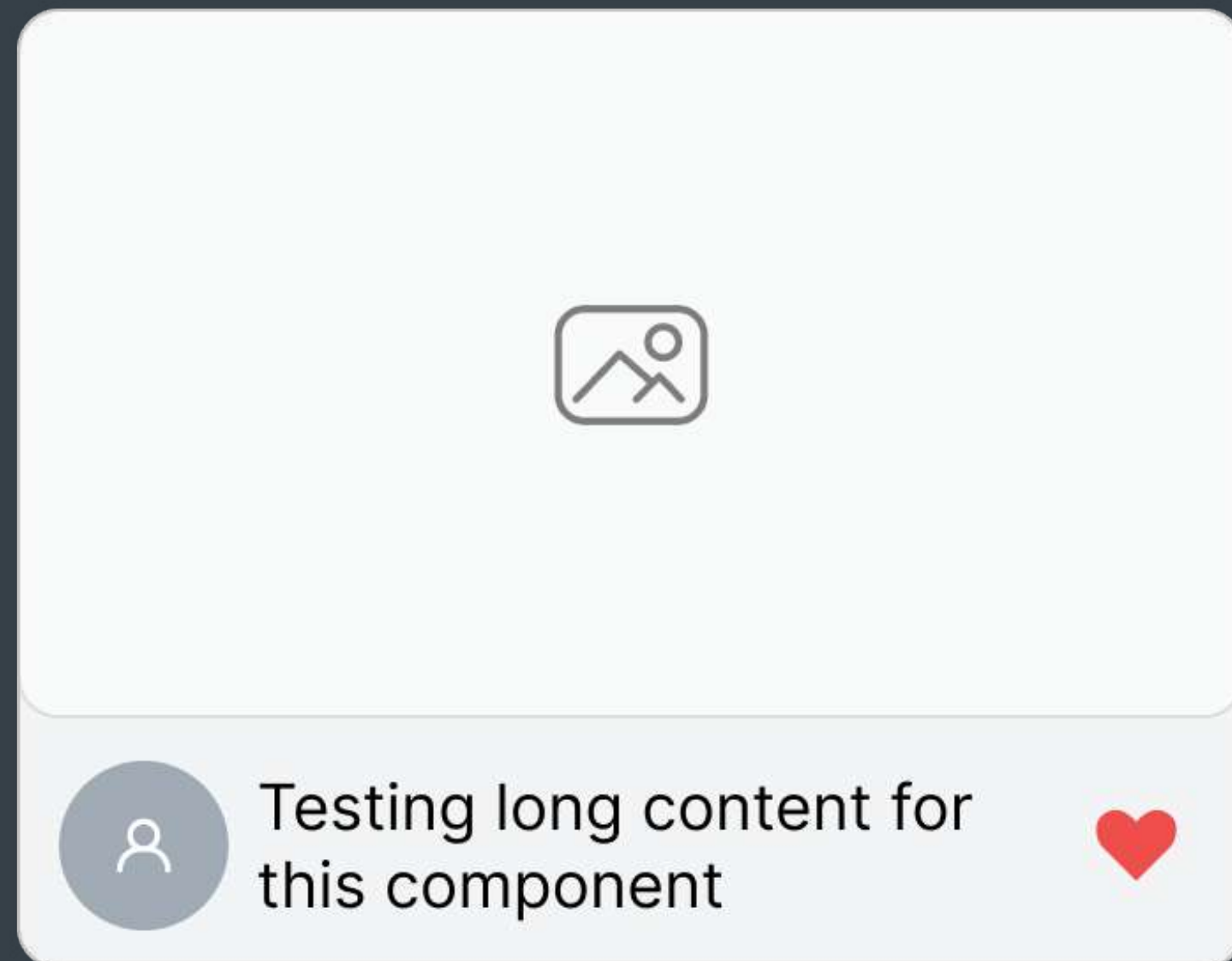
Default



Long content



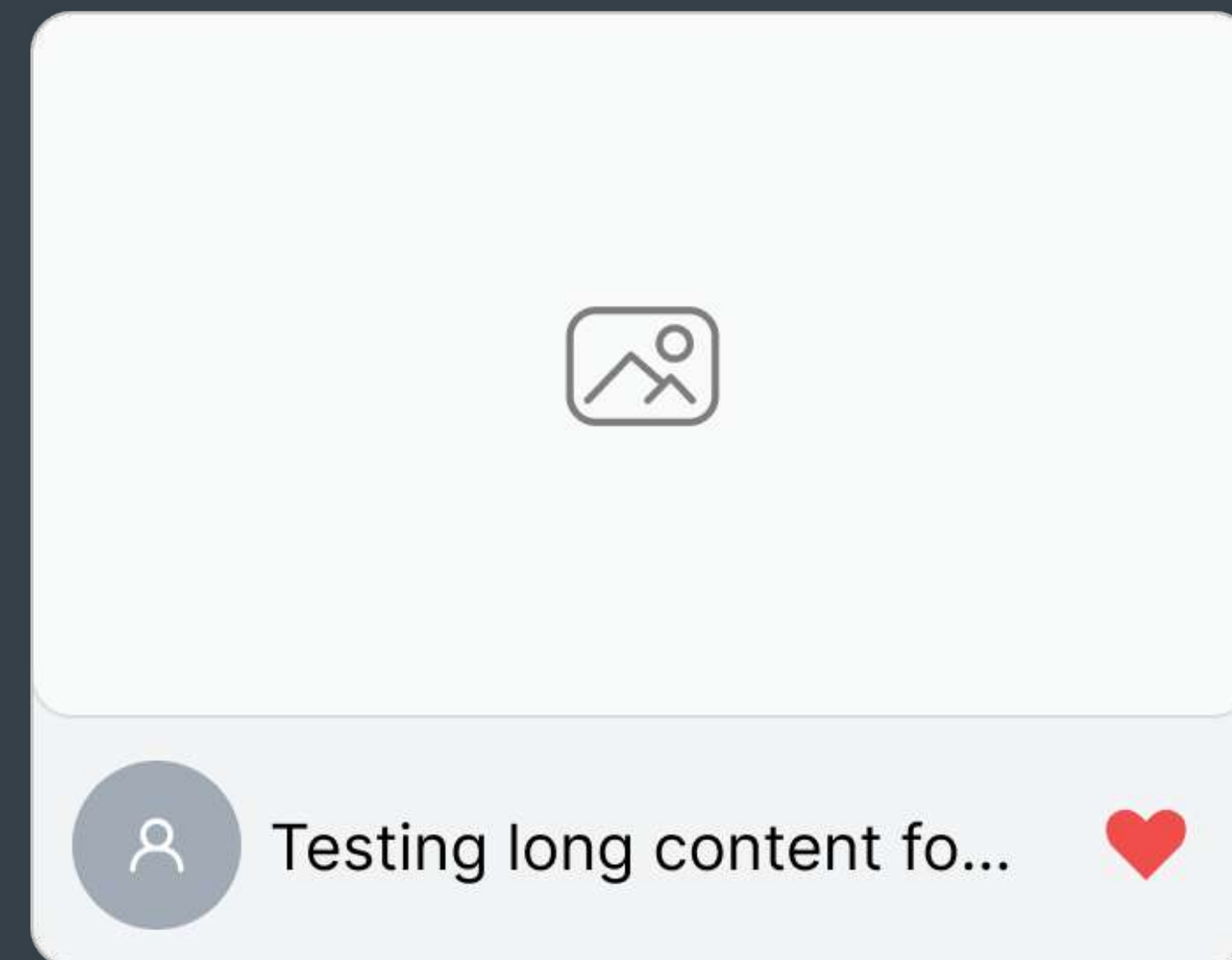
Wrap into a new line



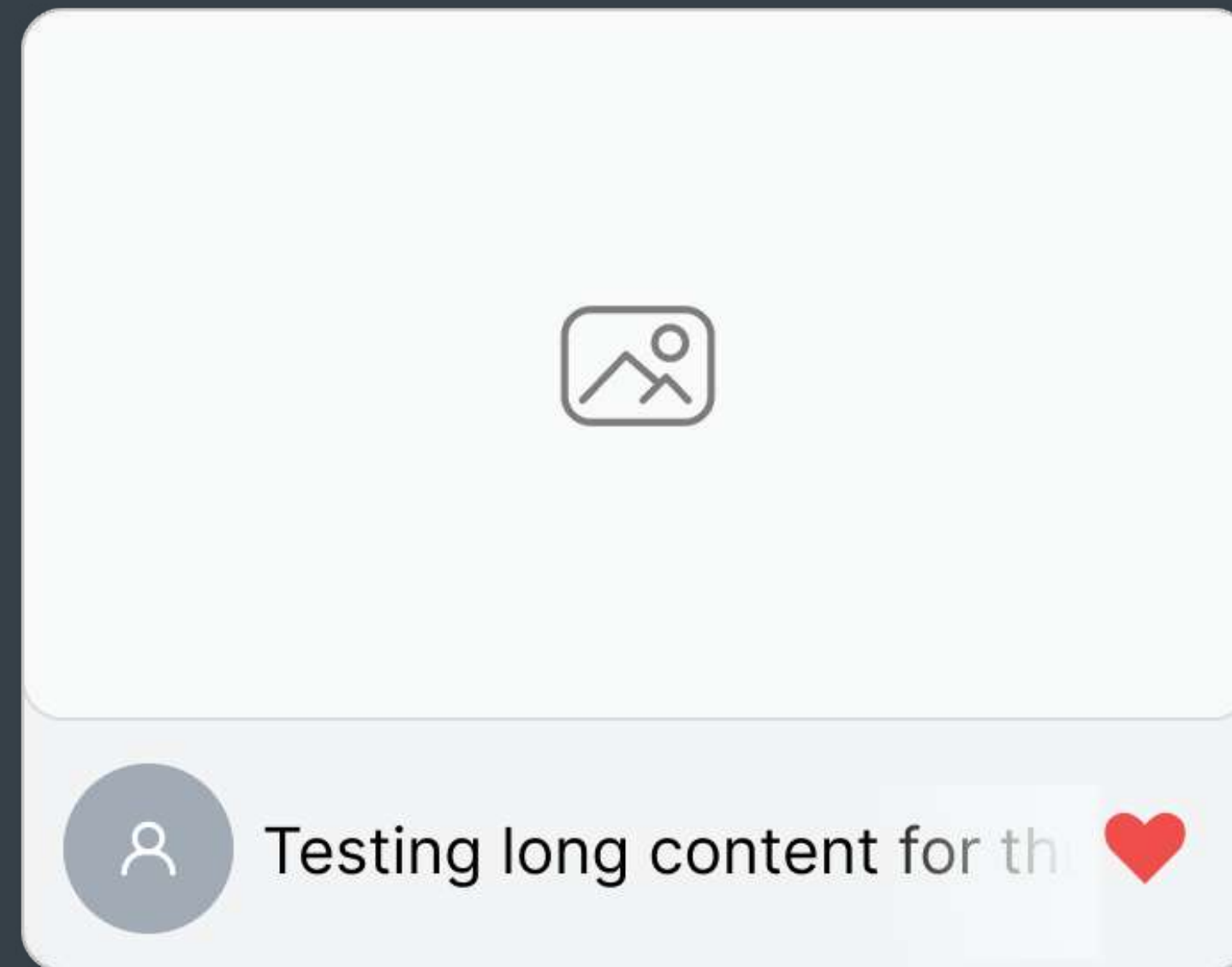
```
.person {  
  flex: 1;  
  min-width: 0;  
}
```

