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SCHOOL OF ENGINEERING AND DIGITAL SCIENCES

Web Programming and Problem Solving

CSS (part 3)

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Content

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- Box Model
  - Box anatomy
  - Overflow
  - Box sizing
- Positioning the Elements
  - Display
  - Float
  - Position
- Website Layout
  - Multi column pages

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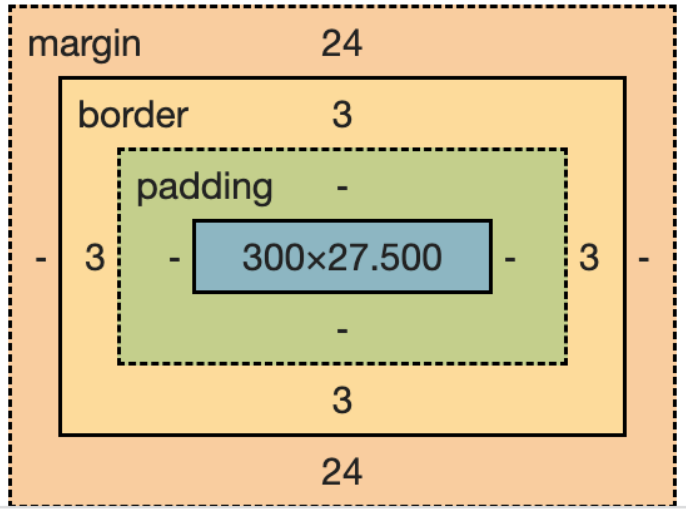
Box Model

The CSS **Box Model** is a box that wraps around every HTML element.

Components of Box Model:

- **Content** - actual content of the box.
- **Padding** – transparent area around the content.
- **Border** – a border around the padding and content
- **Margin** – transparent rea outside the border.



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Box Model

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- Some properties of Box Model:
  - For margin, padding and border, we can define values separately for the properties such as top, right, bottom and left or use the shorthand notations
    - **margin-top**: 20px;
    - **margin**: 50px 30px 50px 30px;
  - If two elements have facing margins, the **maximum** of two gets applied
  - If the content is not fitting the box, use **overflow** property
    - **auto** value adds a scrolling
    - **hidden** value hides the extra part of content

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Box Sizing

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- Some properties of Box Model:
  - The **width** and **height** properties depend on **box-sizing** property
    - **content-box** includes ***only content*** and not borders and padding
    - **border-box** includes ***borders, padding and content*** (recommended way)
    - By default, **box-sizing** is **not** inherited by children
    - Use the **universal** selector * to set **box-sizing** for each element

```
* {
    box-sizing: border-box;
    margin: 0;
    padding: 0;
}
```

Applied to all elements

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Positioning the Elements

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Normal Document Flow defines the positions of elements on the screen depending on their place in HTML document.

We can change this flow using positioning properties such as:

- display
- flow
- position

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Display

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Display property defines how the box model is displayed:

- **block** starts from the new line and occupies it all
- **inline** is placed on the same line where defined (some box properties are ignored like **margin-top**)
- **inline-block** behaves like a **block** and **inline** elements
- **flex** makes the elements inside it to line up (**float**)

