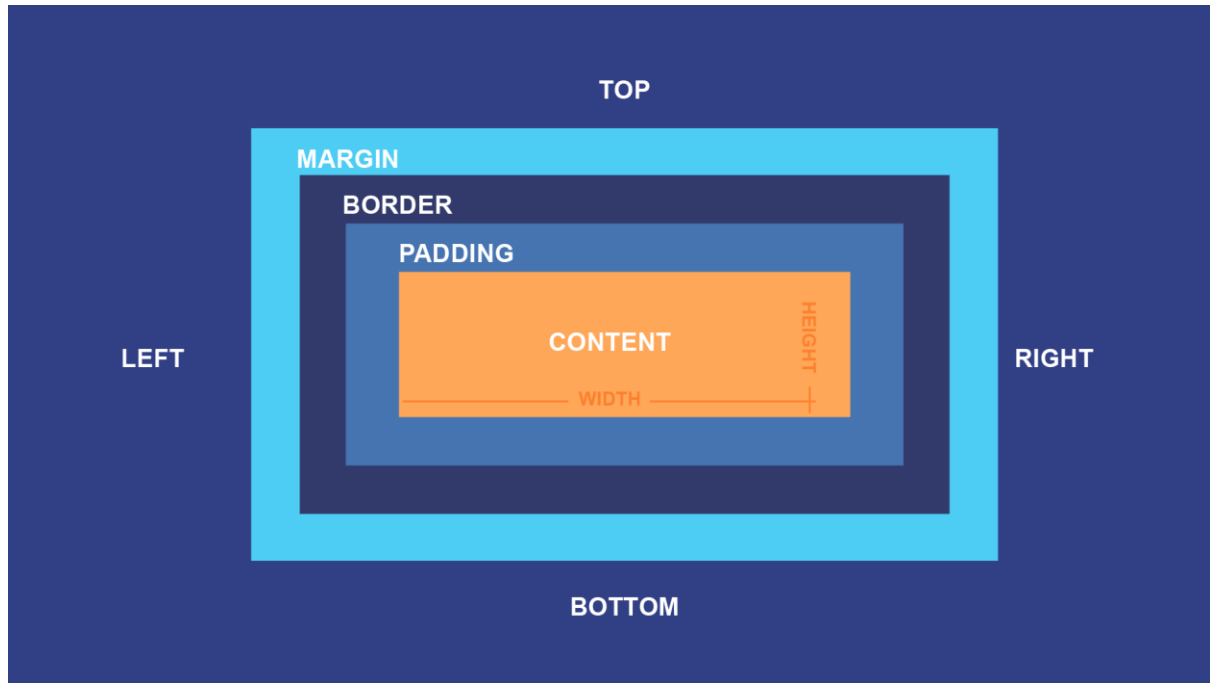


Day 16

“Web Development + Security”

CSS box model:



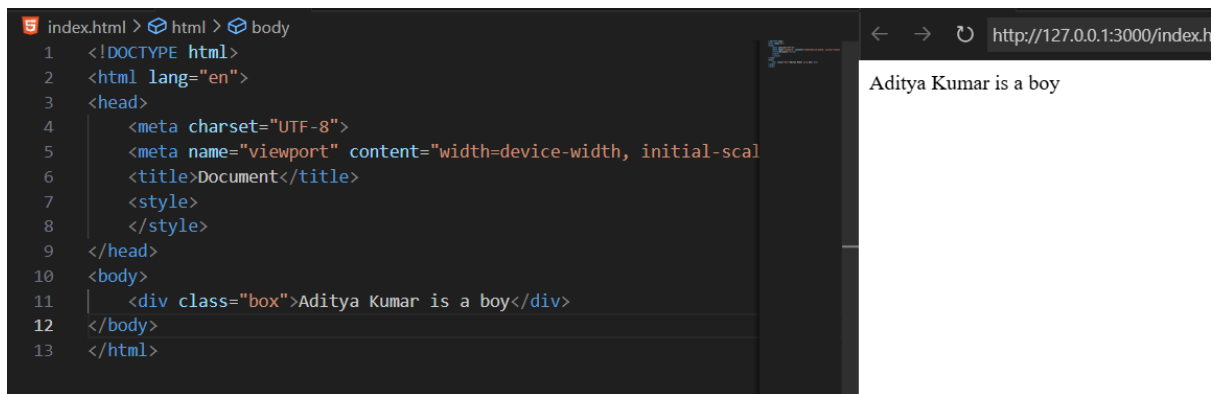
What is CSS box model?

