BRO Academy

Positioning Blocks on the Page and Flexbox

Lesson 7

Lesson Plan

1. Document Flow
2. Box Model
3. Positioning in the Flow
4. `Flexbox`

document flow

– is an abstract model of how elements on a webpage are arranged and interact with each other. It determines the order in which elements will be displayed on the page.

- The standard flow runs from left to right, top to bottom. The flow is maintained in any element.

- The flow consists of two types of elements:
  – **inline**
  – **block**

Content

`block-level boxes` – Occupy the entire available horizontal width and start on a new line

```
display: block, list-item, table, flex, grid
```

`<h1>-<h6>`	`<nav>`	`<main>`	`<header>`
`<div>`	`<section>`	`<form>`	`<footer>`
`<p>`	`<article>`	`<ol> / <ul>`	`<aside>`

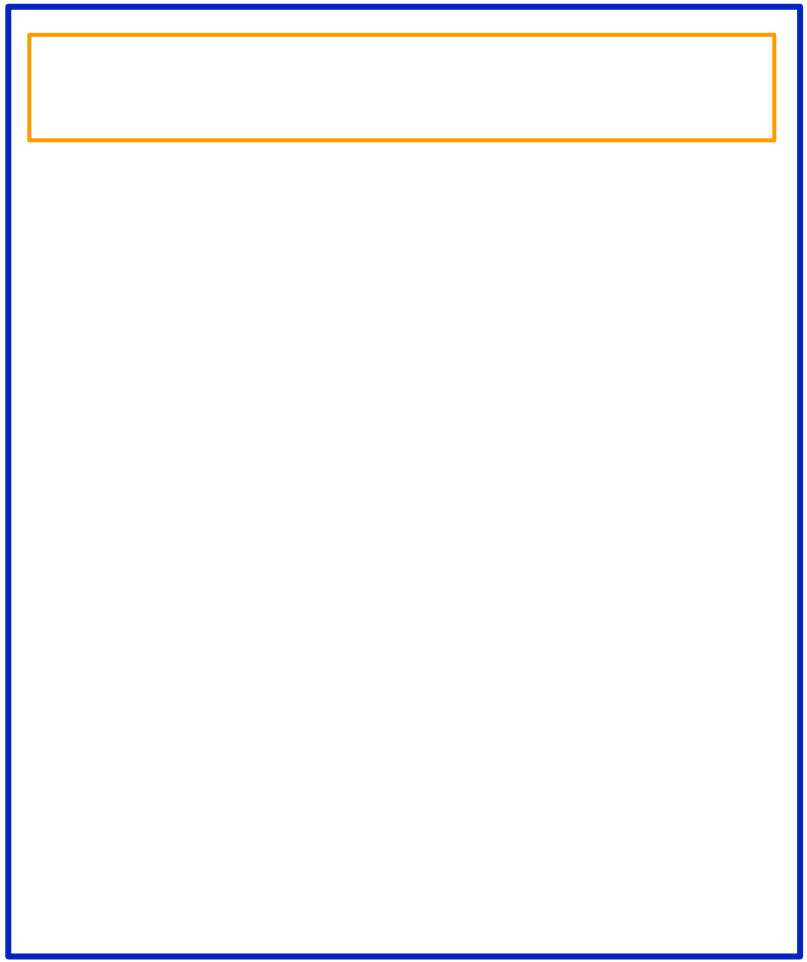
`inline-level boxes` – Occupy only the necessary horizontal space and are placed on the same line. They don't start on a new line and take up only as much space as they need.

```
display: inline, inline-block, inline-table, inline-flex, inline-grid
```