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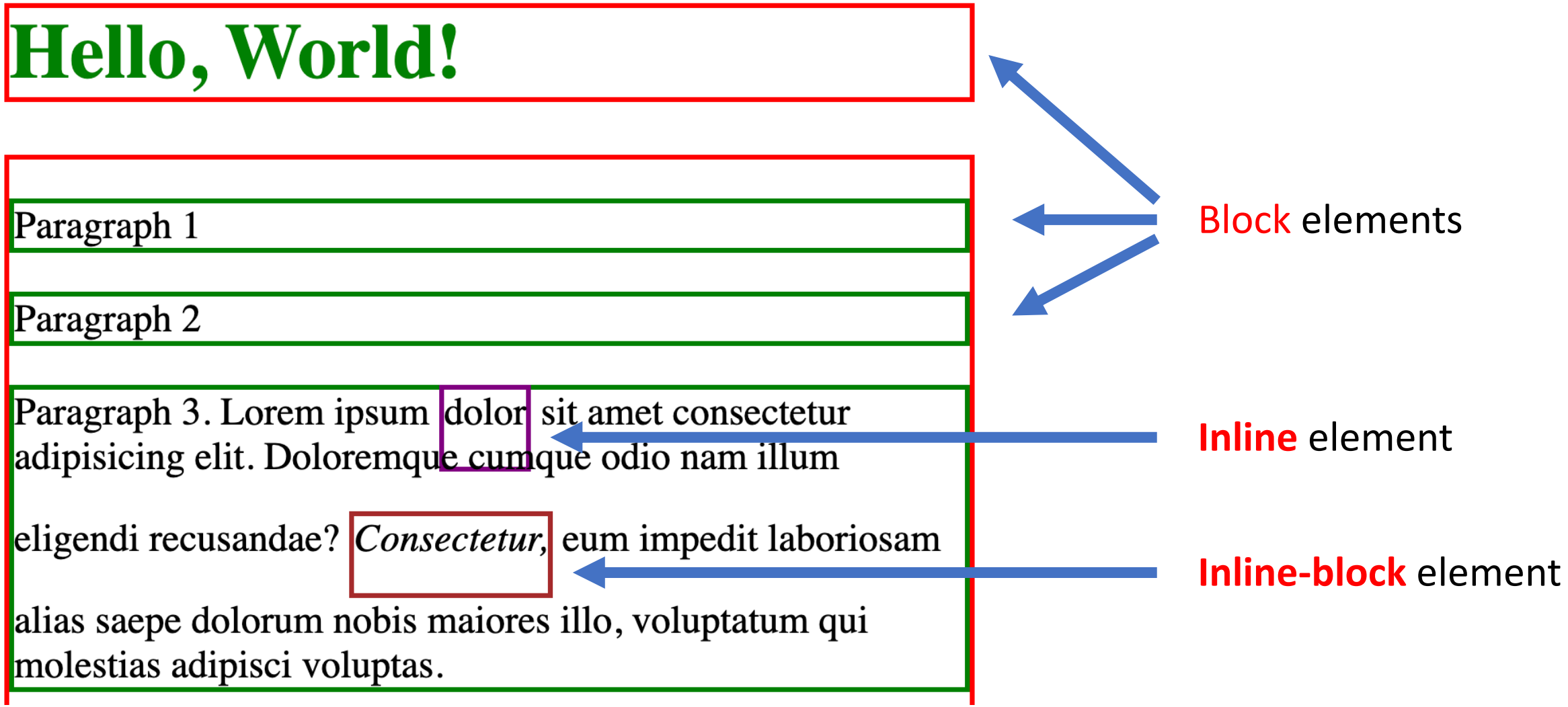
Display



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Float

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The **float** property specifies how an element should float:

- Elements can float to the right or left (none is default)
- Floated elements are removed from the Normal flow
- The next element occupies the free space of the floated element
- The **clear** property prevents the next element from occupying free space of the floating element

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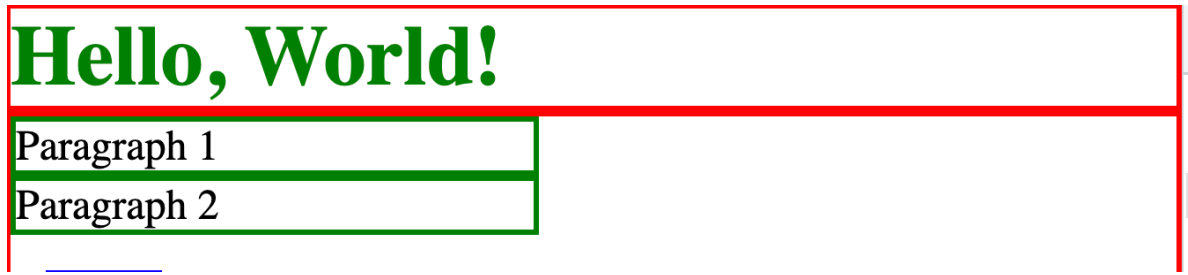
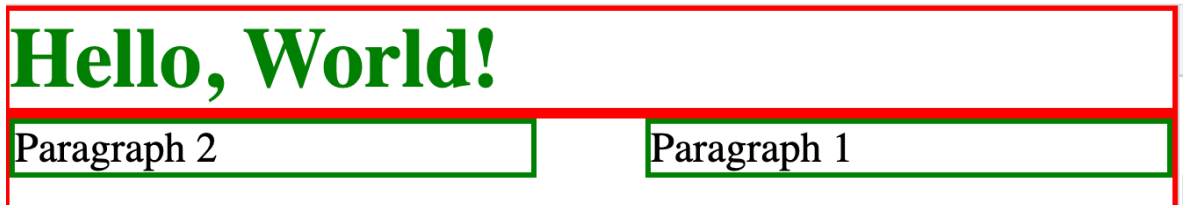
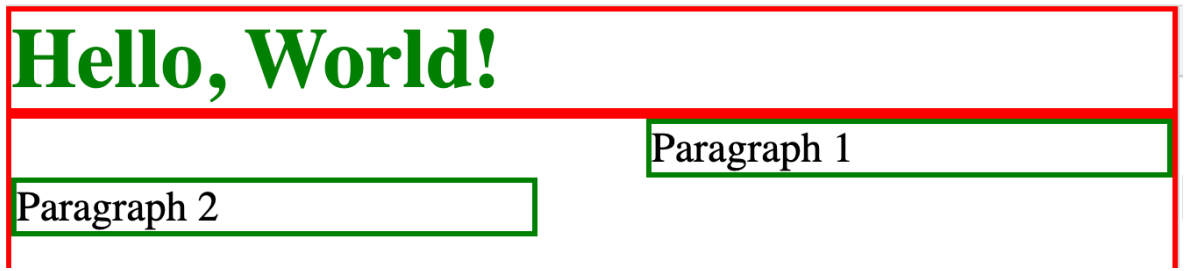
Float