The CSS Box Model describes how every HTML element is treated as a rectangular box in a webpage layout. It defines how space is distributed around each element — including its content, padding, border, and margin.

Explanation of each part:

Part	Description	Example CSS
Content	The actual text, image, or other data inside the box.	width, height
Padding	Space between content and border (inside the box).	padding: 10px;
Border	The line surrounding the padding and content.	border: 2px solid black;
Margin	Space <i>outside</i> the border — separates element from others.	margin: 20px;

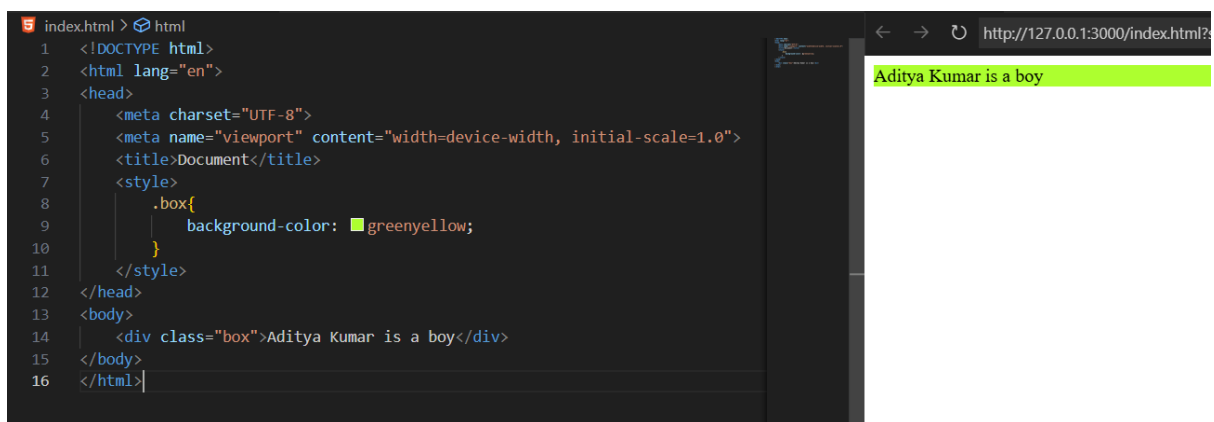
Example: a basic <div> without any <style> tag



```
index.html > html > body
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scal
6   <title>Document</title>
7   <style>
8   </style>
9 </head>
10 <body>
11   <div class="box">Aditya Kumar is a boy</div>
12 </body>
13 </html>
```

Aditya Kumar is a boy

Example: adding a basic CSS to it

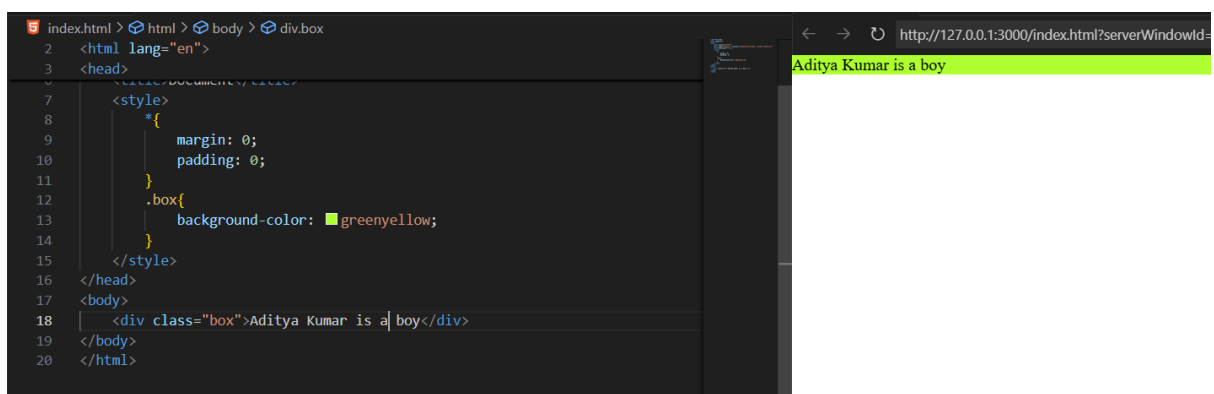


```
index.html > html
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Document</title>
7   <style>
8     .box{
9       background-color: greenyellow;
10    }
11  </style>
12 </head>
13 <body>
14   <div class="box">Aditya Kumar is a boy</div>
15 </body>
16 </html>
```

Aditya Kumar is a boy

Clearly, in above example we can see that there is some space between the top and left corner of the screen and the coloured <div>. This means that there is some default margin and padding is added.

