

HTML

```
<body>  
<div>  
  <img>  
  <a> Click! </a>  
</div>  
</body>
```

OUTPUT

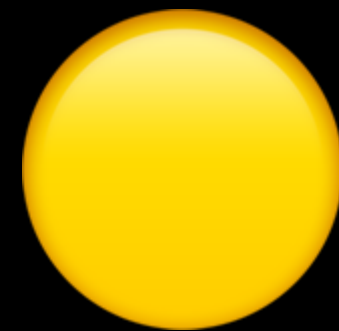
```
body  
├── div  
│   ├── img  
│   └── a
```

# Lab 4

CS50 for MBAs



scoreboard.html



bitcoin.html

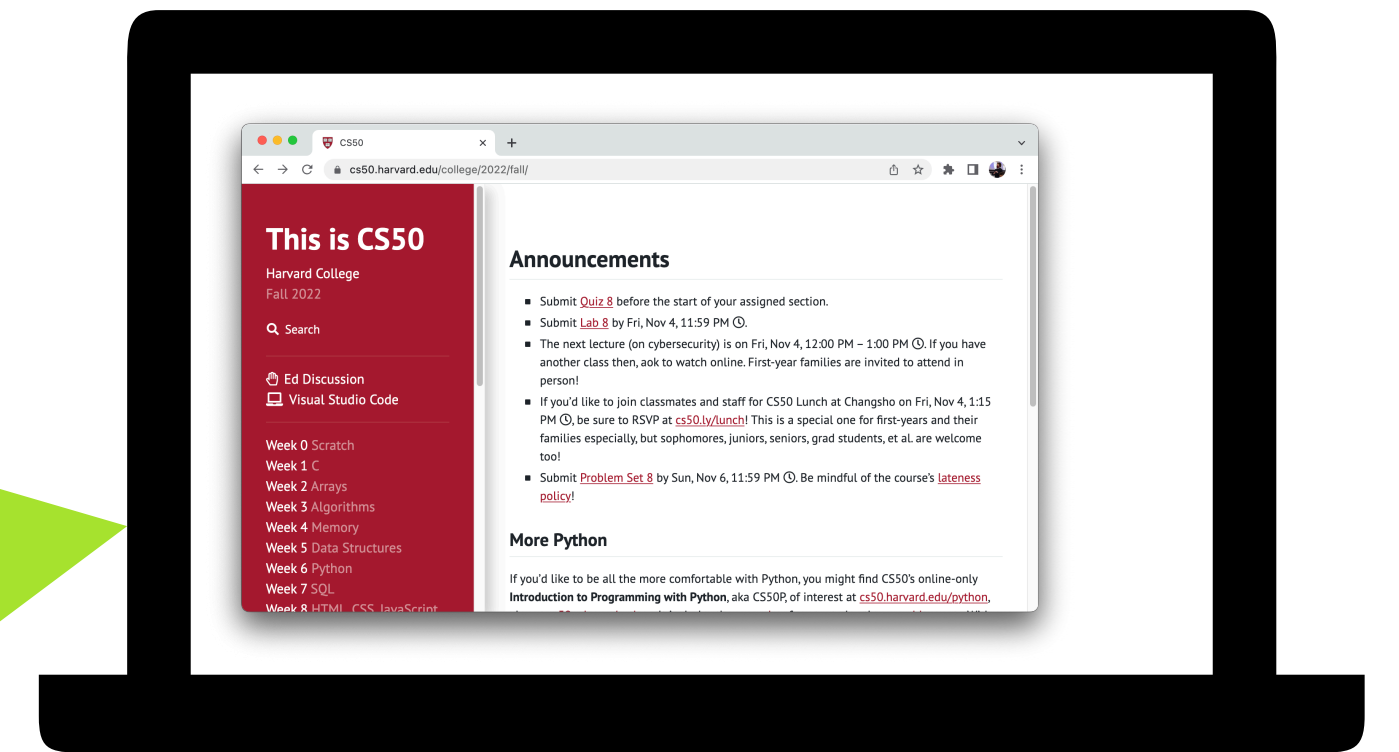
