

This is CS50

Week 8

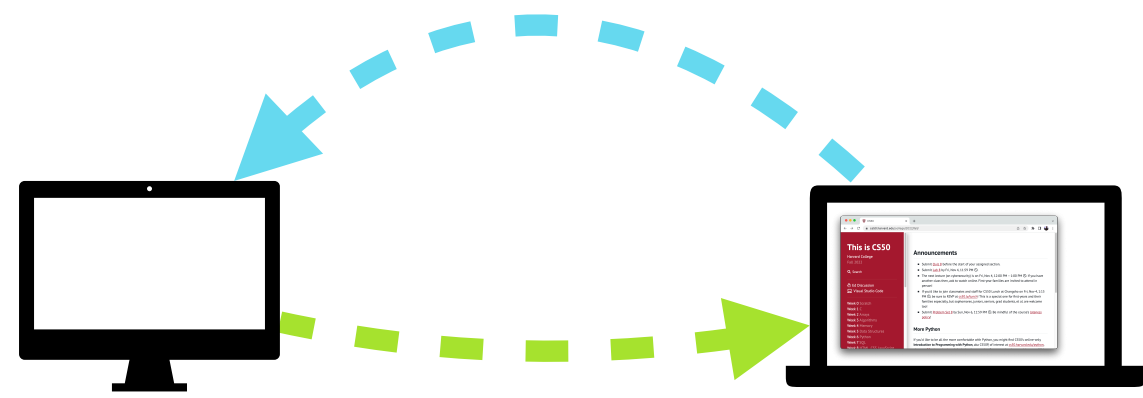
Scan in for attendance, and open code.cs50.io!

carterzenke.me/section

Think, Pair, Share

- What are you excited about from this week's lecture?
- What do you want to learn more about?

<https://carterzenke.me/section>



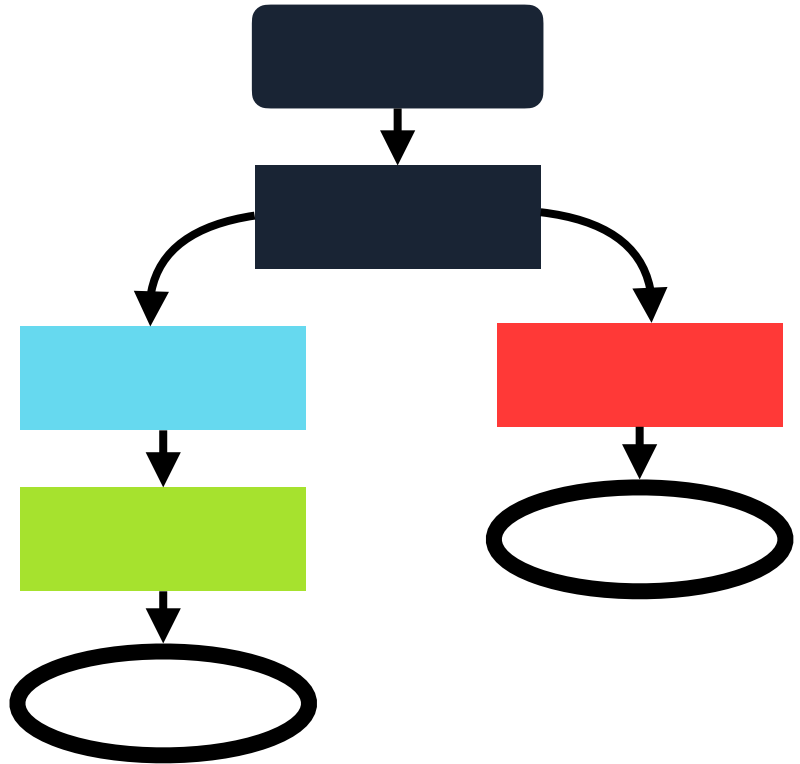
HTTP

HTML

CSS

JavaScript

Team 1	Team 2
0	0
+1	+1



```
team1 = team1 + 1;
document.querySelector(
  '#score1').innerHTML =
  team1;
```