Example: removing that default margin and padding from that <div> and making sure that margin and padding be 0.

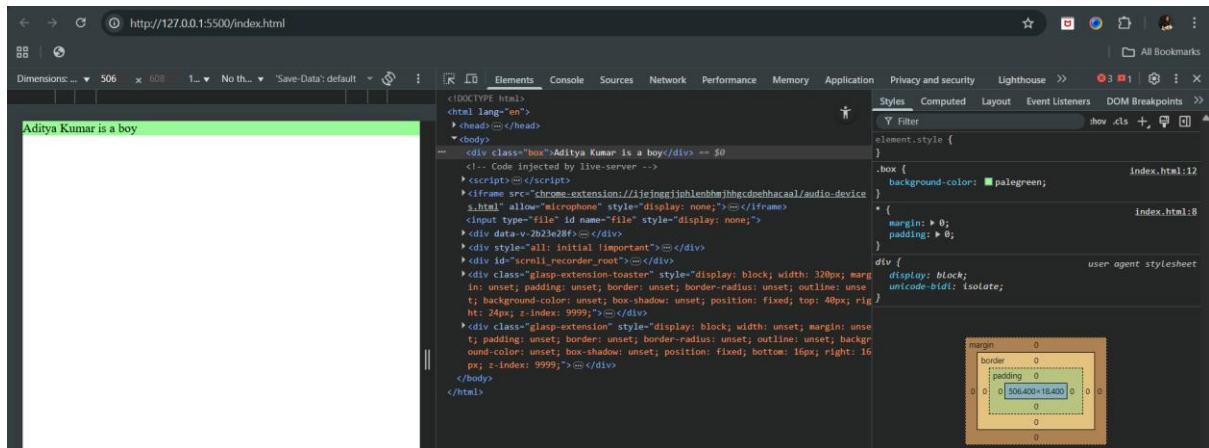


```
index.html > html > body > div.box
1 <html lang="en">
2 <head>
3   <title>Document</title>
4   <style>
5     *{
6       margin: 0;
7       padding: 0;
8     }
9     .box{
10      background-color: greenyellow;
11    }
12  </style>
13 </head>
14 <body>
15   <div class="box">Aditya Kumar is a boy</div>
16 </body>
17 </html>
```

Aditya Kumar is a boy

Note: padding means that space between content and border (inside the box).

We can also cross check the styles applied to the element via the “inspect” option on the browser:

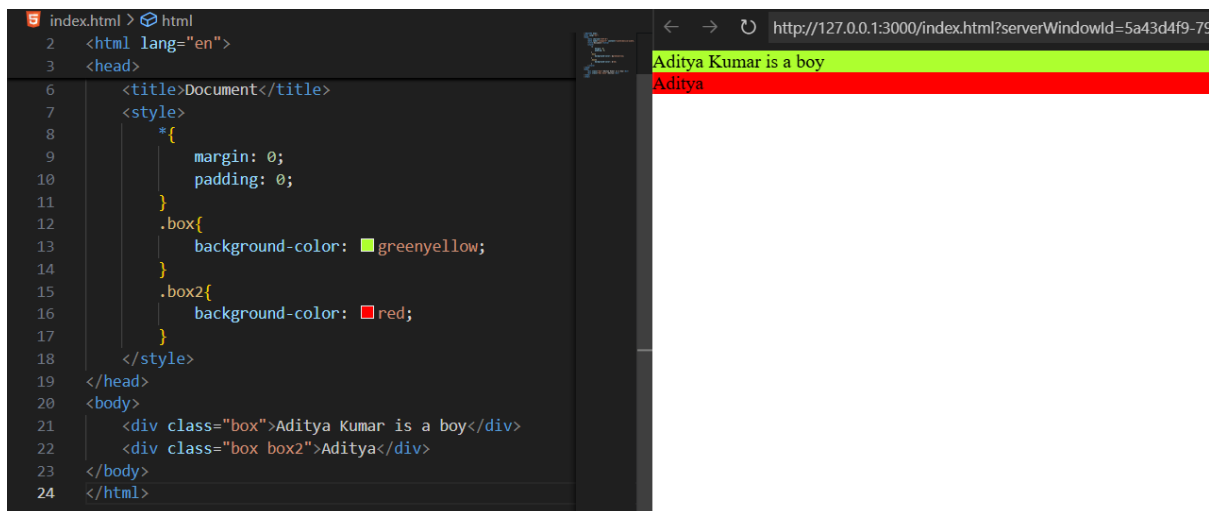


Total Box Size Formula:

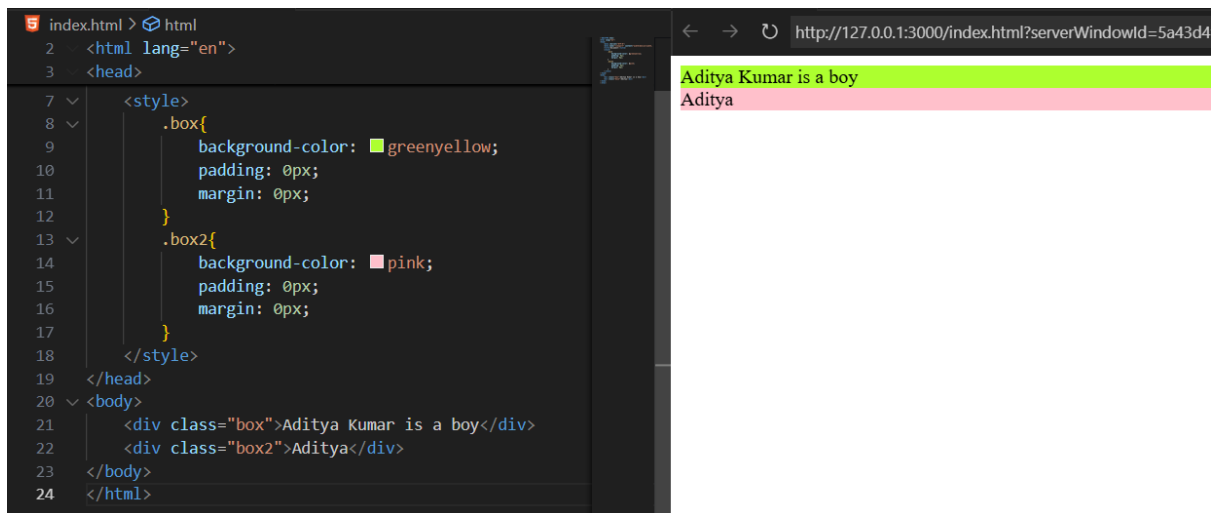
Total Width = content width + left/right padding + left/right border + left/right margin

Total Height = content height + top/bottom padding + top/bottom border + top/bottom margin

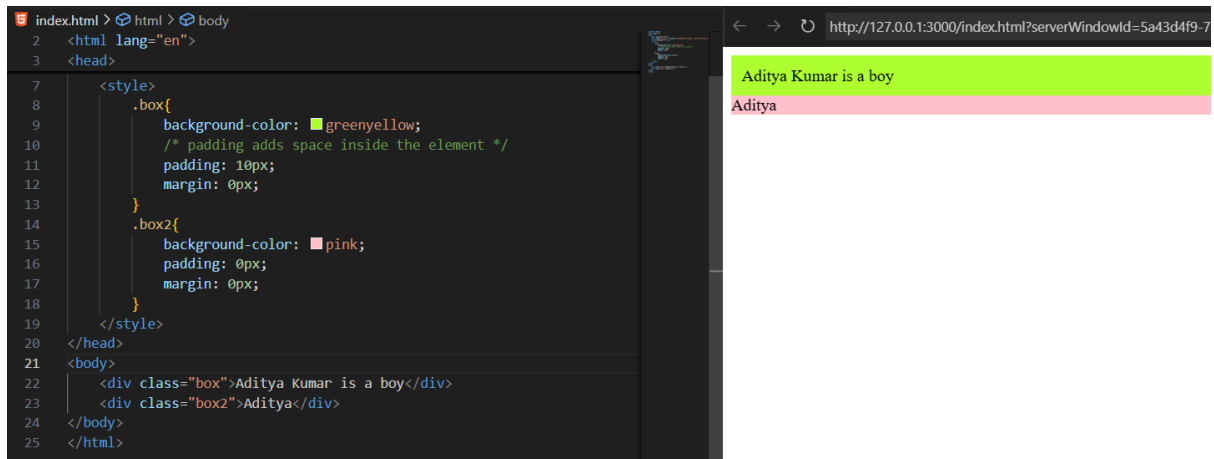
Example: now we have added one more <div> in above example, with different class name and