# HTTP

The protocol of the web

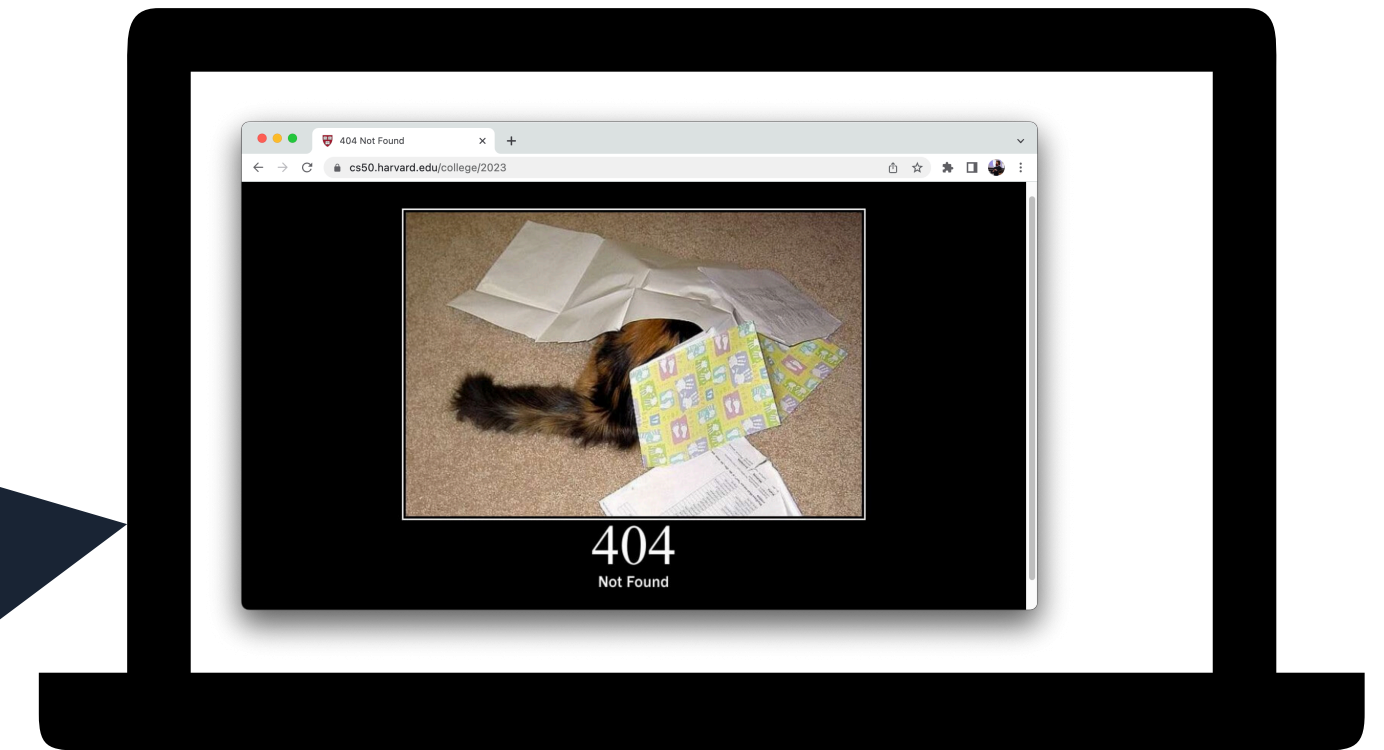
**<http://cs50.harvard.edu/...>**

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

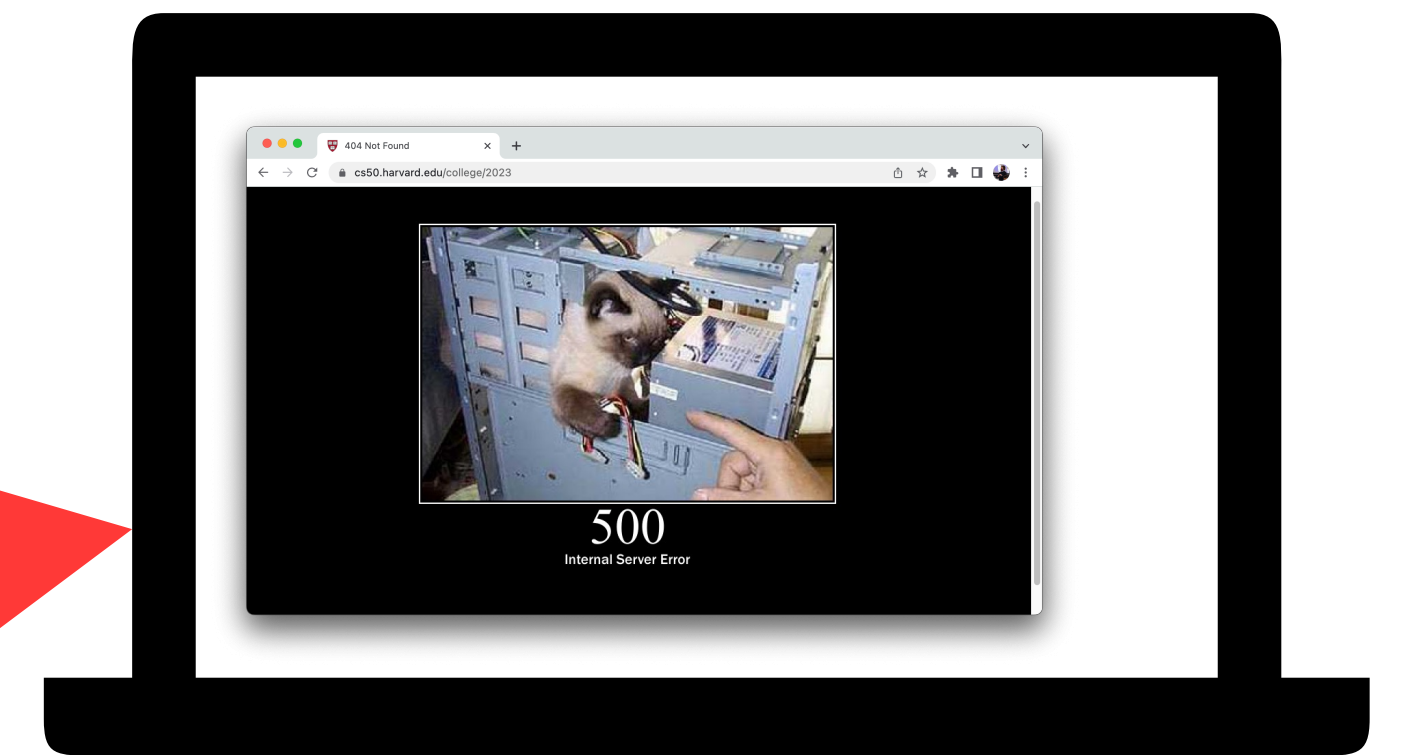
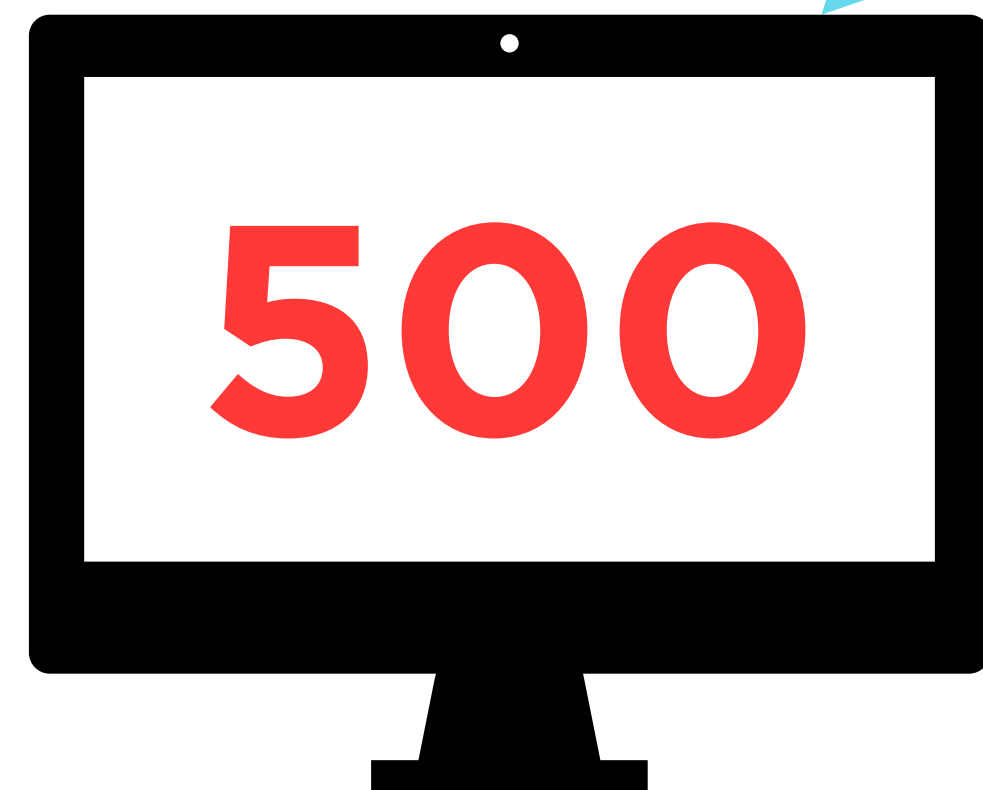
# HTTP