`<a>`	`<label>`	`<select>`	`<button>`
`<span>`	`<textarea>`	`<input>`	`<img>`

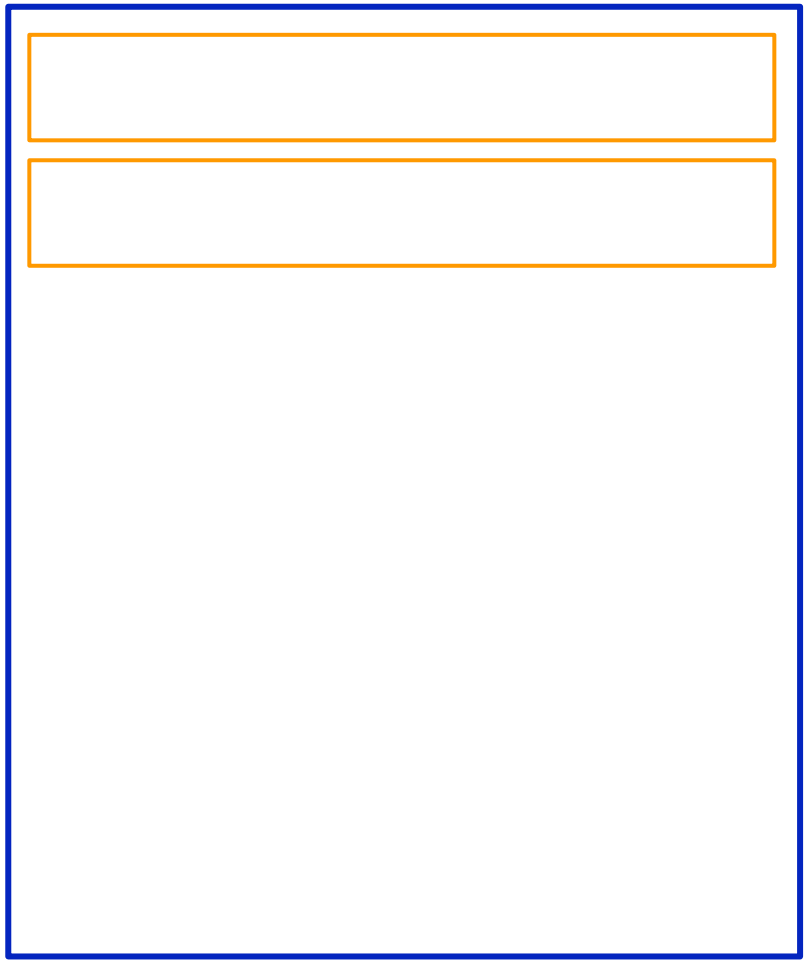
document flow

Normal flow



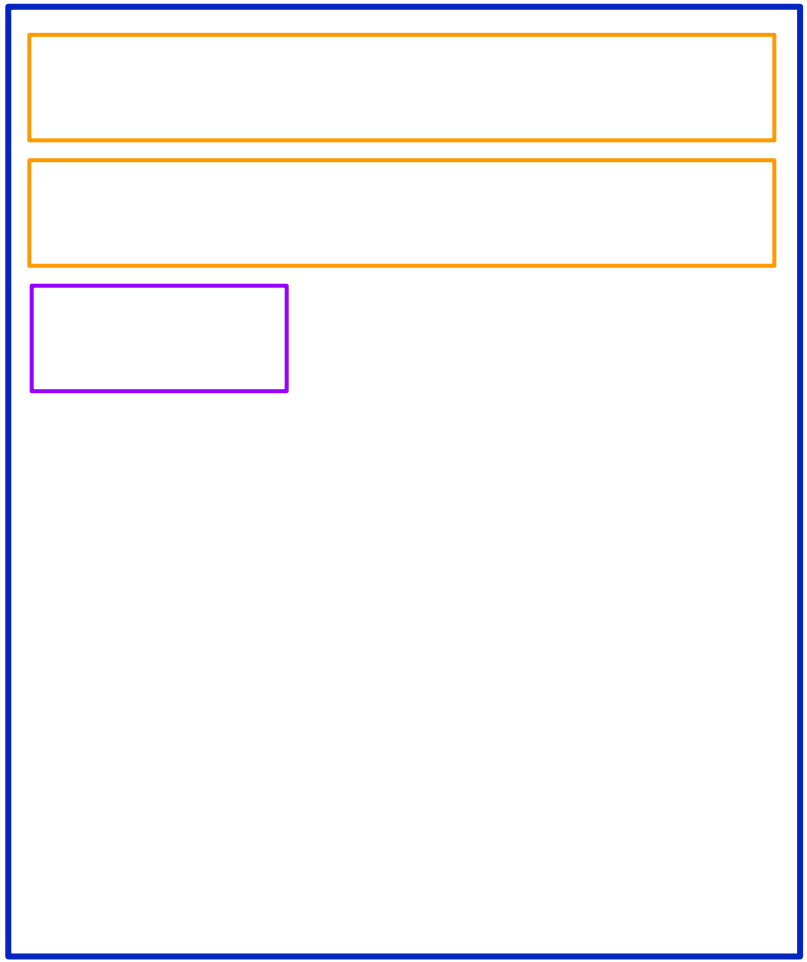
document flow

Normal flow



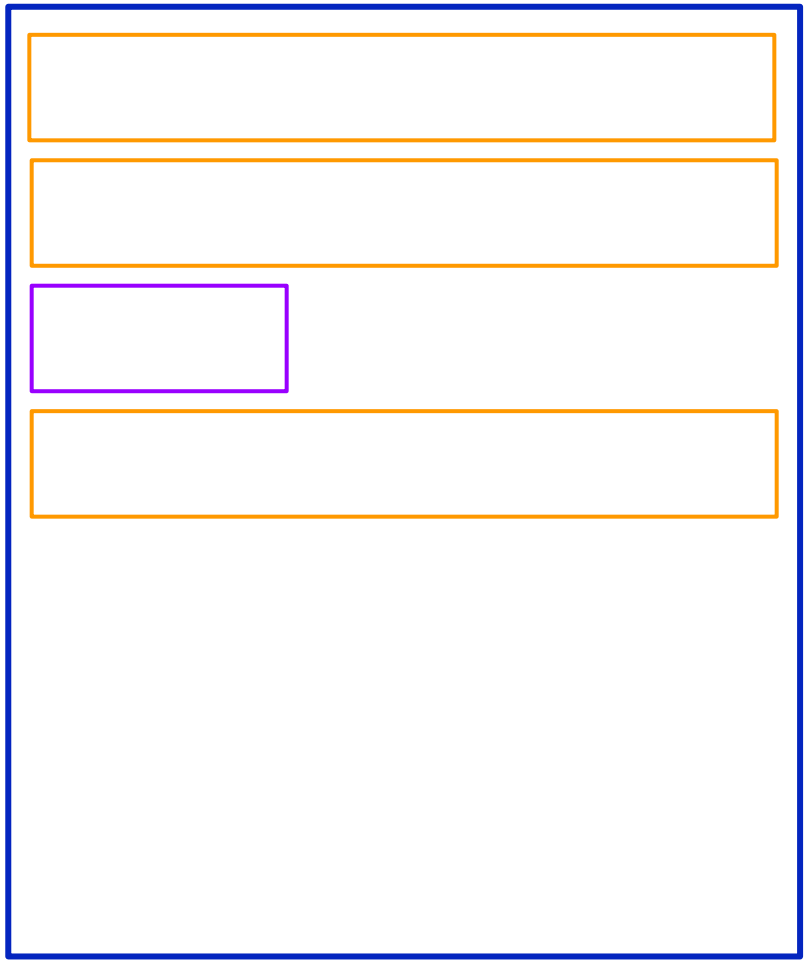
document flow

Normal flow



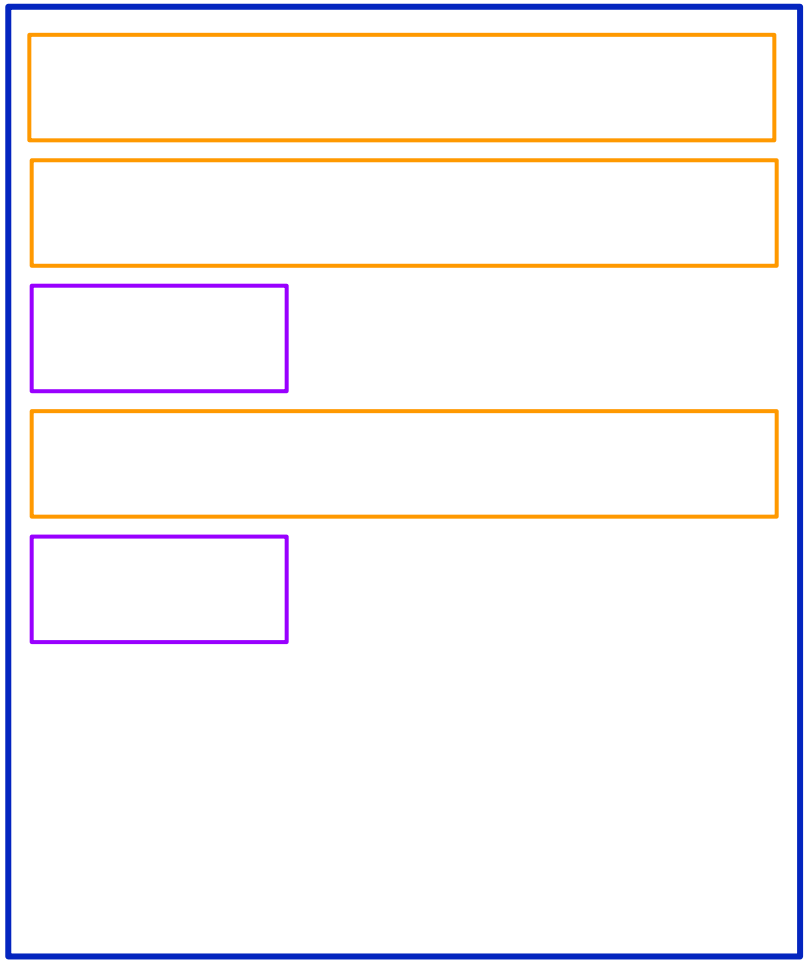
document flow

Normal flow



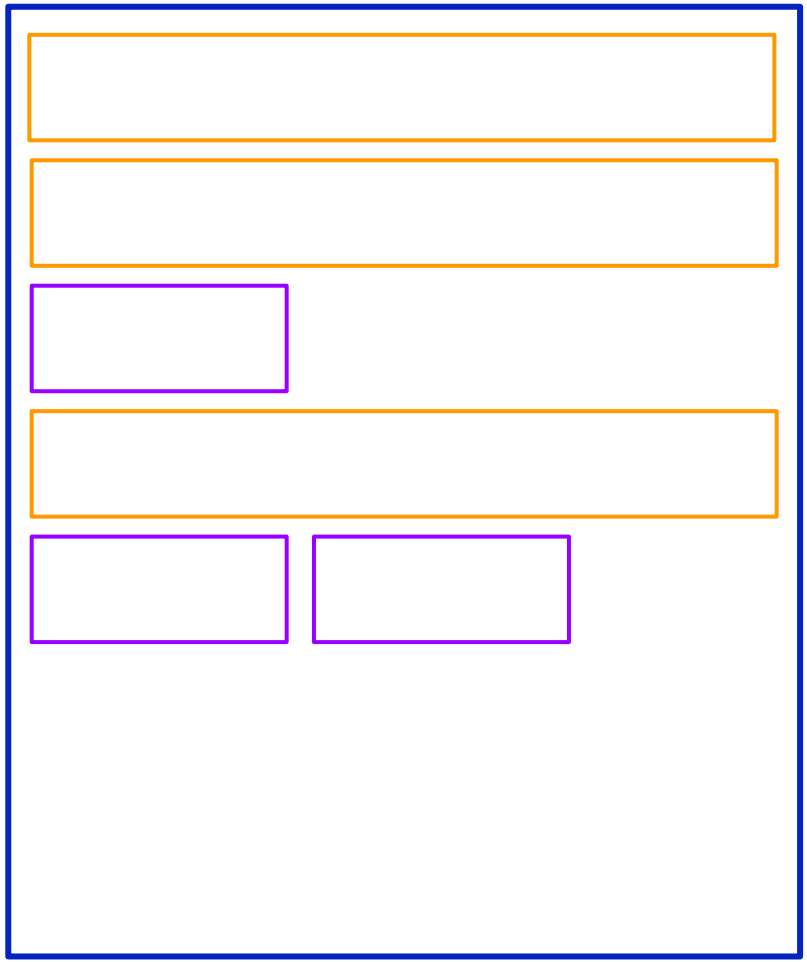
document flow

Normal flow



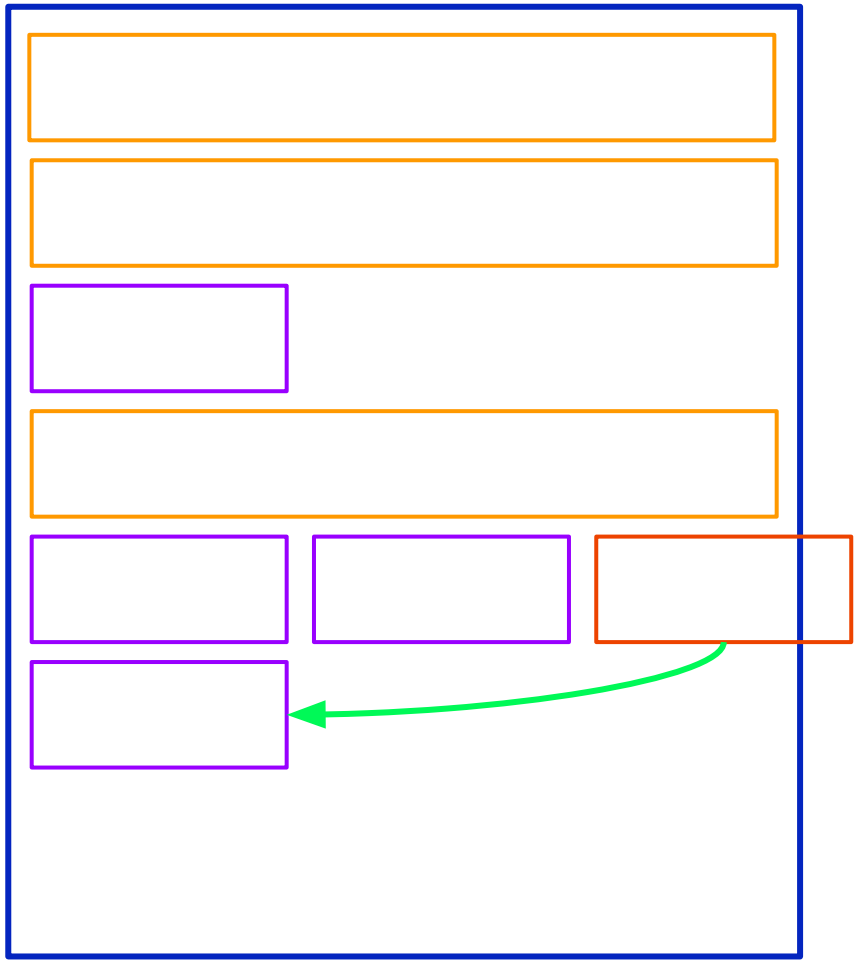
document flow

Normal flow



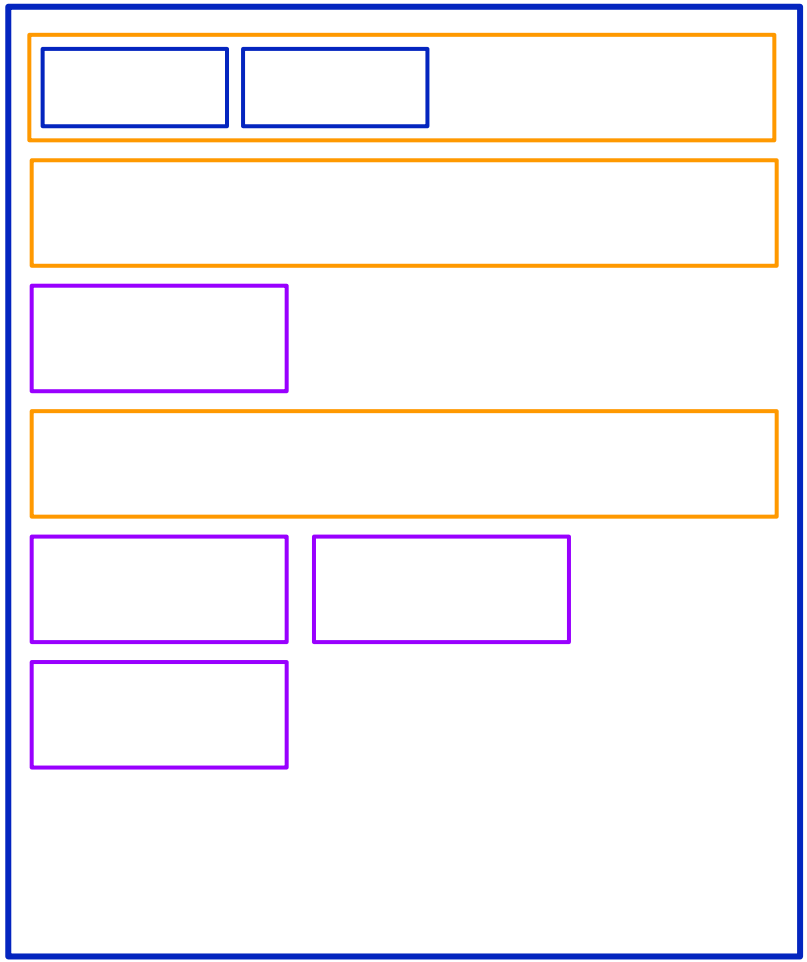
document flow

Normal flow



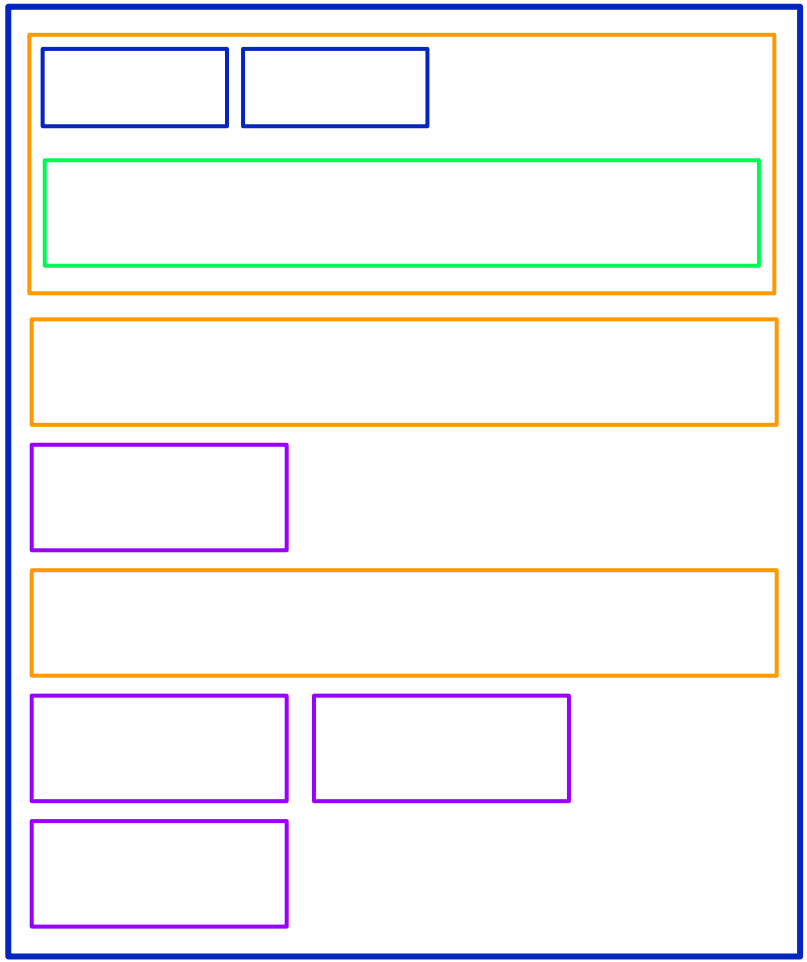
document flow

Normal flow



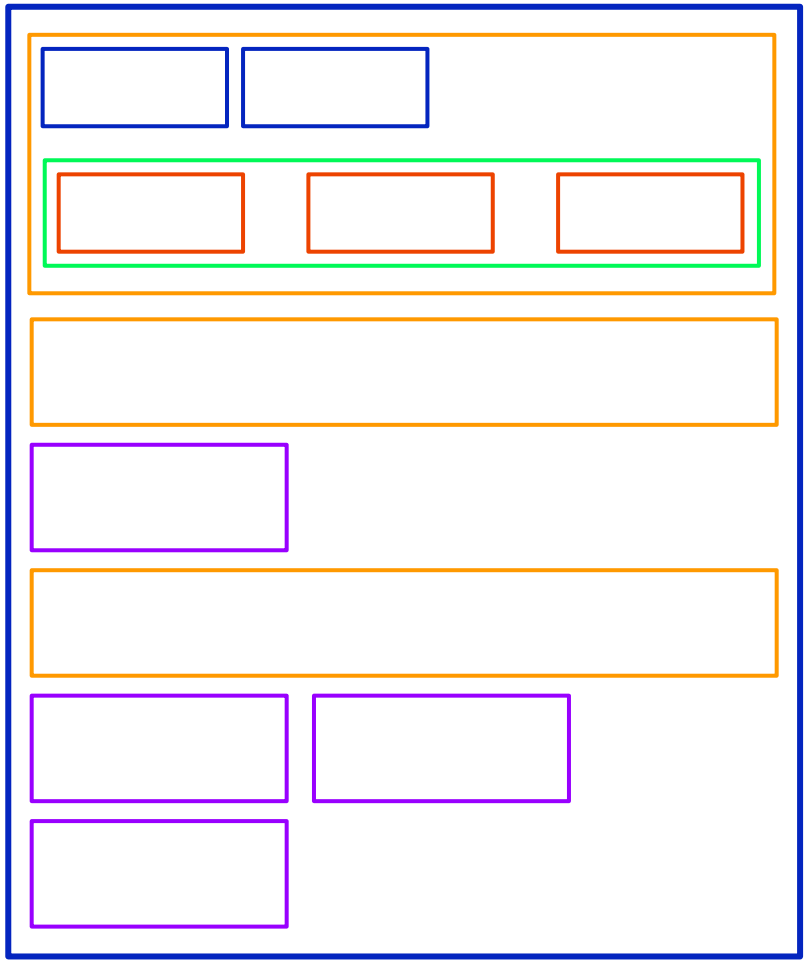
document flow

Normal flow



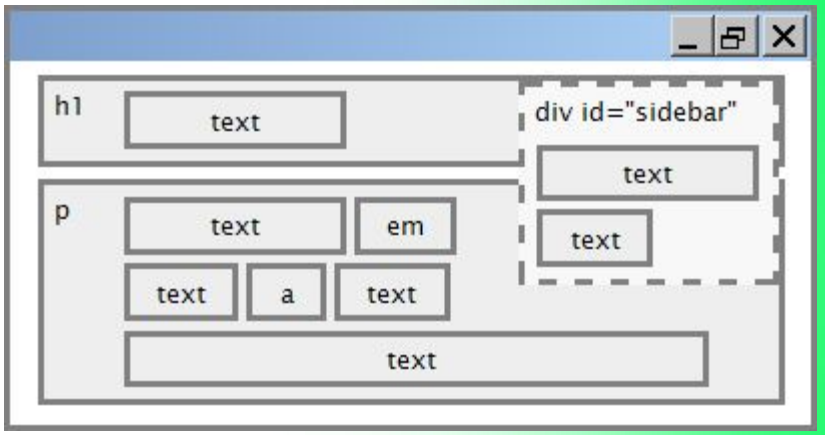
document flow

Normal flow



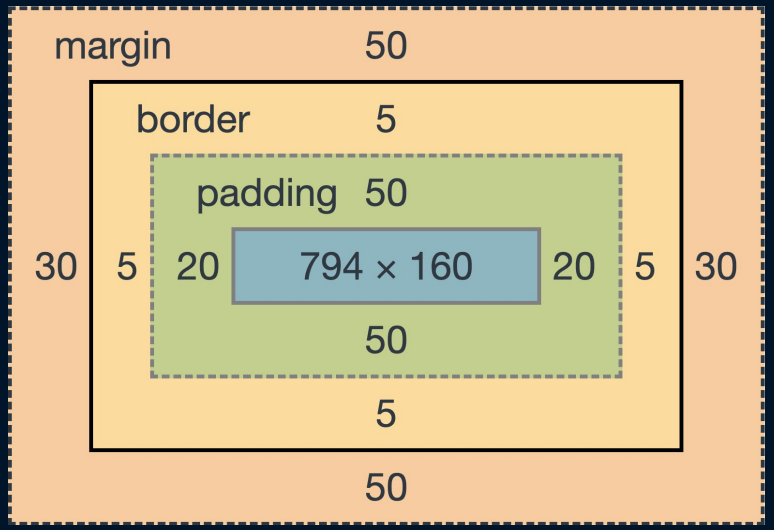
Properties Affecting Document Flow

- display
- width, height
- position
- float
- gap, column-gap, row-gap
- margin, padding, border



Box model

- content
- padding – The space inside the element, adding space within the element
- border
- margin – The space outside the element, pushing neighboring elements away.

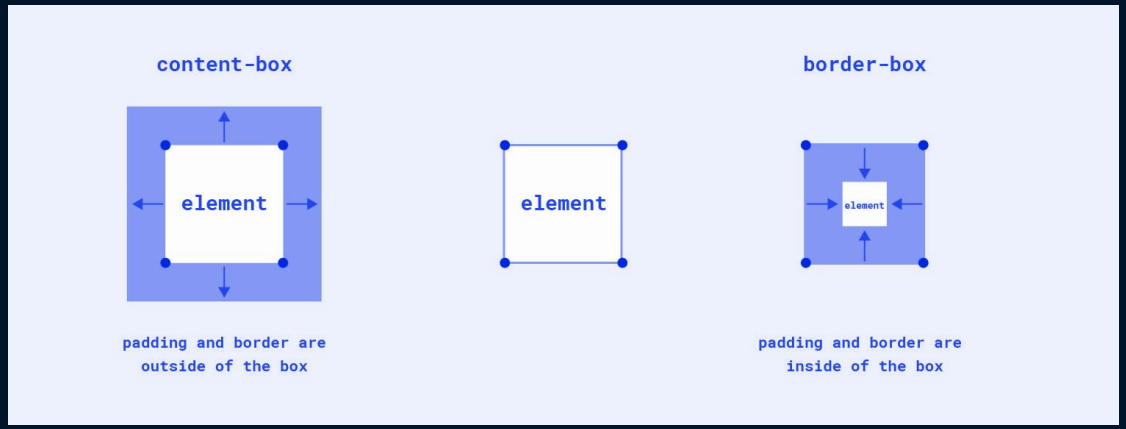


Demo

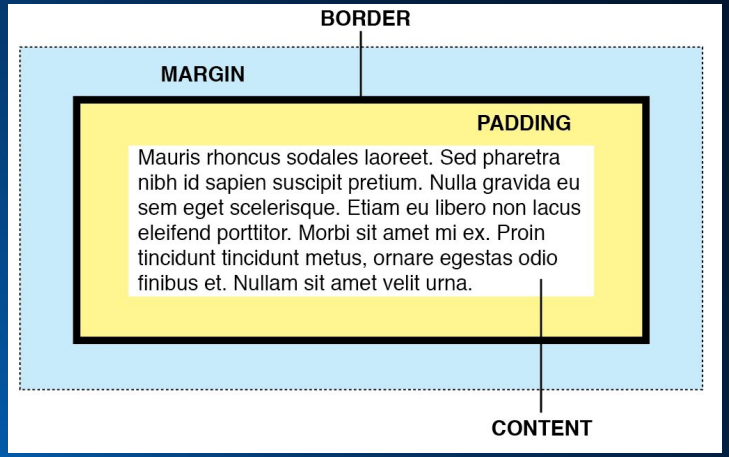
box-sizing property

Default:
`content-box` – width and height properties include the `content`, but **does not include** the `padding`, `border`, or `margin`.