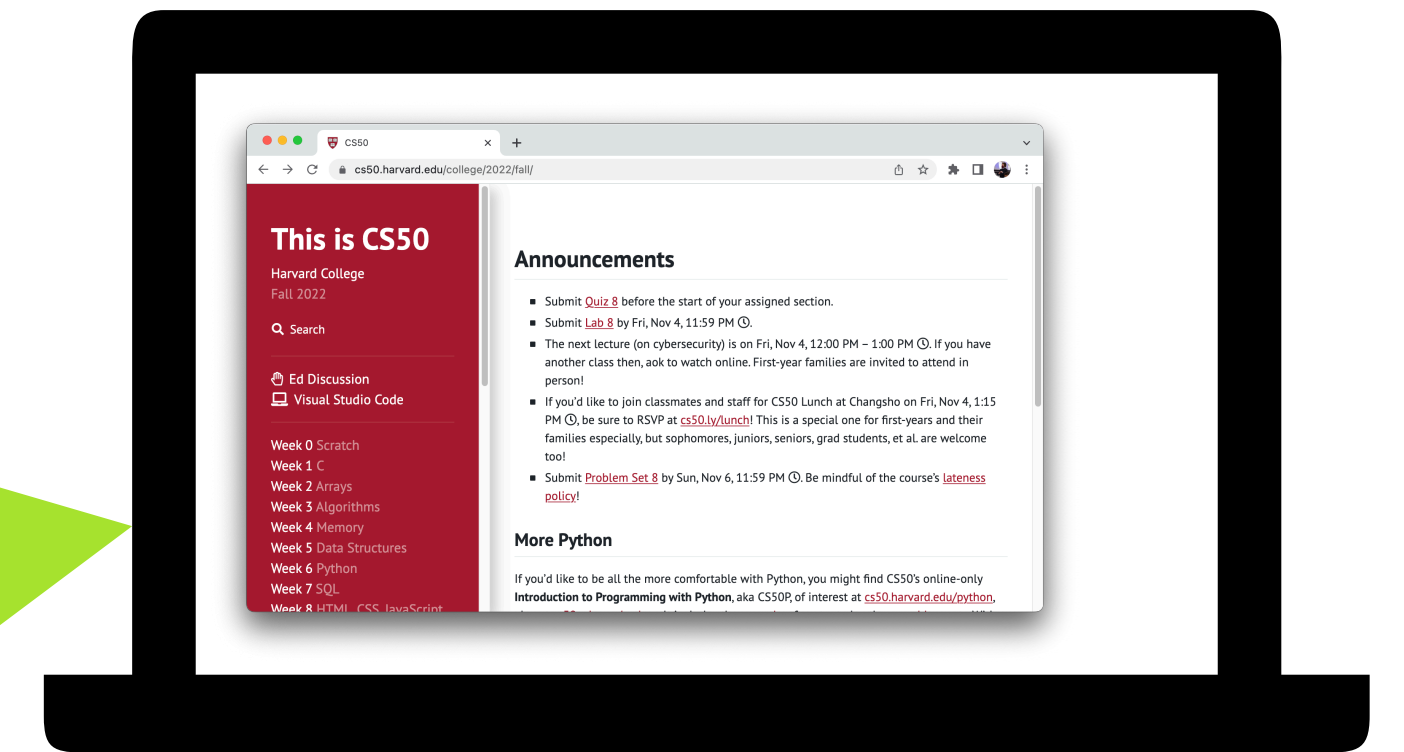
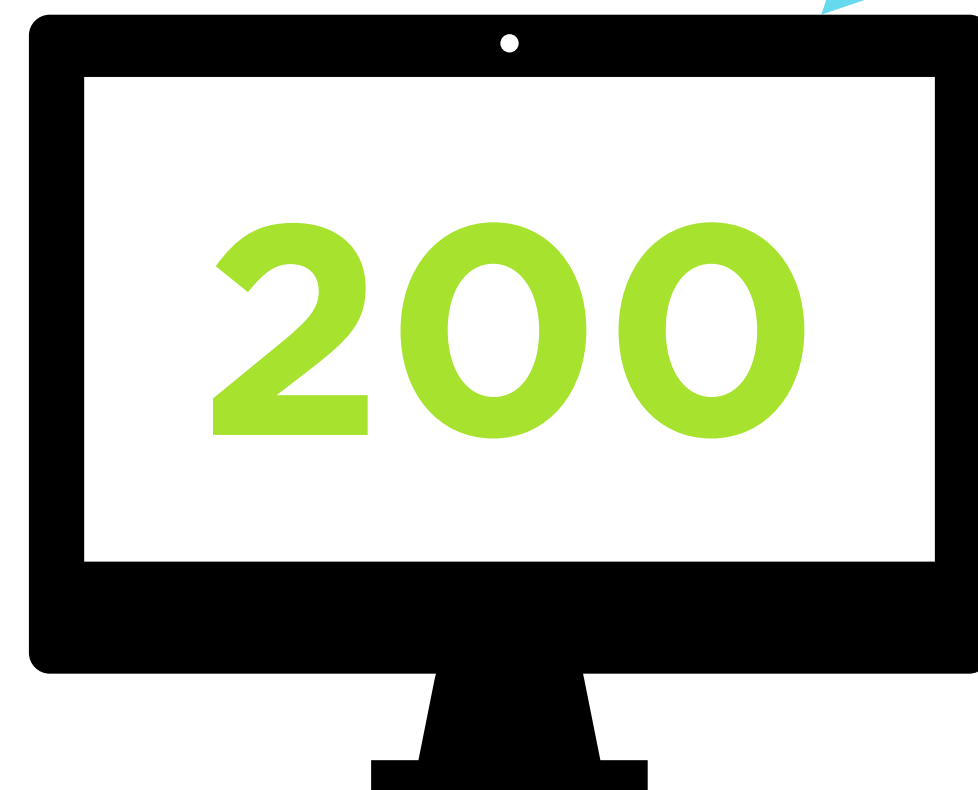
HTTP

