<p>

<h1> - <h6>

<article> A document, page or site. This is usually a root container element after body

<section> Generic section of a document

<header> Intro section of a document

<footer> Footer at end of a document or section

<nav> Navigational section

Use these **before** div when appropriate.

flexbox

Flex Basics

Flex layouts are composed of:

a **Flex container**, which contains one or more:

Flex item(s)

You can then apply CSS properties on the **Flex container** to dictate how the **Flex item(s)** are displayed

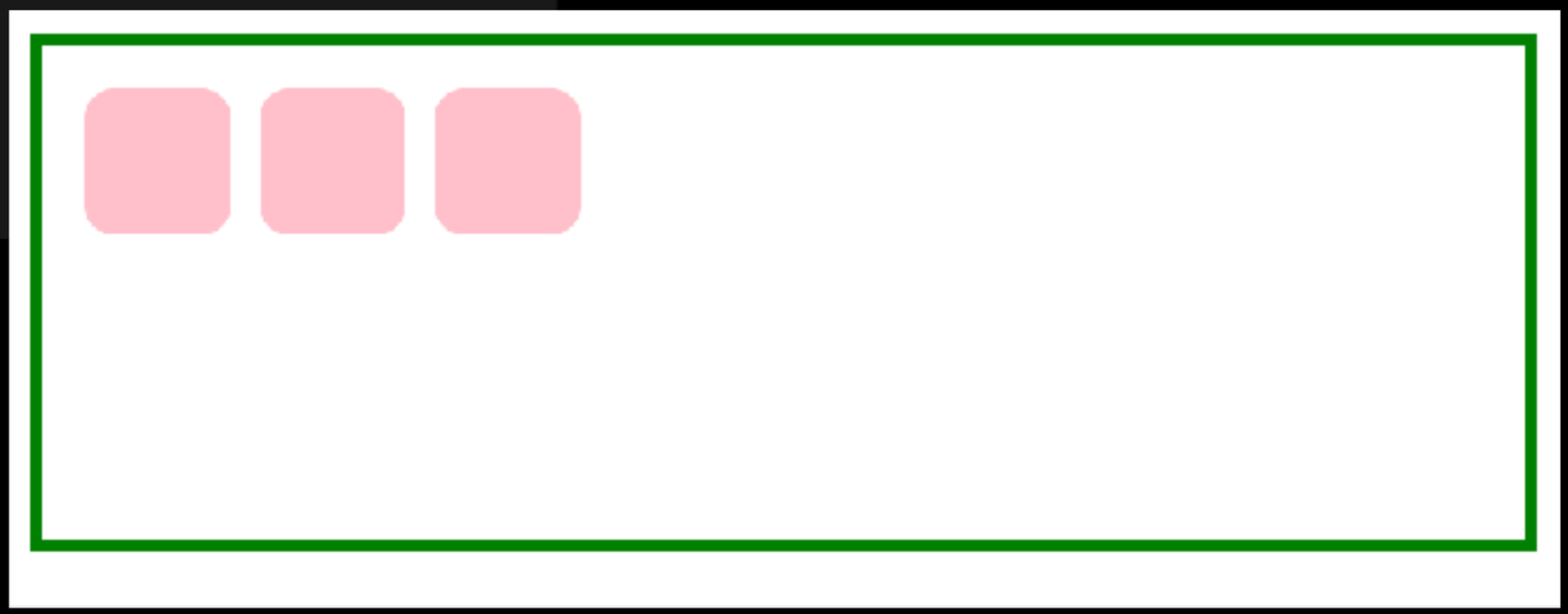
To make an element a flex container, change display:

- Block container: display: flex;
- Inline container: display: inline-flex;

Flex Basics: justify-content

You can control where the item is horizontally in the box by setting **justify-content** in the flex container.

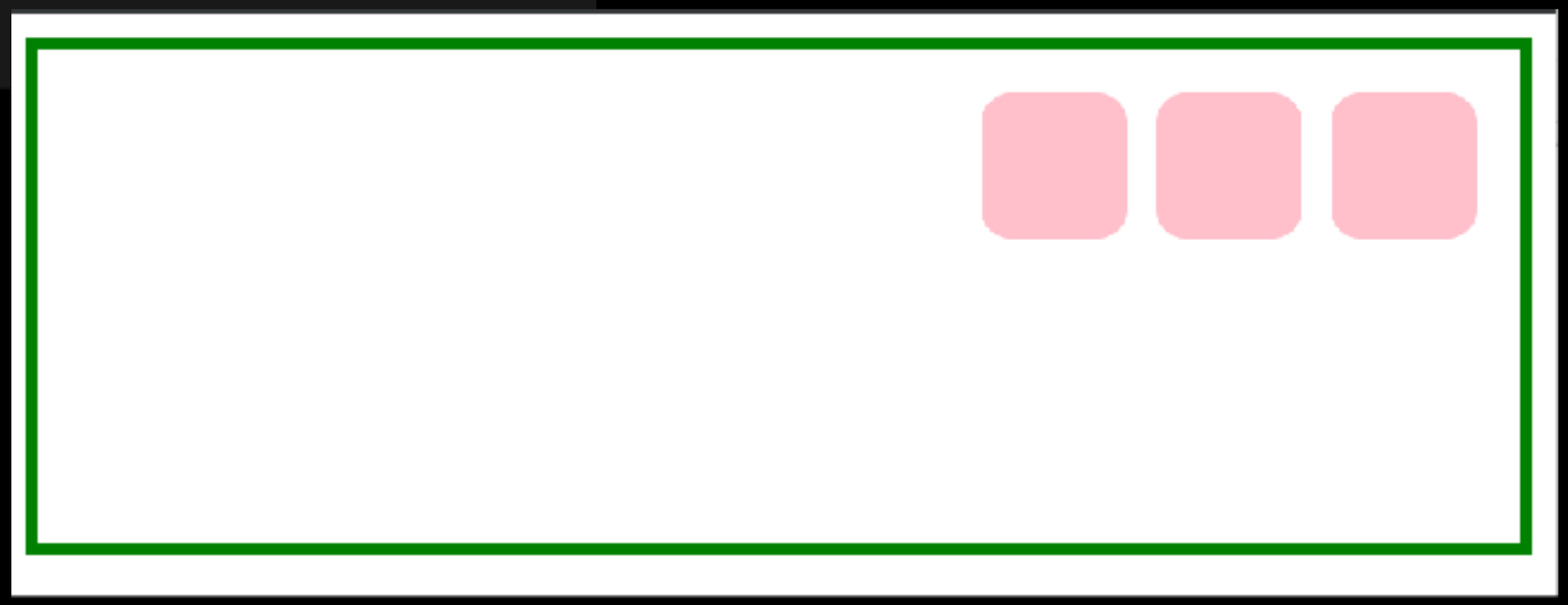
```
#flexBox {
    display: flex;
    border: 4px solid Green;
    justify-content: flex-start;
    padding: 10px;
    height: 150px;
}
```



Flex Basics: justify-content

You can control where the item is horizontally in the box by setting **justify-content** in the flex container.