`border-box` – width and height properties **include** the `content`, `padding`, and `border`, but **do not include** the `margin`.

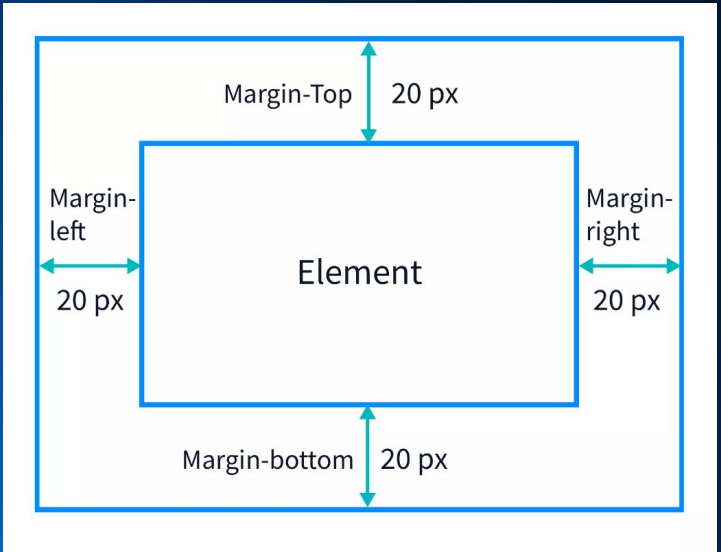


padding



- is the internal space from the content to the edges of the element.
- Units of measurement:
  - **px**
  - **%**
- Cannot be negative.

margin

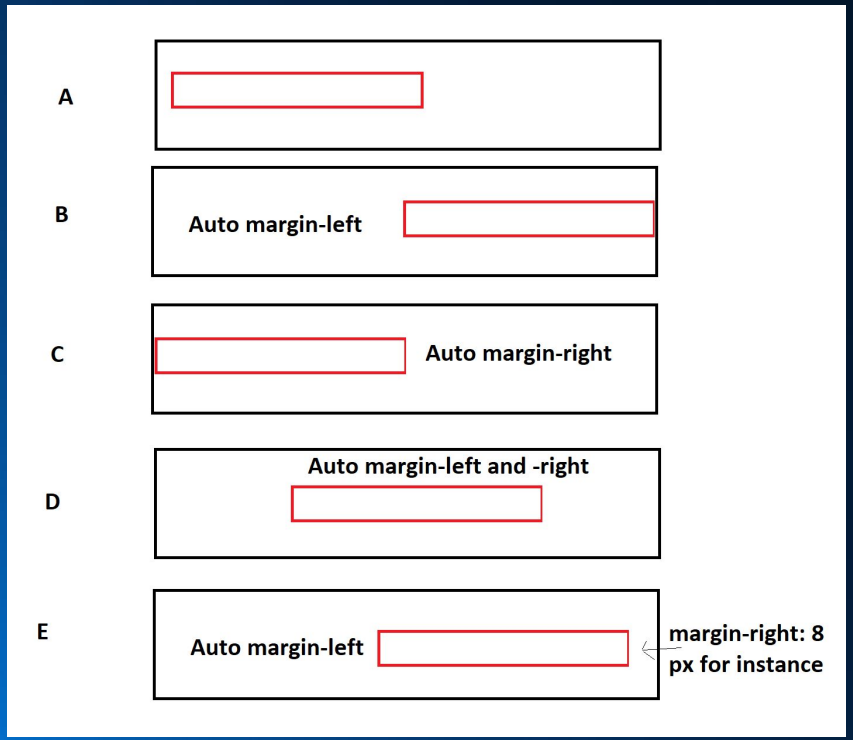


- The outer space that pushes neighboring elements away.
- Units of measurement:
  - **px**
  - **%**
  - **auto**

- Can have negative values:

  `margin-top: -10px;`

- `margin-top` and `margin-bottom` do not work on inline-box



margin: auto

```
margin: auto;
margin-right: auto:
margin: 0 auto;
```

The width of the margin is **automatically calculated** by the browser and occupies **all available space** between elements and margins within the container.

CSS Logical Properties

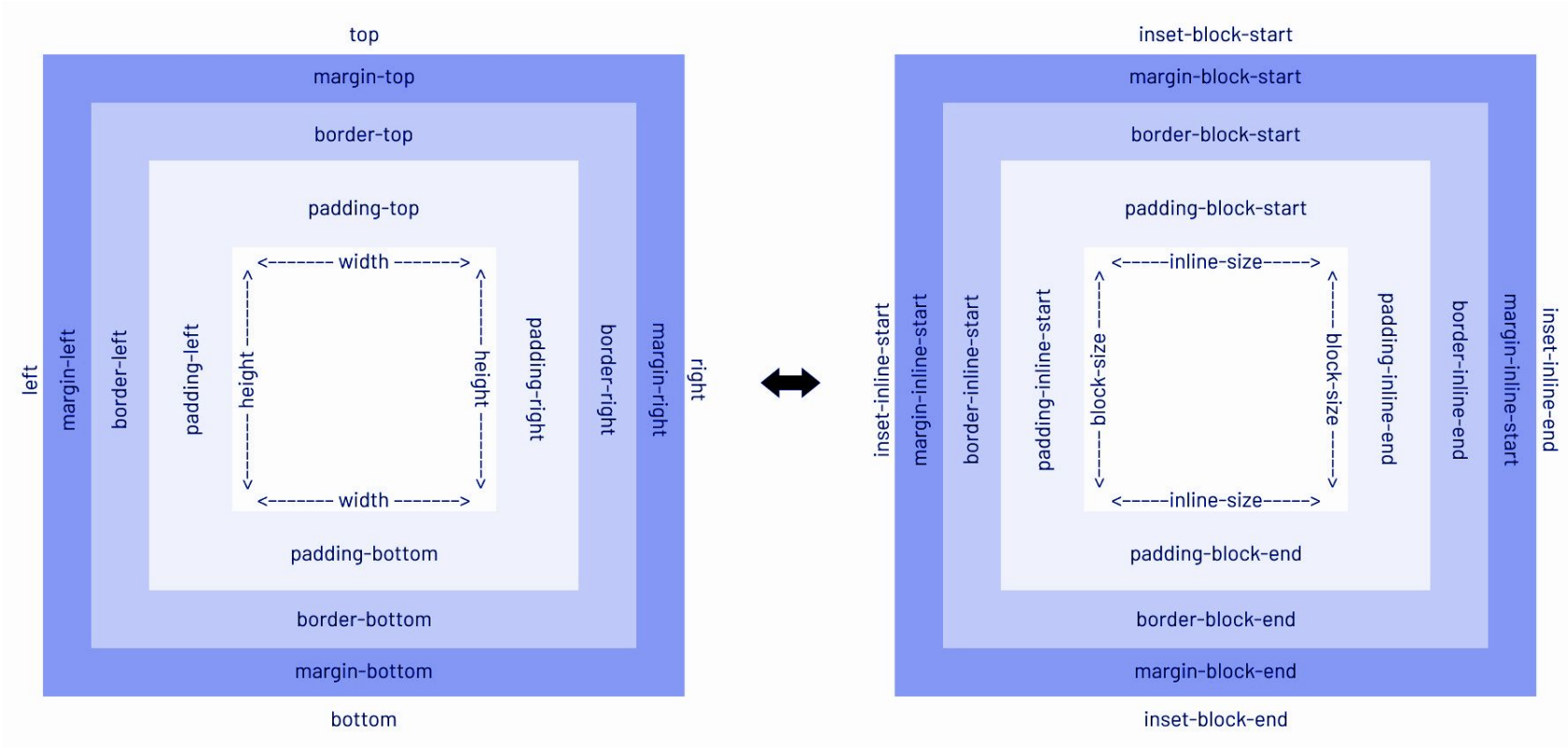
Margins/padding could be applied consistently **according to the document flow**:

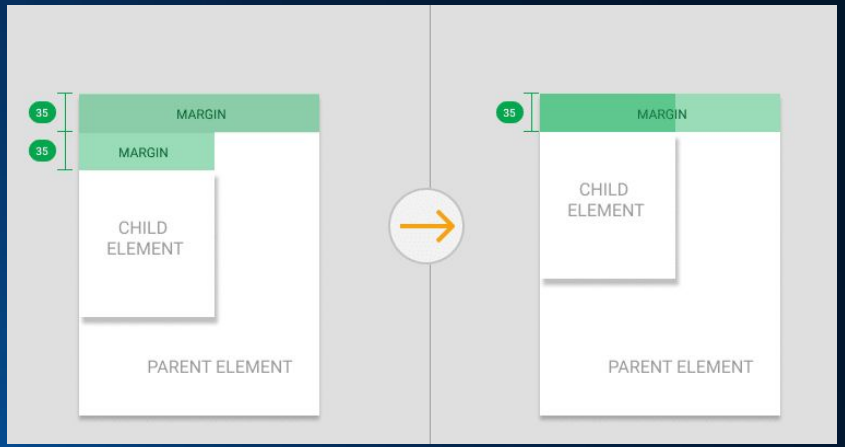
- use -block for **vertical spacing**
- use -inline as for **horizontal spacing**

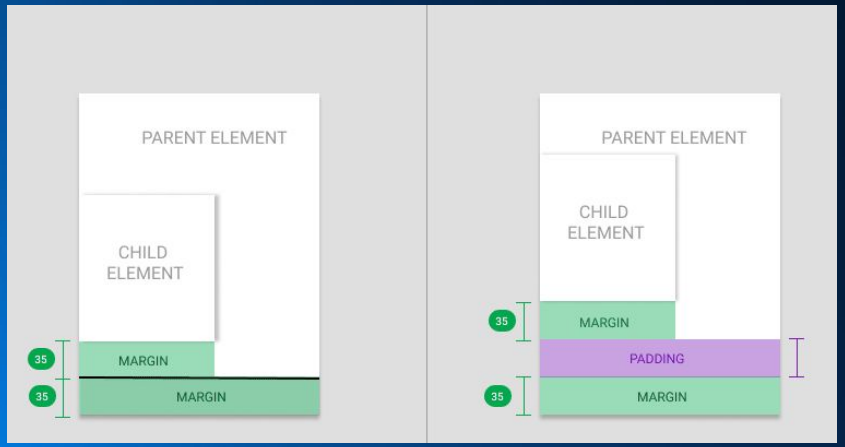
```
margin-block (margin-top + margin-bottom)
margin-inline (margin-left + margin-right)

padding-block (padding-top + padding-bottom)
padding-inline (padding-left + padding-right)
```

physical / logical

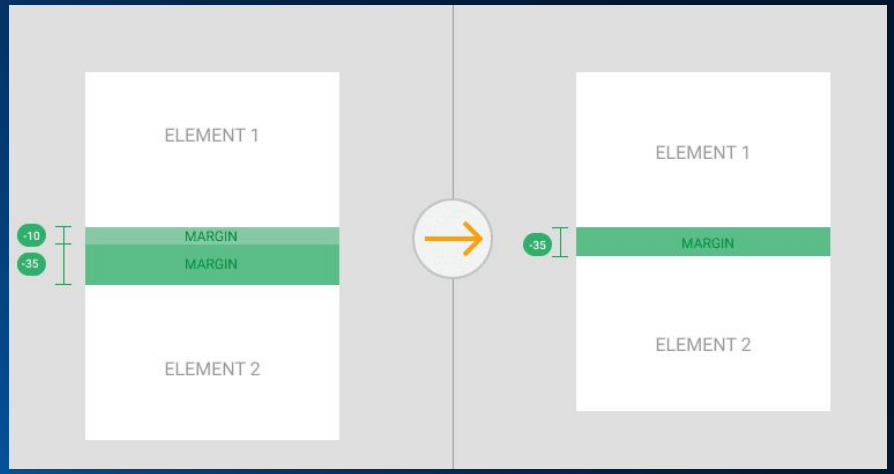


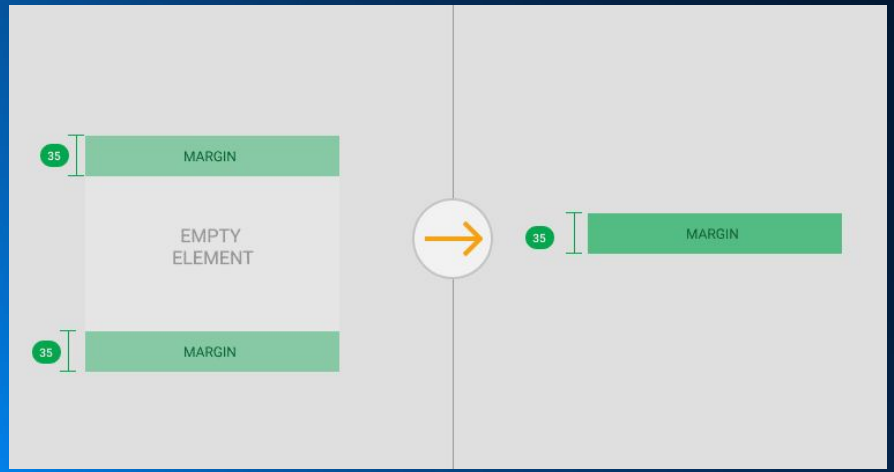




Collapsing Margins

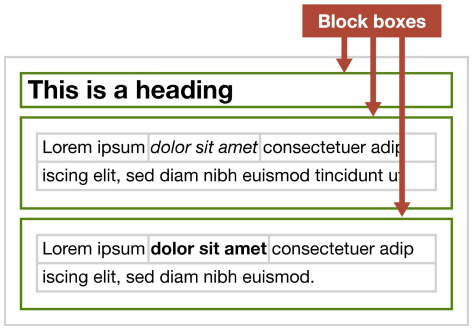
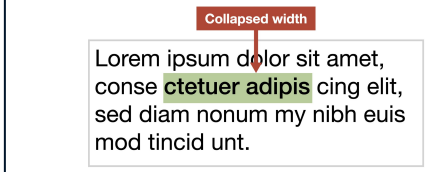
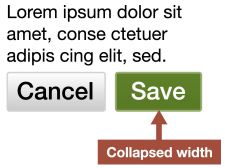
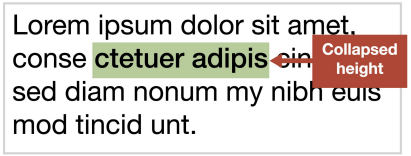
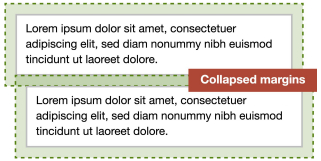
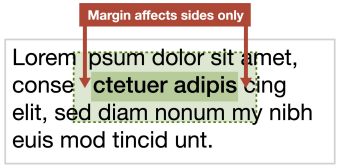
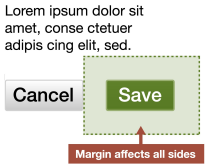
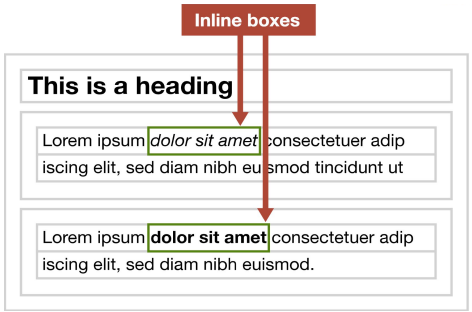
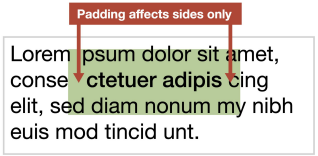
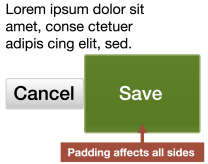
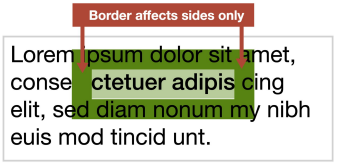
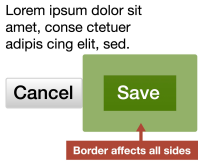
- Works for the `margin-top` of the first child inside a parent and for the `margin-bottom` of the last child inside a parent.
- The child's `margin` becomes the parent's `margin` or the larger of the two applies.
- Does not work if the parent has `padding`
- In elements with `position: absolute` and `position: fixed`, `display: flex`, `display: grid`; `float` margins do not collapse or cause margin drop.