Elements in Normal flow,
not floated



Paragraph 1 is floated to the right



Paragraph 1 is floated to the right,
Paragraph 2 is **cleared**

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Position

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Position property specifies the type of positioning method used for an element:

- **static** - positioned according to the normal flow (default)
- **relative** - positioned relative to its normal position (**preserves** space)
- **absolute** - positioned relative to the nearest positioned ancestor (**removes** space)
- **fixed** - positioned relative to the viewport (**removes** space)
- **sticky** - positioned based on the user's scroll position (as relative or fixed)

- Elements are positioned using the **top, bottom, left,** and **right** properties.

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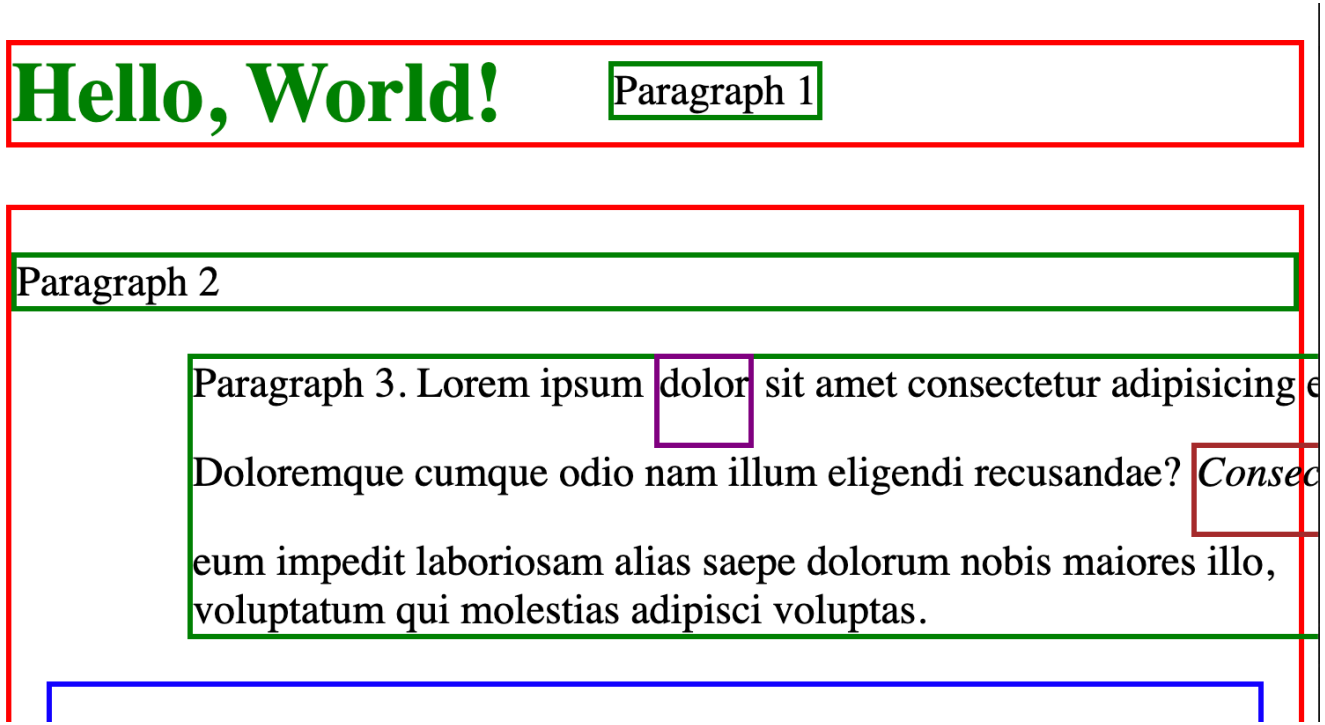
Position



Paragraph 1 is absolute

Paragraph 2 is static

Paragraph 3 is relative

Notes:

- To use absolute position, you need to define **position** property on some ancestor
- **html** element by default defines position relative

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Website Layout

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We can restructure our HTML document to have different layouts depending on:

- content (primary, secondary)
- semantics (header, navigation, content, footer)
- screen size (desktop, tablet, mobile)

Let’s have a look at a typical desktop layout

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Website Layout

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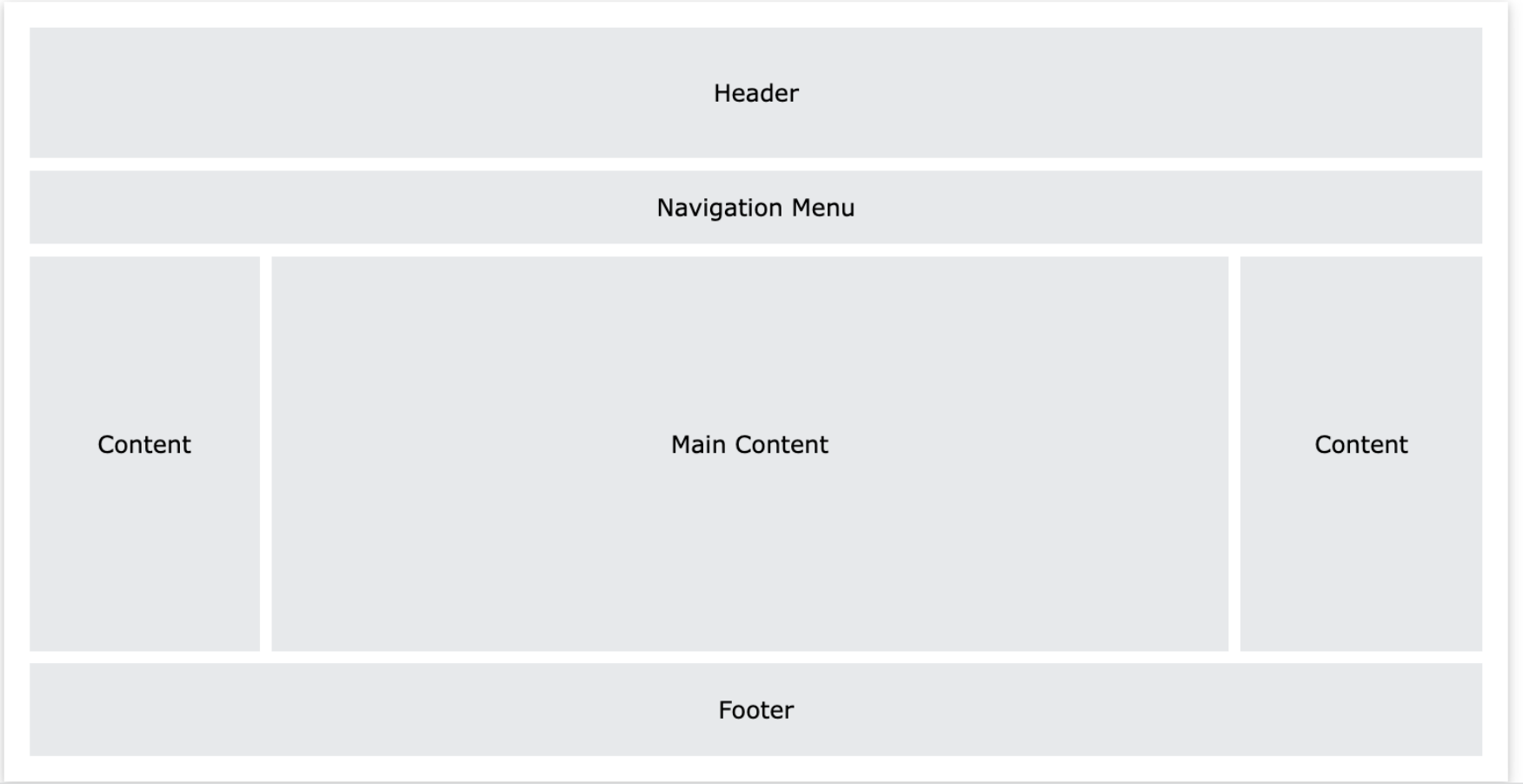
One of the typical layouts for big screen



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Website Layout

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Several ideas to mention:

- Use **semantic** elements (header, nav, footer, section)
- Header,, nav and footer are **block** elements, i.e. take all line
- To make **multi-column** page:
  - use **flex** property on the containing element (section)
  - define column width in percentage (e.g.: 25%-50%-25%)
- See the code (index_layout.html, style3.css)
- Note: there are other solutions as well

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Summary

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- **Key takeaways**:
  - The Box Model :
    - Understand the structure of Box
    - Use overflow property to take care of extra content
    - Use box-sizing property carefully
  - Positioning elements on the page can be done using:
    - Display
    - Float
    - Position
  - Website layouts depend on several factors (content, screen)

Thanks for Attention!