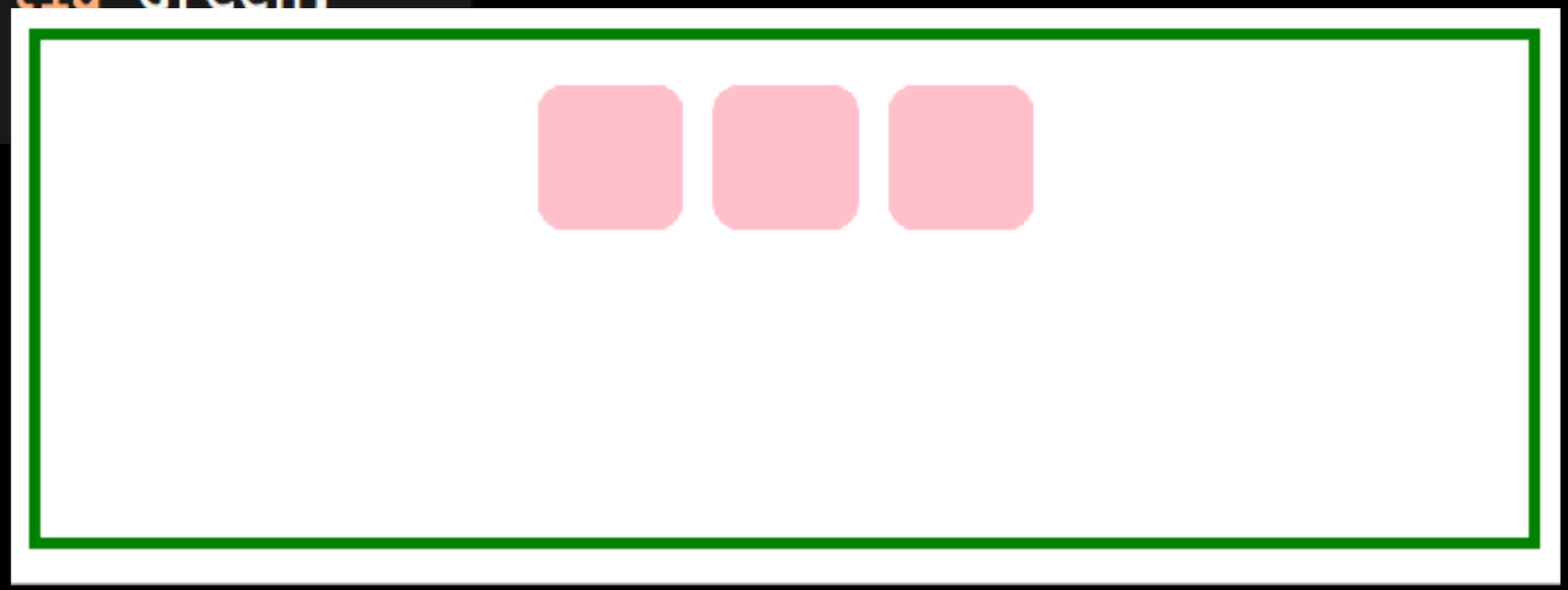
```
#flexBox {
    display: flex;
    justify-content: flex-end;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics: justify-content

You can control where the item is horizontally in the box by setting **justify-content** in the flex container.

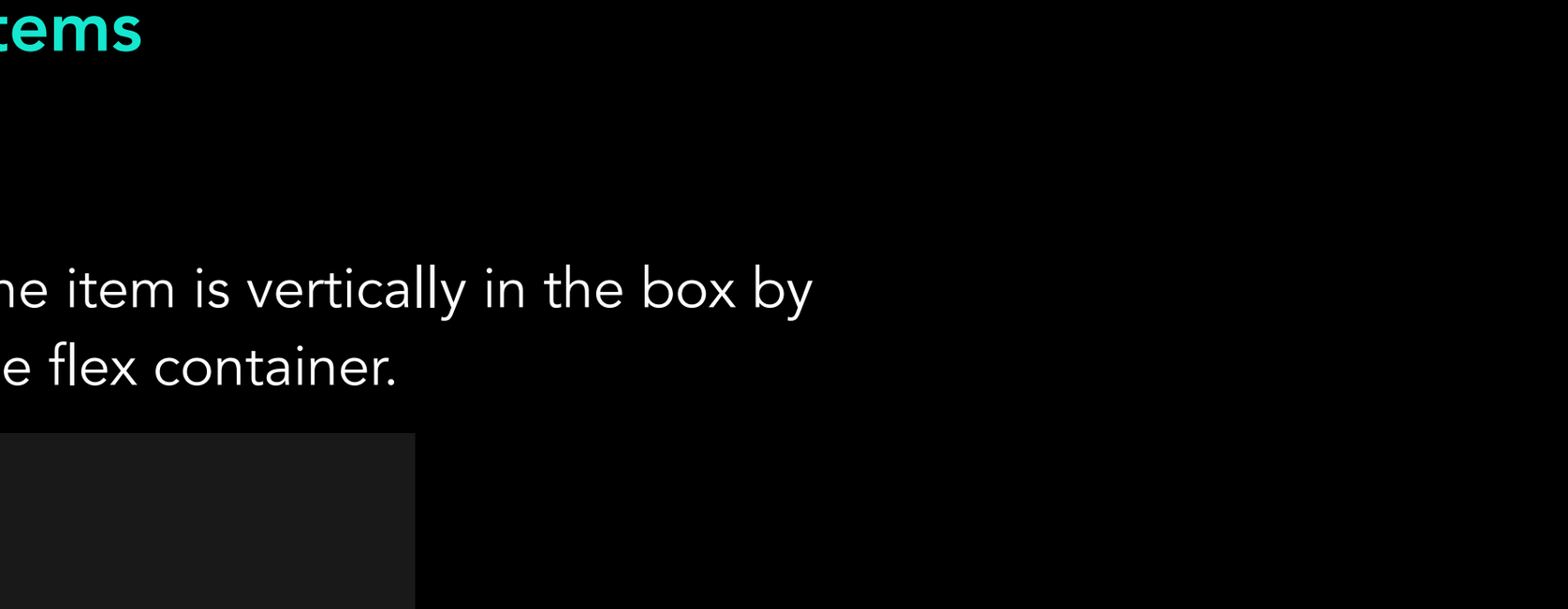
```
#flexBox {
    display: flex;
    justify-content: center;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics: align-items

You can control where the item is vertically in the box by setting **align-items** in the flex container.