The protocol of the web

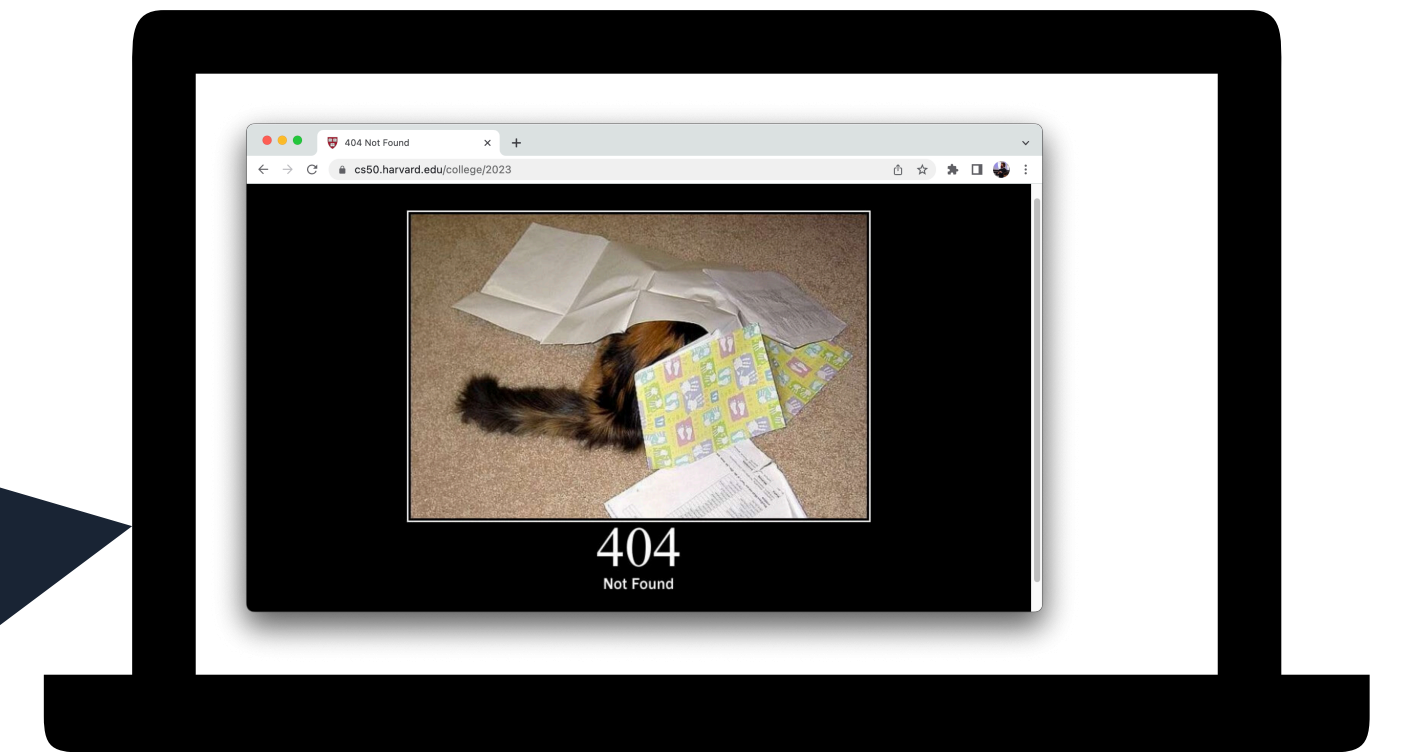
<http://cs50.harvard.edu/...>