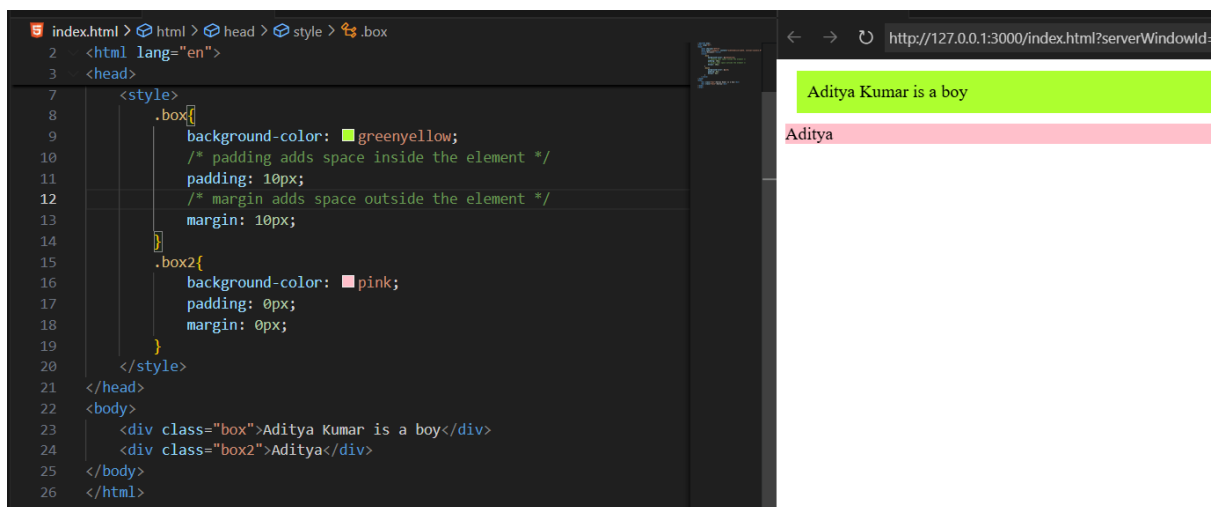
Example: showing how 0 margin and 0 padding looks if added to both <div>



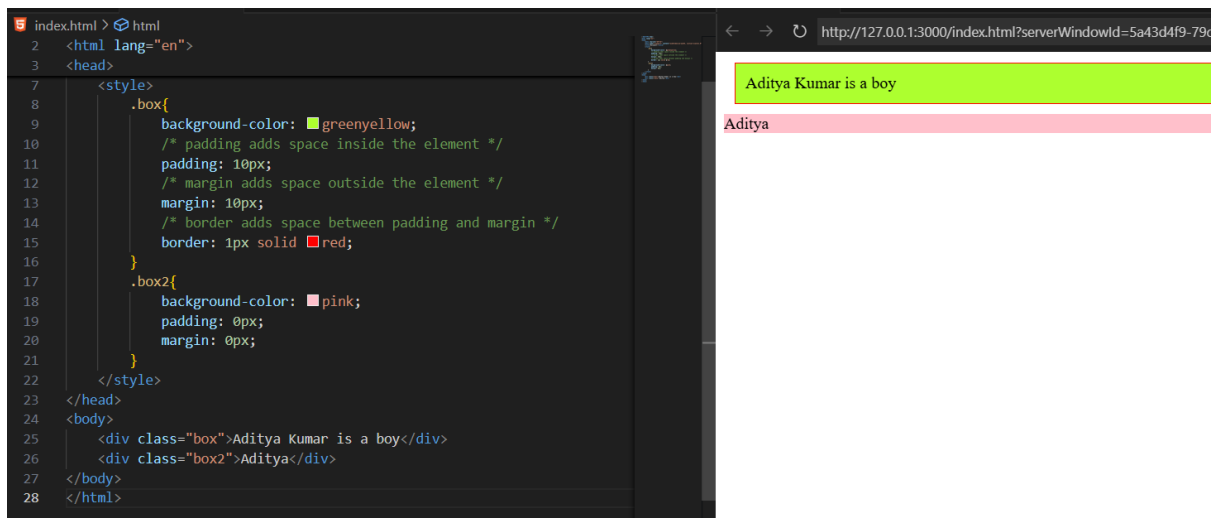
Now, we will make small changes in the padding and margin: changed padding from 0 to 10px. Clearly, padding adds space inside the element