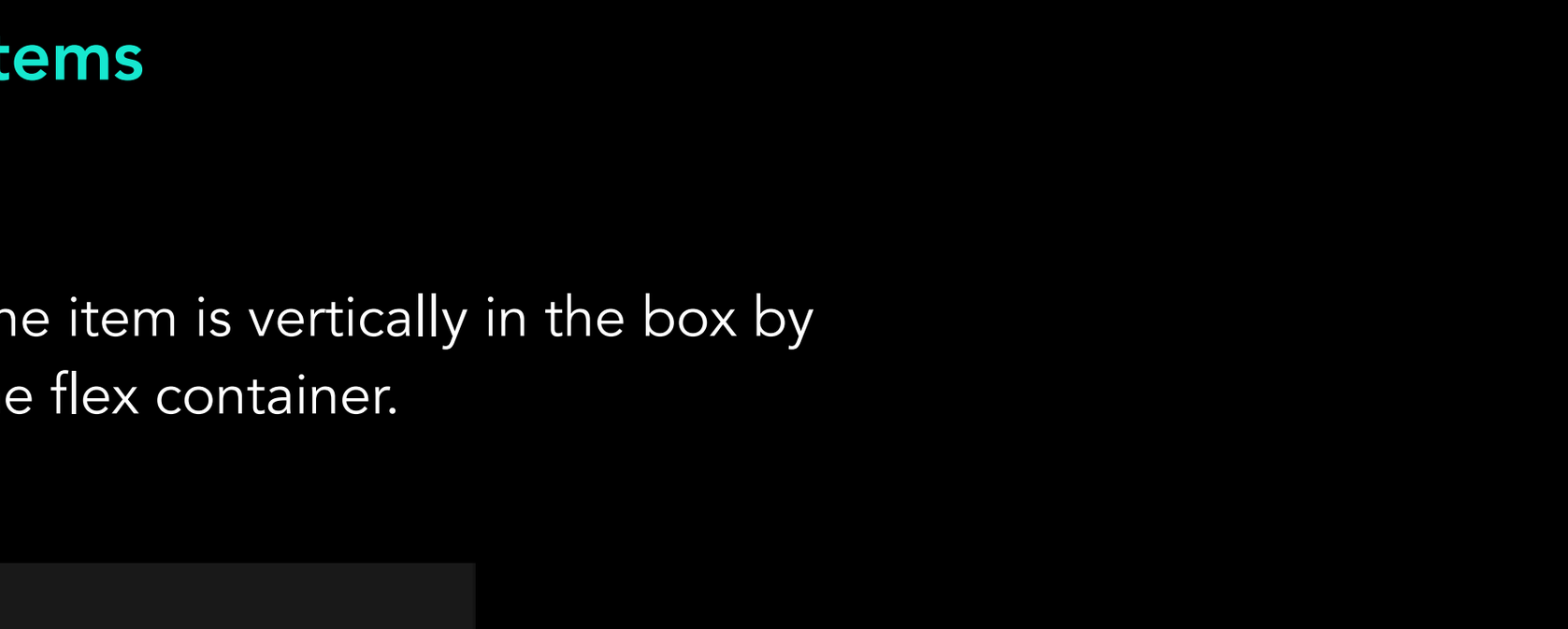
```
#flexBox {
    display: flex;
    align-items: flex-start;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics: align-items

You can control where the item is vertically in the box by setting **align-items** in the flex container.

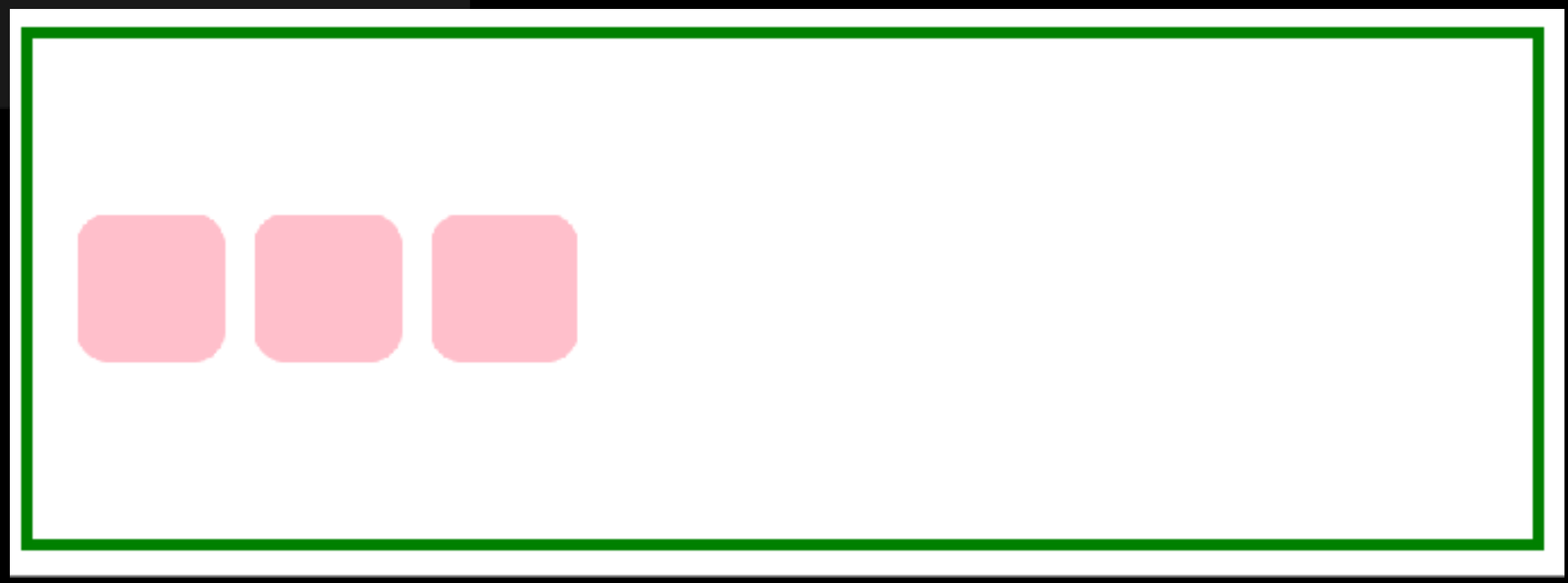
```
#flexBox {
    display: flex;
    align-items: flex-end;
    padding: 10px;
    height: 150px;
    border: 4px solid
}
```



Flex Basics: align-items

You can control where the item is vertically in the box by setting **align-items** in the flex container.

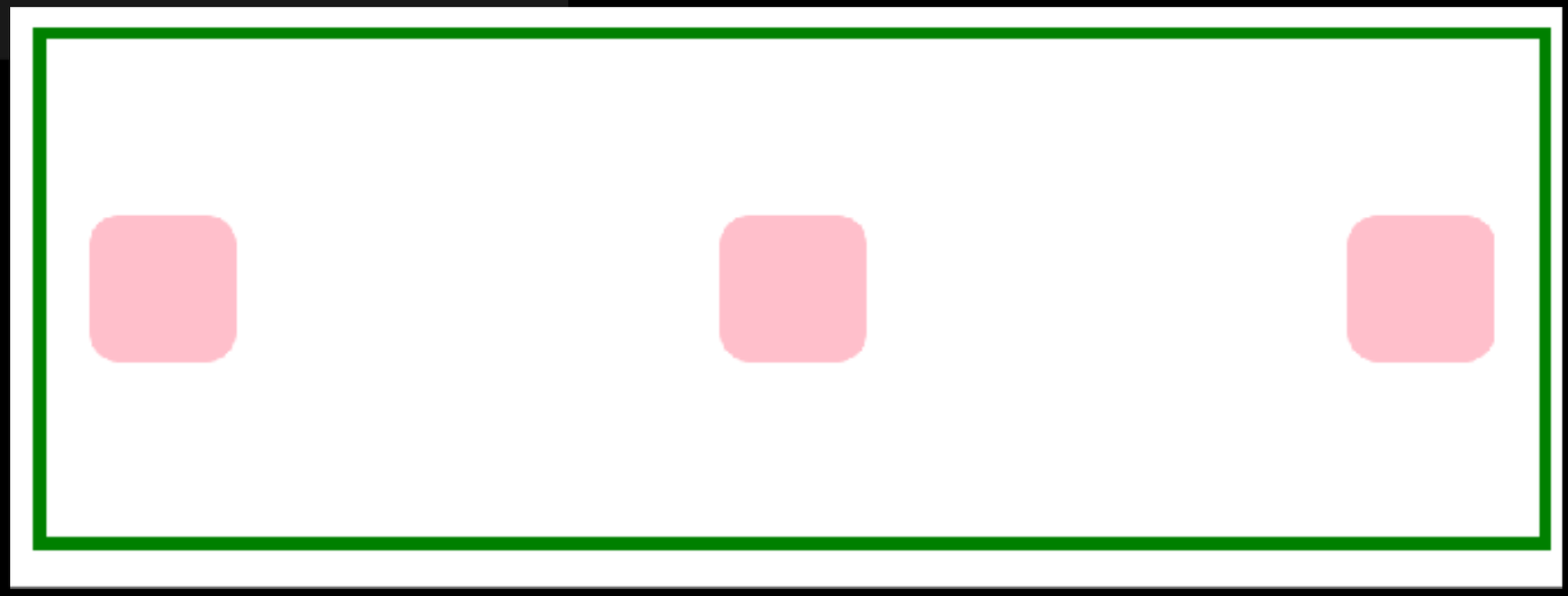
```
#flexBox {
    display: flex;
    align-items: center;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics:

space-between + space-around

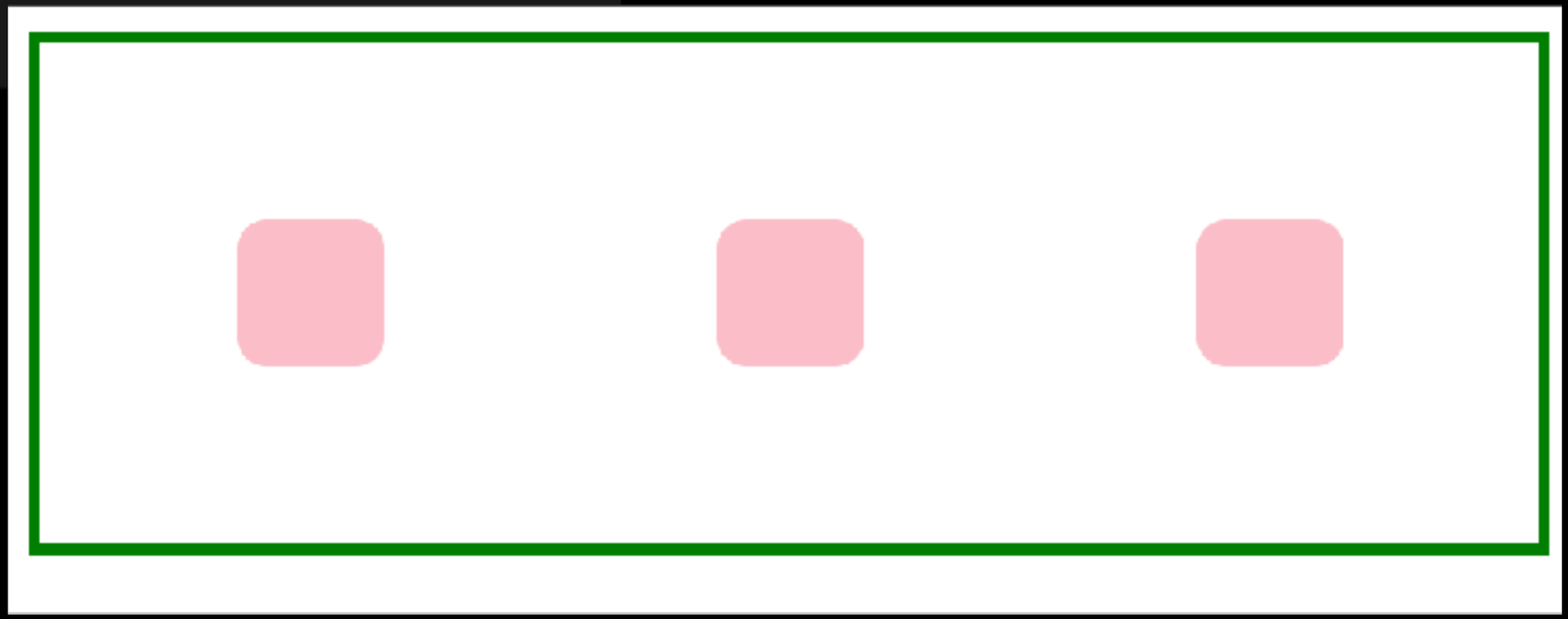
```
#flexBox {
    display: flex;
    justify-content: space-between;
    align-items: center;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics:

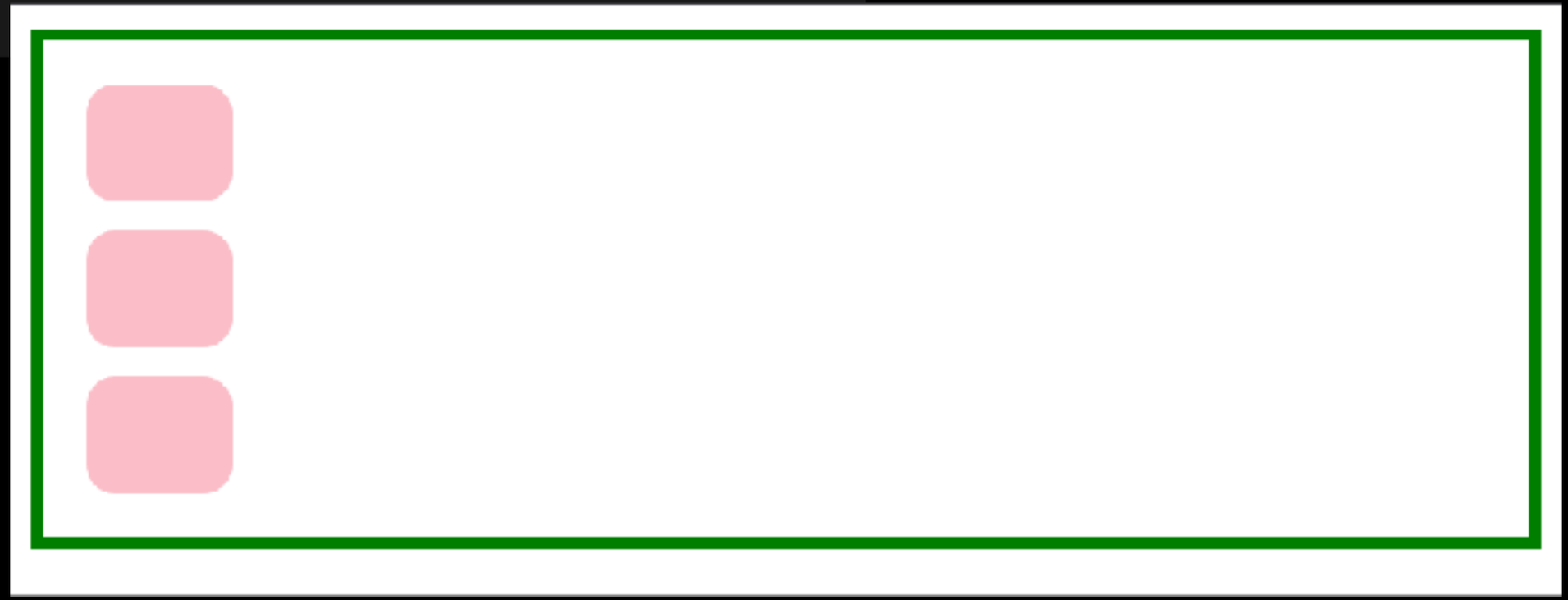
space-between + space-around