Collapsing Margins

- Works only vertically.
- Instead of adding margins together, the larger margin is applied.
- In elements with `position: absolute` and `position: fixed`, `display: flex`, `display: grid`; `float`, margins do not collapse or cause margin drop.
- If an element has no content inside, the margins still remain in the document flow.

	block boxes	inline boxes	inline-block boxes
Default width			
Default height			
Margins			
Padding			
Border			

Demo

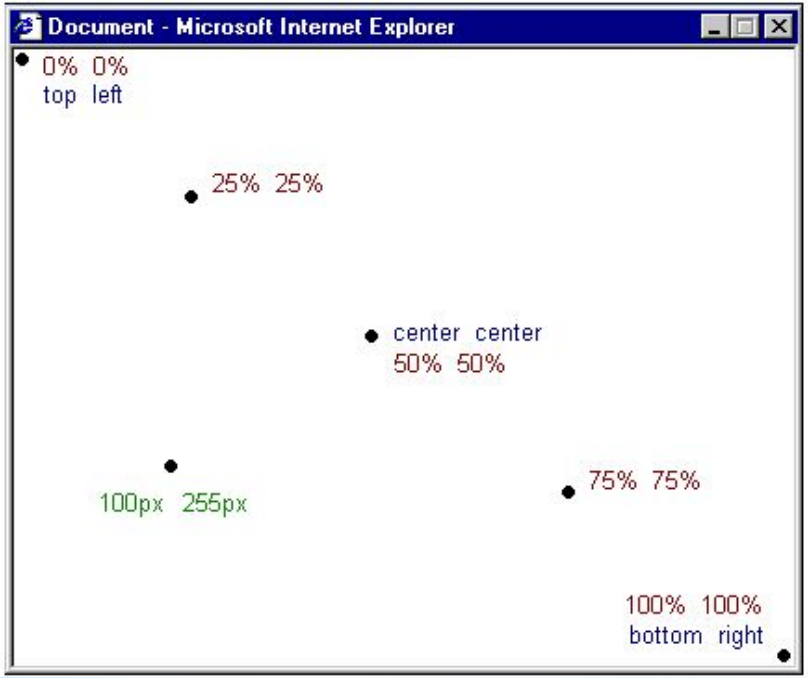
The `position` property specifies the type of positioning method used for an element:

- **static**
- **relative**
- **absolute**
- **fixed**
- **sticky**

- **Positioning should not be used for creating layouts, only for decorative purposes**

CSS POSITION

- **Do not use margin** to set the position of such an element.
- **top, right, bottom, left** – should **always** have at least one **horizontal and vertical** coordinate specified.
- **top, right, bottom, left** can be negative.
- You can specify all four coordinates simultaneously, but there's no guarantee that they will all work together as expected.
- **inset** – shorthand property for **top, right, bottom, left**



CSS COORDINATE SYSTEM

position:

static

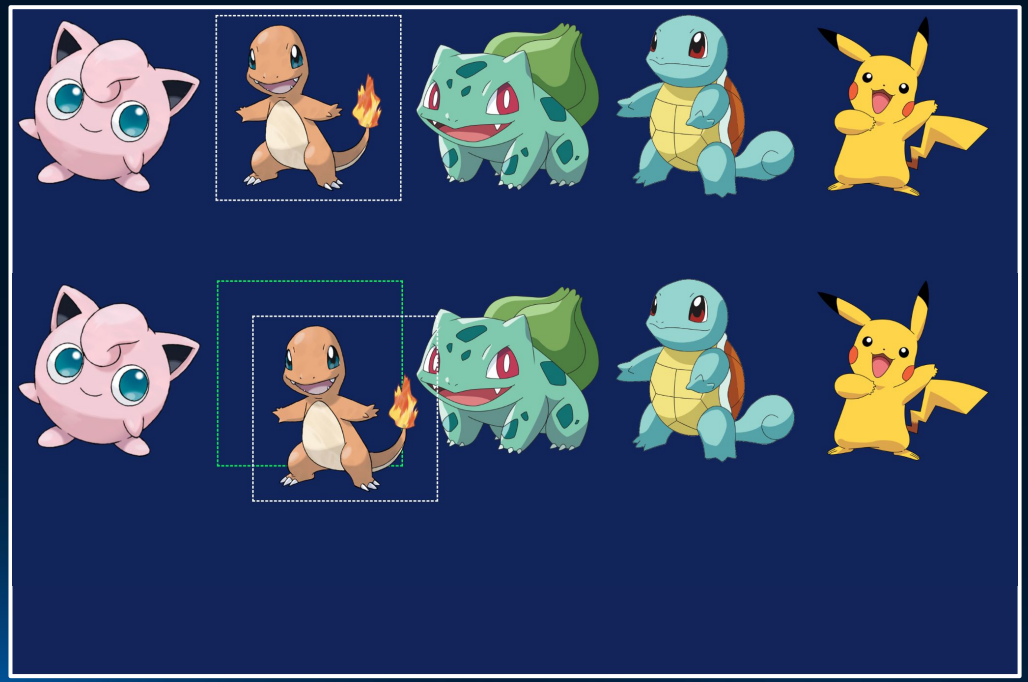
- default value for all elements
- Elements take their place in the flow depending on the box type and the amount of content.
- top, right, bottom, left, z-index don’t work
- **normal document flow**

```
position: static;
```

position:

relative

- The element **remains in the normal document flow.**
- It is positioned relative to its **original position in the flow.**
- Space for the element is **still reserved** in the document flow.
- normal document flow



```
position: relative;
left: 20px;
top: 20px;
```

position:

absolute

- The element is **removed from the document flow**, and neighboring elements completely ignore it.
- It is positioned **relative to its parent block**
  or
  the nearest ancestor with **position: relative**.
- If both horizontal or both vertical coordinates are specified, the element will stretch between them.

```
position: absolute;
left: 0;
top: 10px;
```

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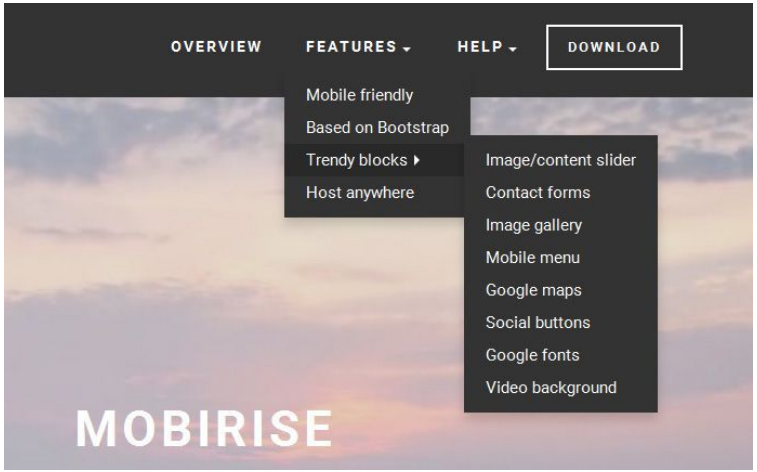
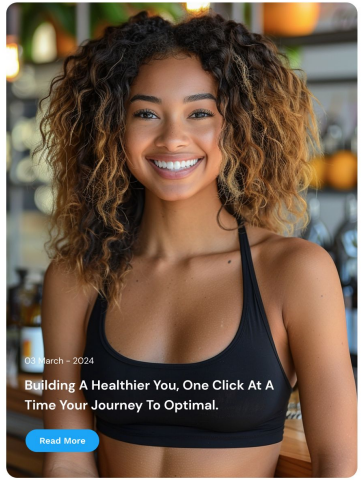
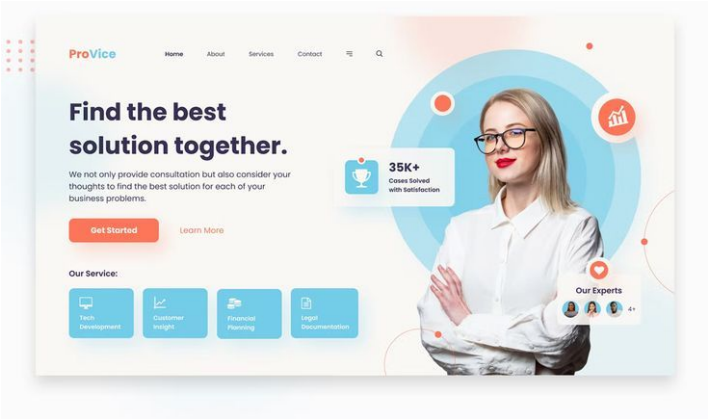
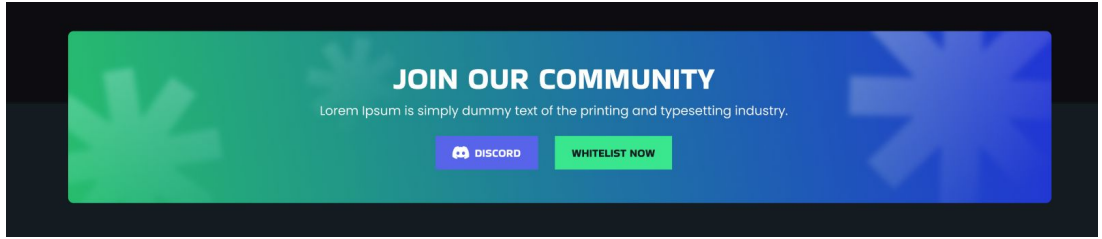
Handwritten Font • Fonts









position:

fixed

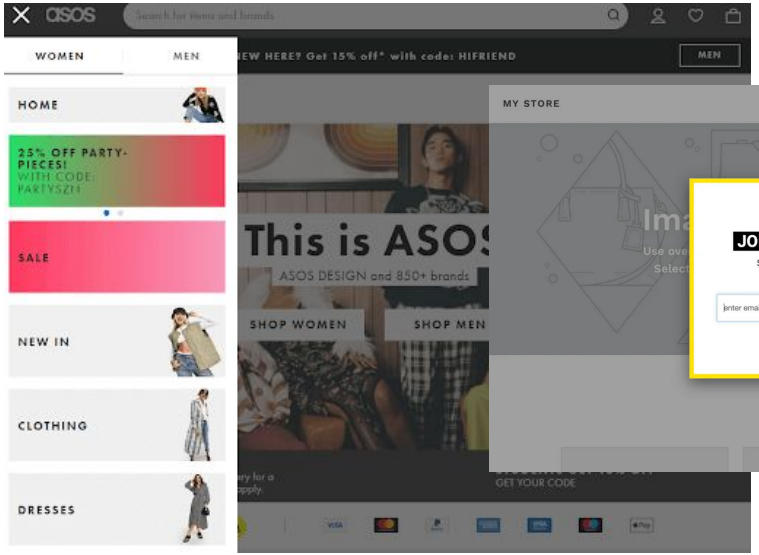
- The element is removed from the document flow, and neighboring elements completely ignore it.
- It is positioned relative to the **viewport.**
- It does not move when **the page is scrolled.**
- If both horizontal or both vertical coordinates are specified, the element will stretch between them.

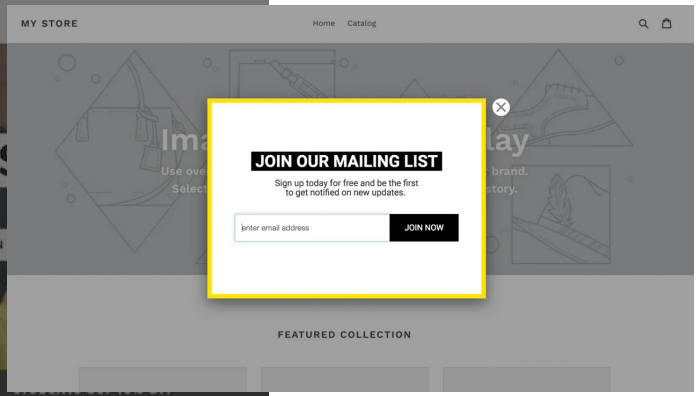
```
position: fixed;
left: 20px;
top: 20px;
```