Truncated

```
.title {  
  white-space: nowrap;  
  overflow: hidden;  
  text-overflow: ellipsis;  
}
```



Hidden with a gradient,  
show full text on hover

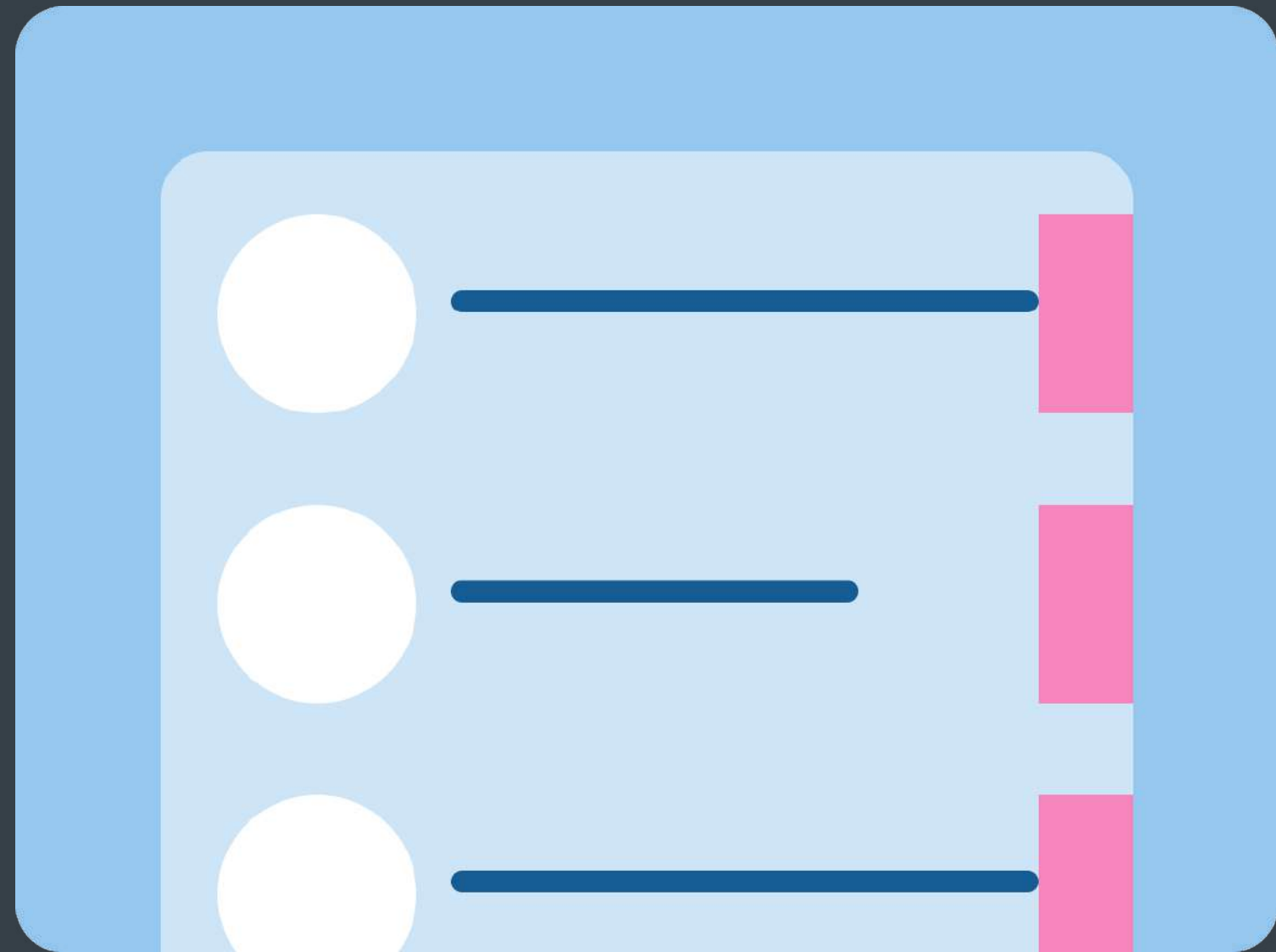


**Defensive CSS is a good way to write  
bullet-proof CSS!**

More

Resize me

Toggle Defensive



Defensive Tips

Component Spacing

## Trending Topics



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



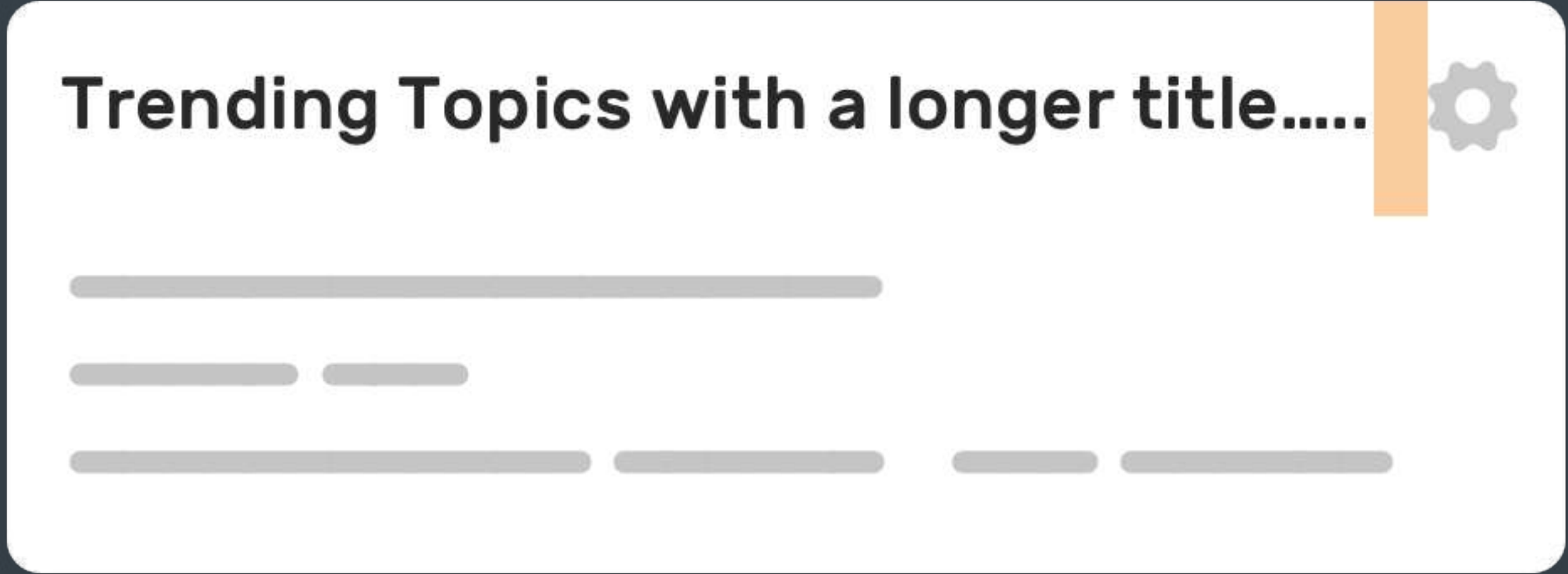
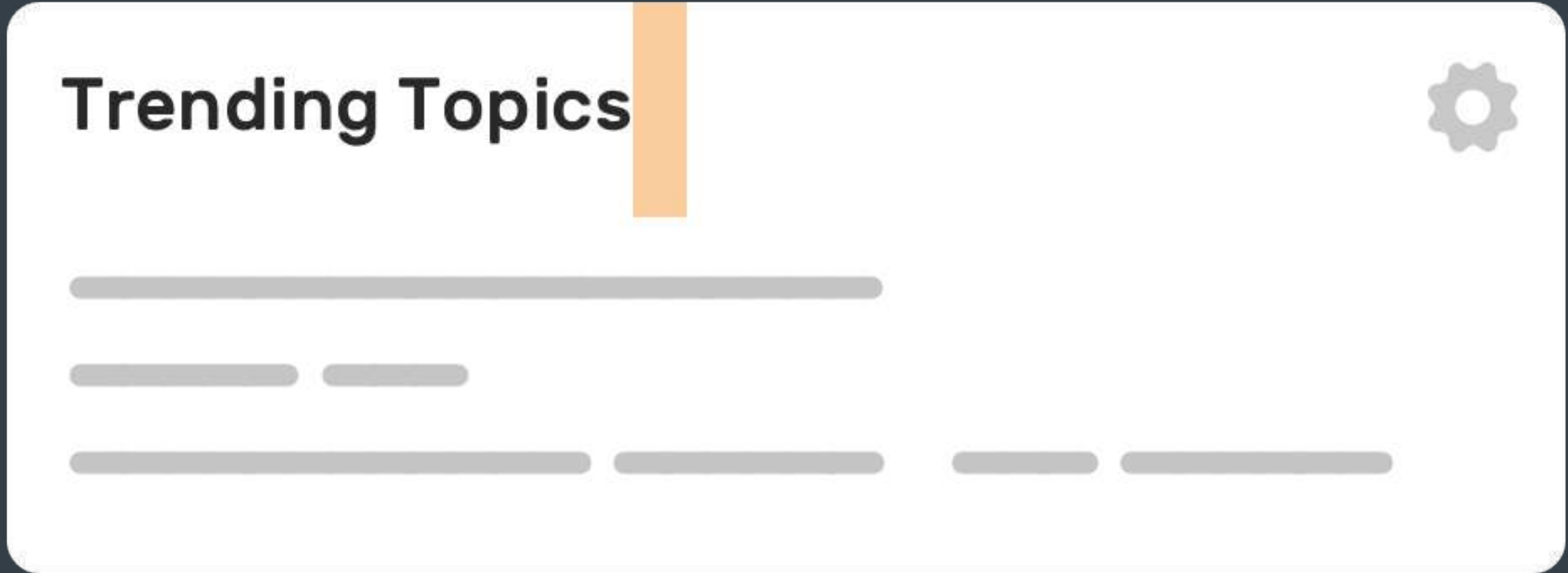
**A list of all the useful topics for TODAY** 