```
#flexBox {
    display: flex;
    justify-content: space-around;
    align-items: center;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics: flex-direction

```
#flexBox {
    display: flex;
    flex-direction: column;
    padding: 10px;
    height: 150px;
    border: 4px solid Green;
}
```



Flex Basics: flex-direction

```
#flexBox {
    display: flex;
    flex-direction: column;
    justify-content: center;
    padding: 10px;
    height: 300px;
    border: 4px solid Green;
}
```

Now **justify-content** controls where the column is vertically in the box.

Flex Basics: flex-direction

```
#flexBox {
    display: flex;
    flex-direction: column;
    justify-content: space-around;
    padding: 10px;
    height: 300px;
    border: 4px solid Green;
}
```

And you can also lay out columns instead of rows.

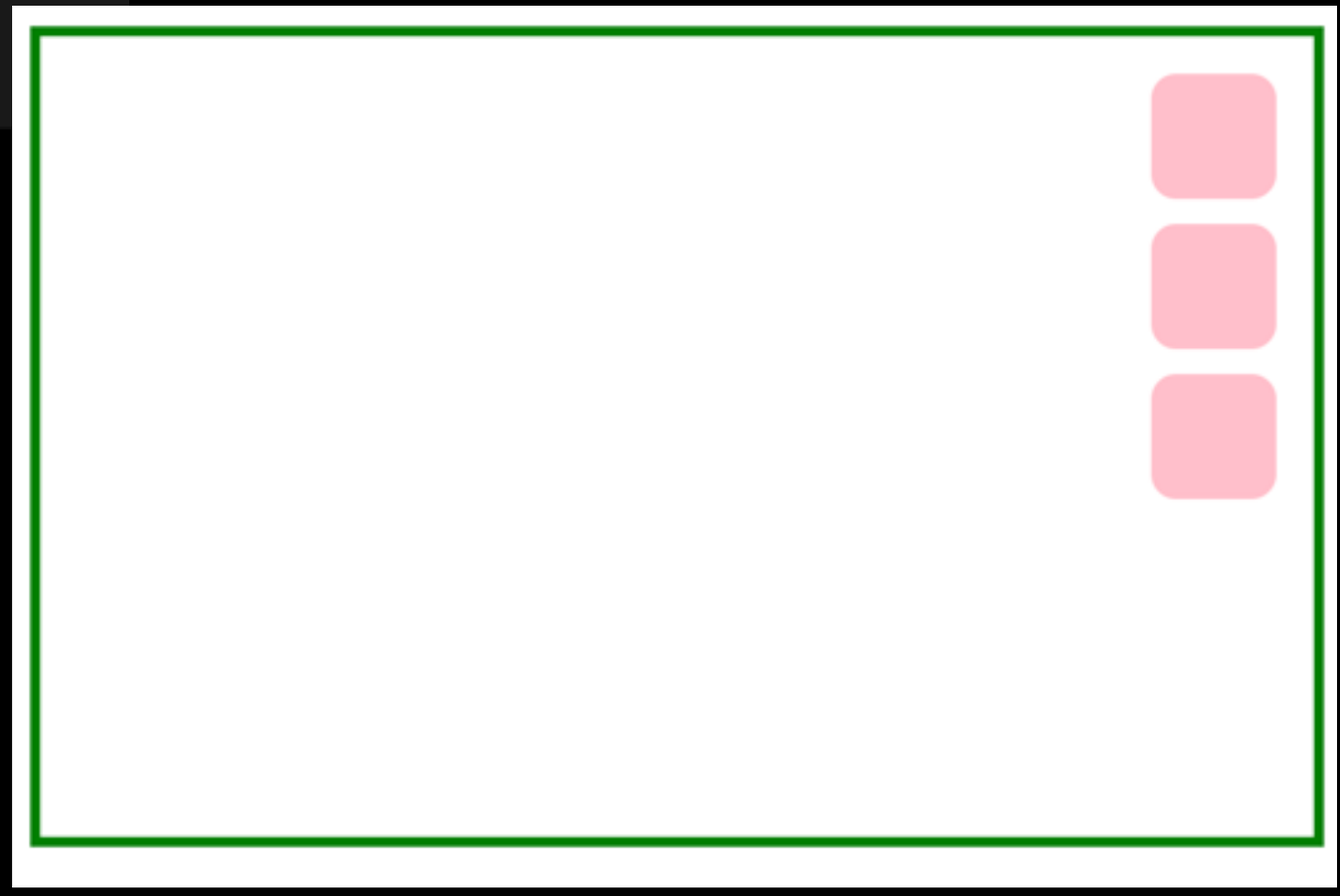
Now **justify-content** controls where the column is vertically in the box.

Flex Basics: flex-direction

```
#flexBox {
    display: flex;
    flex-direction: column;
    align-items: flex-end;
    padding: 10px;
    height: 300px;
    border: 4px solid Green;
}
```

And you can also lay out columns instead of rows.

Now **align-items** controls where the column is horizontally in the box.



Flex - different rendering model

When you set a container to **display: flex**, the direct children in that container are **flex items** + follow a new set of rules.

Flex items are not block or inline; they have different rules for their height, width + layout.

- The **contents** of a flex item follow the usual block/inline rules, relative to the flex item's boundary.

Flex Basis

Flex items have an initial width*, which, by default is either:

- The content width, or

- The explicitly set **width** property of the element, or

- The explicitly set **flex-basis** property of the element

This initial width* of the flex item is called the **flex basis**.

The explicit width* of a flex item is respected **for all flex items**, regardless of whether the flex item is inline, block, or inline-block.