Fixed Mobile Sticky Menu

Use HTML and CSS to create a cross
browser mobile navigation that sticks
By: John McGarrah

search filters map radius



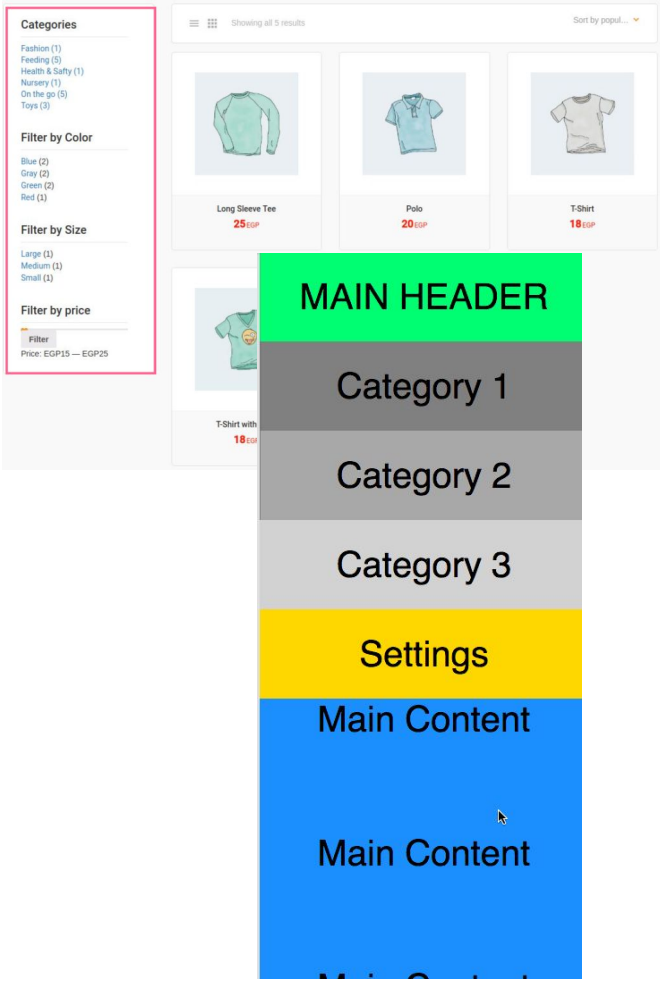


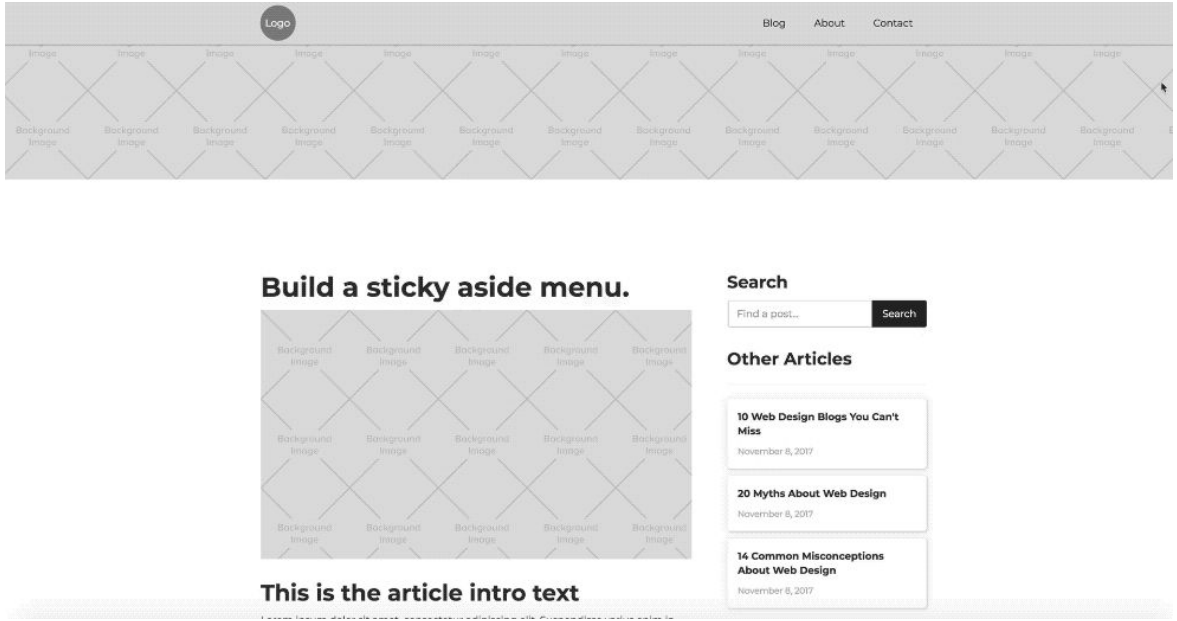
position:

sticky

- The element is removed from the document flow.
- Neighboring elements behave as if the element is still in its original position, and space for the element is **still reserved** in the document flow.
- The element does not move when its containing **block is scrolled**.
- It behaves like position: relative until the block is scrolled, after which it behaves like position: fixed

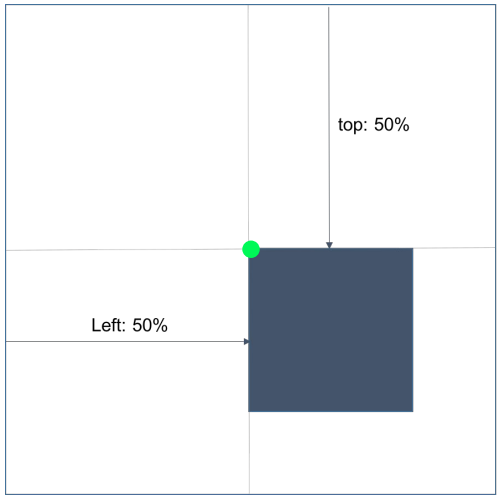
```
position: sticky;
right: 0;
top: 10px;
```

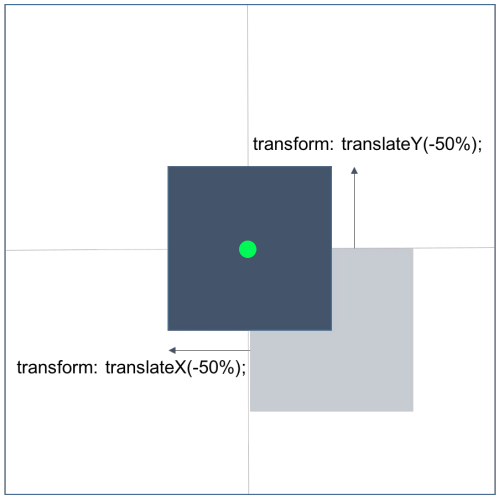

Categories
Fashion (1)
Feeding (5)
Health & Safty (1)
Nursery (1)
On the go (5)
Toys (3)
Filter by Color
Blue (2)
Gray (2)
Green (2)
Red (1)
Filter by Size
Large (1)
Medium (1)
Small (1)
Filter by price
Filter
Price: EGP15 — EGP25
Showing all 5 results
Sort by popul...
Long Sleeve Tee
25 EGP
Polo
20 EGP
T-Shirt
18 EGP
T-Shirt with
18 EGP
MAIN HEADER
Category 1
Category 2
Category 3
Settings
Main Content
Main Content


Logo
Blog
About
Contact
Build a sticky aside menu.
This is the article intro text
Search
Find a post...
Search
Other Articles
10 Web Design Blogs You Can't Miss
November 8, 2017
20 Myths About Web Design
November 8, 2017
14 Common Misconceptions About Web Design
November 8, 2017

center position

Demo





Adds an offset upward by half the height of the block using:
`transform: translateY(-50%);`

Adds an offset to the left by half the width of the block using:
`transform: translateX(-50%);`

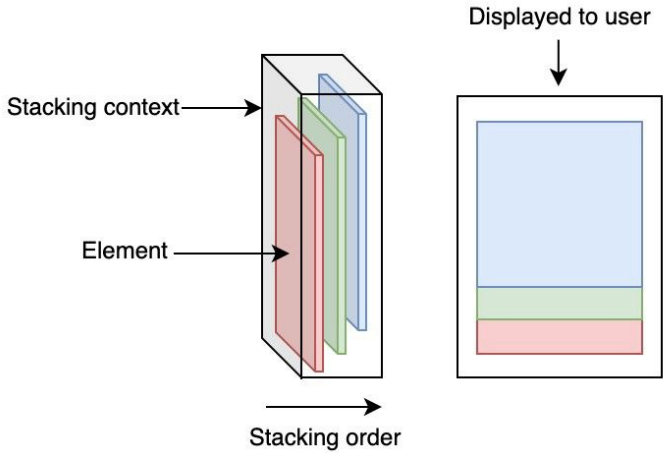
or

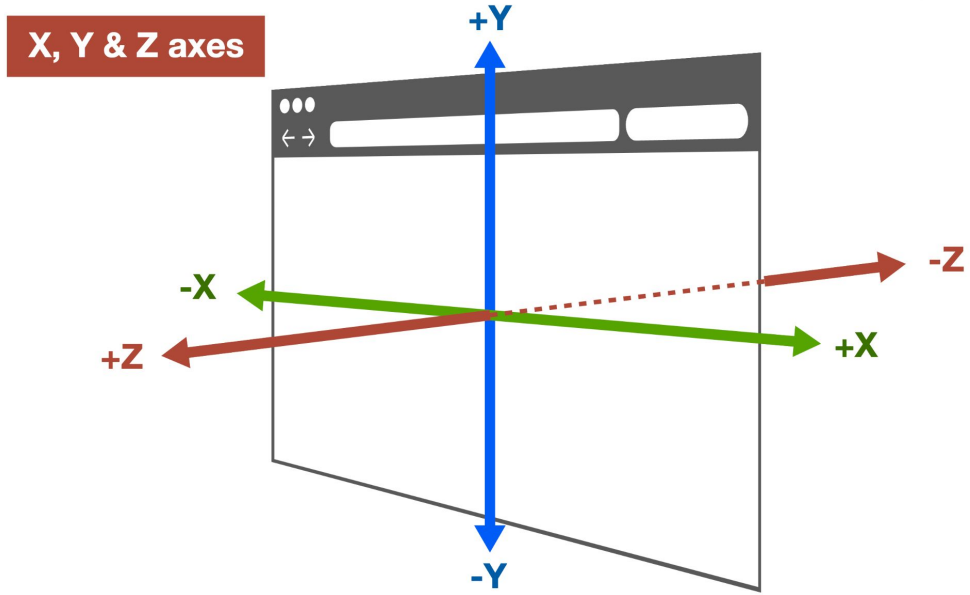
`translate: -50% -50%;`

stacking context

Demo

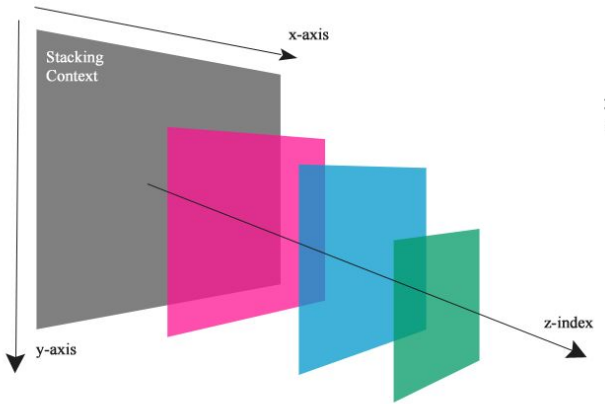
x – left / right
y – top / bottom
z – z-index





z-index

Demo

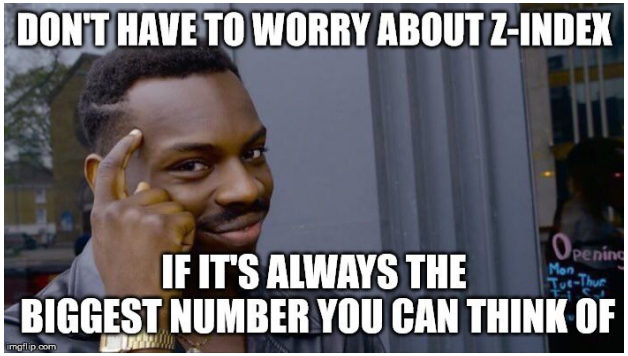


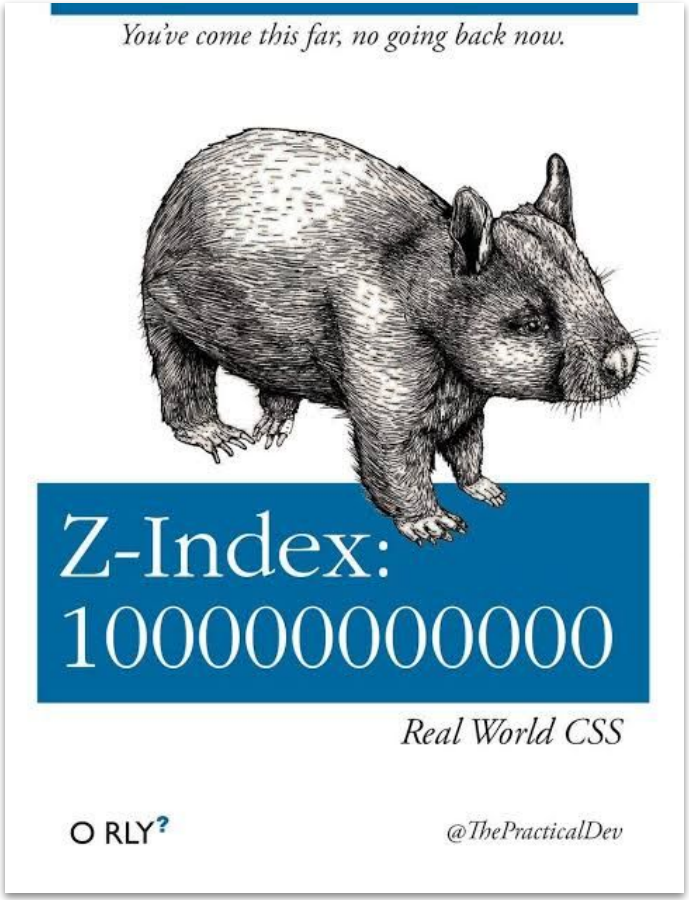
- Controls the stacking order of elements within a stacking context.
- Applies only to elements with an explicitly defined `position` other than `static`.
- If positioning is not needed but you still require a z-index, use `position:relative` without coordinates.
- Values can be positive or negative numbers.
- The higher the number, the more visible the layer.
- By default, `z-index: auto` is used, and visibility is determined by the element's position in the DOM tree: the lower it is in the code, the more visible it is.

z-index

- Stacking context determines the order of how elements are layered on top of each other

Z-index should start from 1 and increment by +1 to avoid using random large numbers like 10, 83, 100, etc.



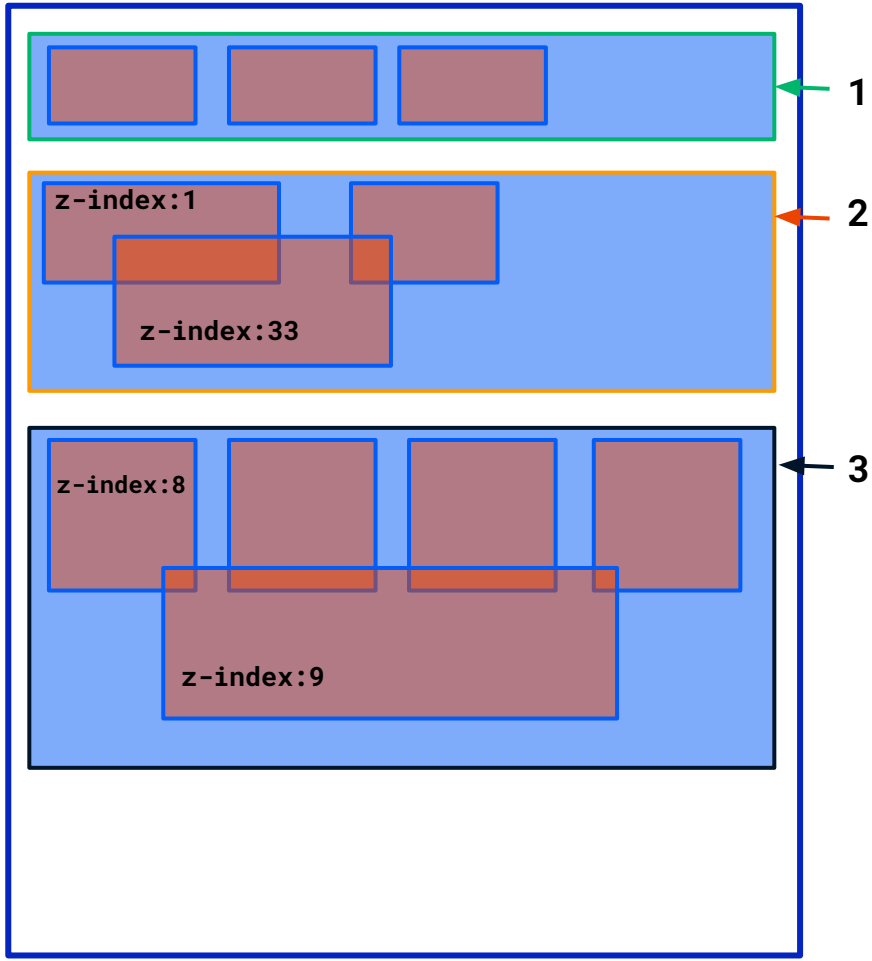


stacking

context

– There can be multiple independent stacking contexts on a page.