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

```
.section__title {  
  margin-right: 1rem;  
}
```



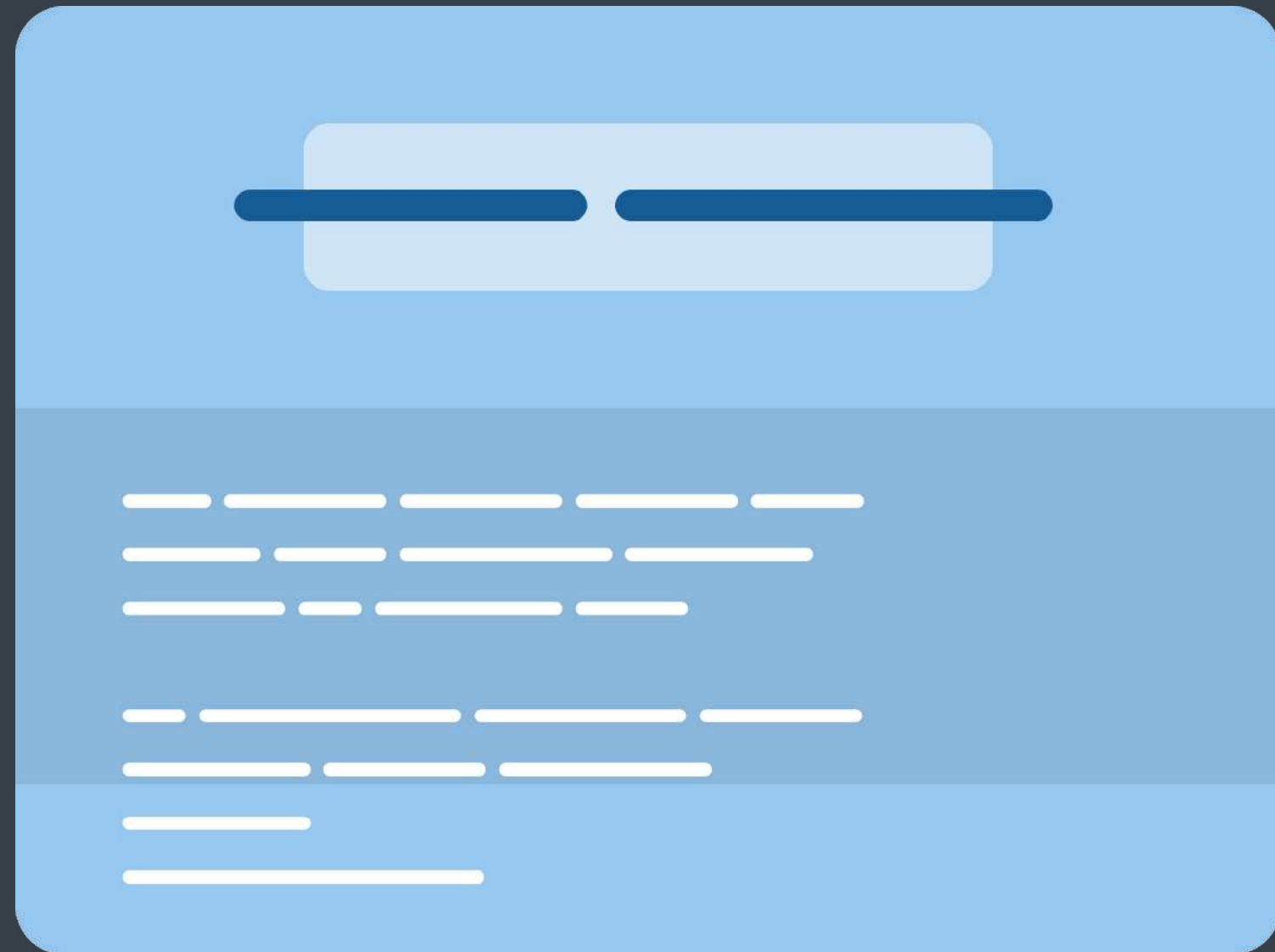
**Defensive CSS is a good way to write bullet-proof CSS!**

More

Resize me

Toggle Defensive





Defensive Tips

Fixed sizes

```
.hero {  
  height: 350px;  
}
```

## Defensive CSS

Lorem ipsum dolor sit amet consectetur  
adipiscing elit. Veritatis provident eius mollitia  
tempora amet. Illum nesciunt, facere labore  
ducimus accusamus, temporibus error perspiciatis  
commodi, quaerat nisi molestias delectus  
aspernatur corrupti.



```
.hero {  
  min-height: 350px;  
}
```

## Defensive CSS

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adipiscing elit. Veritatis provident eius mollitia  
tempora amet. Illum nesciunt, facere labore  
ducimus accusamus, temporibus error perspiciatis  
commodi, quaerat nisi molestias delectus  
aspernatur corrupti.



```
.button {  
  width: 6rem;  
}
```

Fixed width

Sign up

Subscribe Now

```
.button {  
  min-width: 6rem;  
  padding-inline: 1rem;  
}
```

Minimum width

Sign up

Subscribe Now



Lorem ipsum dolor sit amet consectetur adipisicing elit. Veritatis maxime aspernatur fugiat animi? Quae adipisci tenetur culpa quidem iste non quas, beatae, dolorem neque aut sunt magni minus, amet praesentium.

Resize me

Toggle Defensive



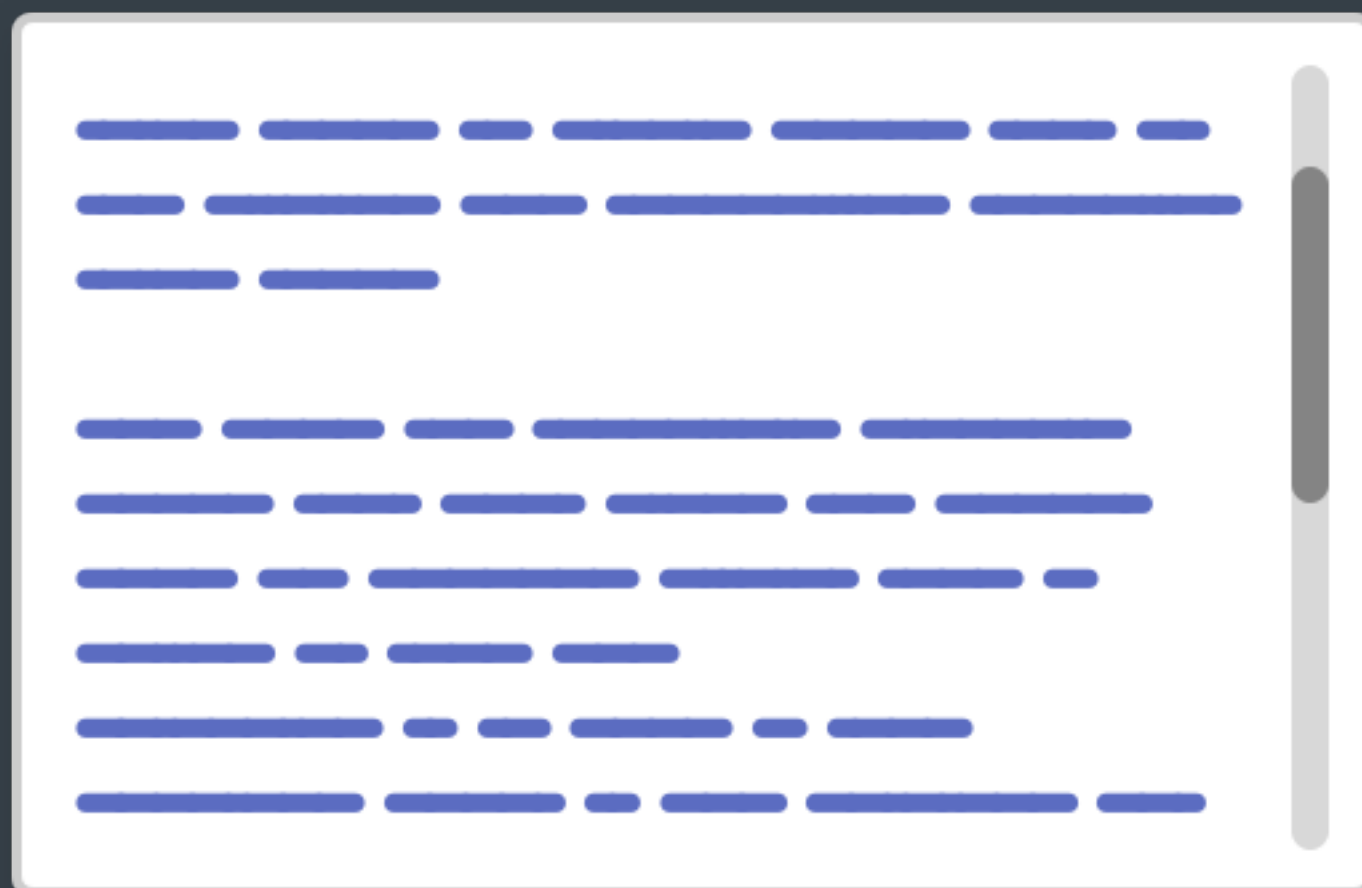
# Scrollbars



Defensive Tips

Scrollbars on demand

overflow-y: scroll



Content is long  
The scrollbar is visible



Content is short  
The scrollbar is visible

```
.element {  
    overflow-y: auto;  
}
```