# HTTP



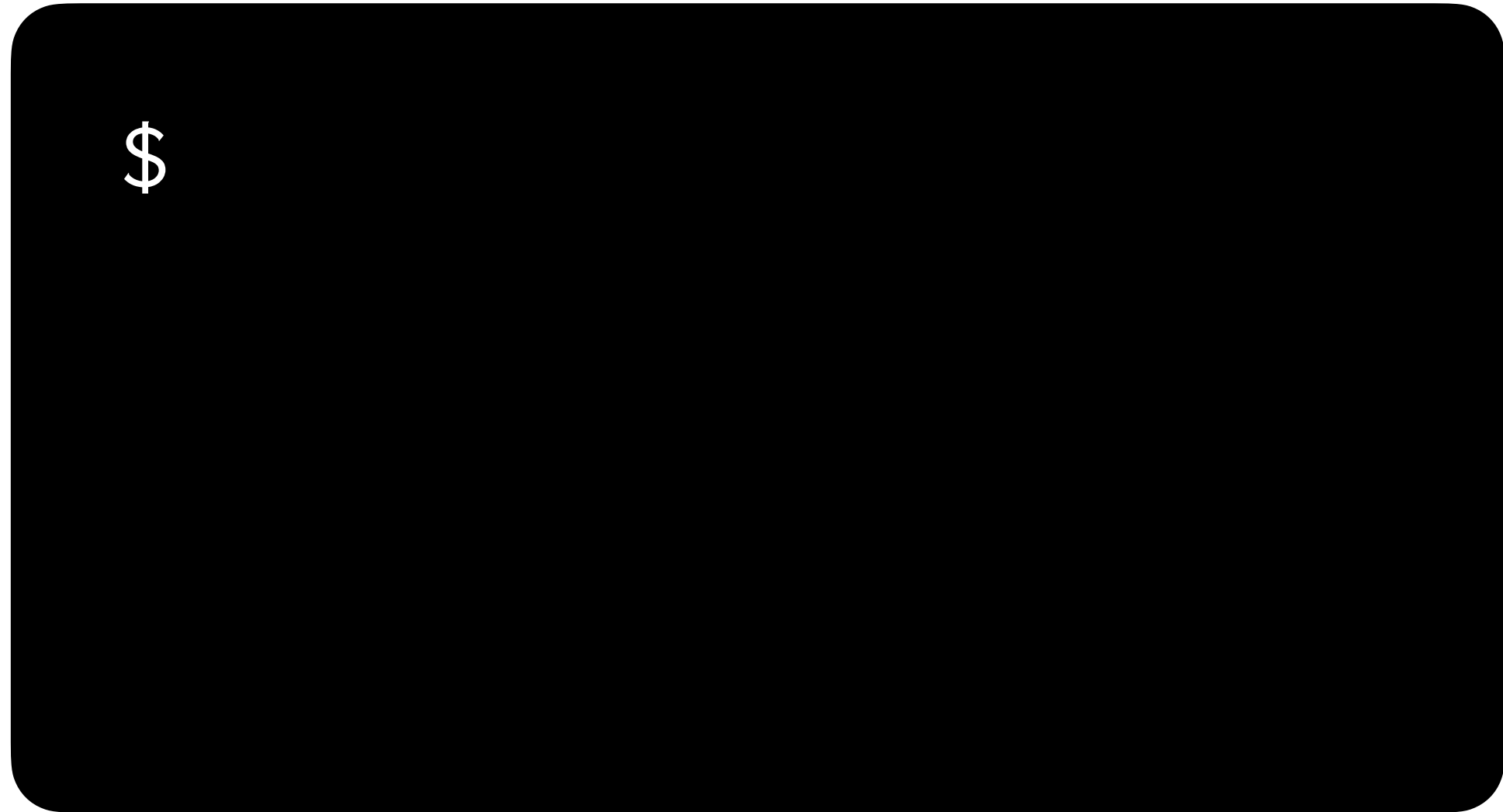
# HTTP





# Scoreboard

Creating a page with a dynamic scoreboard



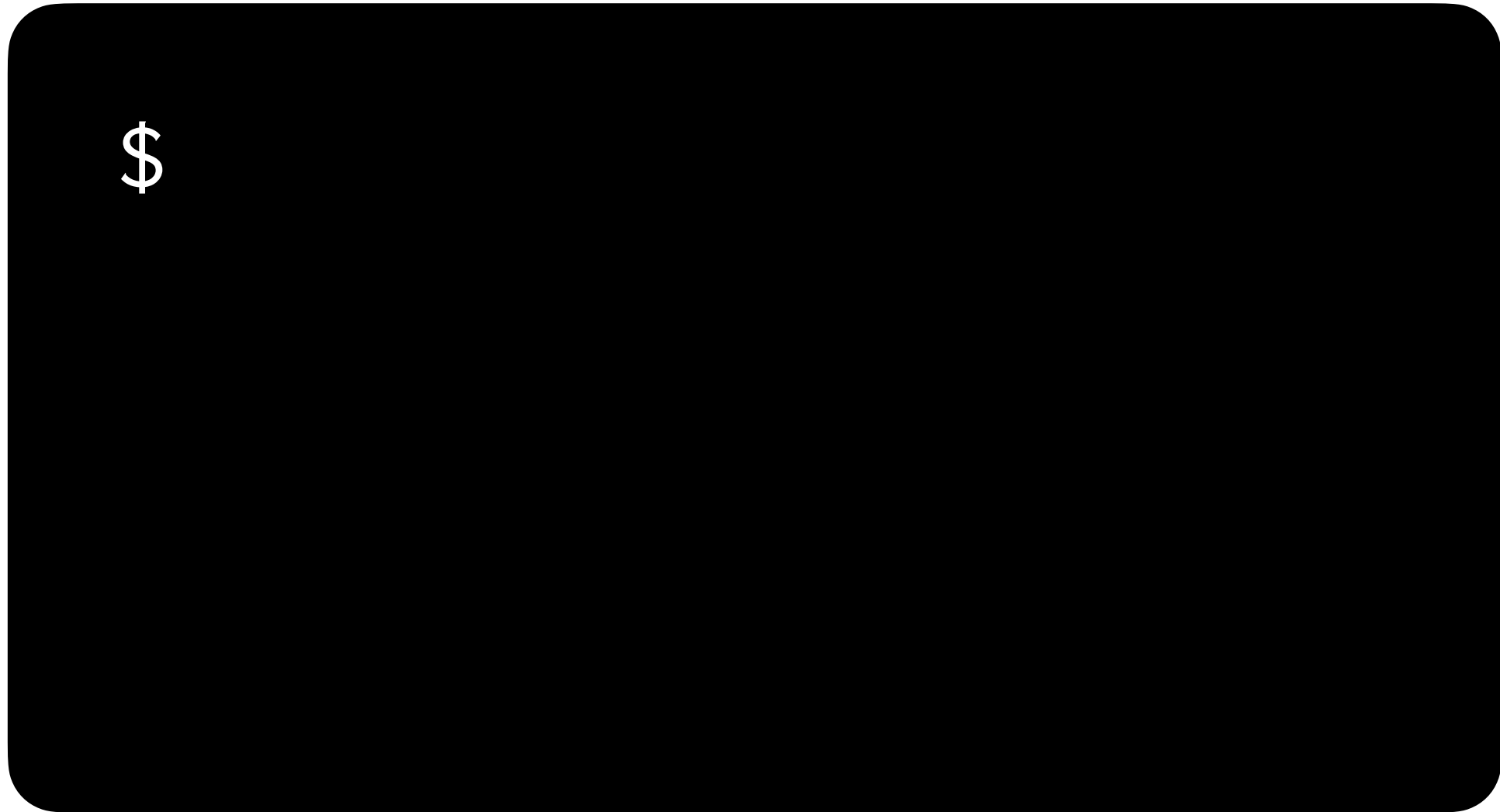
Home Directory



foo.py



bar.py