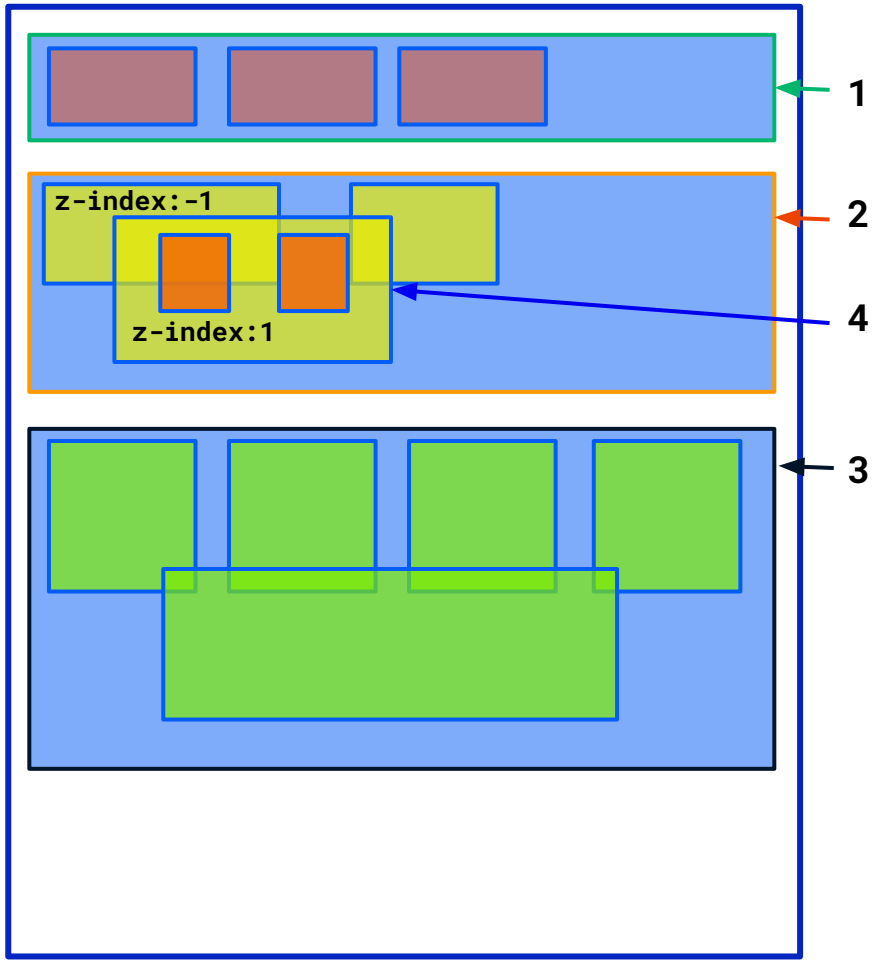
– **z-index** property applies to child elements within an element that creates a stacking context.



stacking

context

Elements that are direct descendants of the same parent belong to the same stacking context.

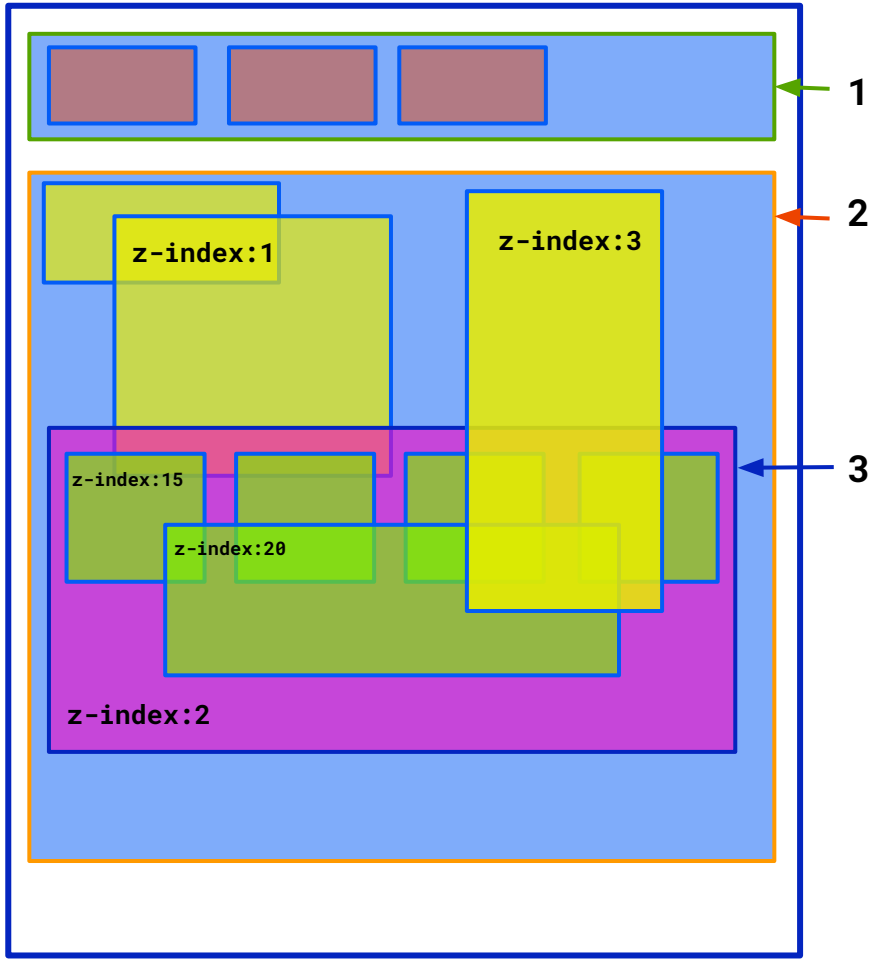


stacking

context

– One stacking context can be nested within another.

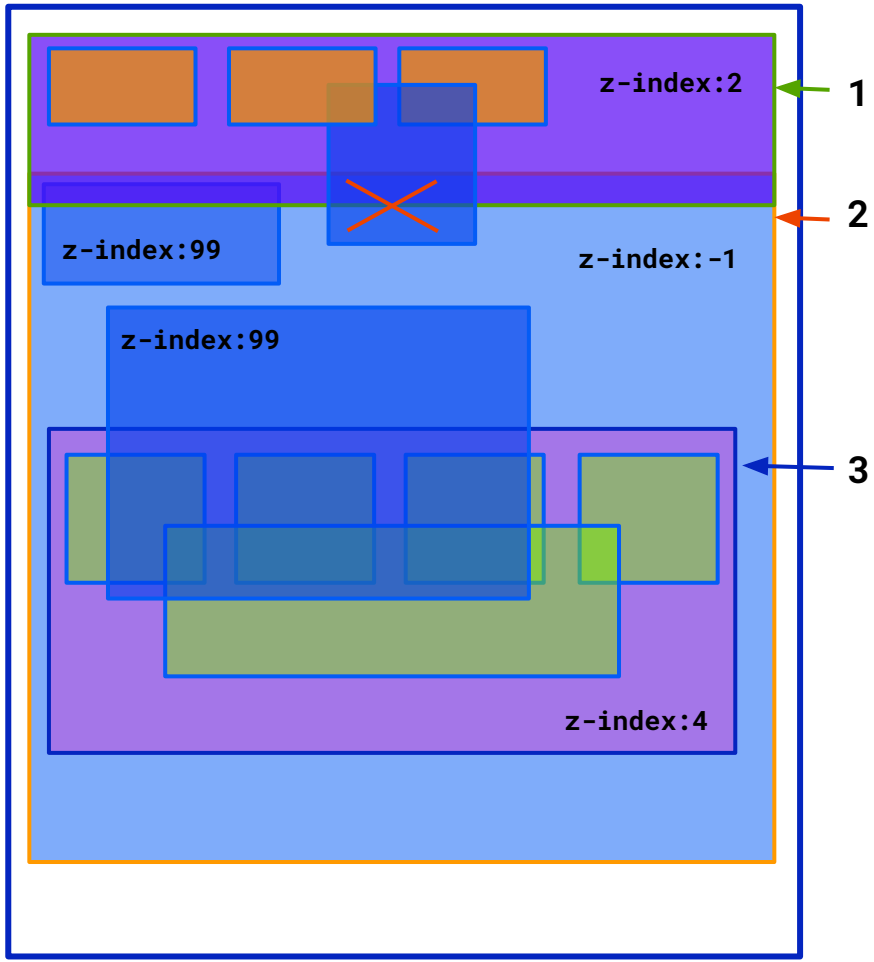
– Child elements are considered part of their parent's stacking context.



stacking

context

Elements within one stacking context cannot be positioned between elements of another stacking context.



stacking context

`root stacking context` – **<html>** tag creates the root stacking context, unless other conditions are specified:

- `position: absolute` with a **z-index** other than **auto**
- `position: relative` with a **z-index** other than **auto**
- `position: fixed`
- `position: sticky` (only on mobile devices)
- A child element of a **flex** container with a **z-index** other than **auto**
- `opacity` less than **1**
- `transform` with a value other than **none**
- `filter` with a value other than **none**
- `perspective` with a value other than **none** or **0**

float

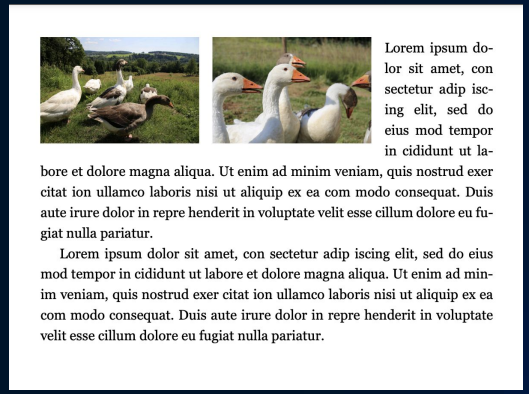
allows content to flow around a block element.

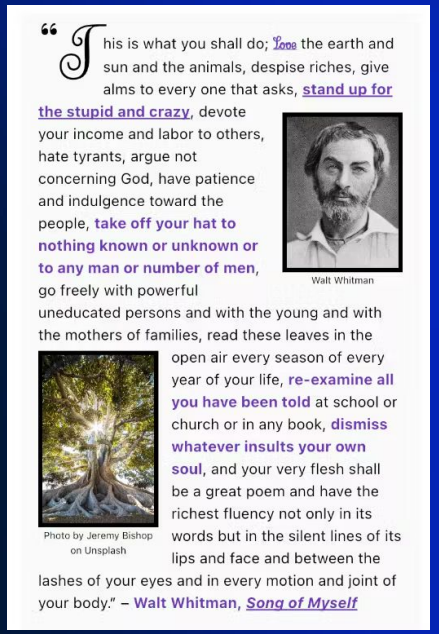
The block is pushed to the specified side as far as possible.

`float document flow`

```
float: left;
     : right;
     : both;
     : none;
```

Do not use float for building layouts!





Demo

clear float

is used to stop elements from being wrapped by floated elements.

It can be applied to:

1. An element that follows a floated element - `float`

```
clear: left;
     : right;
     : both;
     : none;
```

Lorem ipsum dolor sit amet, con sectetur adip iscing elit, sed do eius mod tempor in cididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exer citat ion ullamco laboris nisi ut aliquip ex ea com modo consequat. Duis aute irure dolor in repre henderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Lorem ipsum dolor sit amet, con sectetur adip iscing elit, sed do eius mod tempor in cididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exer citat ion ullamco laboris nisi ut aliquip ex ea com modo consequat. Duis aute irure dolor in repre henderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Demo

clear float

It can be applied to:
2. An element that follows a floated element – `float`

Alternatives:

```
overflow: hidden;
 display: flow-root;
```

Lorem ipsum dolor sit amet, con sectetur adip iscing elit, sed do eius mod tempor in cididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exer citat ion ullamco laboris nisi ut aliquip ex ea com modo consequat. Duis aute irure dolor in repre henderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Lorem ipsum dolor sit amet, con sectetur adip iscing elit, sed do eius mod tempor in cididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exer citat ion ullamco laboris nisi ut aliquip ex ea com modo consequat. Duis aute irure dolor in repre henderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

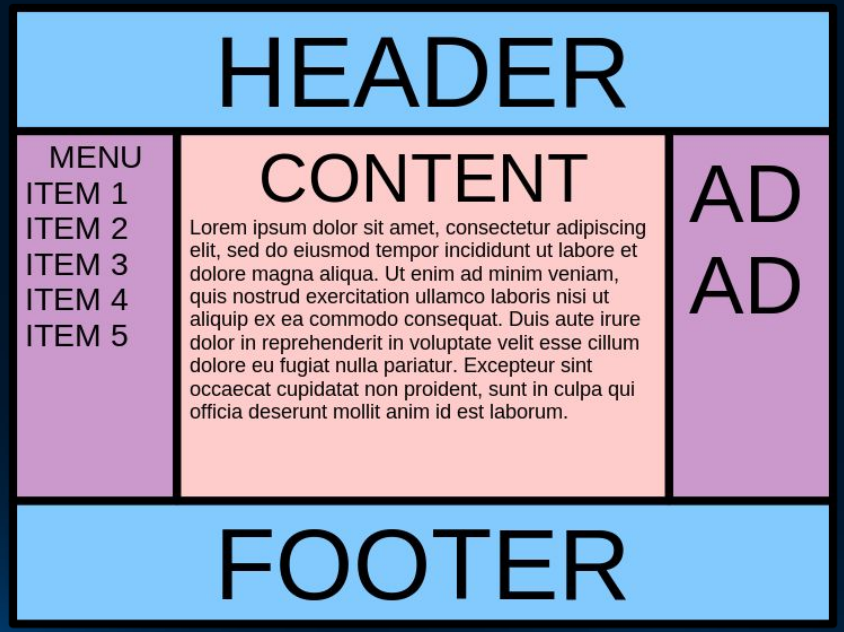
Demo

flexbox

Flexbox allows control over:

- Size
- Order
- Alignment of elements across multiple axes
- Distribution of free space between elements
- and more

★ Ease in creating complex layouts
★ Automatic alignment
★ Responsiveness



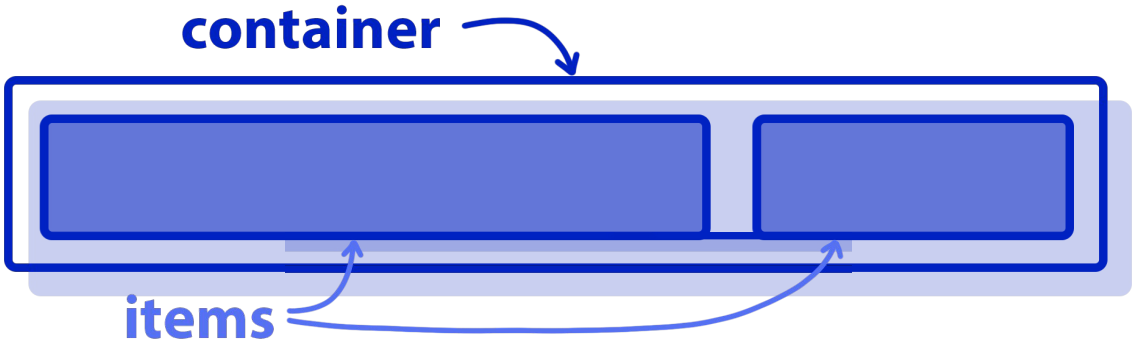
flex container and items

The container is given the property:

```
display: flex;
```

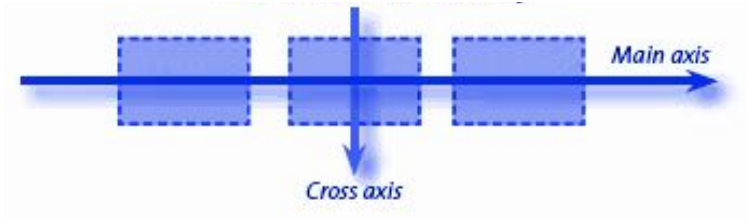
Style properties are applied to the **elements** inside the container.