<http://cs50.harvard.edu/...>

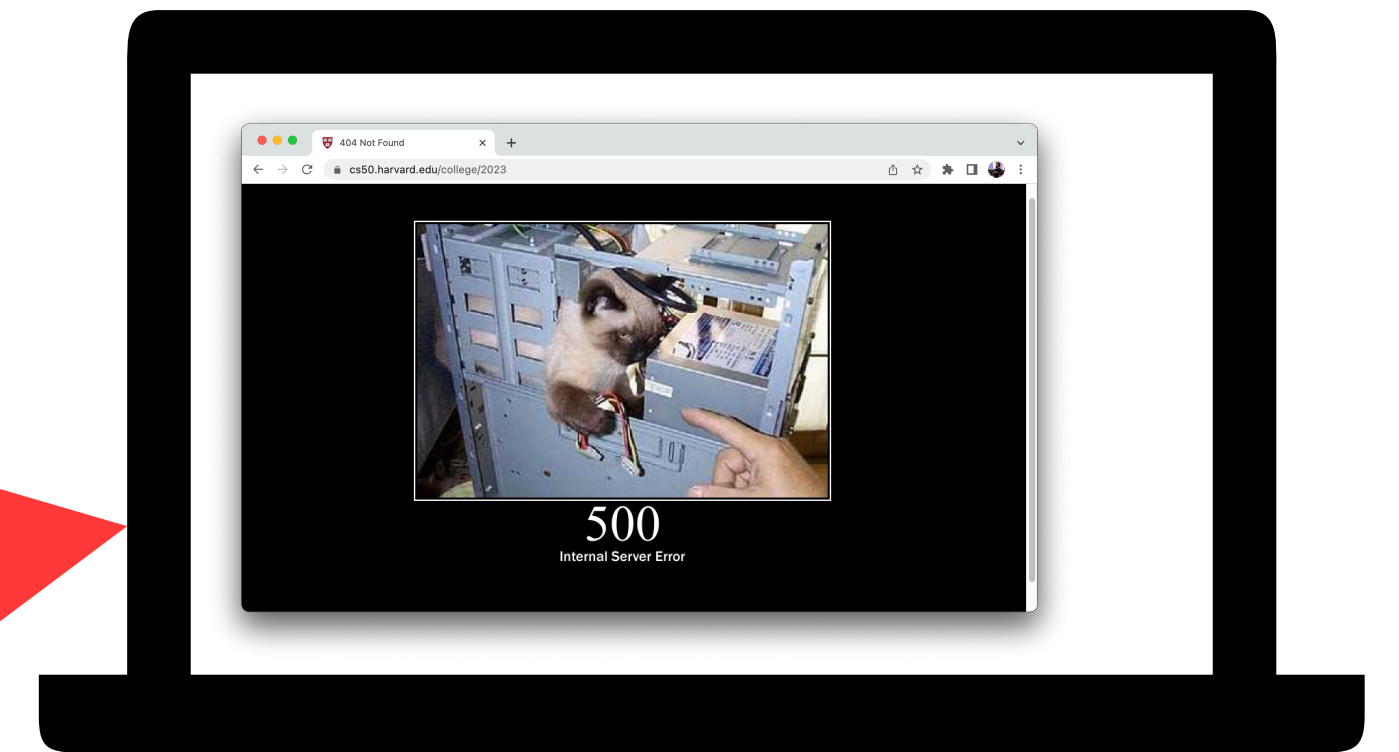
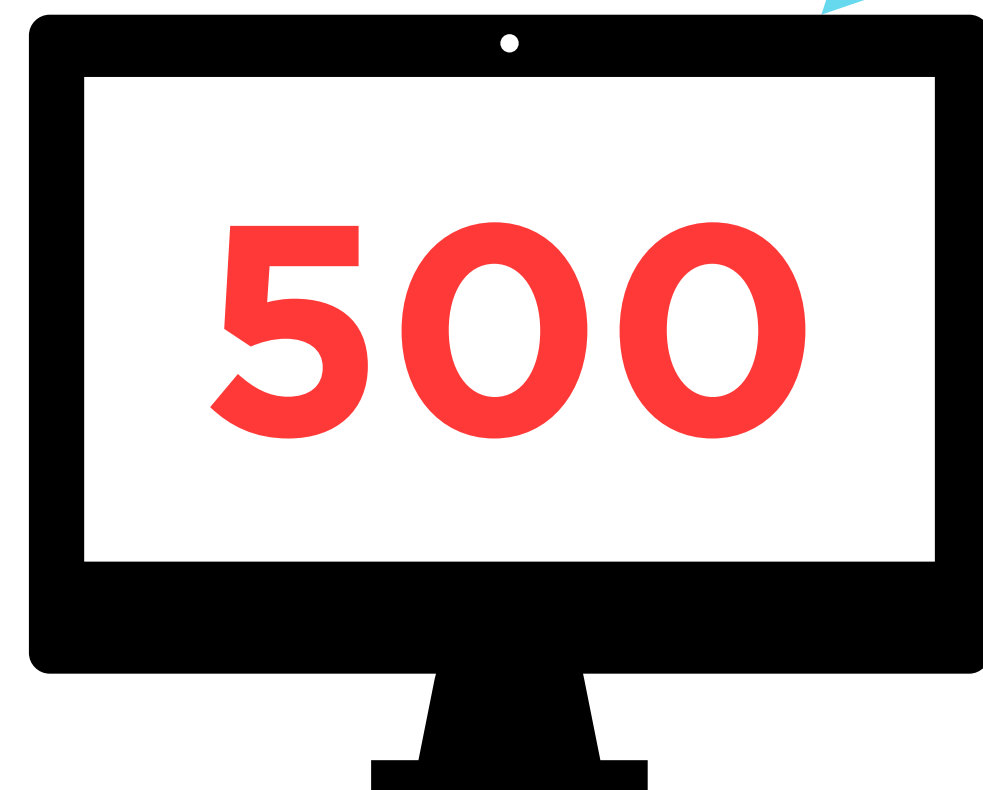
HTTP