Home Directory



foo.py



bar.py

```
$ ls
```



Home Directory



foo.py



bar.py

```
$ ls
foo.py bar.py
```



Home Directory



foo.py



bar.py

```
$ mkdir lab4
```



Home Directory

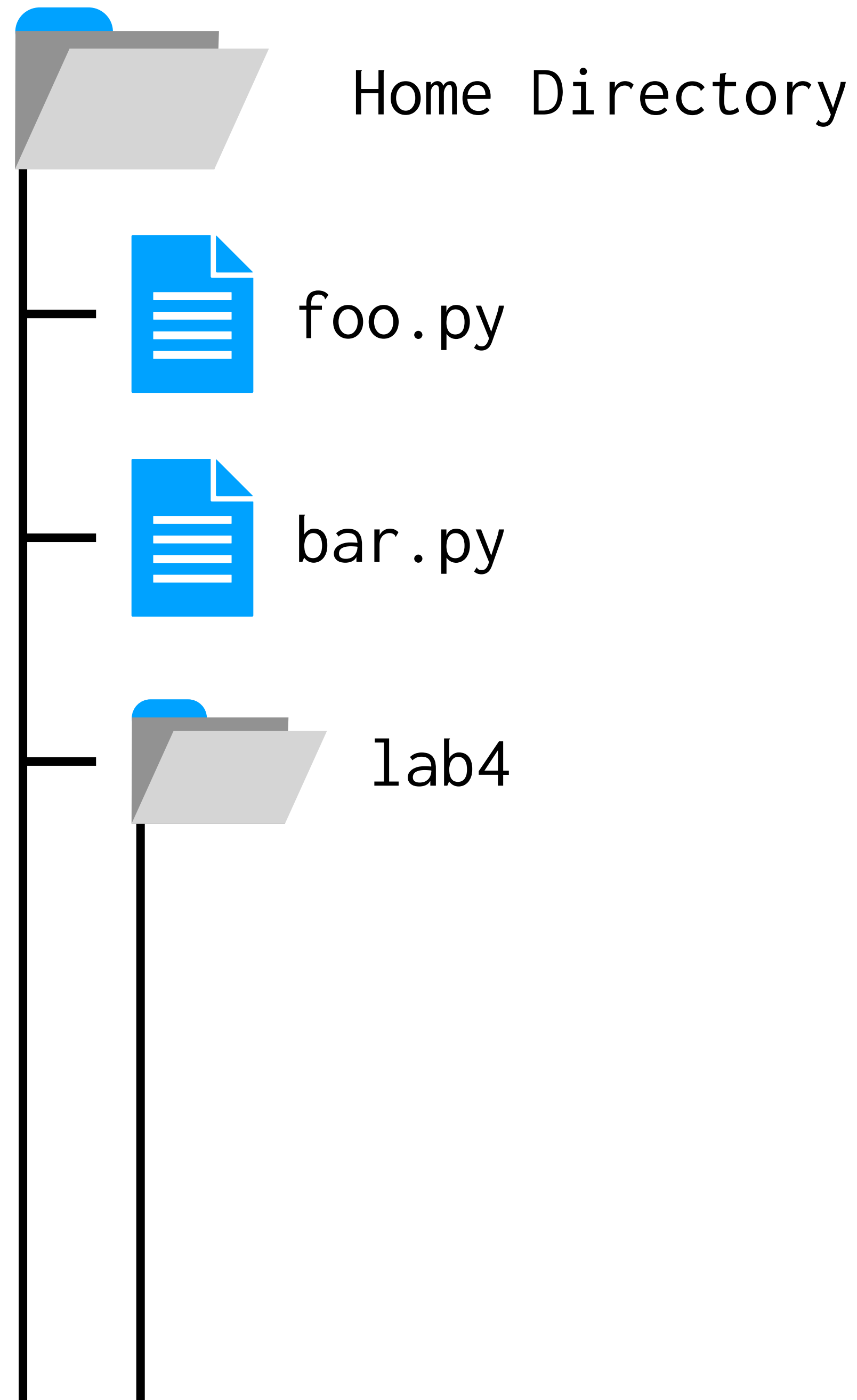


foo.py

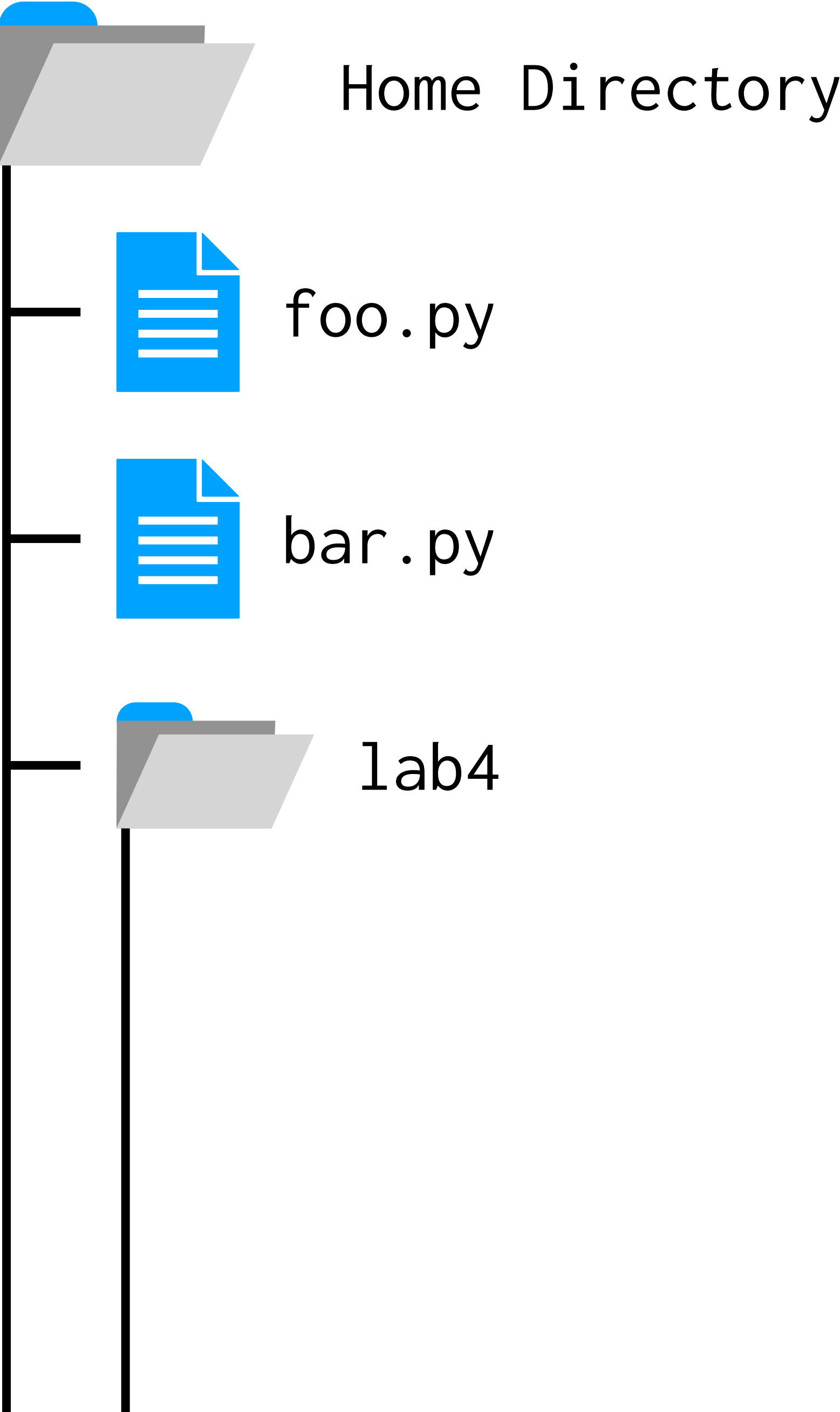


bar.py

```
$ mkdir lab4
```

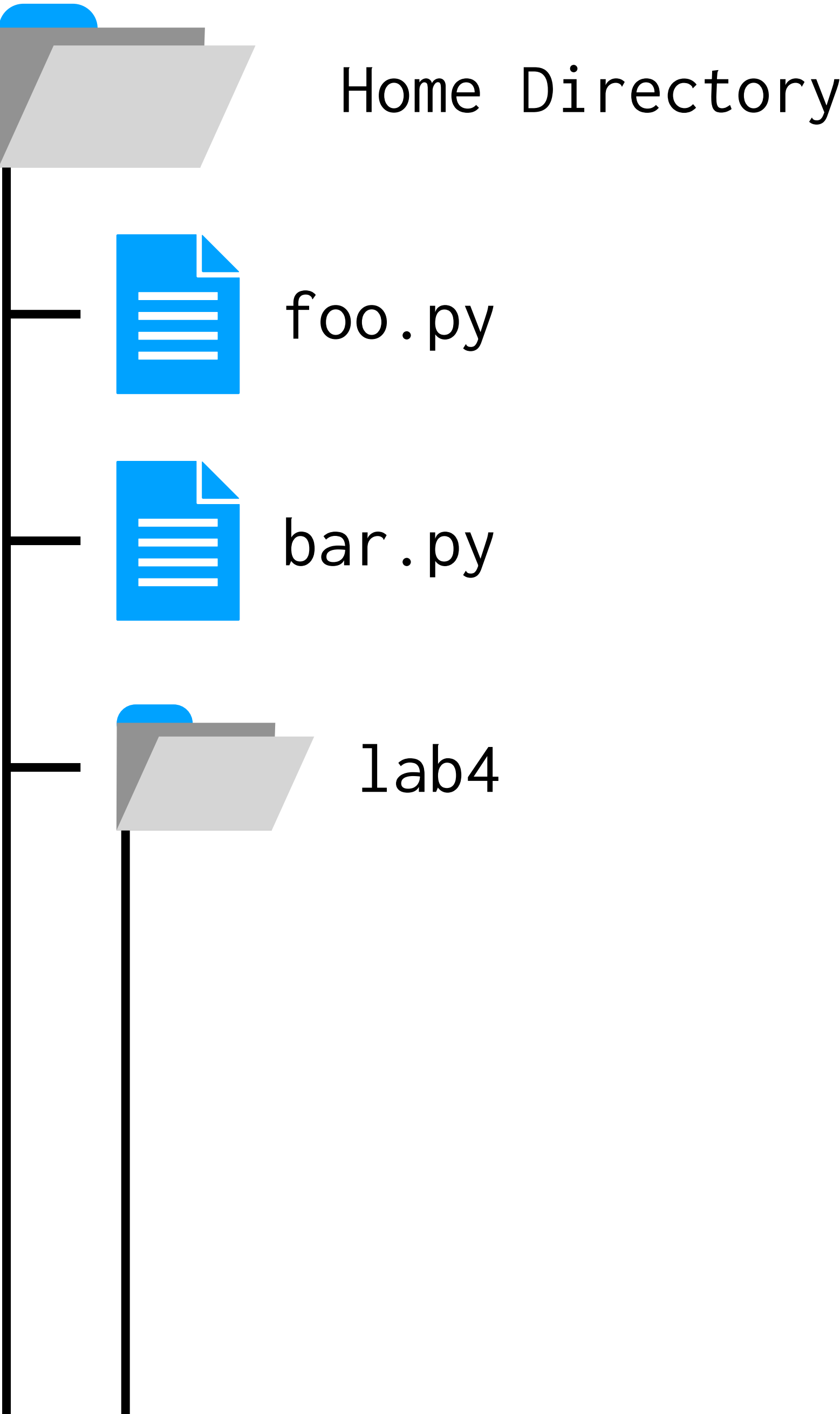


```
$ cd lab4
```

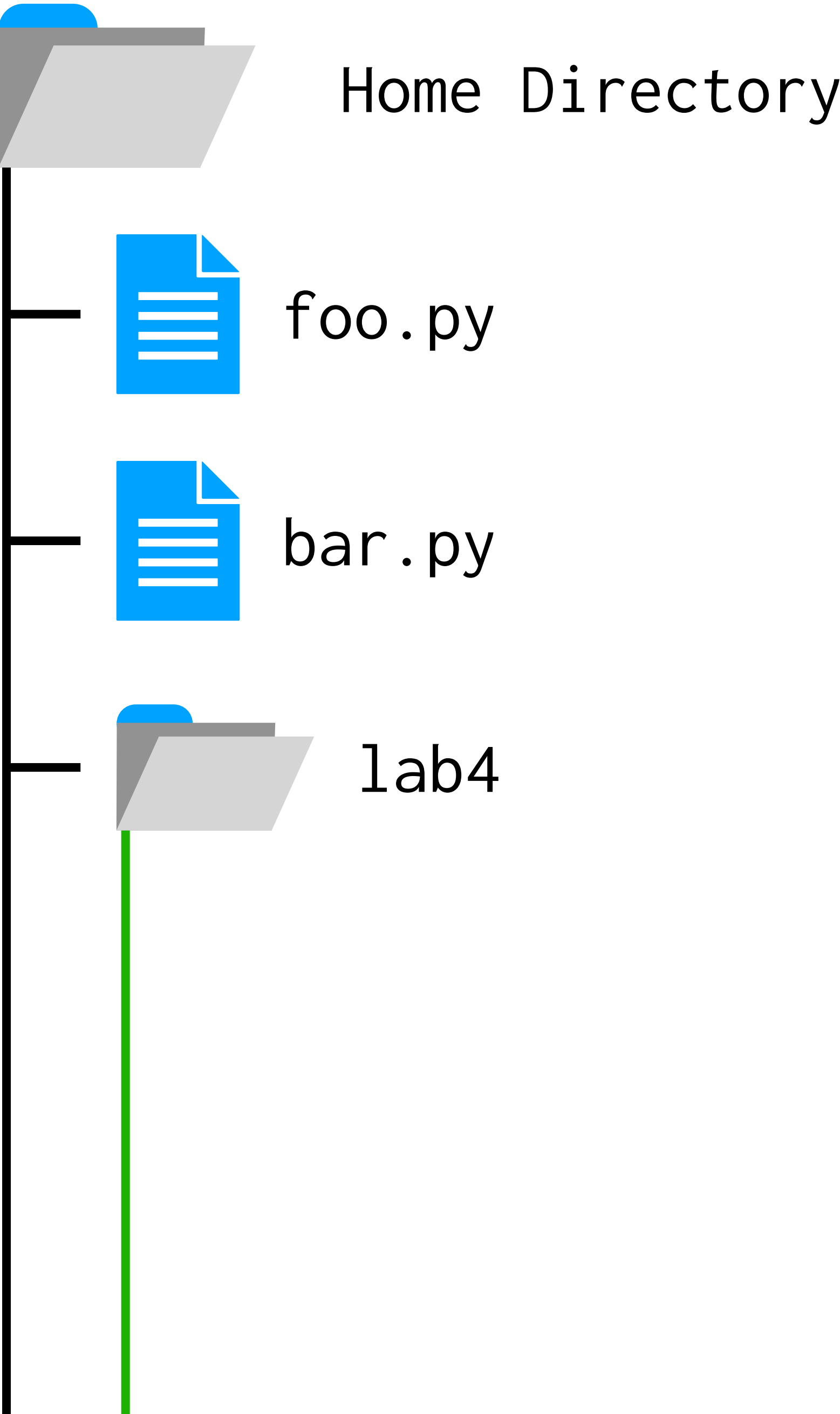