The elements adjust to the width of their content and are arranged in a row by default.



Demo

flex: axis

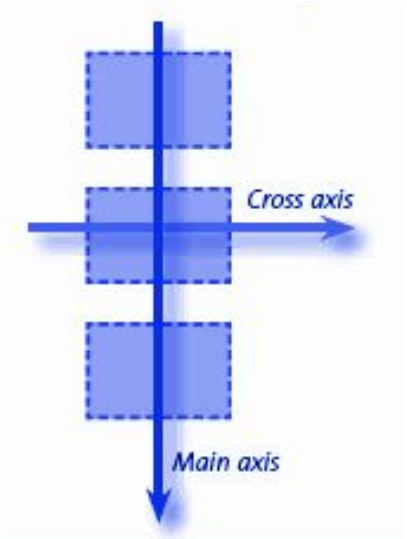


There are two axes:
main axis ~~horizontal~~
cross axis ~~vertical~~

The direction of the axes can be changed using the property:
`flex-direction`

Default:
```
flex-direction: row;
```

To arrange elements in a column:
```
flex-direction: column;
```



Demo

flex: Changing the Order of Elements

Demo

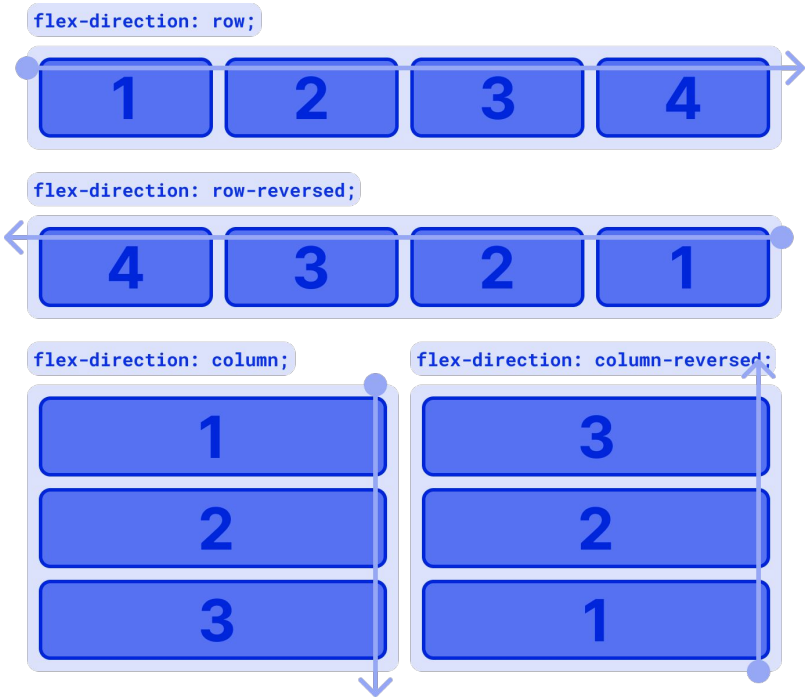
1. Using Reverse Direction:

```
flex-direction: row-reversed;
flex-direction: column-reversed;
```

2. The **order** Property:

```
order: 4;
```

Accepts positive and negative values.
Works correctly when the **order** property is set for all elements within the flex container.



flex: Alignment elements

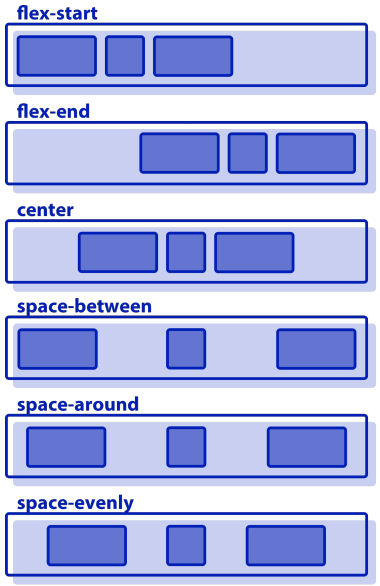
Main Axis:

`justify-content`

Default Value:

`flex-start`

Demo



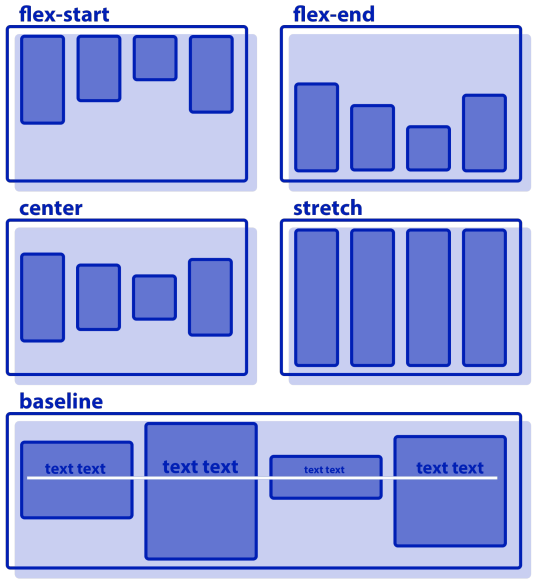
Cross Axis:

`align-items`

Default Value:

`stretch`

Demo



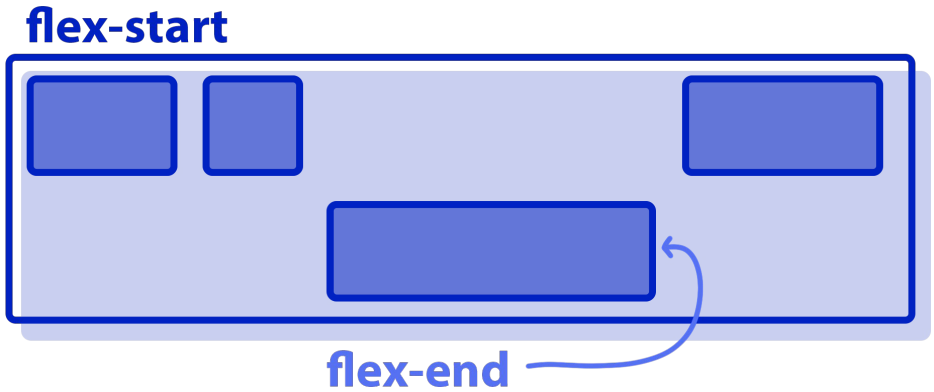
These properties are set on the container, and the alignment is applied to the items within it.

flex: Alignment one element

You can align a specific element only along the cross axis using:

`align-self`

The values are the same as those for `align-items`

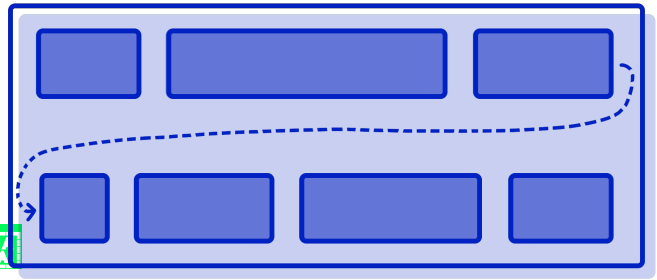


Demo

flex: Working with Rows

Flexbox can wrap items to new rows using :

```
flex-wrap: wrap;
```



Default:

```
flex-wrap: no-wrap;
```

Demo

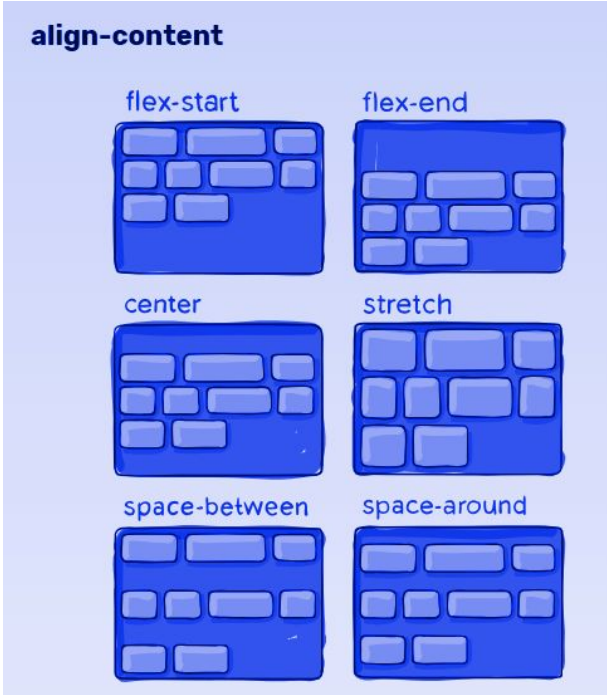
Aligning Rows on the Cross Axis:

```
align-content
```

Default:

```
align-content: flex-start;
```

Demo

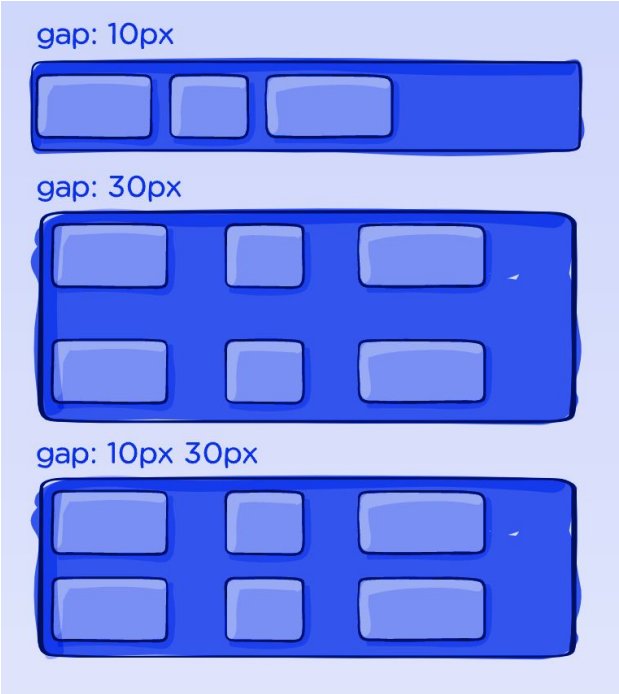


flex: Spacing Between Items

You can set `margin` for each element individually, but it's much easier to set spacing for the entire container in one place using the `flex` container.

`gap` – Sets spacing between items

```
gap: 10px 15px;
row-gap: 15px;
column-gap: 10px;
```



flex: distributing extra space

Applied along the **main axis** for `flex-item`.

Coefficient for distributing extra space:

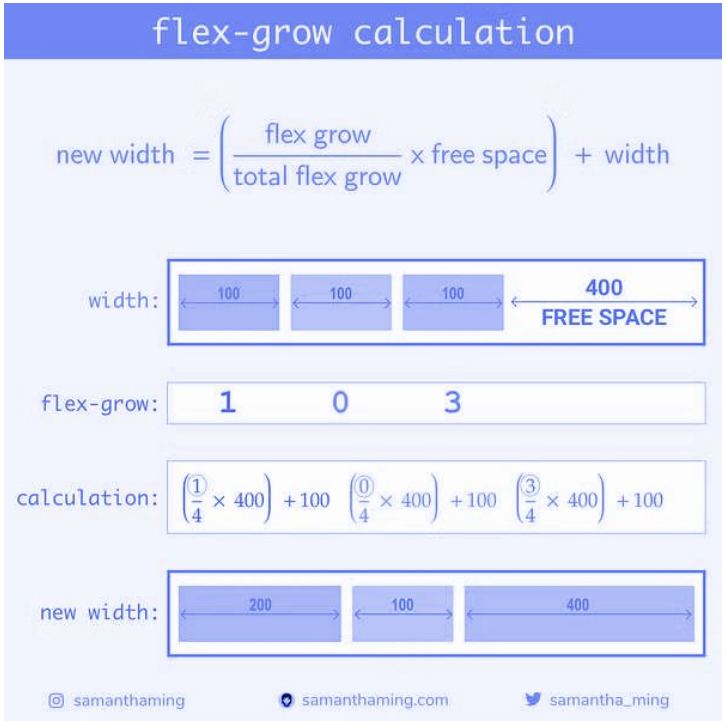
`flex-grow`

Values are positive integers greater than 0.

```
flex-grow: 2;
```

The distribution is calculated based on a specific formula –>

Demo



flex: shrinking elements

Demo

Applied along the **main axis**.

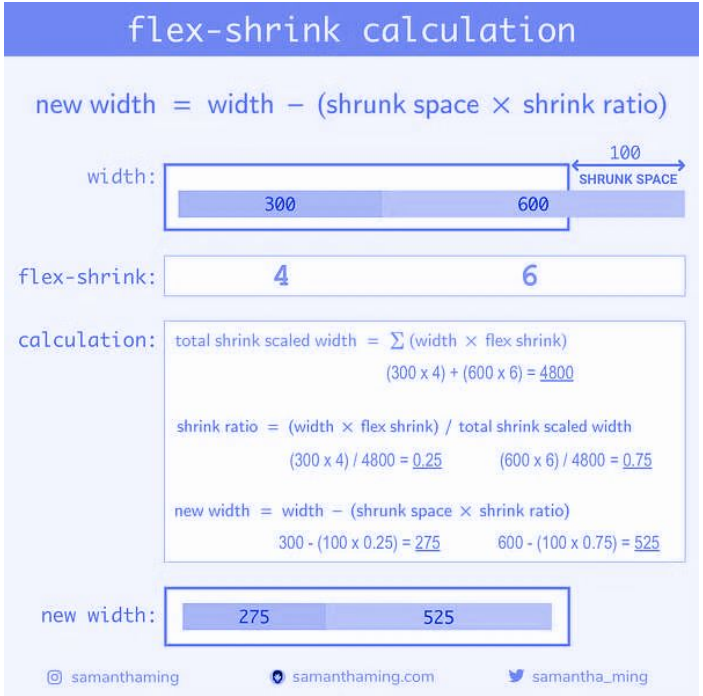
Shrink coefficient when items don't fit in one line:
`flex-shrink`

Values are positive integers greater than 0.

`flex-shrink: 1;`

The shrinkage is calculated based on a specific formula →

`flex-shrink: 0;` – The element will maintain the width specified by `width` or `flex-basis`, even if this causes other elements to overflow.