overflow-y: auto



Content is long  
The scrollbar is visible



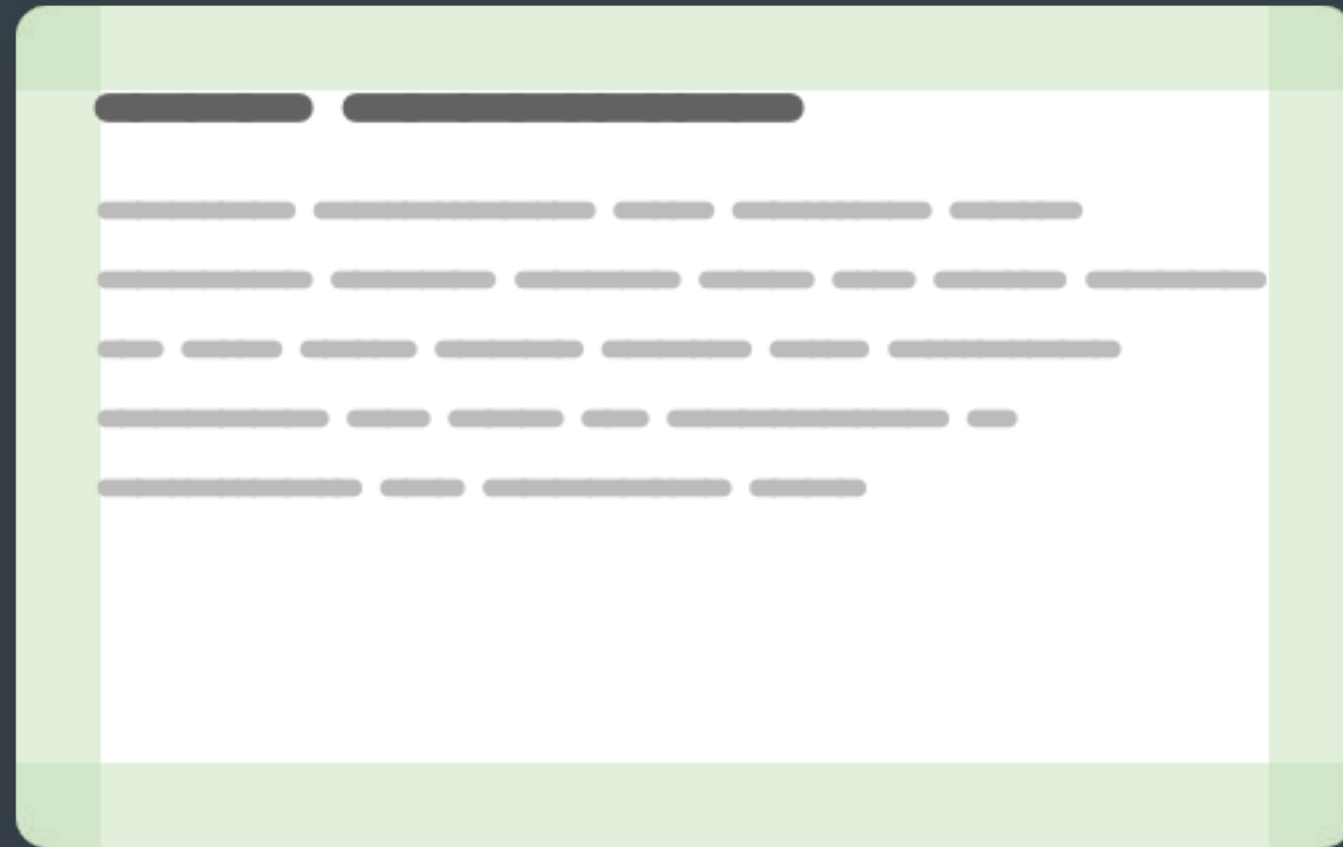
Content is short  
The scrollbar is **not** visible



Defensive Tips

Scrollbar gutter

Before



After

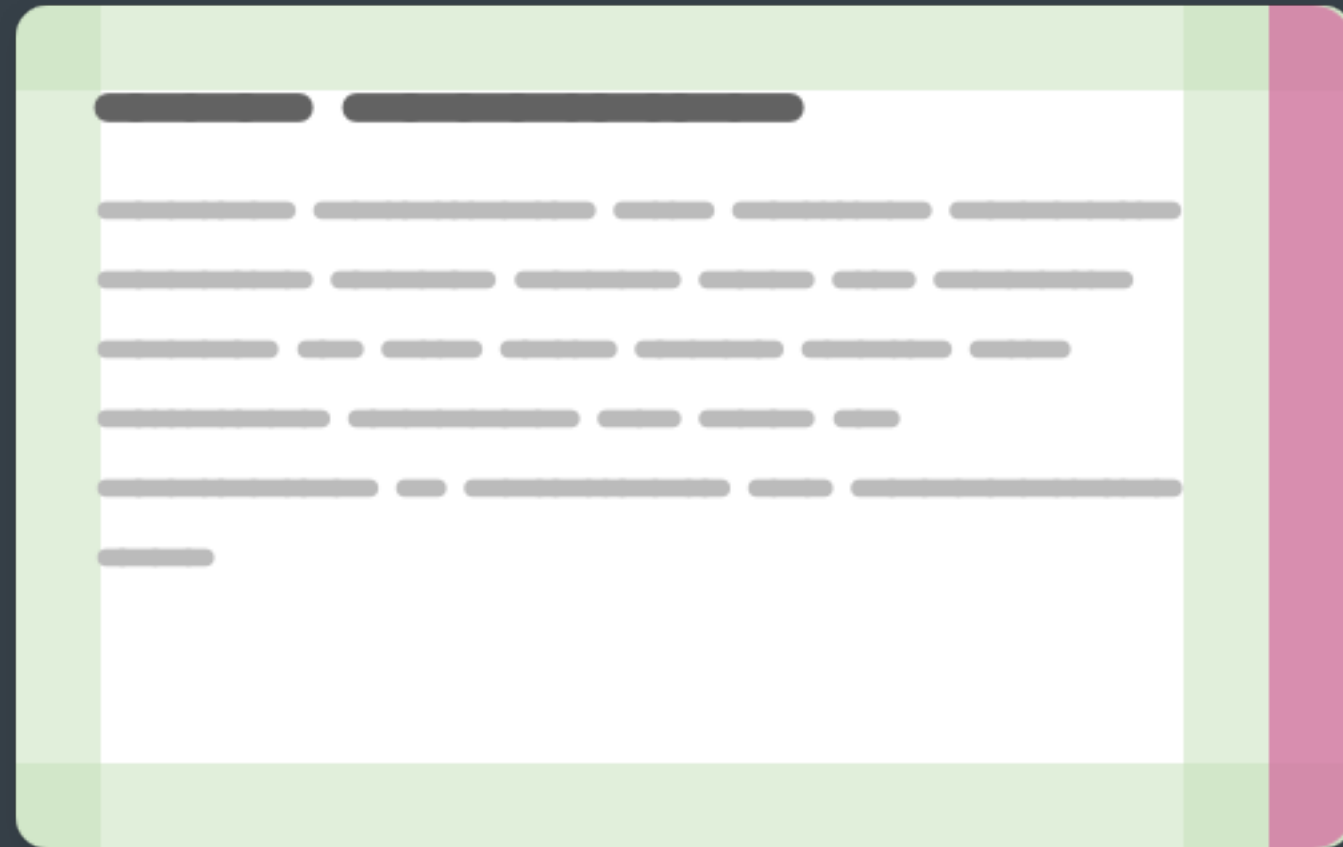


A scrollbar is shown because the content is longer



```
.element {  
    scrollbar-gutter: stable;  
    overflow-y: auto;  
}
```

Short content



■ Scrollbar space is reserved

Long content



Content grows. No layout changes

HTML

SCSS

JS

Result

EDIT ON  
CODEPEN

## scrollbar-gutter

Add content

Add gutter

Reset

16px padding

Gutter

Lorem ipsum dolor sit amet  
consectetur adipisicing elit. Aliquam,  
asperiores tempore debitis sunt  
porro.