Now, adding margin to the above example from 0 to 10px: margin adds space outside the element



Example: adding border to the class box



Box-sizing:

What is box sizing?

The box-sizing property controls how the total size of an element is calculated — whether the padding and border are included inside the width/height or added outside.

By Default: box-sizing: content-box

(Default behaviour of browsers)

The width and height only apply to the content area, and padding + border are added on top of that.

Example:

```
div {
  box-sizing: content-box; /* default */
  width: 200px;
  padding: 20px;
  border: 5px solid black;
}
```

Actual rendered width = 200 (content) + 20 + 20 (padding) + 5 + 5 (border) = **250px**

The box becomes *bigger* than the width you set. This can cause layout issues when you expect exact sizes.

Important: When Using *box-sizing: border-box*

The width and height include content + padding + border.

```
div {
  box-sizing: border-box;
  width: 200px;
  padding: 20px;
  border: 5px solid black;
}
```

Total rendered width = 200px (everything included)

The content area automatically shrinks to make room for padding and border — so the *total box stays exactly 200px wide*.

Margin collapse:

What is margin collapse?

Margin collapse happens when two vertical margins meet (top and bottom) and combine into a single margin, instead of adding together.

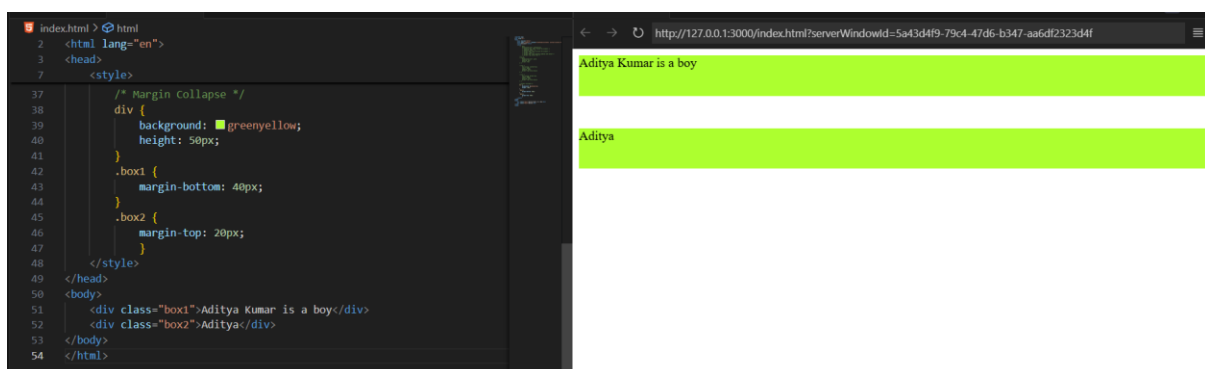
It applies only to vertical margins (top/bottom), not horizontal ones (left/right).

When two blocks touch vertically — like one `<div>` stacked above another — the space between them isn't the *sum* of both margins. It becomes the larger of the two margins.

When Does It Happen?

Situation	Description	Example
Adjacent vertical margins	Two block elements stacked vertically	.box1 and .box2 example above
Parent and first/last child	A child's top margin or bottom margin collapses with parent's margin	<code><div><p></p></div></code>
Empty blocks	An empty block with no padding/border/content collapses top & bottom margins together	<code><div style="margin:30px 0;"></div></code>

Example:



--The End--