HTTP



HTTP



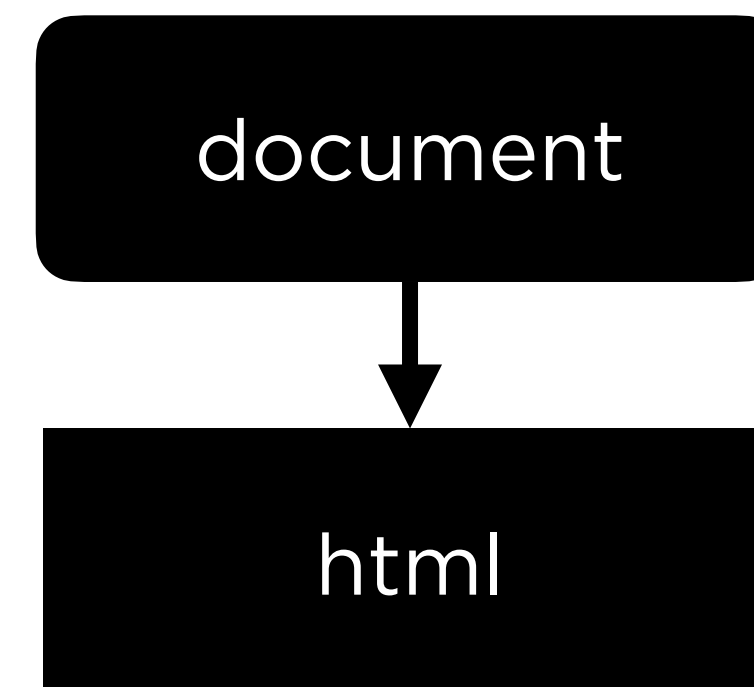
http-server

HTML

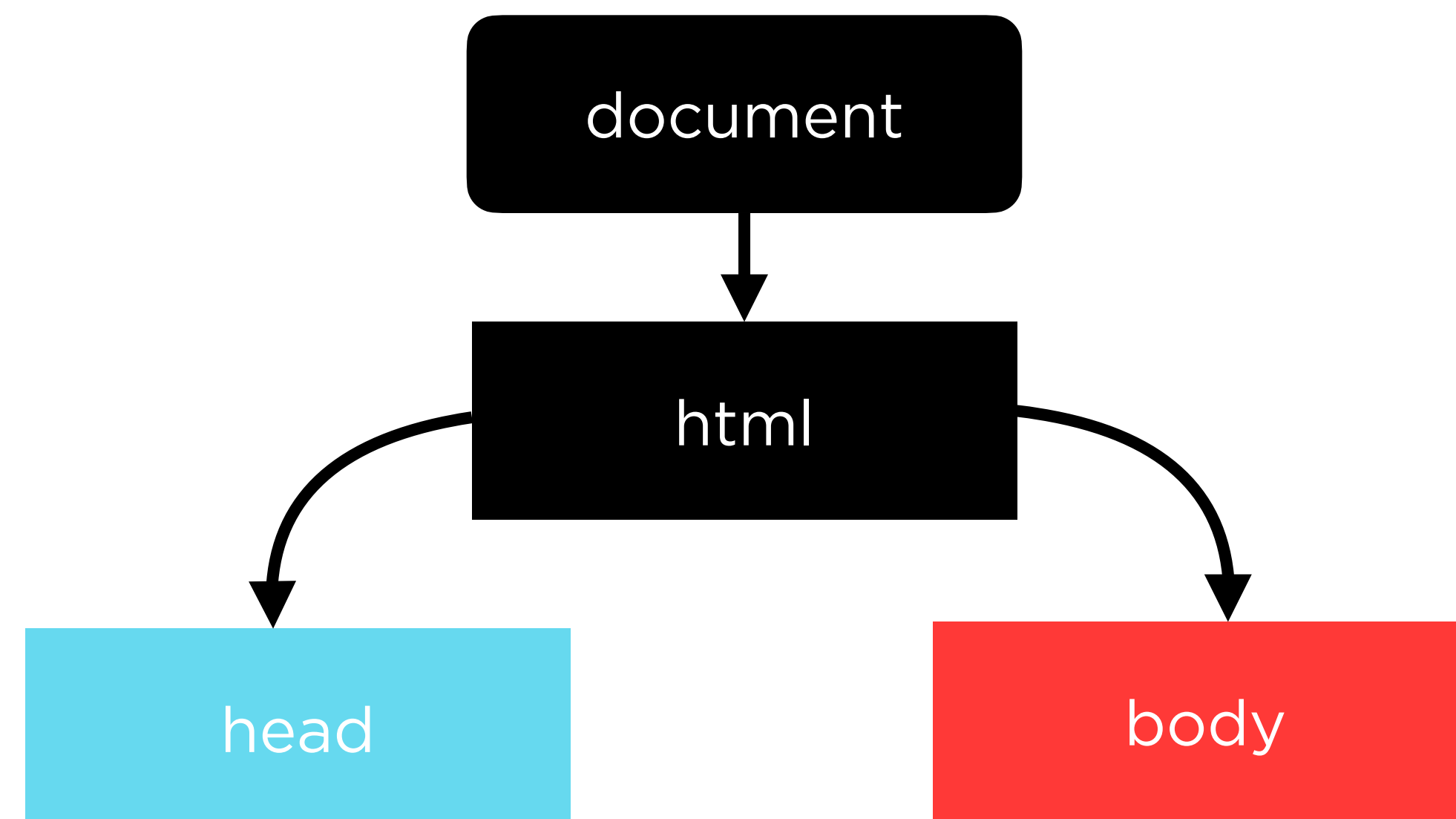
The structure of web pages

```
<!DOCTYPE html>  