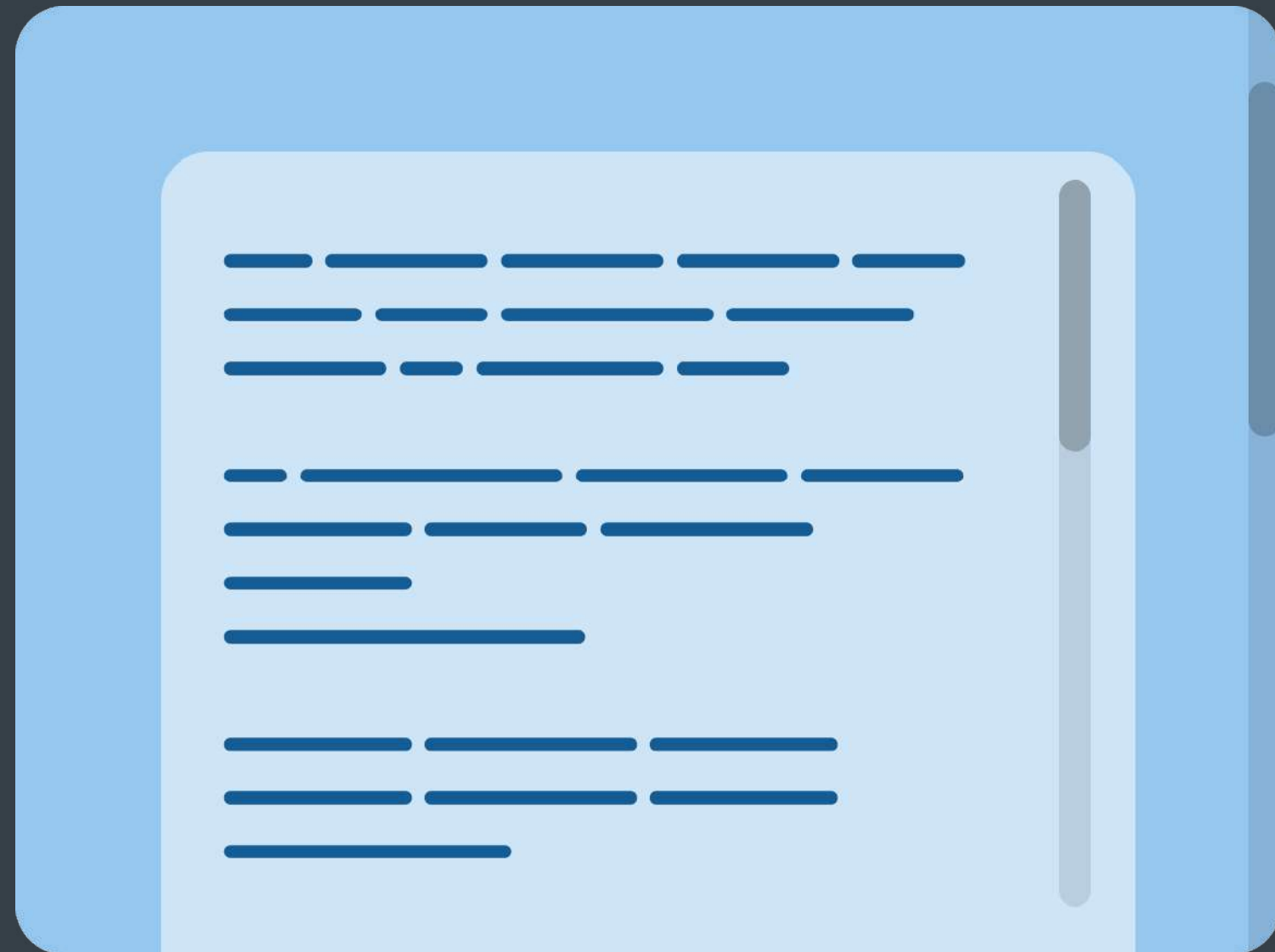
Resources

1x

0.5x

0.25x

Rerun



Defensive Tips

Scroll chaining

## overscroll-behavior: **auto**

When we reach the modal boundry, the scrolling will start on the body content



Body scrolls after modal content ends

```
.modal__body {  
  overscroll-behavior-y: contain;  
  overflow-y: auto;  
}
```

## overscroll-behavior: **contain**

- The scrolling is contained within the modal





Lorem ipsum, dolor sit amet  
aperiam sed ut soluta quia ni  
necessitatibus veritatis aut quia maiores. Enim.

Lorem ipsum dolor sit  
amet consectetur,  
adipiscing elit. Ratione  
non nostrum, ducimus  
velit excepturi dolor

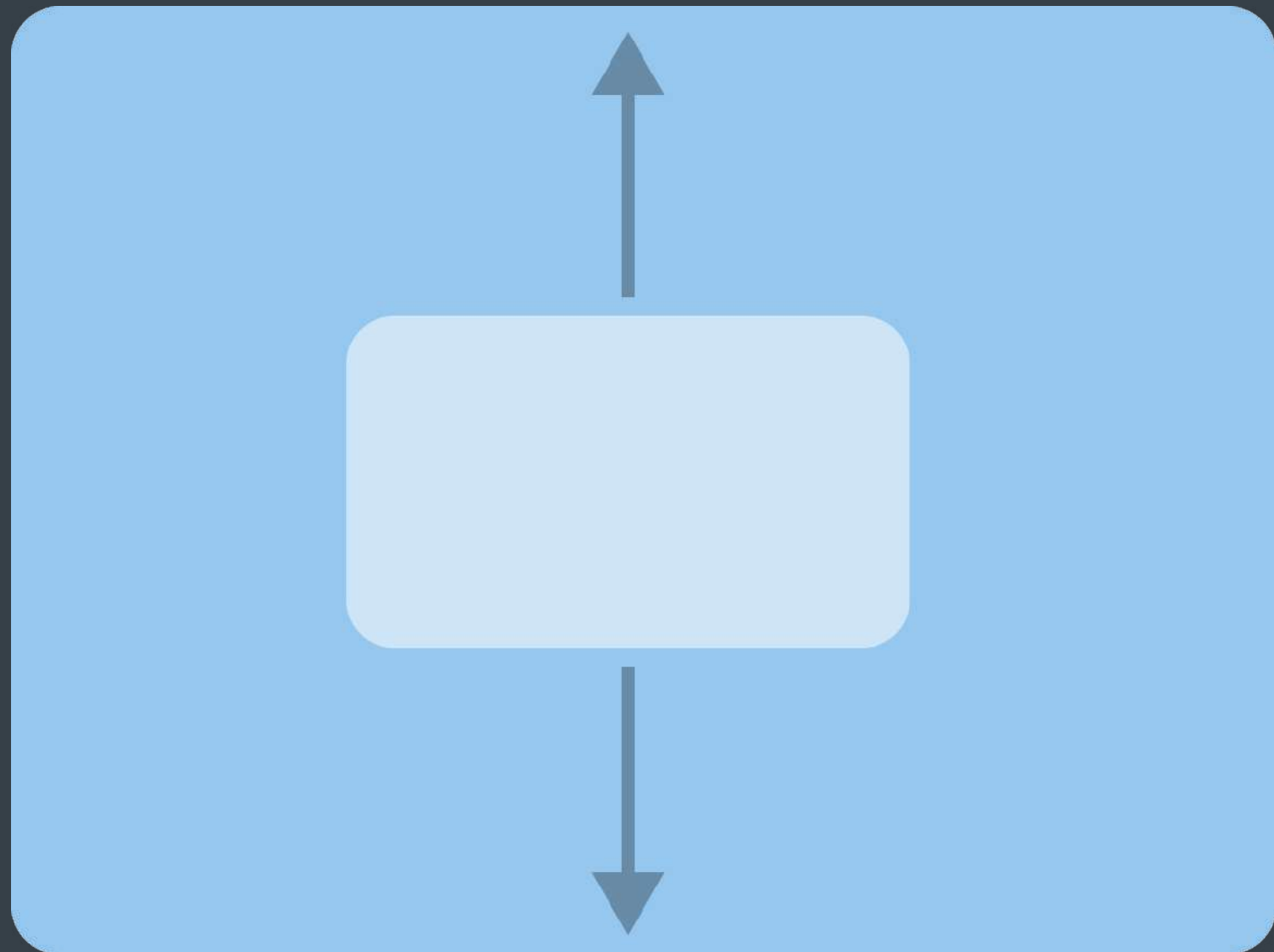
oremque harum est eum  
consectetur amet sapiente