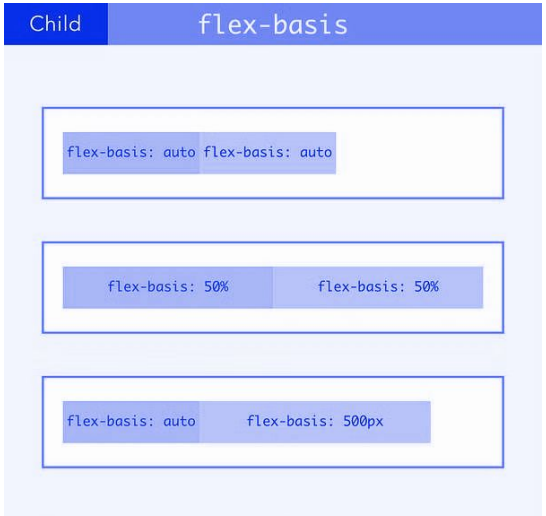


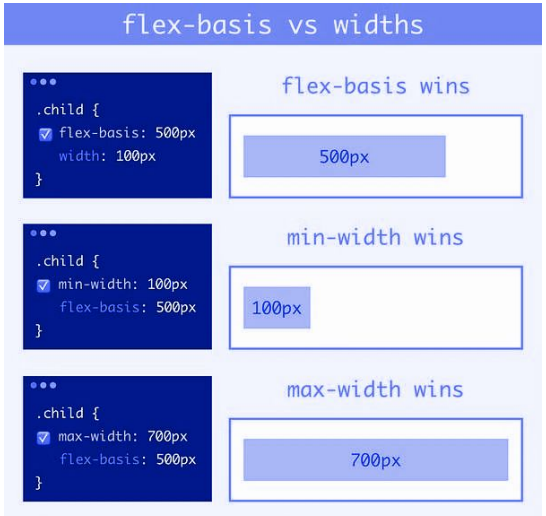
flex: base size of an element

`flex-basis` defines the size of an element along the **main axis** before considering `flex-grow` and `flex-shrink`.

Values can be in `px` or `%`.

```
flex-basis: 50%;
```





flex: shorthand property

flex-grow / flex-shrink / flex-basis

```
flex: 1 0 300px;
```

Centering Content, Full-Width Background

The background of the website should always stretch across the full width of the page.

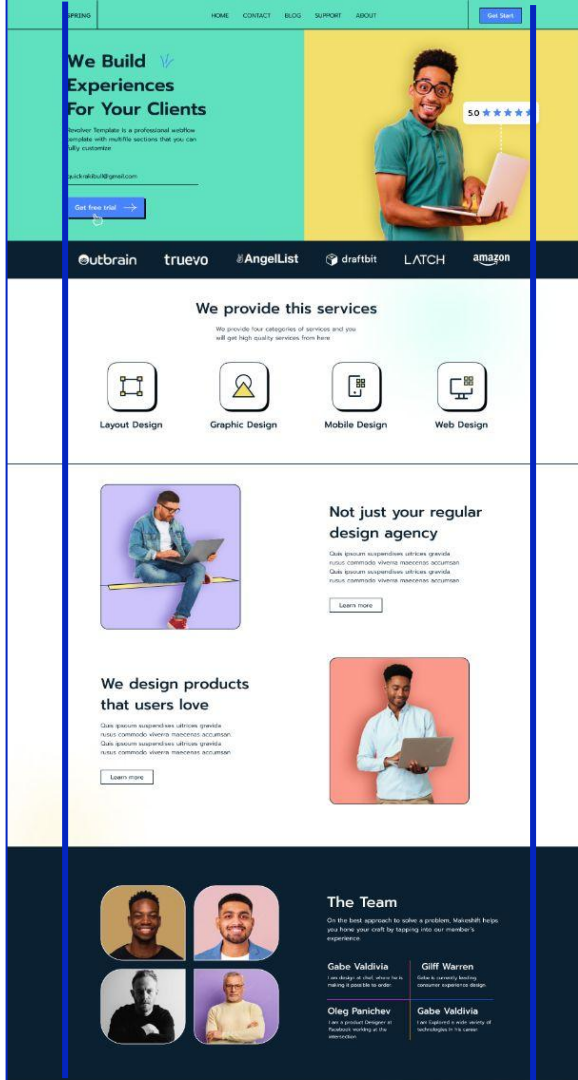
The content has a width restriction (set by width/max-width) as per the design layout and is centered on the page.

```
<section>
     <div class=”content-wrapper”>

section { background-color: grey; }

.content-wrapper {
     width: 1400px;
     margin: 0 auto;
}
```

Demo



example

flex golden layout

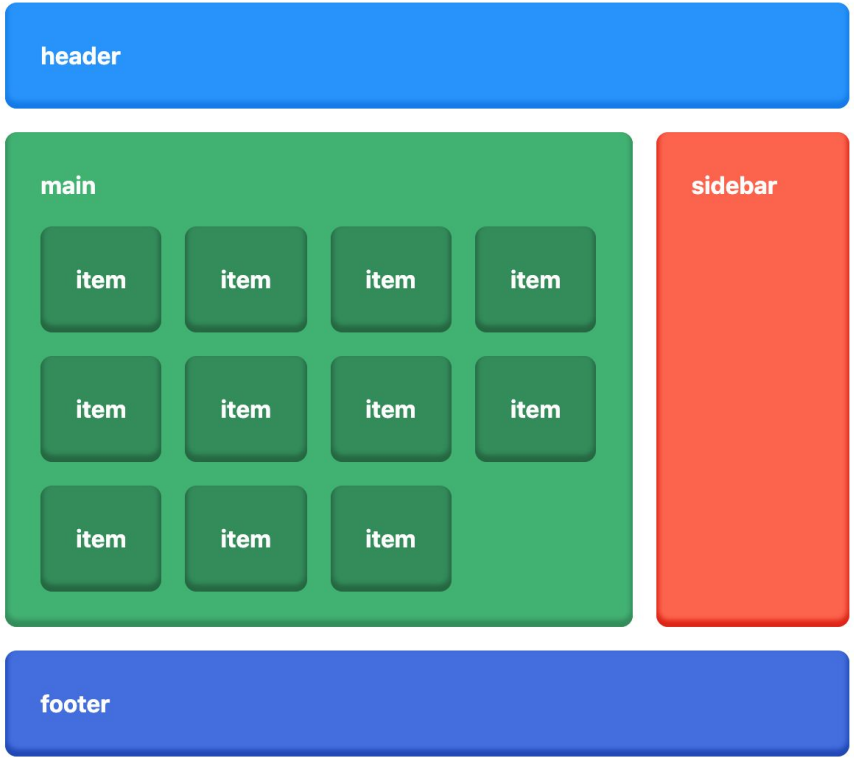
```
body {
      display: flex;
      flex-wrap: wrap;
      gap: 20px;
}

header,
footer {
      flex-basis: 100%;
}

main {
      flex-basis: 80%;
      display: flex;
      flex-wrap: wrap;
}
```

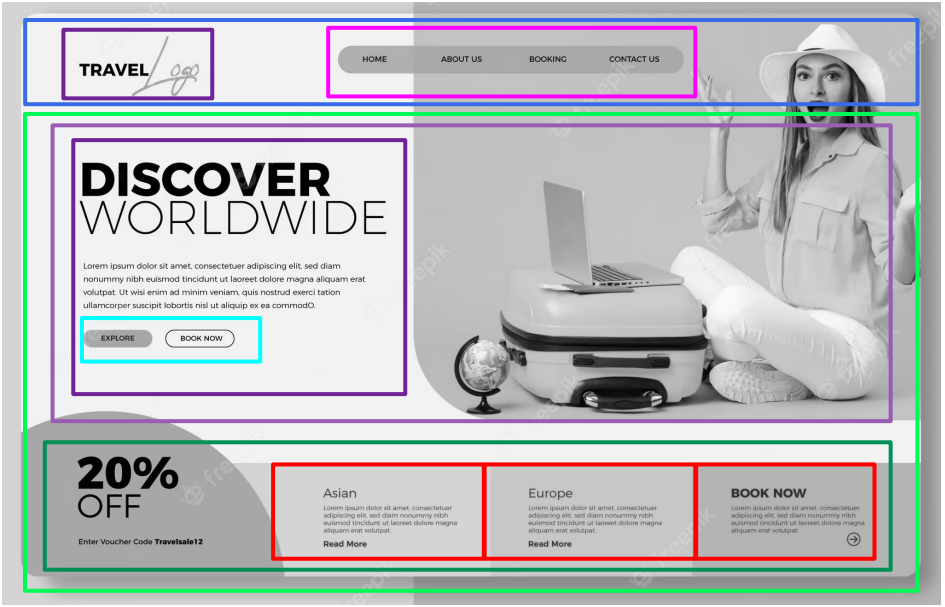
```
item {
      flex-grow: 1;
}

sidebar {
      flex-basis: 20%;
}
```



flex

hero section




```css
.header {
      display: flex;
}
.nav {
      display: flex;
      margin: 0 auto;
}
.main {
      display: flex;
      flex-direction: column;
}
.hero-text {
      display: flex;
      flex-direction: column;
      margin-right: auto;
}
.button-wrap {
      display: flex;
}
.advantages {
      display: flex;
}
.advantages-item {
      flex-grow: 1;
}
```

flex

card item

.is-gallery .is-info

justify-content: space-between

justify-content: flex-start

justify-content: space-between

```
.card {
      display: flex;
}
.part {
      flex-grow: 1;
      display: flex;
}
.is-gallery {
      flex-wrap: wrap;
}
.is-info {
      flex-direction: column;
}
.row {
      display: flex;
}
.multirow {
      display: flex;
      flex-wrap: wrap;
}
```

Quality Criteria for HTML Course

❤️Mandatory for passing the course

💛Required for the highest grade

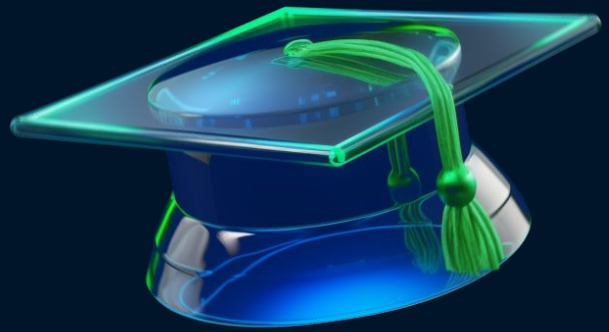
💚Optional

❤️**2.12 Use flex or grid for layouts**

Do not use tables or positioning.

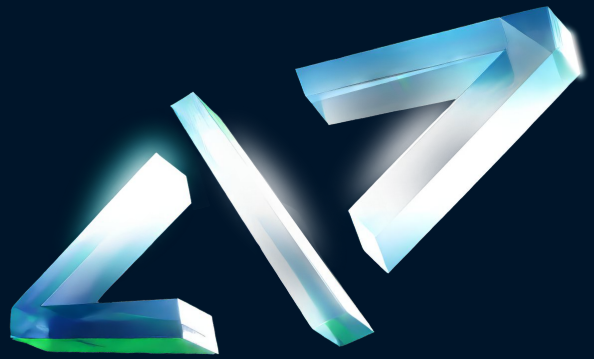
Summary

1. How elements are positioned in the document flow
2. What is included in the box model
3. Different types of boxes
4. Specifics of margin behavior
5. How positioning and stacking context work
6. The purpose of float
7. How to build a page layout using Flexbox



Homework

1. Complete a Course about box model and flexbox
2. Interactive Flexbox Learning (Optional but Encouraged)
3. Create a Page Layout Using Flexbox
    - Create a page layout using Flexbox for the layout system.
    - Implement inner (padding) and outer (margin) spacing for the elements.
    - Use positioning properties (relative, absolute, fixed, etc.) where necessary, especially for pseudo-elements.

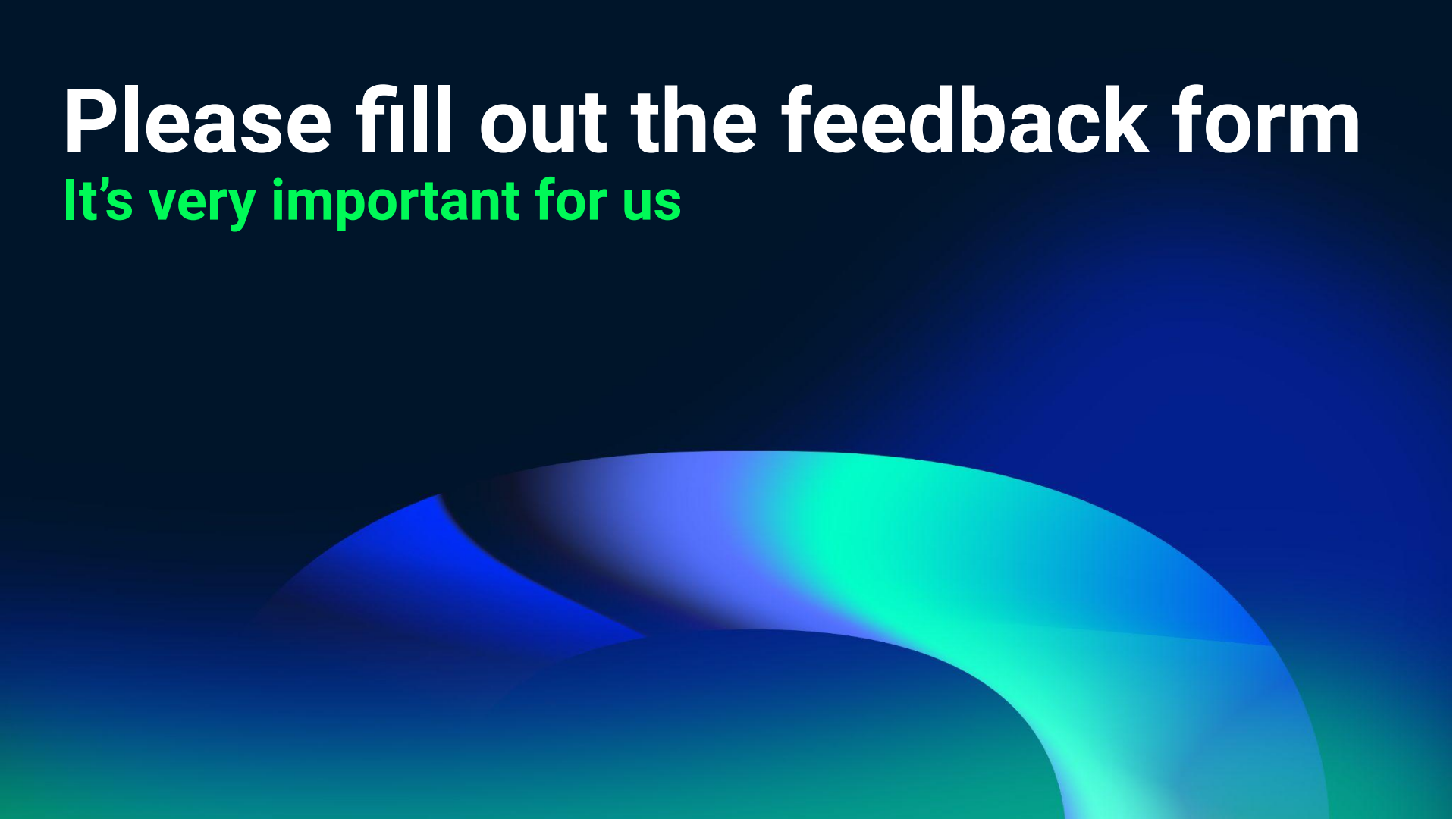


BRO Academy

QUESTIONS?

Please fill out the feedback form

It’s very important for us




THANK YOU!
Have a good evening!