<html>
```

```
</html>
```

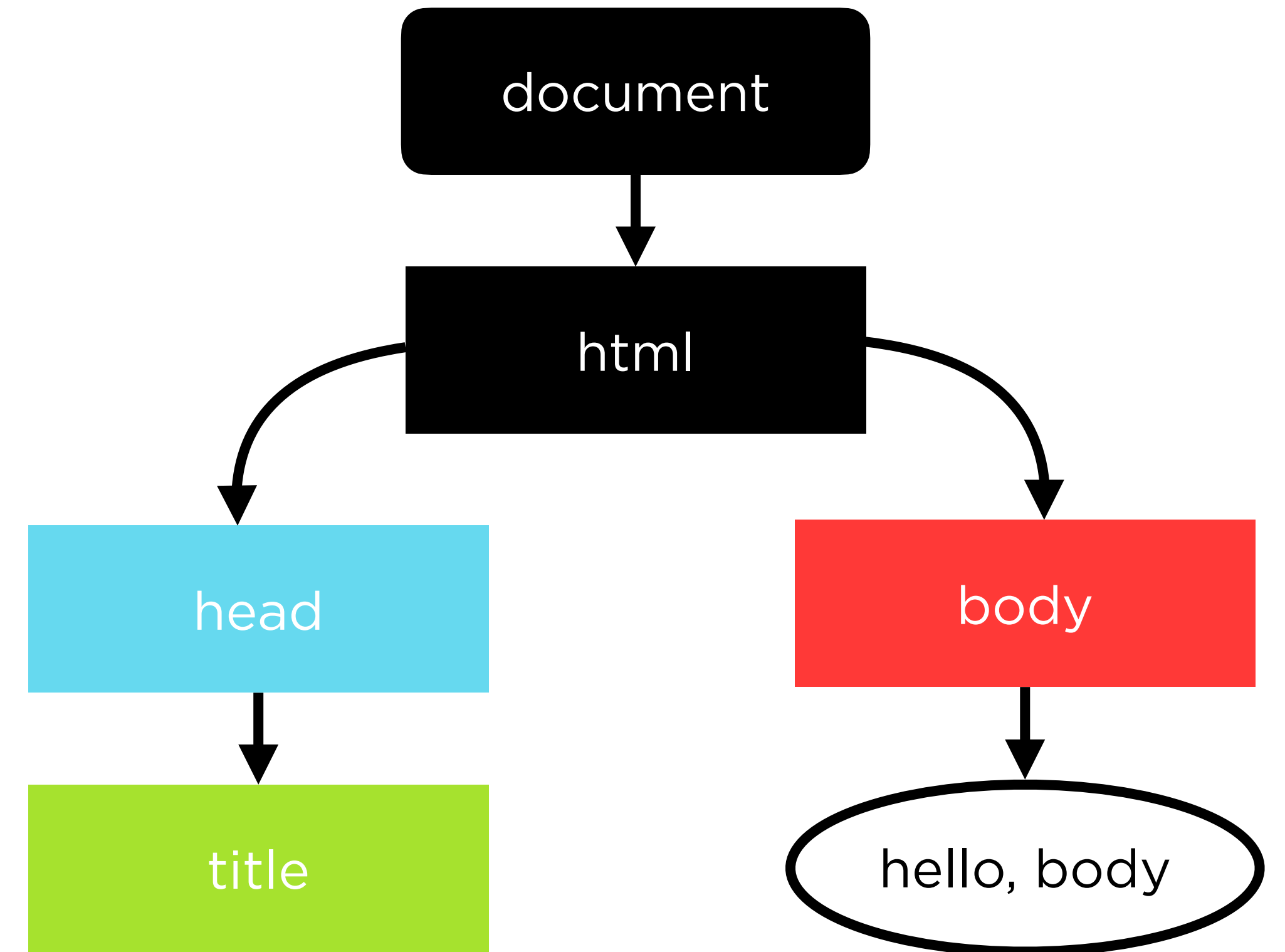


```
<!DOCTYPE html>  
<html>  
  <head>  
  
  </head>  
  <body>  
  
  </body>  
</html>
```