## Title

Toggle Defensive



# Media Queries



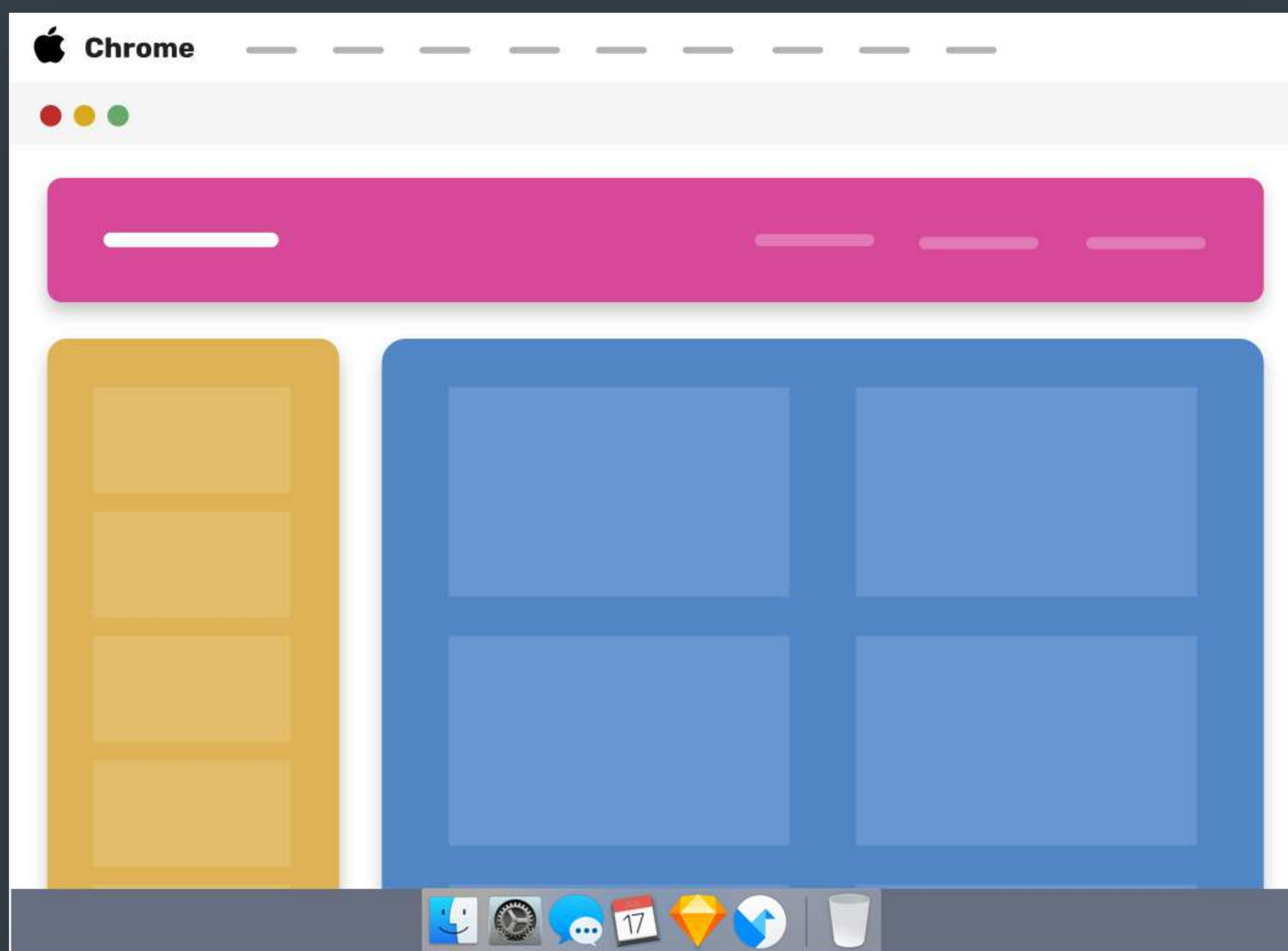
Defensive Tips

**Vertical media queries**

## **Two ways to test** vertical media queries

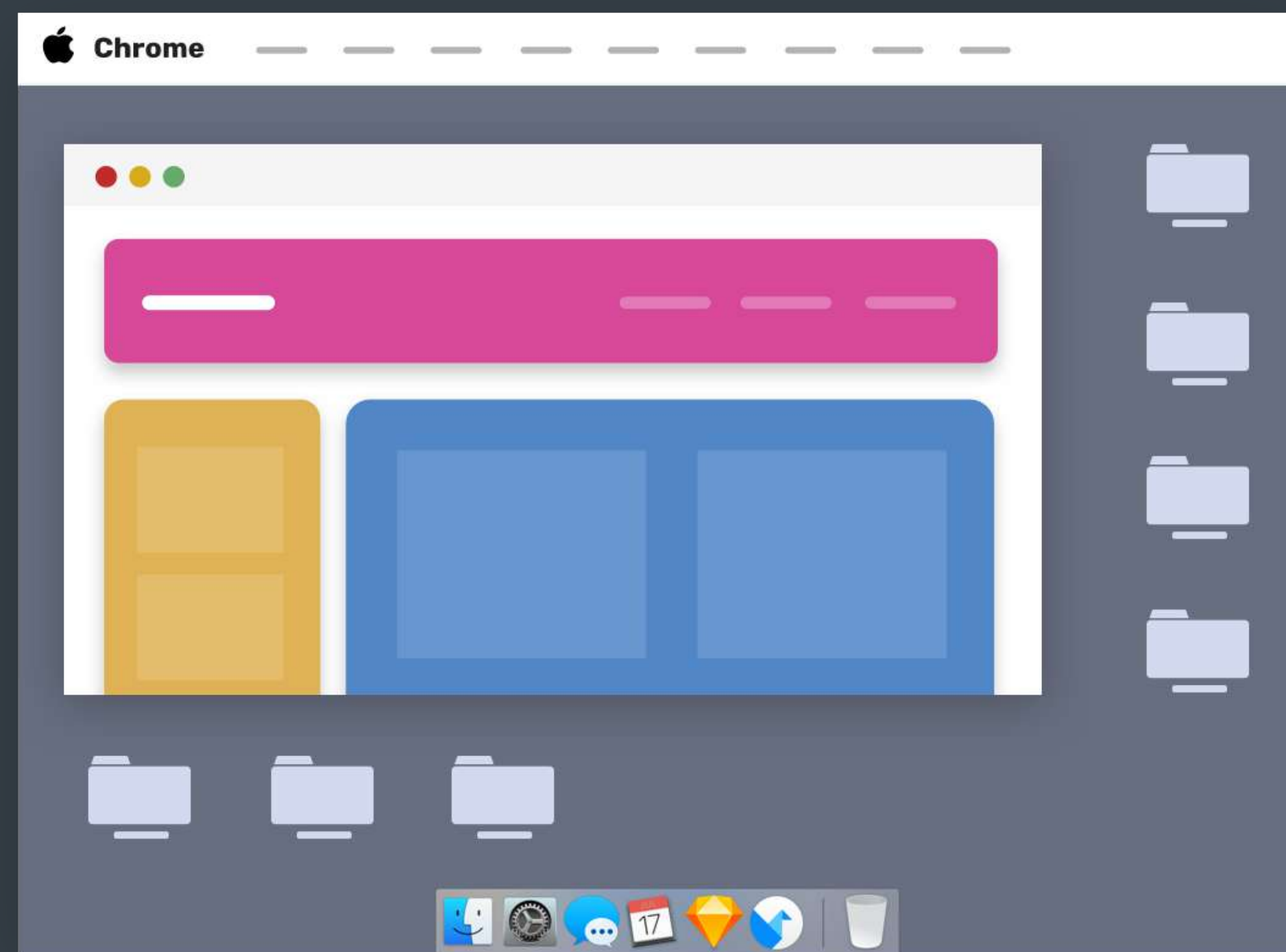
## Assumption

You assume that the user's browser is occupying the full width & height of the screen

