



CS472 WAP

The Box Model

Page Layout

The Whole is Greater than the Sum of the Parts

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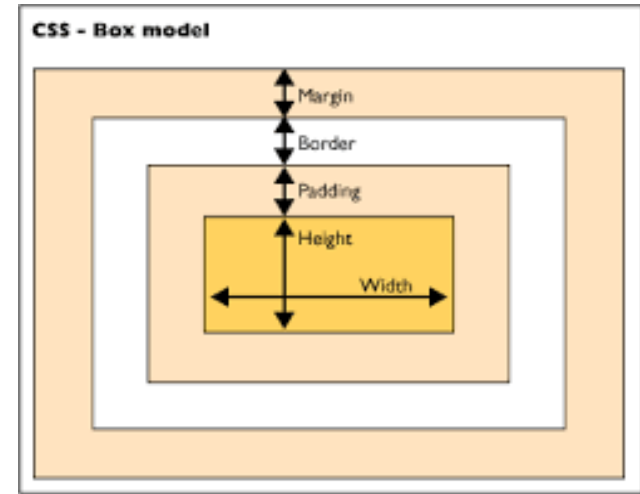
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Main Point Preview

- The box model is a description of how every element has a basic width and height, outside of which it has padding, a border, and margin. For inline elements only the left and right margin and padding affect surrounding elements.
- *The box model is an abstraction that allows many similar elements to be treated by a common set of rules. More abstract levels of awareness are more powerful.*

The CSS Box Model

- For layout purposes, every element is composed of:
 - **content**
 - **border**
 - **padding**
 - **margin**
- $\text{width} = \text{content width} + \text{L/R padding} + \text{L/R border} + \text{L/R margin}$
- $\text{height} = \text{content height} + \text{T/B padding} + \text{T/B border} + \text{T/B margin}$
- The standard `width` and `height` properties refer ONLY to the content's width and height.



CSS properties for borders



```
h2 { border: 5px solid red; }
```

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Property	Description
border	thickness/style/color of border on all 4 sides

- **thickness** (specified in px, pt, em, or thin, medium, thick)
- **style** (none, hidden, dotted , dashed , double , groove , inset , outset , ridge , solid)
- **color** (specified as seen previously for text and background colors)

More border properties

Property	Description
border-color, border-width, border-style	specific properties of border on all 4 sides
border-bottom, border-left, border-right, border-top	all properties of border on a particular side
border-bottom-color, border-bottom-style, border-bottom-width, border-left-color, border-left-style, border-left-width, border-right-color, border-right-style, border-right-width, border-top-color, border-top-style, border-top-width	properties of border on a particular side
<u>Complete list of border properties</u>	

Border example 2

```
h2 {  
  border-left: thick dotted #CC0088;  
  border-bottom-color: rgb(0, 128, 128);  
  border-bottom-style: double;  
}
```

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- each side's border properties can be set individually
- if you omit some properties, they receive default values (e.g. border-bottom-width above)

Dimensions

- For **Block elements and img element only**, set how wide or tall this element, or set the max/min size of this element in given dimension.

width, height, max-width, max-height, min-width, min-height

```
p { width: 350px; background-color: yellow; }  
h2 { width: 50%; background-color: aqua; }
```

This paragraph uses the first style above.

An h2 heading

- Using **max-width** instead of **width** in this situation will improve the browser's handling of small windows.
 - Max-width will allow a smaller width box on smaller viewports versus fixed width will result in extending off screen

box-sizing



• `box-sizing: content-box;` - initial and default value. The width and height properties are measured including only the content, but not the padding, border or margin.

• `box-sizing: border-box;` The width and height properties include the content, the padding and border, but not the margin. Note that padding and border will be inside of the box

• Q: Why is Hooray indented?

• [responsive design advantage demo](#)

```
.div3 {  
  width: 300px;  
  height: 100px;  
  border: 1px solid blue;  
  box-sizing: border-box;  
}  
.div4 {  
  width: 300px;  
  height: 100px;  
  padding: 50px;  
  border: 1px solid red;  
  box-sizing: border-box;  
}
```

Both divs are the same size now!

Hooray!



Rounded corners `border-radius`

```
p {  
  border: 3px solid blue;  
  border-radius: 12px;  
}
```

A visual example of the CSS border-radius property. It shows a light gray rectangular box with a blue border and rounded corners. Inside the box, the text "Text Paragraph" is written in a light gray font.

Text Paragraph

- Each side's border radius can be set individually, separated by spaces
 - **Four values:** top-left, top-right, bottom-right, bottom-left
 - **Three values:** top-left, top-right and bottom-left, bottom-right
 - **Two values:** top-left and bottom-right, top-right and bottom-left
 - **One value:** all four corners are rounded equally

Padding

- The padding shorthand property sets all the padding properties in one declaration. Padding shares the background color of the element. This property can have from one to four values:

```
padding:10px 5px 15px 20px; /* Top, right, bottom, left */  
padding:10px 5px 15px; /* Top, right and left, bottom */  
padding:10px 5px; /* Top and bottom, right and left */  
padding:10px; /* All four paddings are 10px */
```

- padding-bottom, padding-left, padding-right, padding-top

```
h1 { padding: 20px; }  
h2 {  
    padding-left: 200px;  
    padding-top: 30px;  
}
```

Margin

- Margins are always transparent. This property can have from one to four values:

```
margin:10px 5px 15px 20px; /* Top, right, bottom, left */
```

```
margin:10px 5px 15px; /* Top, right and left, bottom */
```

```
margin:10px 5px; /* Top and bottom, right and left */
```

```
margin:10px; /* All four margins are 10px */
```

- margin-bottom, margin-left, margin-right, margin-top

```
h1 {margin: 20px; }
```

```
h2 {
```

```
    margin-left: 200px;
```

```
    margin-top: 30px;
```

```
}
```

- See example: [lesson3_examples/paddingmargin.html](#)
 - Inspect element in console

Margin Collapse



- Vertical margins on different elements that touch each other (thus have no content, padding, or borders separating them) will collapse, forming a single margin that is equal to the greater of the adjoining margins.

1. Collapsing Margins Between Adjacent Elements



2. Collapsing Margins Between Parent and Child Elements



Main Point

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