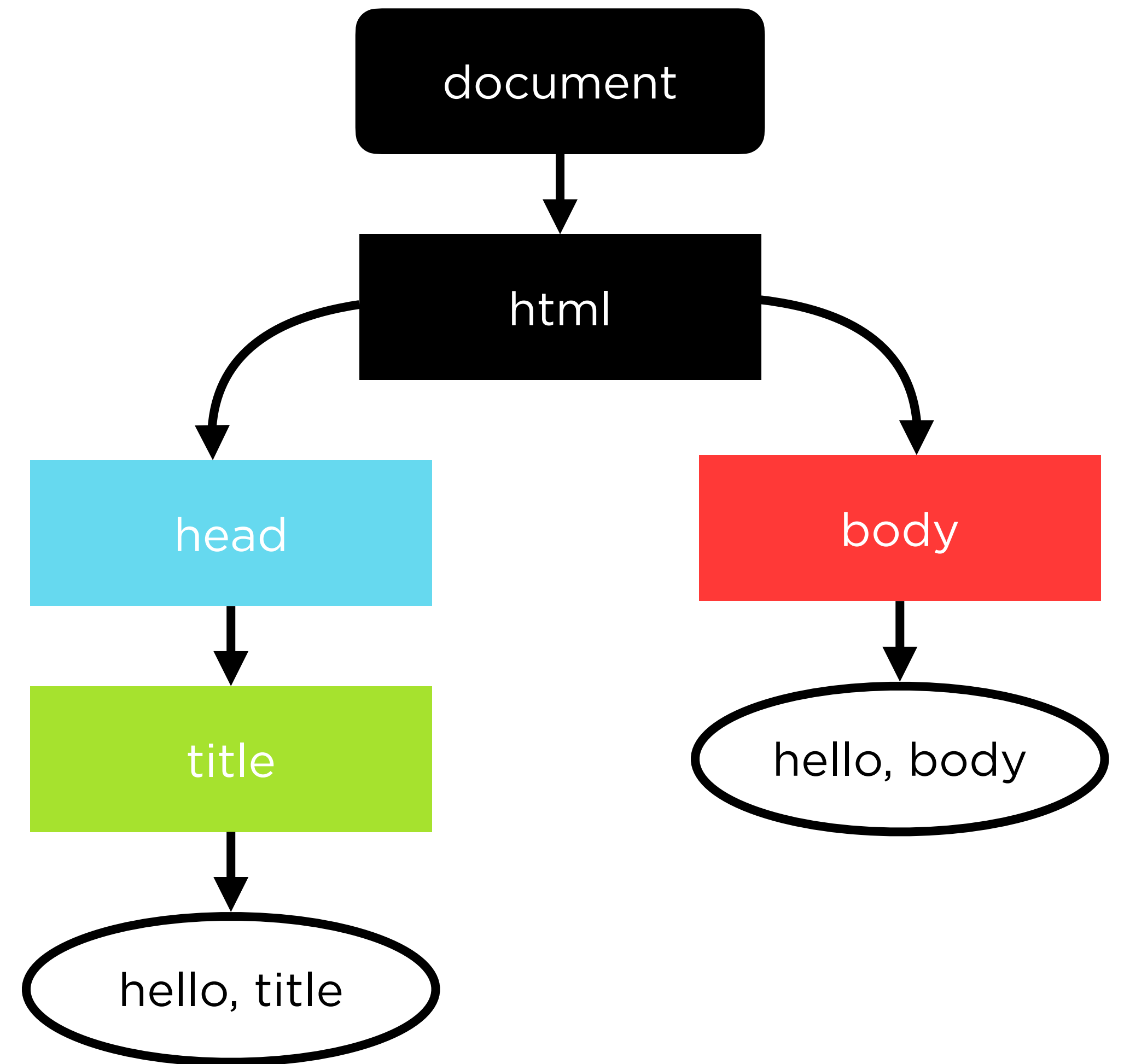


```
<!DOCTYPE html>
<html>
  <head>
    <title>

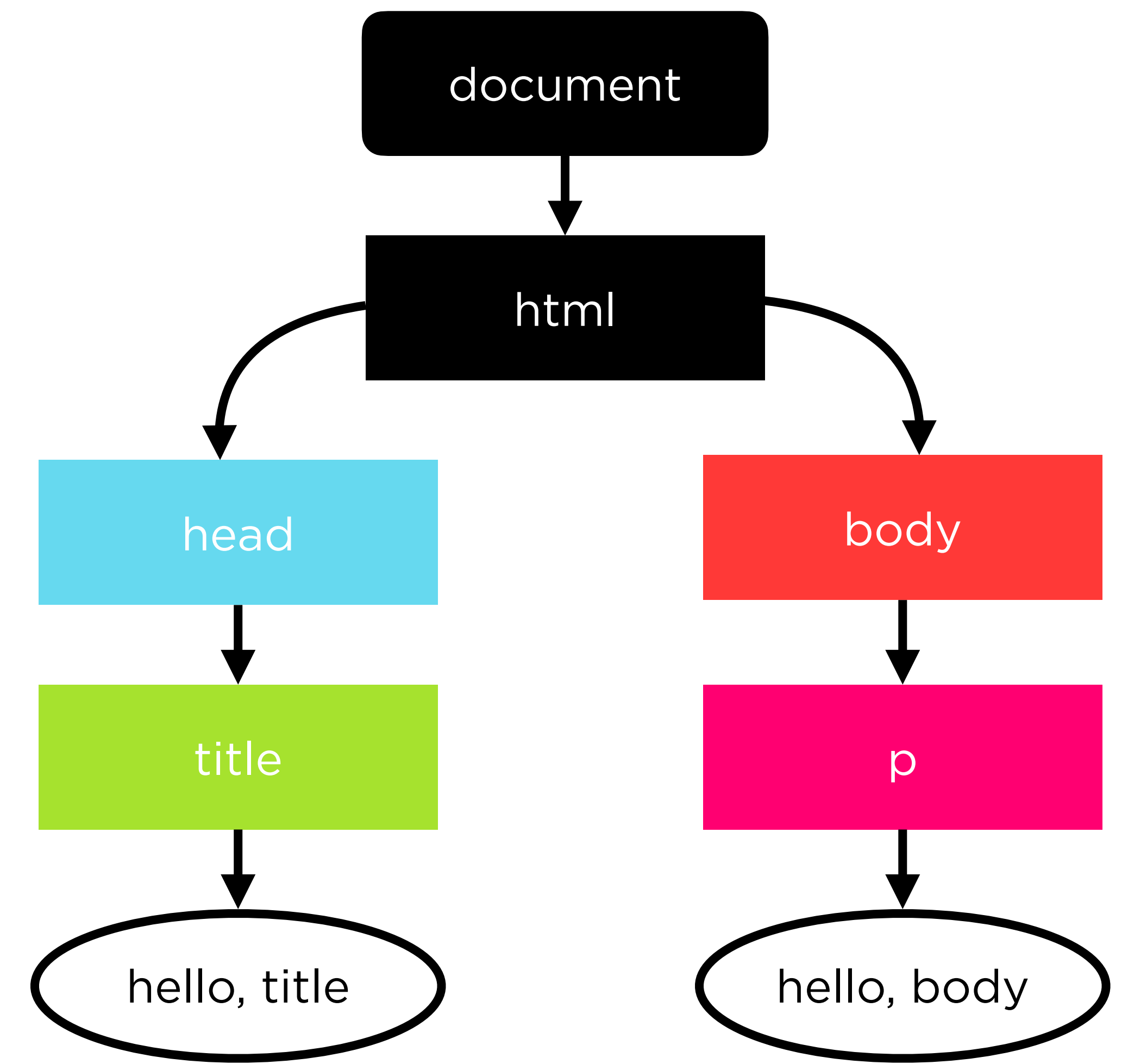
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```