```
lab4/ $
```

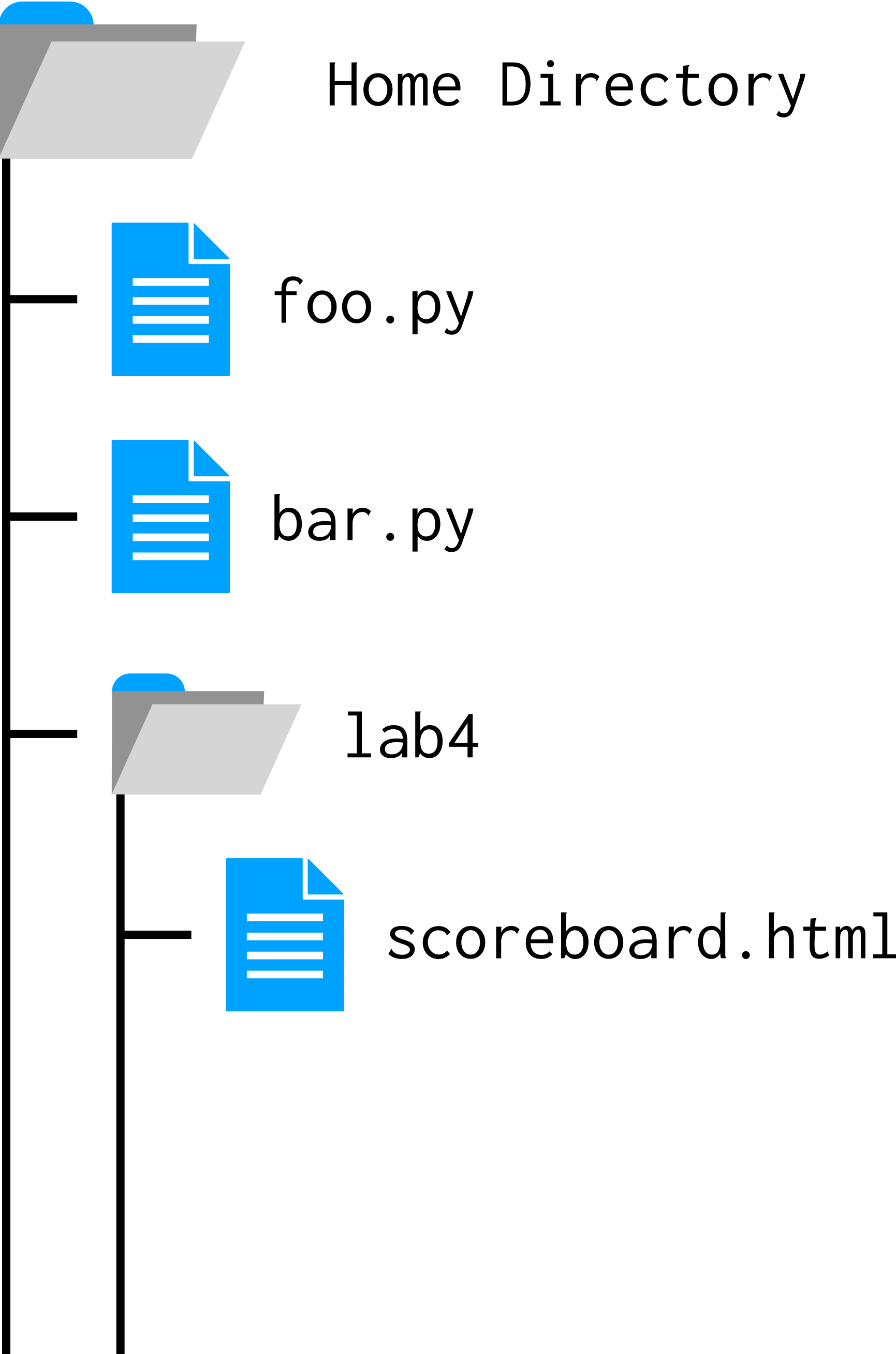


```
lab4/ $
```

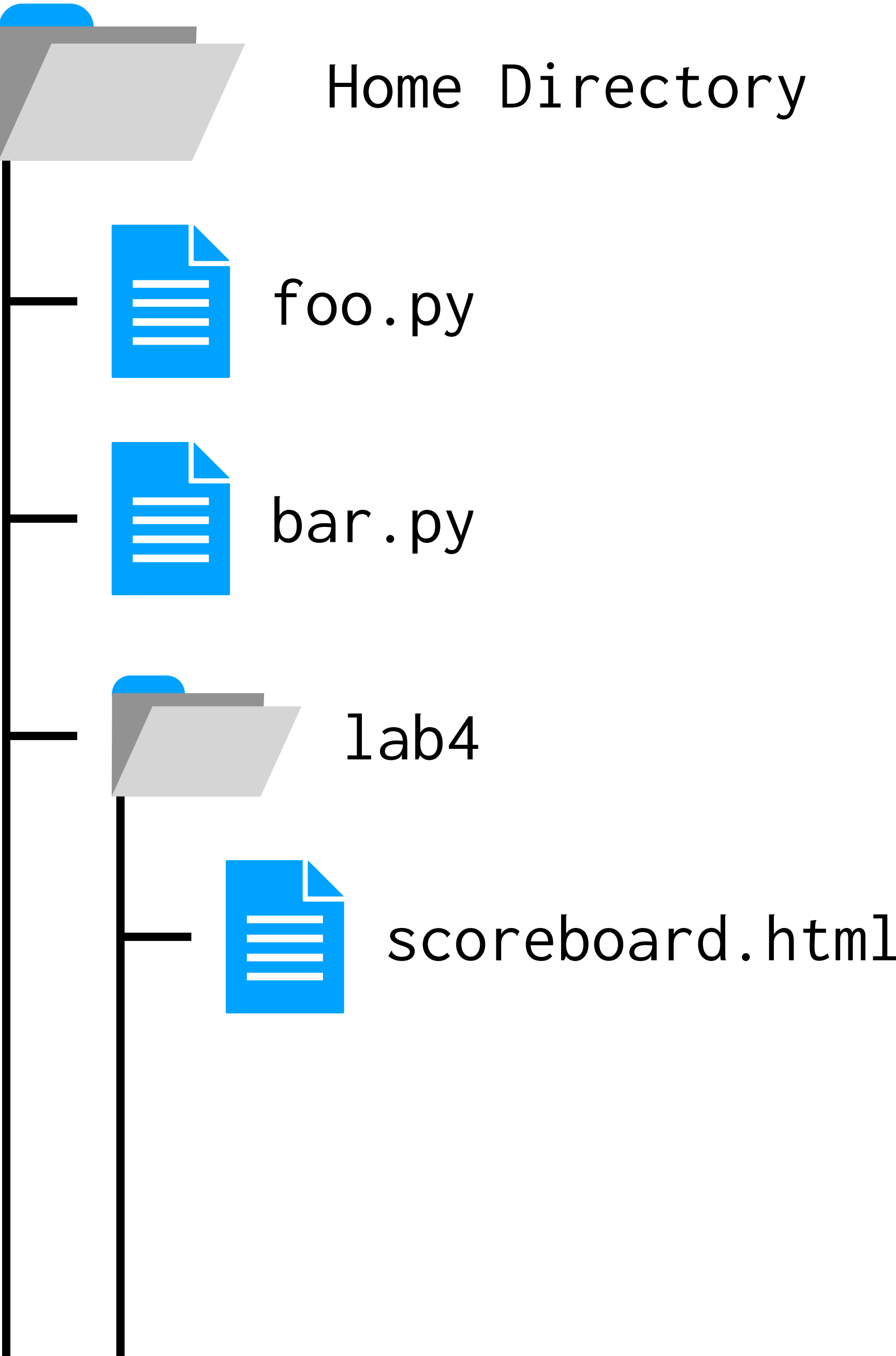


```
wget https://cdn.cs50.net/hbs/2023/spring/labs/4/scoreboard.html
```