*width in the case of rows; height in the case of columns

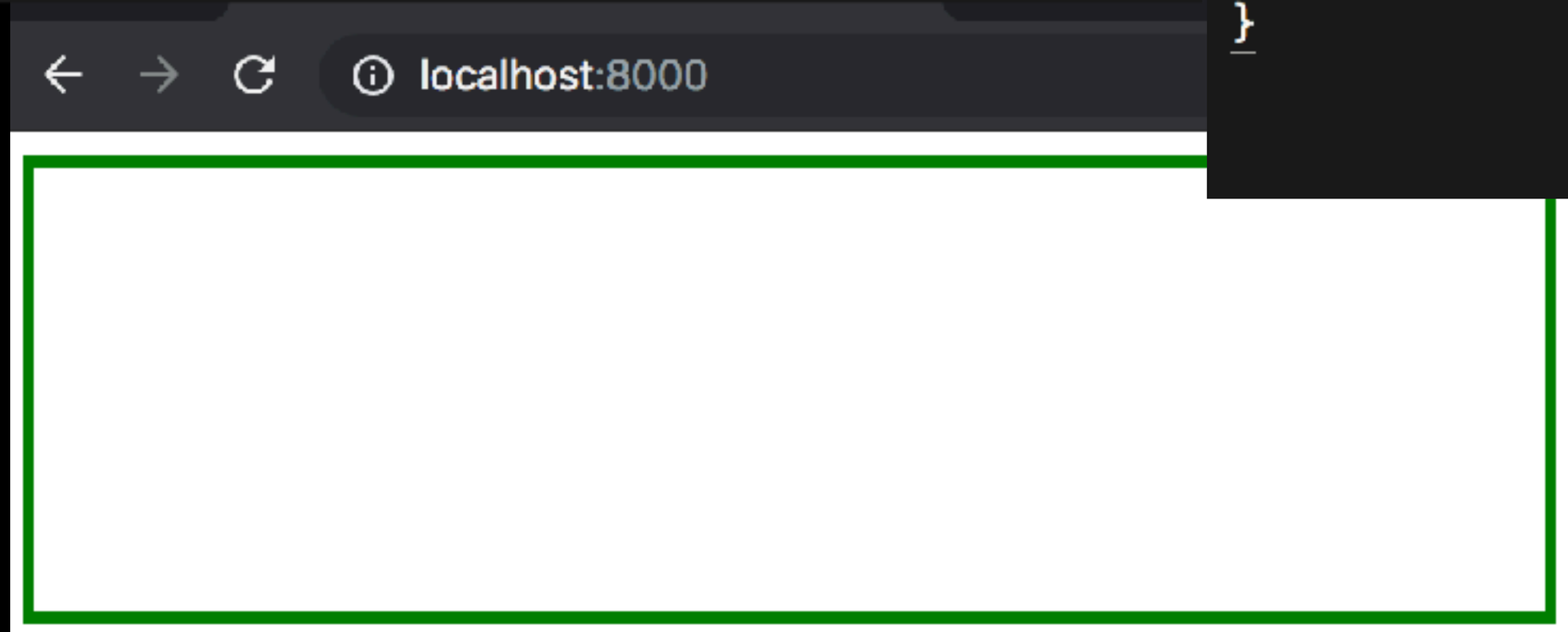
Flex Basis

If we unset the height and width, our flex items disappears, because the **flex basis** is now the content size, which is empty:

```
<div id="flexBox">
 <span class="flexThing"></span>
 <div class="flexThing"></div>
 <span class="flexThing"></span>
</div>
```

```
#flexBox {
    display: flex;
    border: 4px solid Green;
    height: 150px;
}

.flexThing {
    border-radius: 10px;
    background-color: pink;
    margin: 5px;
}
```



flex-shrink

The width* of the flex item can automatically shrink **smaller** than the **flex basis** via the **flex-shrink** property:

flex-shrink:

- If set to **1**, the flex item shrinks itself as small as it can in the space available
- If set to **0**, the flex item does not shrink.

Flex items have **flex-shrink**: **1 by default**.

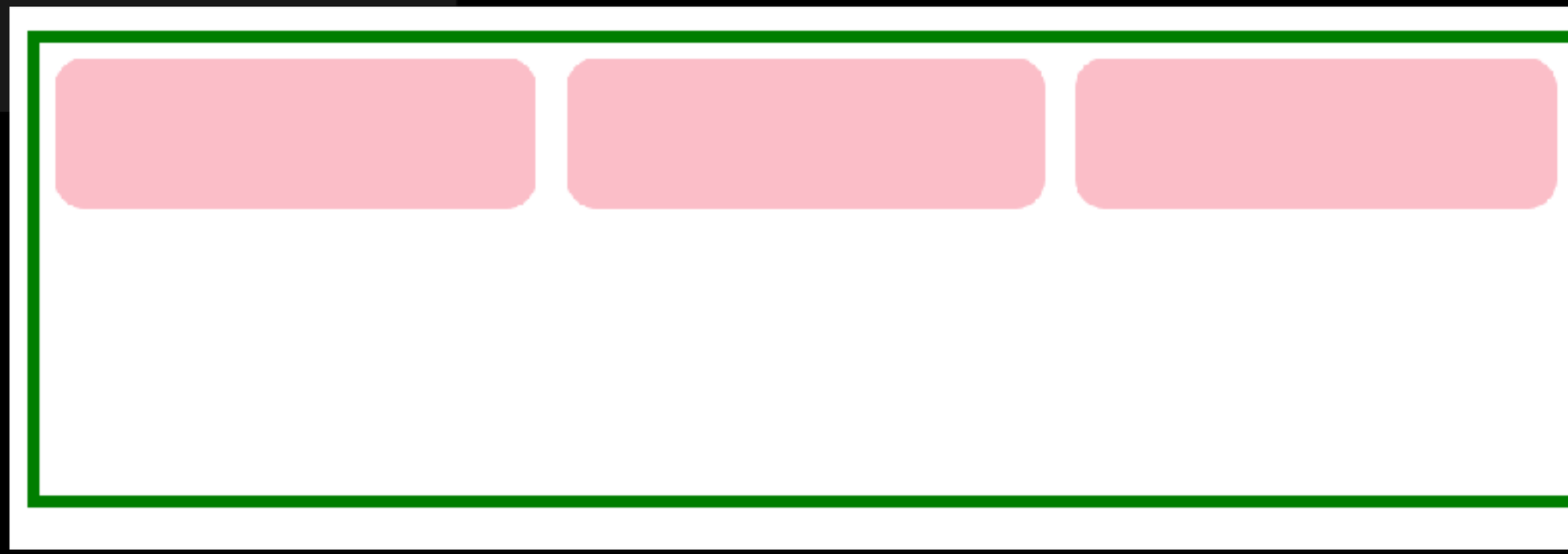
*width in the case of rows;
height in the case of columns

flex-shrink

```
#flexBox {
    display: flex;
    align-items: flex-start;
    border: 4px solid Green;
    height: 150px;
}

.flexThing {
    width: 500px;
    height: 50px;
    border-radius: 10px;
    background-color: pink;
    margin: 5px;
}
```

The flex items' widths all shrink to fit the width of the container.



flex-shrink

```
.flexThing {
    width: 500px;
    height: 50px;
    flex-shrink: 0;
    border-radius: 10px;
    background-color: pink;
    margin: 5px;
}
```

Setting **flex-shrink**: **0**;
undoes the shrinking behavior,
and the flex items do not
shrink in any circumstance:

flex-grow

The width* of the flex item can automatically **grow larger** than the **flex basis** via the **flex-grow** property:

flex-grow:

- If set to **1**, the flex item grows itself as large as it can in the space remaining
- If set to **0**, the flex item does not grow

Flex items have **flex-grow**: **0 by default**.

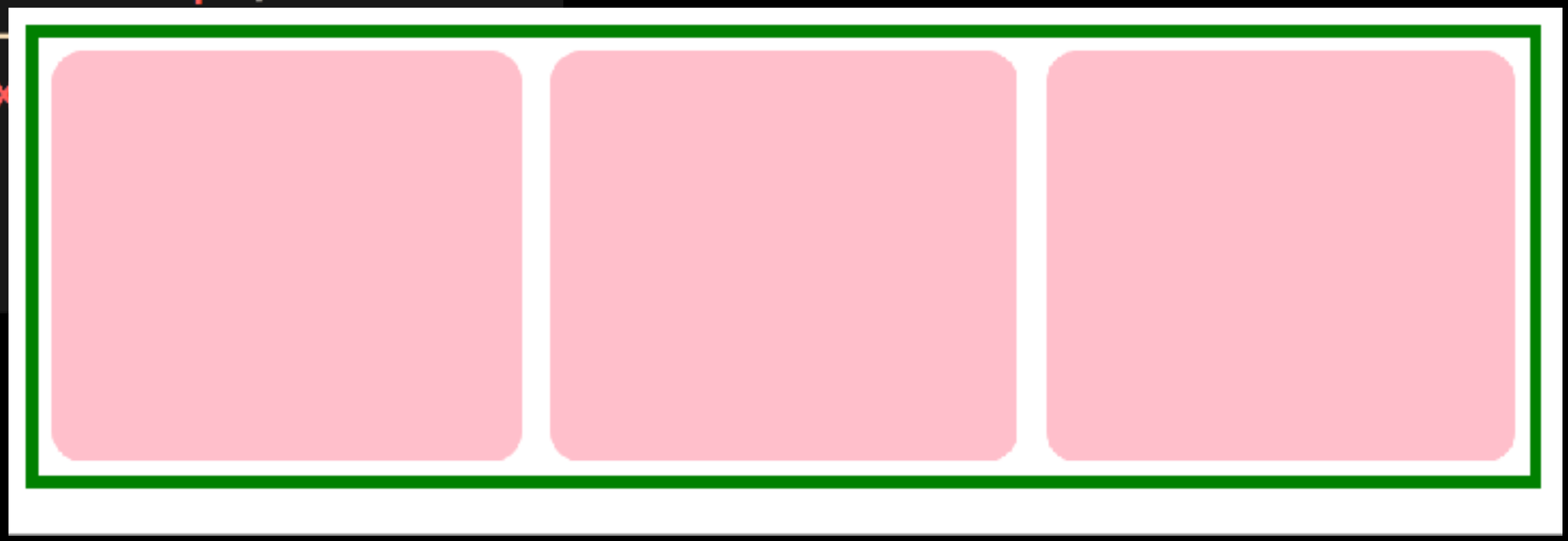
*width in the case of rows;
height in the case of columns