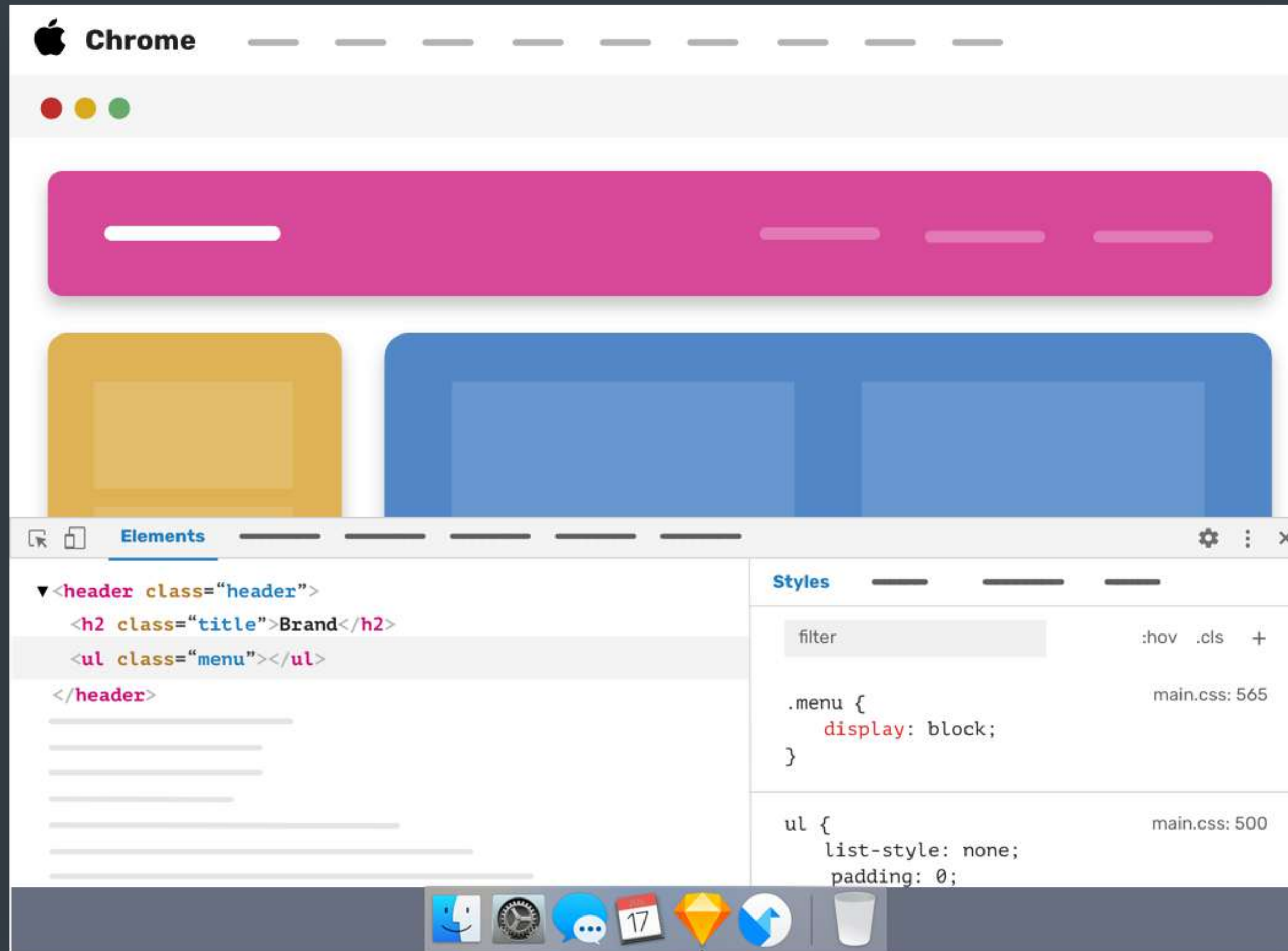


## Reality

But in reality, the browser window is resized



Defensive tips / Vertical media queries



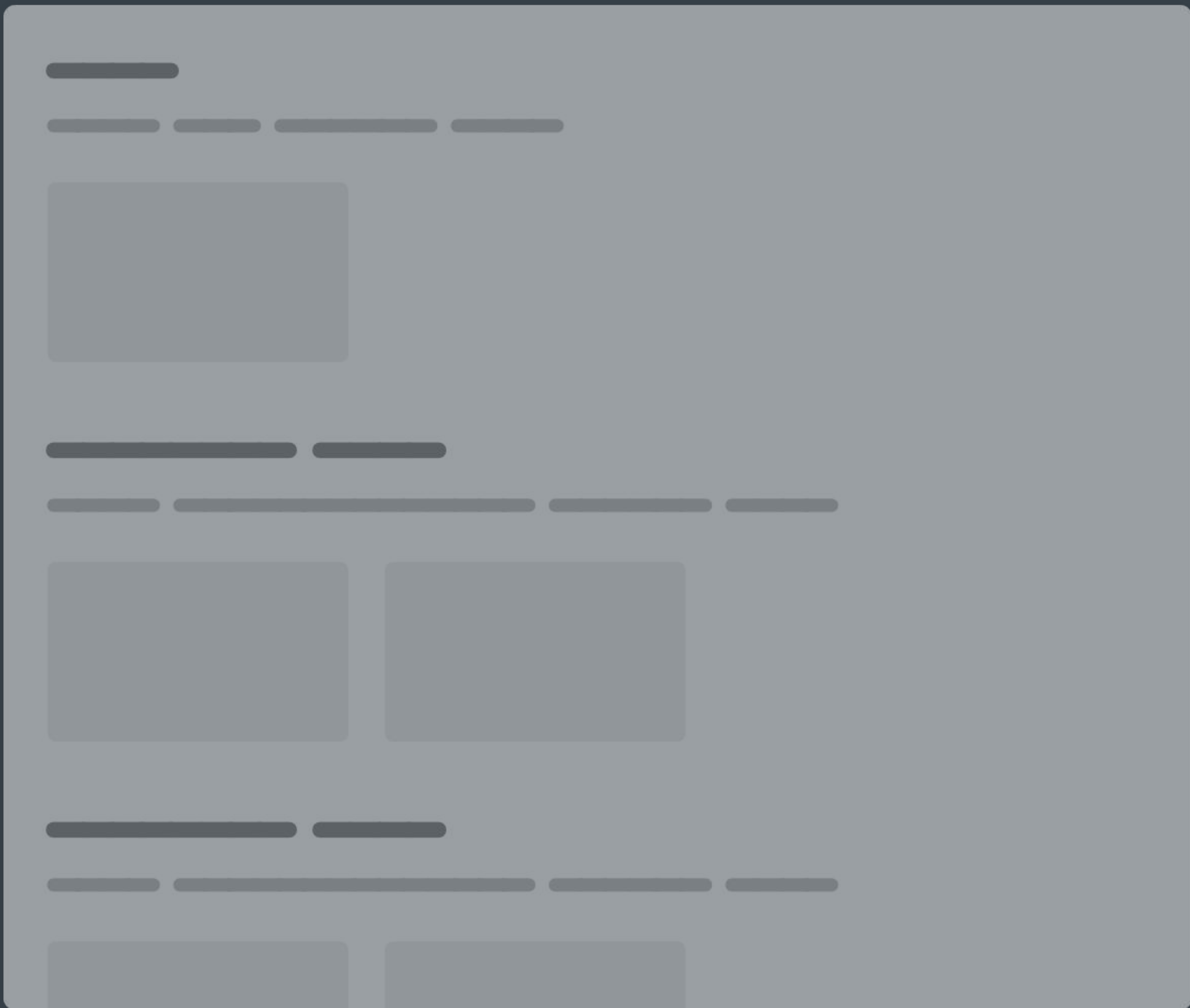
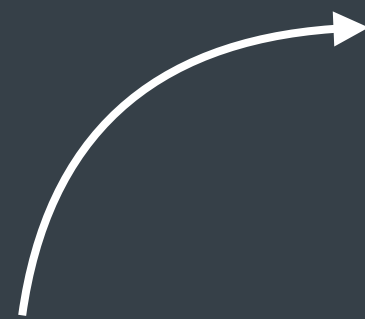
Viewport height

**Brand**

- Home
- Explore
- Notifications
- Messages

- Home
- Explore
- Notifications
- Messages

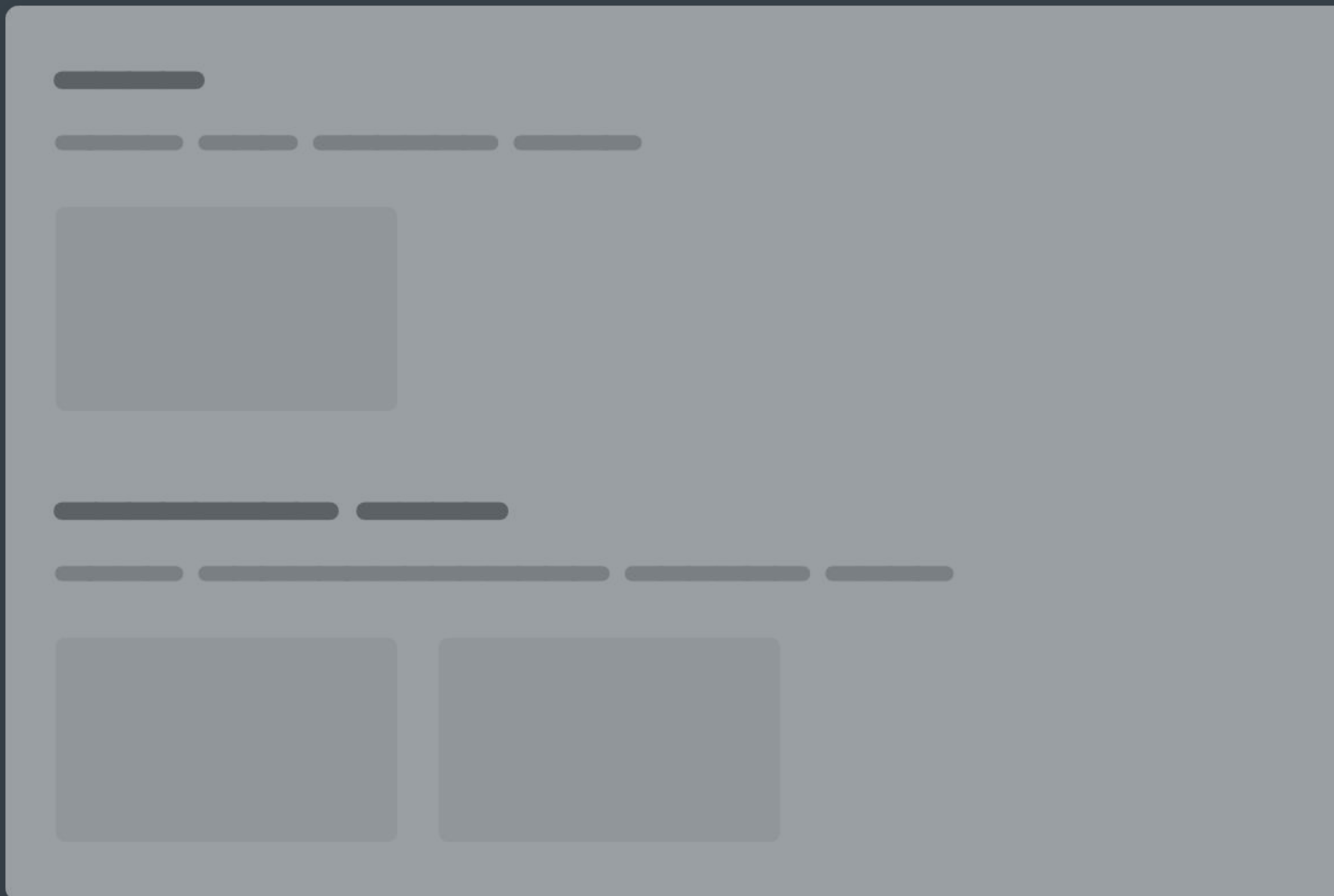
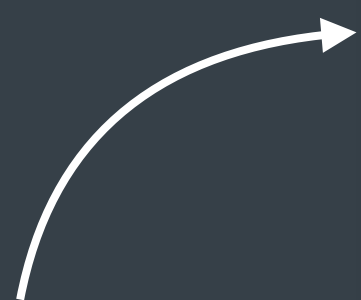
Fixed bottom nav



**Brand**

- Home
  - Explore
  - Notifications
  - Messages
- Home  
Explore  
Notifications  
Messages

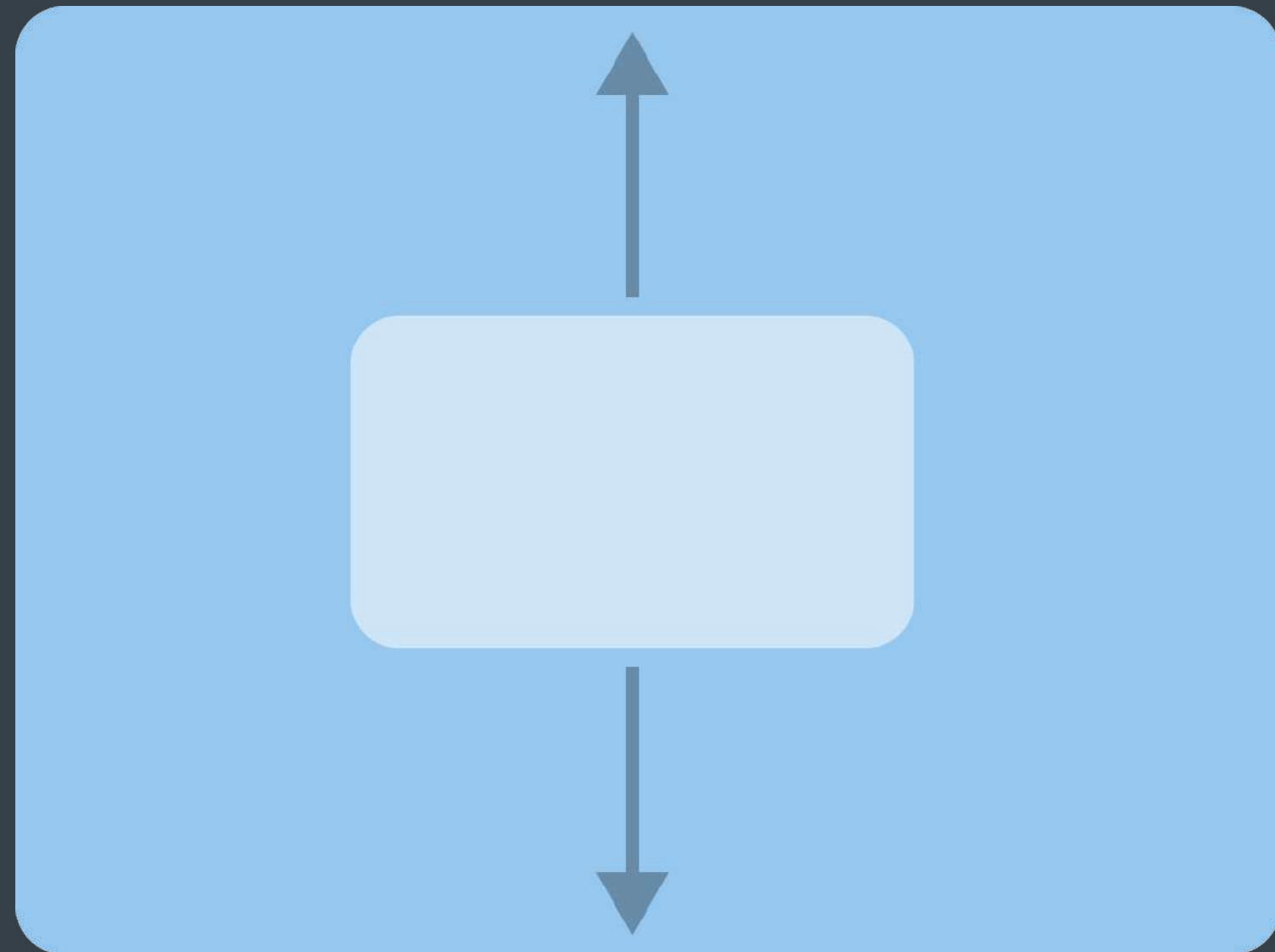
Breaks with a small  
viewport height



```
@media (min-height: 500px) {  
  .element {  
    position: fixed;  
    left: 0;  
    bottom: 0;  
  }  
}
```