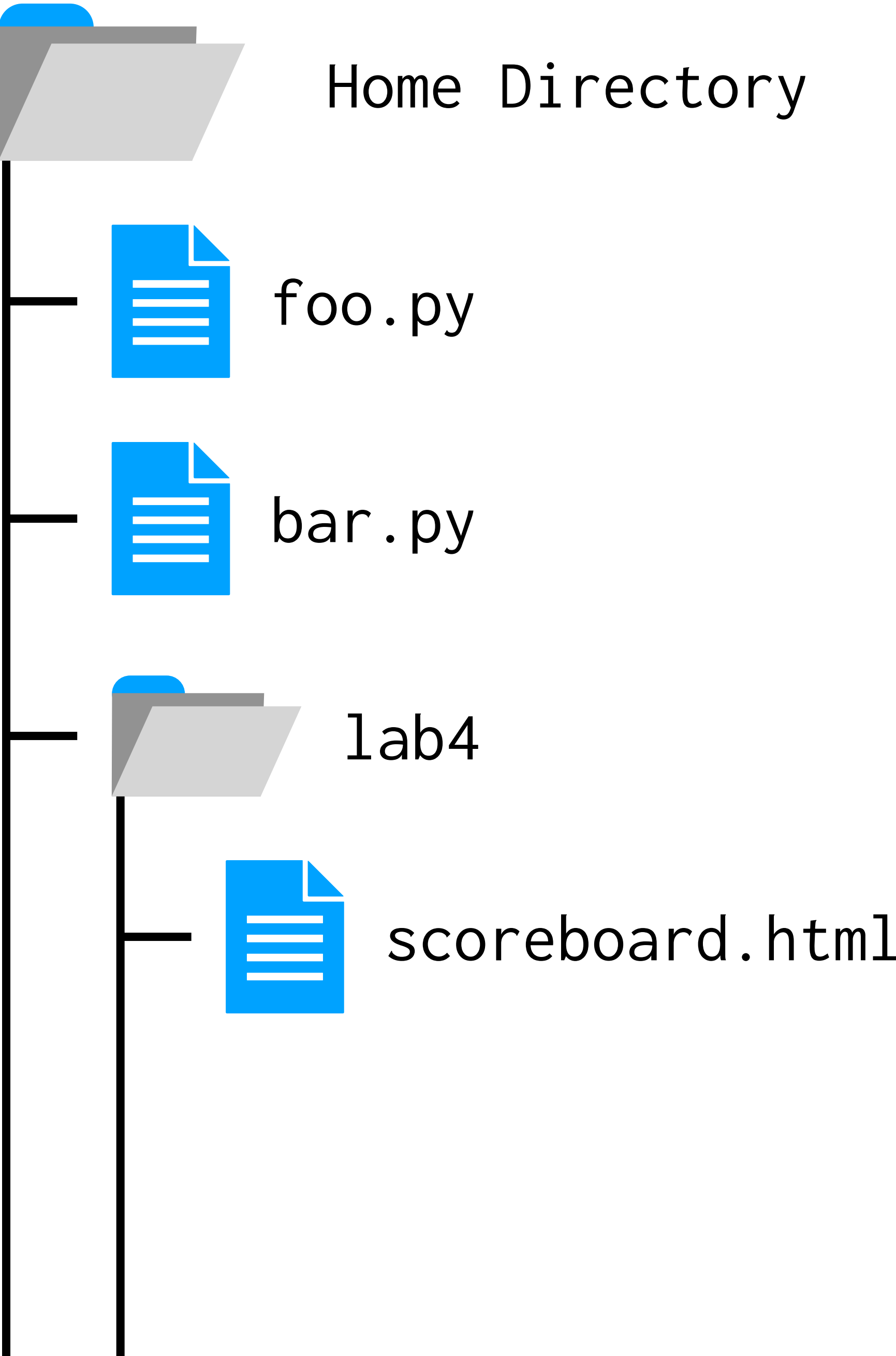
```
lab4/ $
```



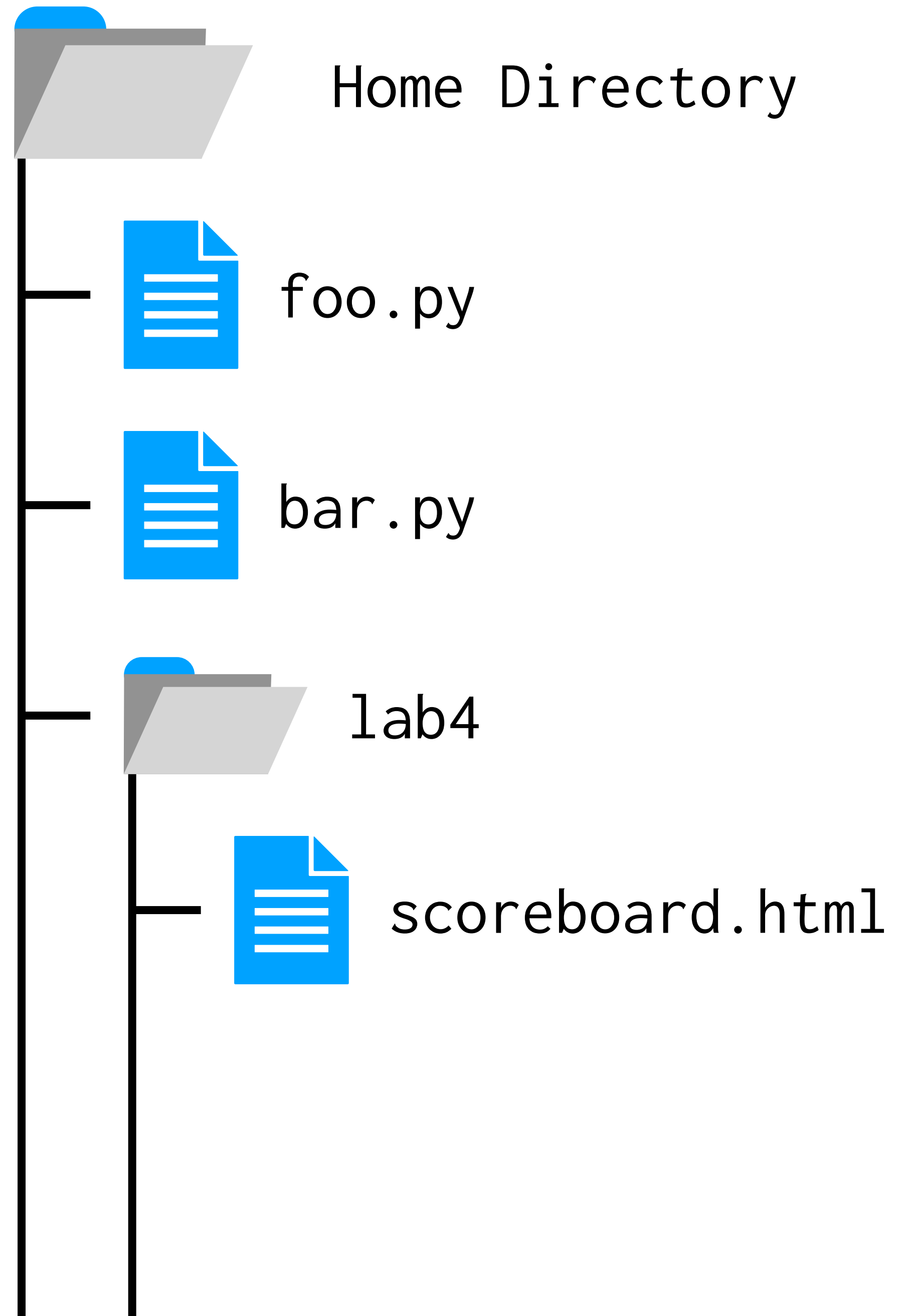
```
lab4/ $ ls
```



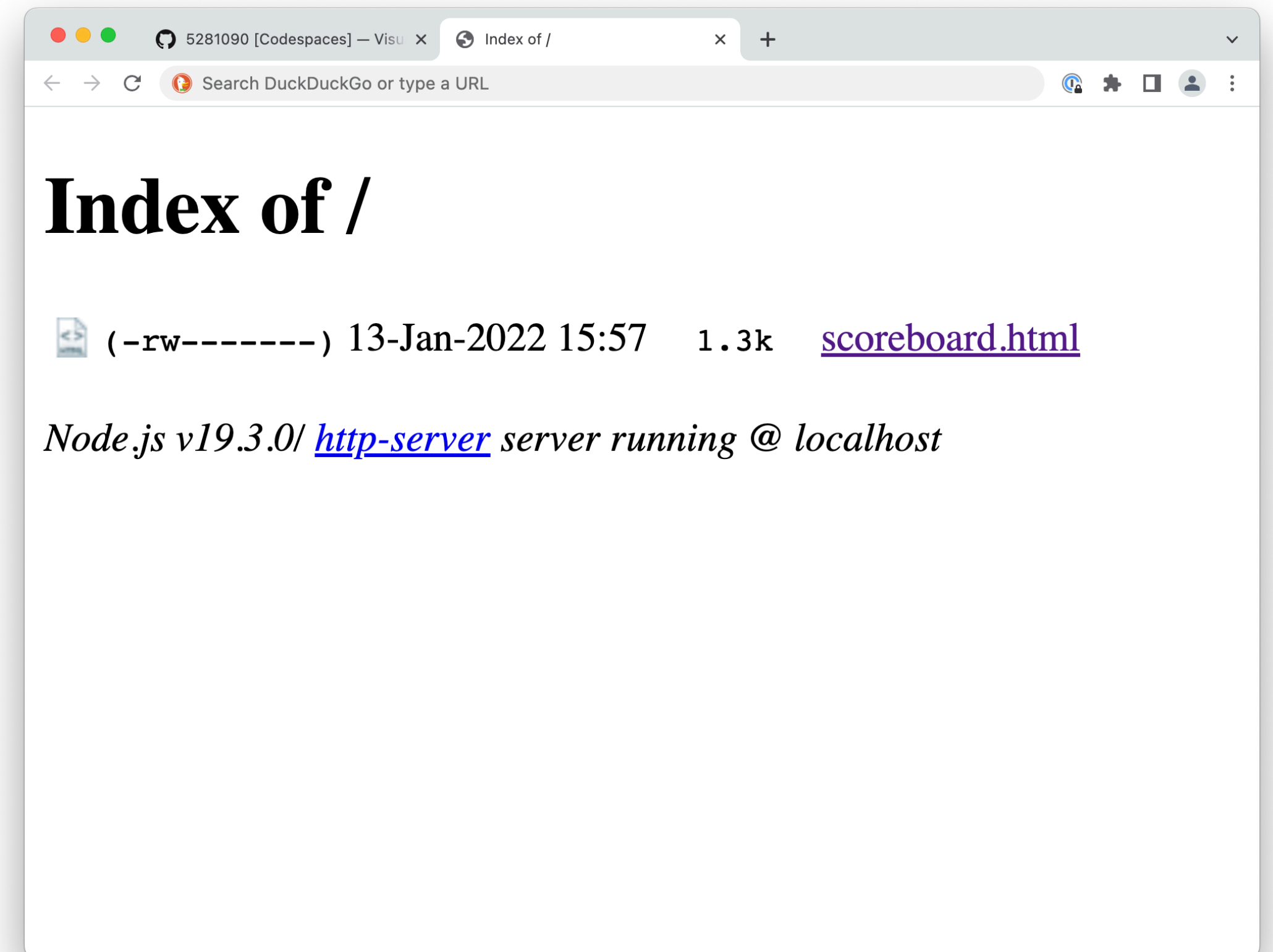
```
lab4/ $ ls
scoreboard.html
```



```
lab4/ $ http-server
```



```
lab4/ $ http-server
```