flex-grow

if we set **flex-grow: 1;**
the flex items fill the empty space.

```
#flexBox {
    display: flex;
    border: 4px solid Green;
    height: 150px;
}

.flexThing {
    flex-grow: 1;
    border-radius: 10px;
    background-
    margin: 5px
}
```



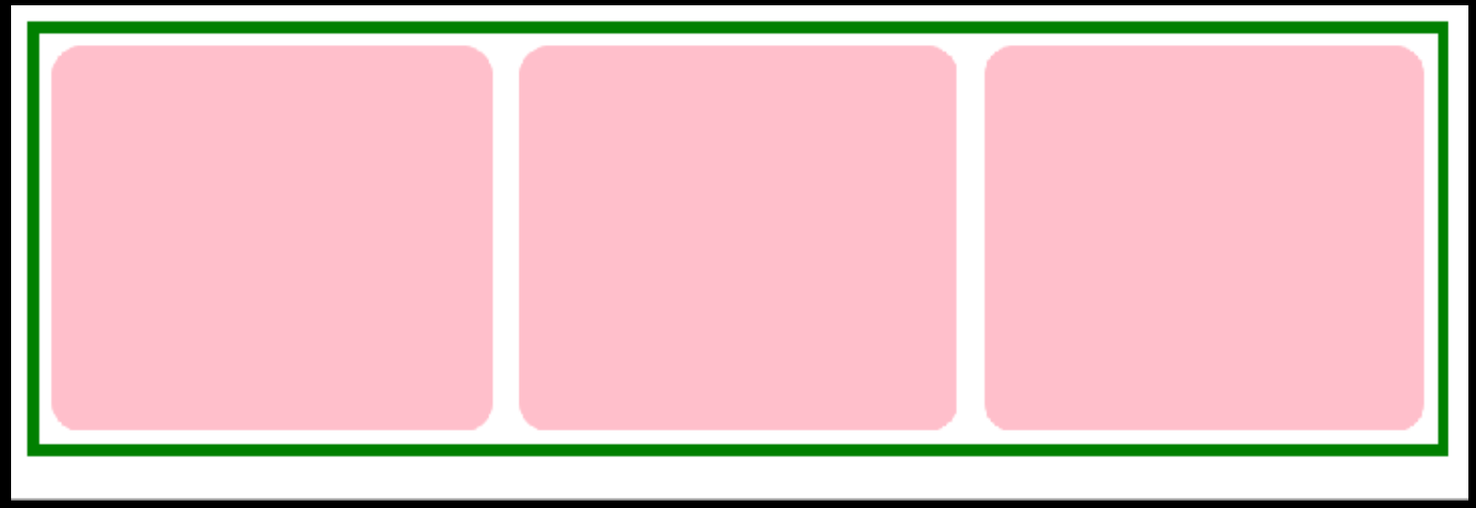
align-items: stretch;

The default value of **align-items** is stretch, which means every flex item grows vertically* to fill the container by default.

(This will not happen if the height on the flex item is set)

```
#flexBox {
    display: flex;
    border: 4px solid Green;
    height: 150px;
}

.flexThing {
    flex-grow: 1;
    border-radius: 10px;
    background-color: pink;
    margin: 5px;
}
```



*veritcally in the case of rows; horizontally in the case of columns

responsive web design

Responsive Text

The text size can be set with a "vw" unit, which means the "viewport width".

That way the text size will follow the size of the browser window.

```
<h1 style="font-size:10vw">Hello World</h1>
```

Metadata: `viewport`

The user's visible area of a web page

HTML5 introduced a method to let web designers take control over the viewport, through the **<meta>** tag.

```
<!
—  - Tells the browser to match the device's width for the viewport
     - Sets an initial zoom value -->

<meta name="viewport" content="width=device-width, initial-scale=1”>
```

<meta name="viewport" content="width=device-width, initial-scale=1.0”>

without

with

Let's breakdown the `content` value of this responsive <meta> tag:

Values are comma separated, letting you specify a list of values for `content`

The `width` value is set to `device-width`. This will cause the browser to render the page at the same width of the device's screen size.

`initial-scale` set to `1` indicates the "zoom" value if your web page when it is first loaded. `1` means "no zoom."

There are other values you can specify for the `content` list -

Mobile First

Common device widths

- 320px (x-small mobile)
- 375px (small mobile)
- 768px (tablet)
- 1024px (laptop)
- 1440px (desktop)

Although it is good practice to create and test your responsive design with these sizes in mind, it is also important that you test beyond the suggested sizes as well.

Media Queries

the @media rule tells the browser to include a block of CSS properties only if a certain condition is true.

So this:

```
@media only screen and (max-width: 500px)  {
    body {
        background-color: light blue;
    }
}
```

Translates to:

```
if (the maximum width of the web page is 500 pixels) {
        then do this stuff
}
```

Media Queries

Breakpoint

```
/* For mobile phones: */
[class*="col-"] {
    width: 100%;
}
@media only screen and (min-width: 768px) {
    /* For desktop: */
    .col-1 {width: 8.33%;}
    .col-2 {width: 16.66%;}
    .col-3 {width: 25%;}
    .col-4 {width: 33.33%;}
    .col-5 {width: 41.66%;}
    .col-6 {width: 50%;}
    .col-7 {width: 58.33%;}
    .col-8 {width: 66.66%;}
    .col-9 {width: 75%;}
    .col-10 {width: 83.33%;}
    .col-11 {width: 91.66%;}
    .col-12 {width: 100%;
}
```

add a **breakpoint** where certain parts of the design will behave differently on each side of the breakpoint

many examples: https://www.w3schools.com/Css/css_rwd_mediaqueries.asp

Mobile-first! (Images)

```
/* For width smaller than 400px: */
body {
    background-image: url(‘void_newspaper.jpg’);
}

/* For width 400px and larger: */
@media only screen and (min-width: 400px) {
    body {
        background-image: url('void.jpg');
    }
}
```

Responsive Frameworks

Responsive frameworks are templates of responsive stylesheets

Examples: W3.CSS, Bootstrap (JavaScript)

Examples: https://www.w3schools.com/html/html_responsive.asp

rwd

Responsive Web Design

Most of these notes are verbatim txt from: Learning Web Design - Jennifer Niederst Robbins

Responsive layout patterns

The manner in which a site transitions from a small-screen layout to a wide-screen layout must make sense for that particular site, but there are a few patterns (common and repeated approaches) that have emerged over the years. We can thank Luke Wroblewski (known for his “Mobile First” approach to web design, which has become the standard) for doing a survey of how responsive sites handle layout. Following are the top patterns Luke named in his **article**:

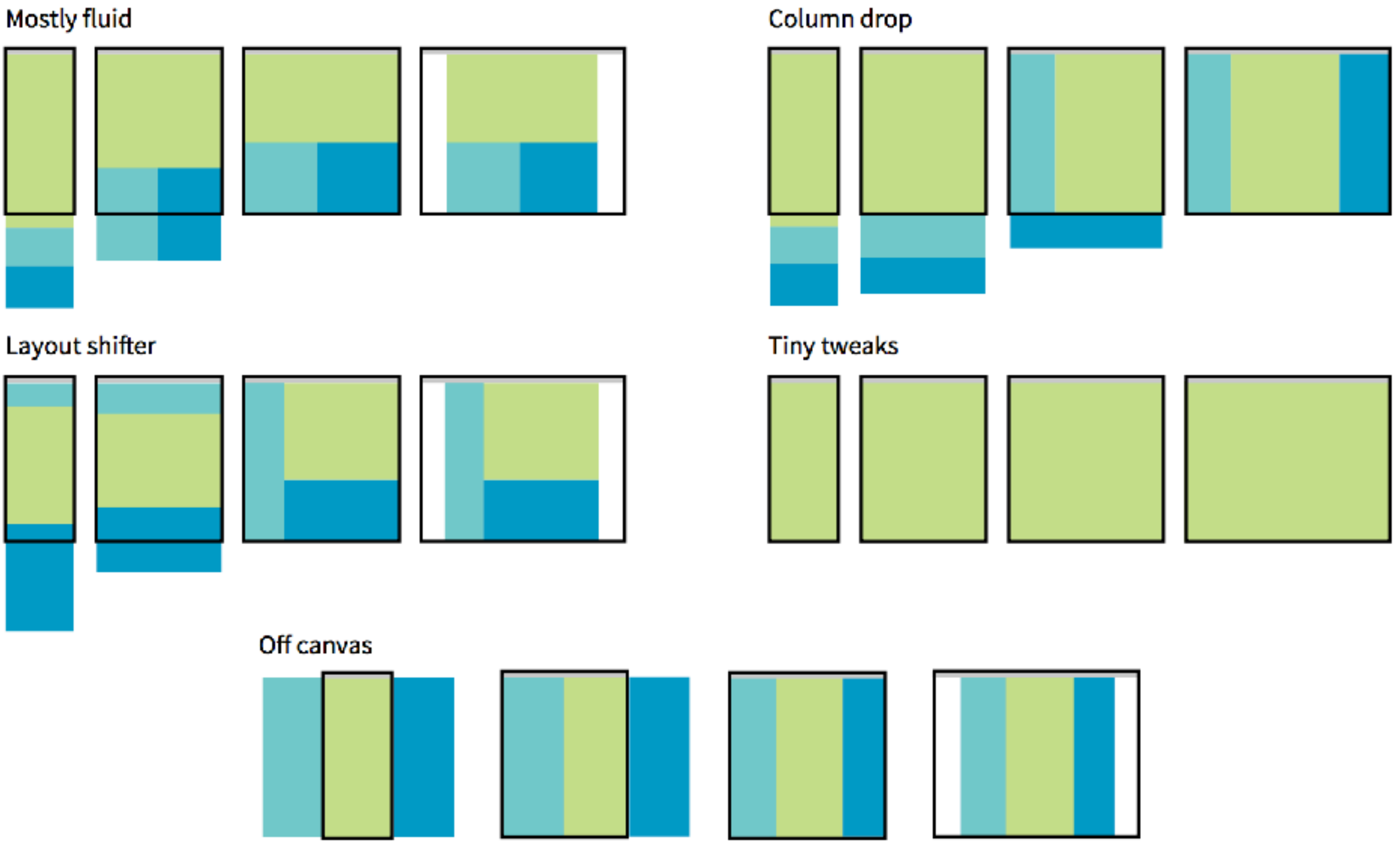


FIGURE 17-9. Examples of the responsive layout patterns identified by Luke Wroblewski.

Mostly fluid

This pattern uses a single-column layout for small screens, and another fluid layout that covers medium and large screens, with a maximum width set to prevent it from becoming too wide. It generally requires less work than other solutions.

Column drop

This solution shifts between one-, two-, and three-column layouts based on available space. When there isn't room for extra columns, the sidebar columns drop below the other columns until everything is stacked verti- cally in the one-column view.

Layout shifter

If you want to get really fancy, you can completely reinvent the layout for a variety of screen sizes. Although expressive and potentially cool, it is not necessary. In general, you can solve the problem of fitting your content to multiple environments without going overboard.

Tiny tweaks

Some sites use a single-column layout and make tweaks to type, spacing, and images to make it work across a range of device sizes.

Off canvas

As an alternative to stacking content vertically on small screens, you may choose to use an “off-canvas” solution. In this pattern, a page component is located just out of sight on the left or right of the screen and flies into view when requested. A bit of the main content screen remains visible on the edge to orient users as to the relationship of moving parts. This was made popular by Facebook, wherein Favorites and Settings were placed on a panel that slid in from the left when users clicked a menu icon

Navigation

Navigation feels a little like the Holy Grail of Responsive Web Design. It is critical to get it right. Because navigation at desktop widths has pretty much been conquered, the real challenges come in re-creating our navigation options on small screens. A number of successful patterns have emerged for small screens, which I will briefly summarize here

Top navigation

If your site has just a few navigation links, they may fit just fine in one or two rows at the top of the screen.

Priority +

In this pattern, the most important navigation links appear in a line across the top of the screen alongside a More link that exposes additional options. The pros are that the primary links are in plain view, and the number of links shown can increase as the device width increases. The cons include the difficulty of determining which links are worthy of the prime small-screen real estate.

Select menu

For a medium list of links, some sites use a select input form element. Tapping the menu opens the list of options using the select menu UI of the operating system, such as a scrolling list of links at the bottom of the screen or on an overlay. The advantage is that it is compact, but on the downside, forms aren't typically used for navigation, and the menu may be overlooked.

Link to footer menu

One straightforward approach places a Menu link at the top of the page that links to the full navigation located at the bottom of the page. The risk with this pattern is that it may be disorienting to users who suddenly find themselves at the bottom of the scroll.

Accordion sub-navigation

When there are a lot of navigation choices with sub-navigation menus, the small-screen solution becomes more challenging, particularly when you can't hover to get more options as you can with a mouse. Accordions that expand when you tap a small arrow icon are commonly used to reveal and hide sub-navigation. They may even be nested several levels deep. To avoid nesting navigation in accordion submenus, some sites simply link to separate landing pages that contain a list of the sub-navigation for that section.

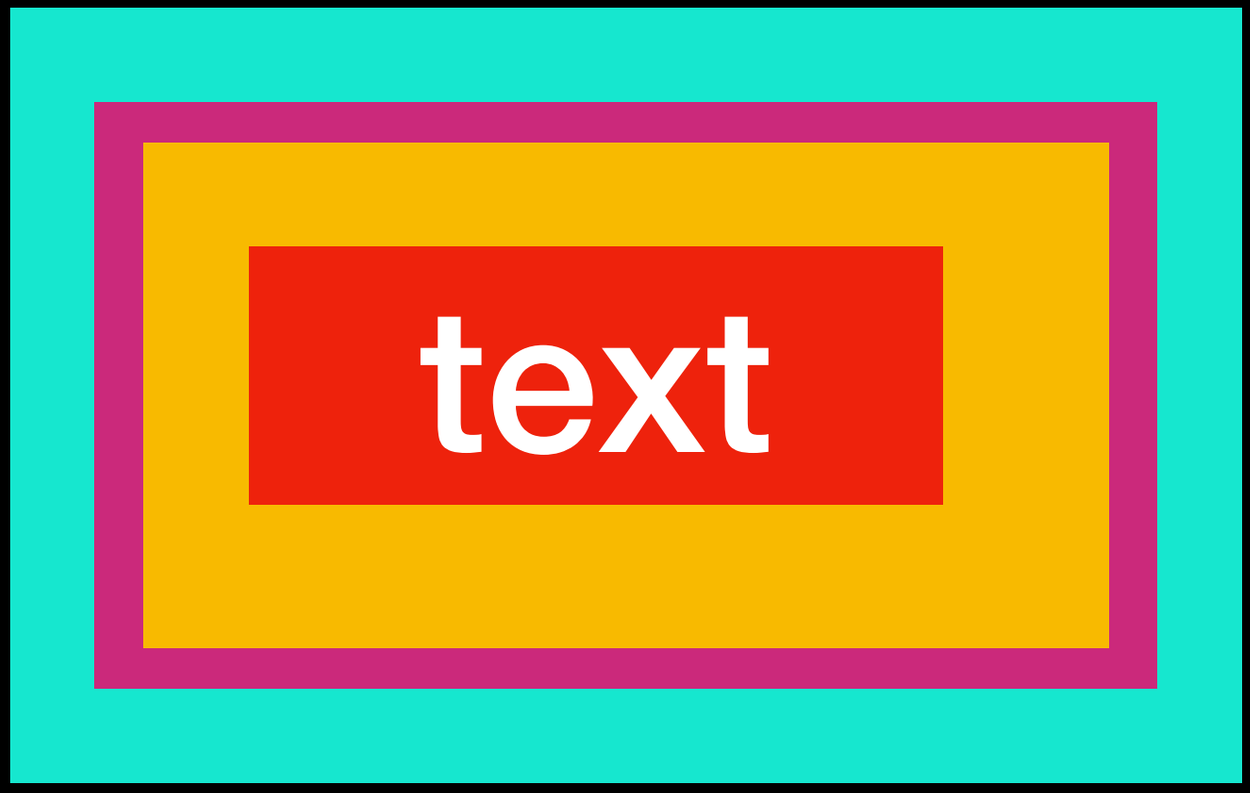
Box Model

Border

All boxes have borders even if invisible or 0px wide. It separates the edge of one box from another.