```
<!DOCTYPE html>
<html>
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```




```
<!DOCTYPE html>
<html>
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    <p>hello, body</p>
  </body>
</html>
```



Trivia

Headings

Titling a page

Heading 1

Heading 2

Heading 3

Heading 4

Heading 5

Heading 6

<h1></h1>

<h2></h2>

<h3></h3>

<h4></h4>

<h5></h5>

<h6></h6>

Paragraphs

Adding regular text

This is paragraph text. It's regular text that's part of my webpage. Each new paragraph tag will create a new paragraph.

Like this!

<p>This is paragraph text. It's regular text that's part of my webpage. Each new paragraph tag will create a new paragraph.</p>

<p>Like this!</p>

Buttons

Adding clickable elements to your page

```
<button></button>
```



```
<button>Click me!</button>
```



Click me!

Inputs

Adding text input to your page

```
<input>
```

```
<input type="text">
```

```
<input type="number">
```

```
<input type="password">
```


Your turn!

In **index.html**, experiment by adding your choices of...

- A heading element to ask a question
- A paragraph to add additional context to the question
- Buttons to create a multiple choice question
- A text input to create a free response question



CSS

Styling web pages

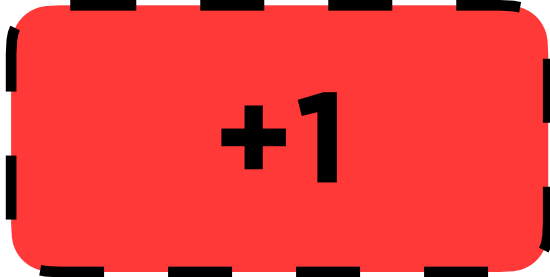
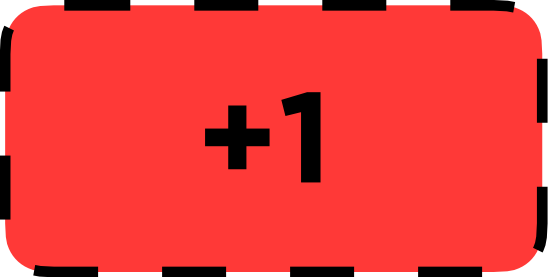
```
selector {  
  property: value;  
}
```

Team 1	Team 2
0	0
+1	+1

```
button {  
  background-color: red;  
}
```

Team 1	Team 2
0	0
	

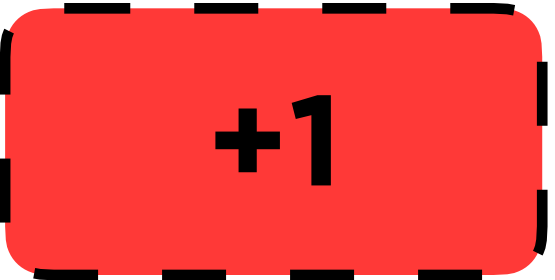
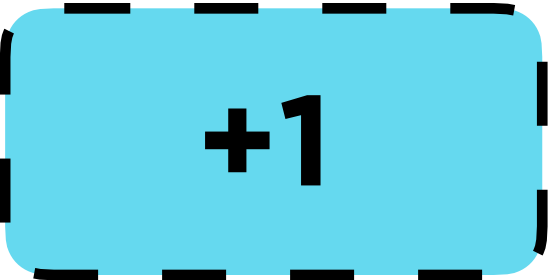
```
button {  
  background-color: red;  
  border: 4pt dashed;  
}
```

Team 1	Team 2
0	0
	

ID Selectors

Selecting single elements

```
#team1-button {  
  background-color: red;  
  border: 4pt dashed;  
}  
  
#team2-button  
{  
  background-color: blue;  
  border: 4pt dashed;  
}
```

Team 1	Team 2
0	0
	

```
#team1-button {  
  background-color: red;  
  border: 4pt dashed;  
}
```

```
#team2-button {  
  background-color: blue;  
  border: 4pt dashed;  
}
```

...

```
<button id="team1-button">  
  Team 1  
</button>
```

...

```
<button id="team2-button">  
  Team 2  
</button>
```

...

Type Selectors

Selecting all elements of a certain type

```
td {  
  background-color: gray;  
}
```

Team 1	Team 2
0	0
+1	+1

```
td {  
  background-color: gray;  
}
```

Team 1	Team 2
0	0
+1	+1

Class Selectors

Selecting groups of elements

```
.title {  
  background-color: gray;  
}
```

Team 1	Team 2
0	0
+1	+1

```
.title {  
  background-color: gray;  
}
```

...

```
<tr>  
  <td class="title">  
    Team 1  
  </td>  
  <td class="title">  
    Team 2  
  </td>  
</tr>
```

...

Font Family

Changing fonts

```
p {  
  font-family: serif;  
}
```

In the great green room there was a
telephone and a red balloon.


```
p {  
  font-family: sans-serif;  
}
```

In the great green room there was a telephone and a red balloon.

```
p {  
  font-family: monospace;  
}
```

In the great green room
there was a telephone and
a red balloon.

Backgrounds

Changing colors and images

```
body {  
    background-color: seagreen;  
}
```

```
body {  
    background-color: #FFB6C1;  
}
```

```
body {  
    background-color: rgb(255,255,255);  
}
```

Size

Resizing elements

```
img {  
  width: 50px;  
}
```




```
img {  
  width: 200px;  
}
```



```
img {  
  width: 600px;  
}
```



```
img {  
  width: 600px;  
  height: 300px;  
}
```



Your turn!

In **index.html**, experiment by adding your choice of...

- An id, class, and type selector
- Buttons with borders
- Updated font size and family
- Something else!

JavaScript

Making web pages dynamic

querySelector

Selecting elements from HTML

```
document.querySelector( '#add1' );
```

Find element with id "add1"

```
document.querySelector('img');
```

Find first **img** element


```
document.querySelector('.correct');
```

Find first element with the "correct" class

Event Listeners

Defining what should happen when the user interacts with our site

```
document.querySelector('button');
```

Find first **button** element

```
document.querySelector('button').addEventListener(...);
```

Add an event listener to the button element we selected

```
addEventListener(event, function)
```

When **event** happens, run **function**.

```
addEventListener('click', function)
```

```
addEventListener('mouseover', function)
```

```
addEventListener(event, changeColor)
```



```
addEventListener(event, updateScore)
```

```
function changeColor() {  
    document.querySelector('body').style.backgroundColor = 'blue';  
}  
  
document.querySelector('button').addEventListener('click', changeColor);
```

```
document.querySelector('button').addEventListener('click', function() {  
    document.querySelector('body').style.backgroundColor = 'blue';  
});
```

```
document.querySelector('button').addEventListener('click', function() {  
    document.querySelector('body').style.backgroundColor = 'blue';  
});
```

Your turn!

In **index.html**, experiment by adding...

- Buttons that turn red or green, depending on whether they are the correct or incorrect answer
- Feedback on whether the user answered a question correctly or incorrectly
- Something else of your choosing!

The week ahead

- **Submit Problem Set 8** by Sunday, April 2, 11:59 PM.
- Attend **office hours**.
- Complete <https://cs50.ly/studybuddy> to be paired with a classmate if you'd like!