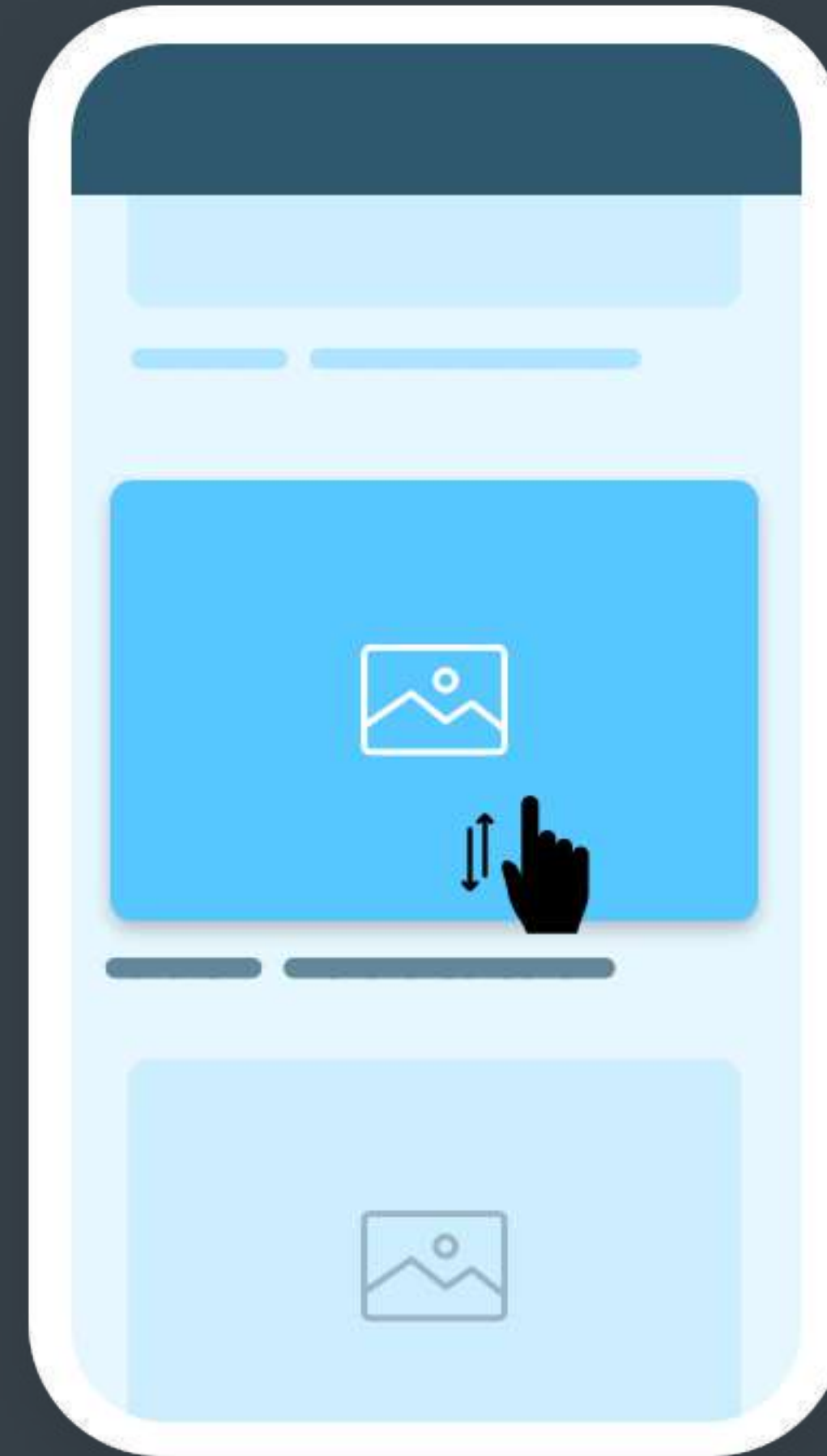
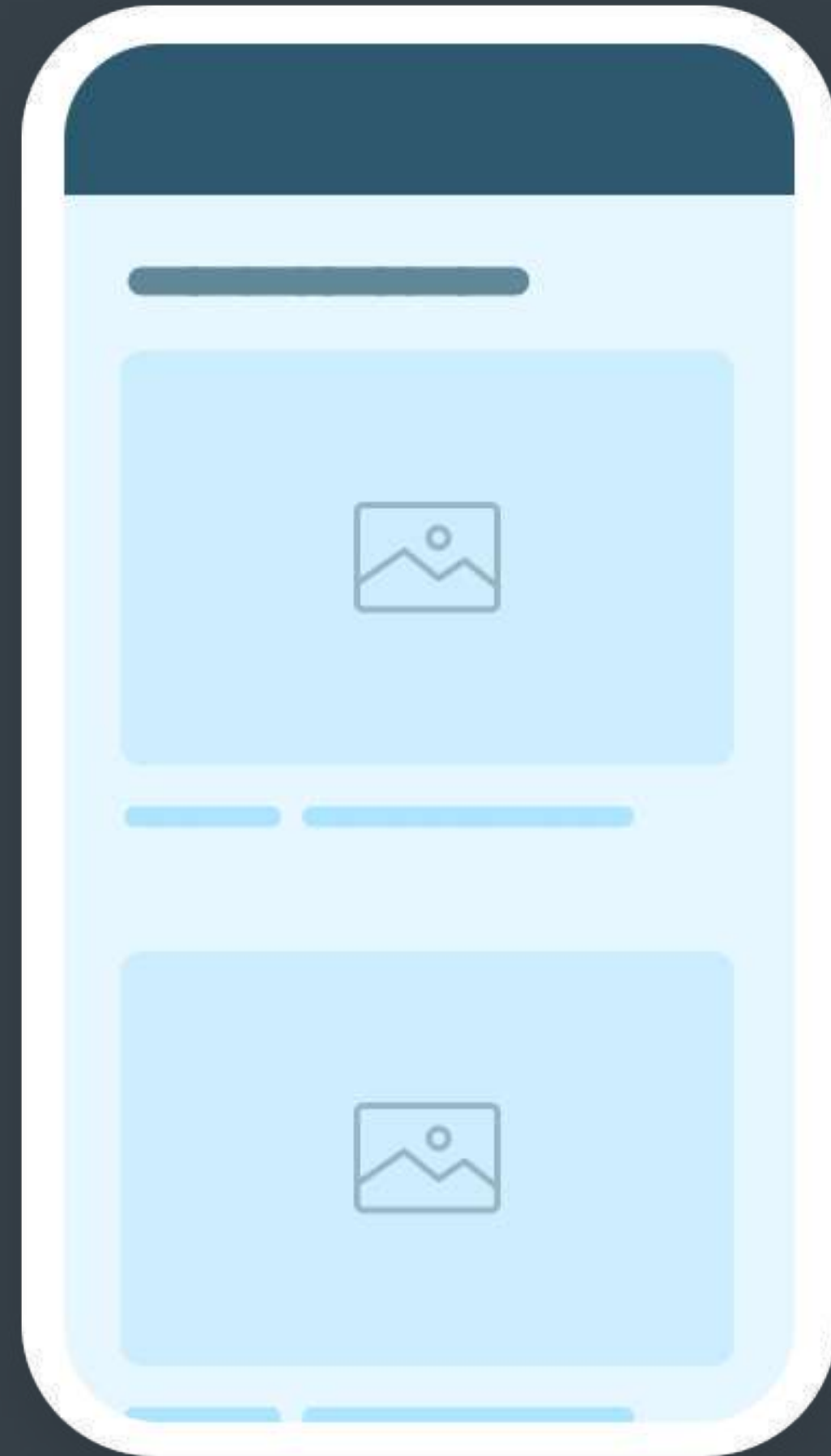
With that, the element will be `fixed` only if the viewport height is 500px or heigher





Defensive Tips

Accidental hover on mobile



```
@media (hover: hover) {  
  .card:hover {  
    /* Add hover styles.. */  
  }  
}
```

**Give Defensive CSS a try**

# Thank you

 [defensivecss.dev](https://defensivecss.dev)

 [@DefensiveCSS](https://twitter.com/DefensiveCSS)