Padding

Padding is the space btw the border + any content contained within it. More padding increases the readability of its contents.



Margin

Margins sit outside the edge of the border. You can set the width to create a gap btw borders of adjacent boxes.

Content

Box Model

By default in the CSS box model, the width and height you assign to an element is applied only to the element's **content box**. If the element has any border or padding, this is then added to the width and height to arrive at the size of the box that's rendered on the screen. **This means that when you set width and height, you have to adjust the value you give to allow for any border or padding that may be added**.

box-sizing

content-box gives you the default CSS box-sizing behavior. If you set an element's width to 100 pixels, then the element's content box will be 100 pixels wide, and the width of any border or padding will be added to the final rendered width.

border-box tells the browser to account for any border and padding in the values you specify for an element's width and height. If you set an element's width to 100 pixels, that 100 pixels will include any border or padding you added, and the content box will shrink to absorb that extra width. This typically makes it much easier to size elements.

Flexbox & CSS Grid

By Flexbox and CSS Grid are designed to be responsive and eliminate the need for media queries. However, they both offer many options as to the design while remaining responsive.

+ Example of Responsive Image Gallery

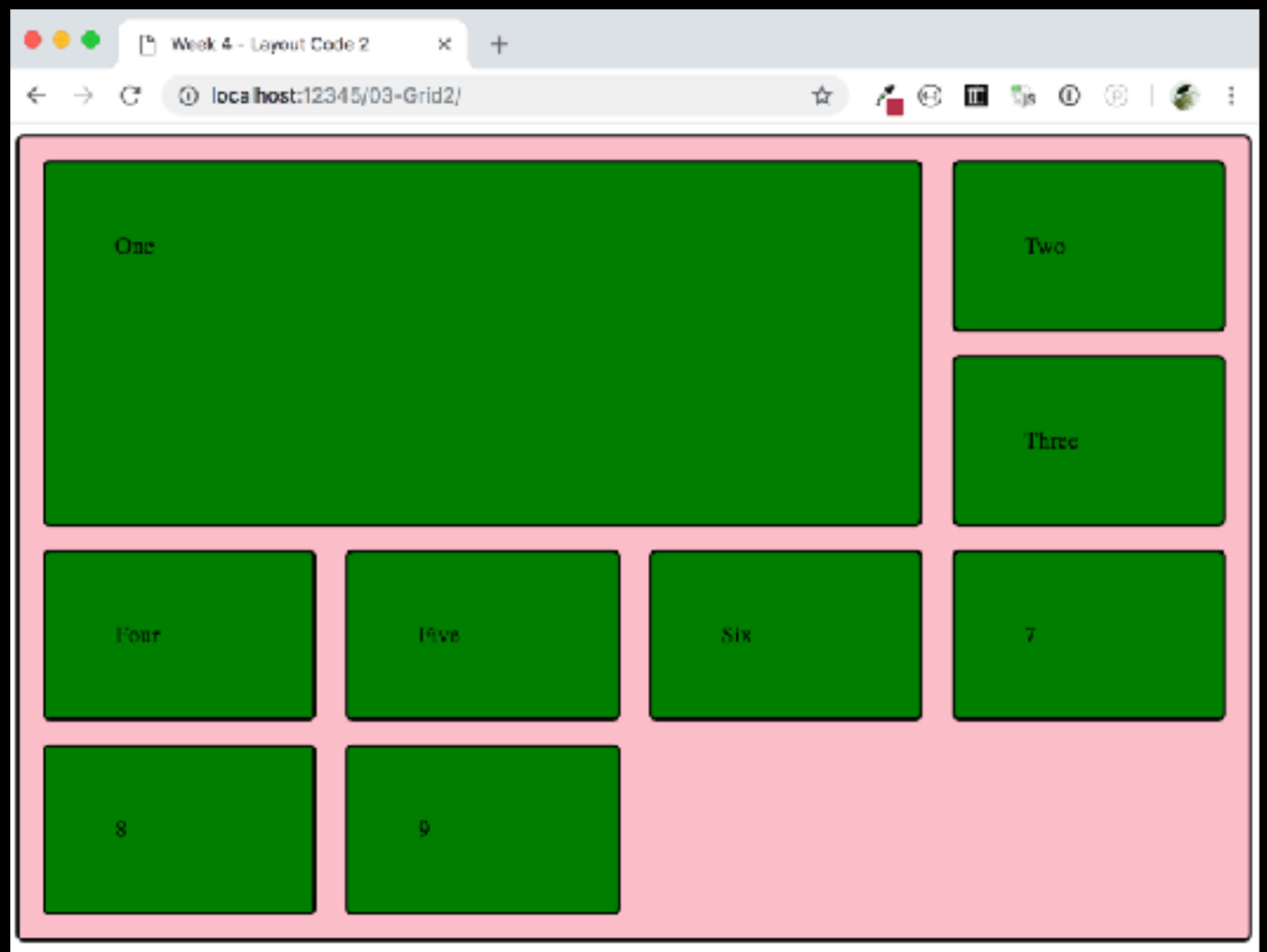
+ CSS Flexbox

+ CSS Grid + Responsive Layout

Flexbox & CSS Grid

"The basic difference between CSS Grid Layout and CSS Flexbox Layout is that flexbox was designed for layout in one dimension - either a row or a column. Grid was designed for two-dimensional layout - rows, and columns at the same time. The two specifications share some common features, however, and if you have already learned how to use flexbox, the similarities should help you get to grips with Grid."

MDN



CSS Grid

A grid is an intersecting set of horizontal and vertical lines - one set defining columns and the other rows. Elements can be placed onto the grid, respecting these column and row lines.

How Grid Layout Works

The process for using the CSS Grid Layout Module is fundamentally simple:

+ Use the display property to turn an element into a grid container. The element's children automatically become grid items.
+ Set up the columns and rows for the grid. You can set them up explicitly and/or provide directions for how rows and columns should get created on the fly (the css grid is very flexible).
+ Assign each grid item to an area on the grid. If you don't assign them explicitly, they flow into the cells sequentially.

The element that has the display: **grid property** applied to it becomes the grid container and defines the context for grid formatting. All of its direct child elements automatically become grid items that end up positioned in the grid. You can define an explicit grid with grid layout but the specification also deals with the content added outside of a declared grid, which adds additional rows and columns when needed. Features such as adding "as many columns that will fit into a container" are included.

Grid line

The horizontal and vertical dividing lines of the grid are called grid lines.

Grid cell

The smallest unit of a grid is a grid cell, which is bordered by four adjacent grid lines with no grid lines running through it.

Grid area

A grid area is a rectangular area made up of one or more adjacent grid cells.

Grid track

The space between two adjacent grid lines is a grid track, which is a generic name for a grid column or a grid row. Grid columns are said to go along the block axis, which is vertical (as block elements are stacked) for languages written horizontally. Grid rows follow the inline (horizontal) axis.

The structure established for the grid is independent from the number of grid items in the container. You could place 4 grid items in a grid with 12 cells, leaving 8 of the cells as 'whitespace.' That's the flexibility of grids. You can also set up a grid with fewer cells than grid items, and the browser adds cells to the grid to accommodate them.

Display Property

The display property specifies if/how an element is displayed. Every HTML element has a default display value depending on what type of element it is. The default display value for most elements is block or inline. A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can). An inline element does not start on a new line and only takes up as much width as necessary.

```
display: none;
```

commonly used with JavaScript to hide/show elements without deleting and recreating them.

Overriding Default Display

Changing an inline element to a block element, or vice versa, can be useful for making the page look a specific way, and still follow the web standards.

```
li {
    display: inline;
}

span {
    display: block;
}
```

Note: Setting the display property of an element only changes how the element is displayed, NOT what kind of element it is. So, an inline element with display: block; is not allowed to have other block elements inside it.

Overflow Property

The CSS overflow property controls what happens to content that is too big to fit into an area. The overflow property specifies whether to clip content or to add scrollbars when the content of an element is too big to fit in a specified area. The overflow property only works for block elements with a specified height. The overflow property has the following values:

visible - Default. The overflow is not clipped. It renders outside the element's box
hidden - The overflow is clipped, and the rest of the content will be invisible
scroll - The overflow is clipped, but a scrollbar is added to see the rest of the content
auto - If overflow is clipped, a scrollbar should be added to see the rest of the content

Properties for left and right

overflow-x
specifies what to do with the left/right edges of the content.

overflow-y
specifies what to do with the top/bottom edges of the content.

```
div.theExample1 {
    background-color: lightblue;
    height: 40px;
    width: 200px;
    overflow-y: scroll;
}

div.theExample2 {
    background-color: lightblue;
    height: 40px;
    width: 200px;
    overflow-y: hidden;
}
```

code from W3