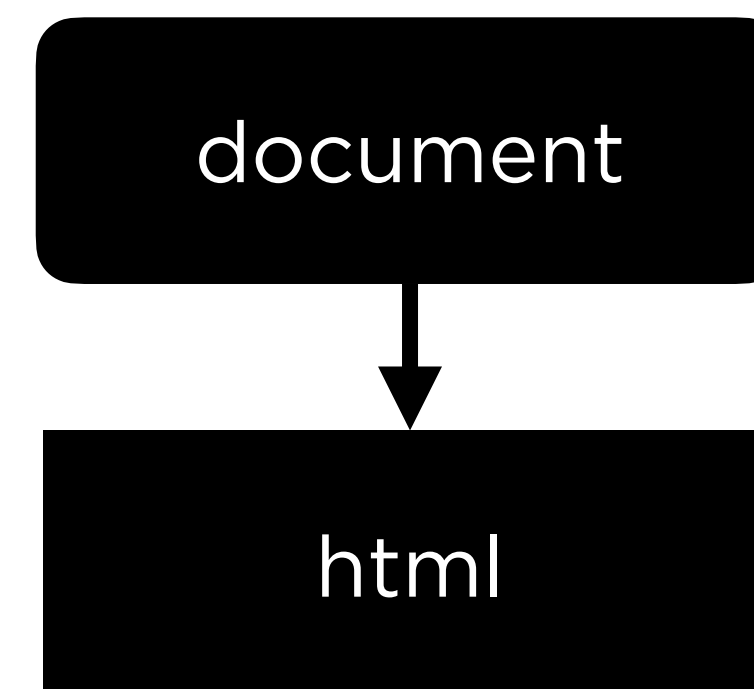


# HTML

The structure of web pages

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

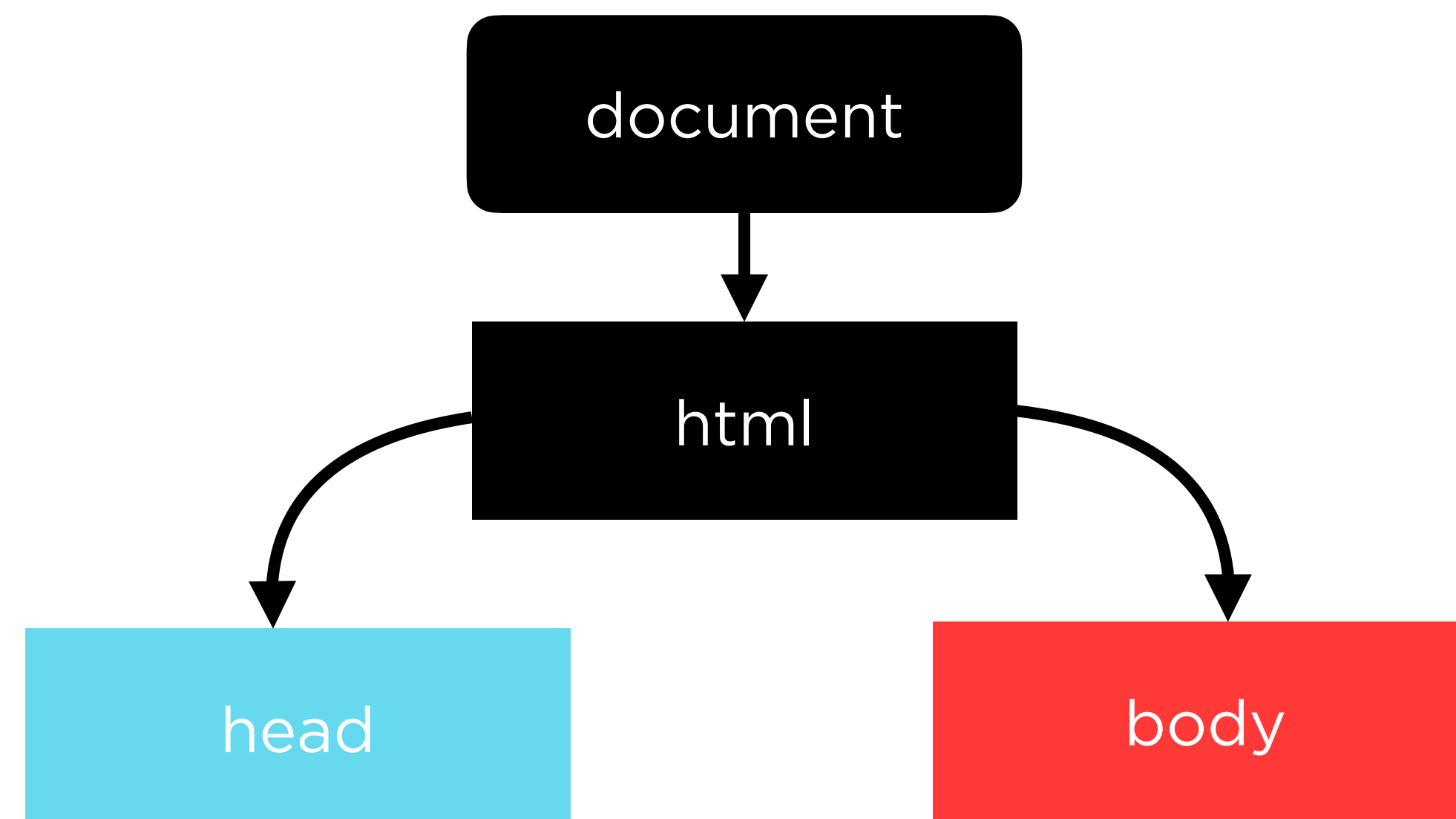
```
</html>
```



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

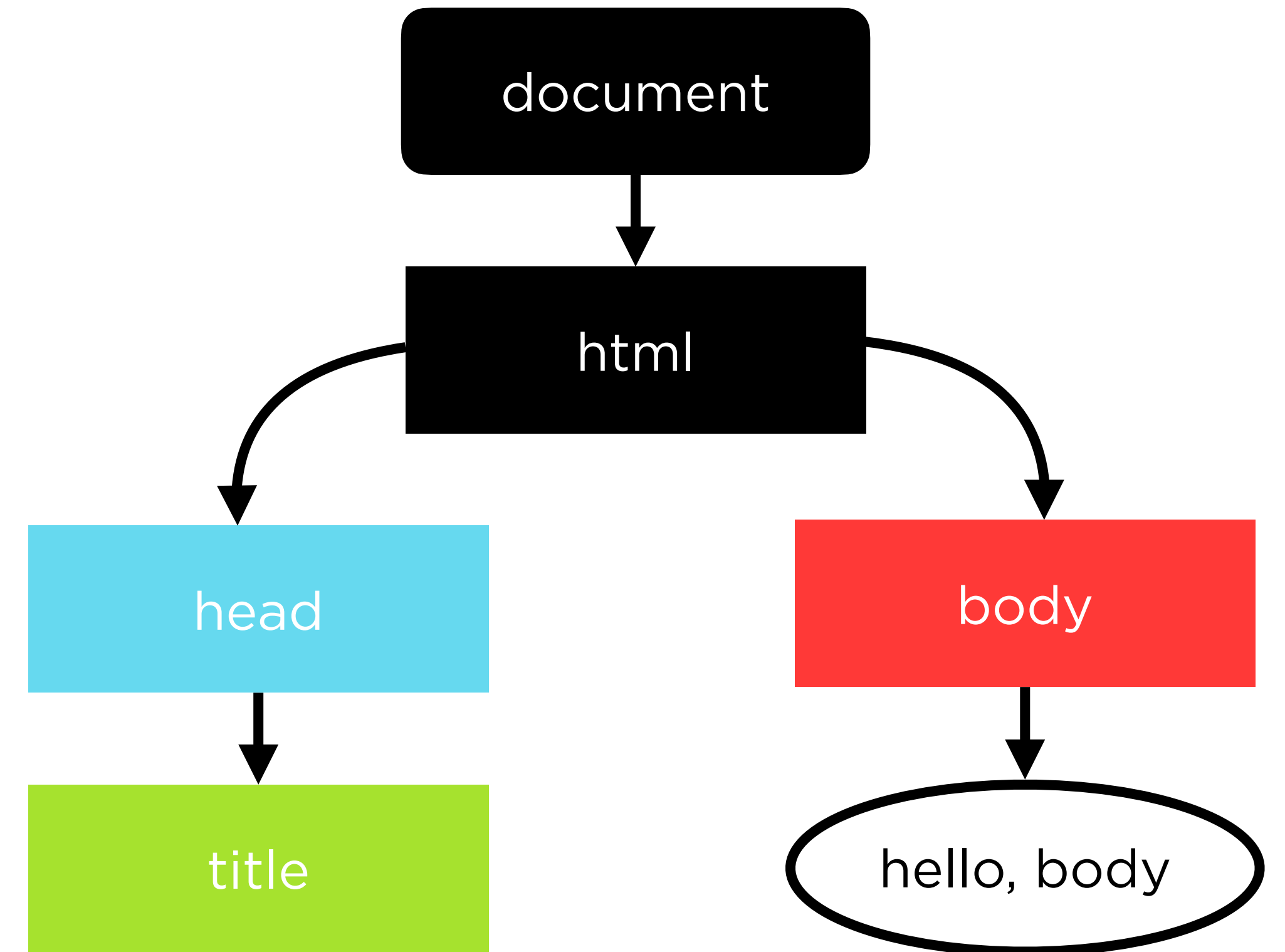
  </head>
  <body>

  </body>
</html>
```

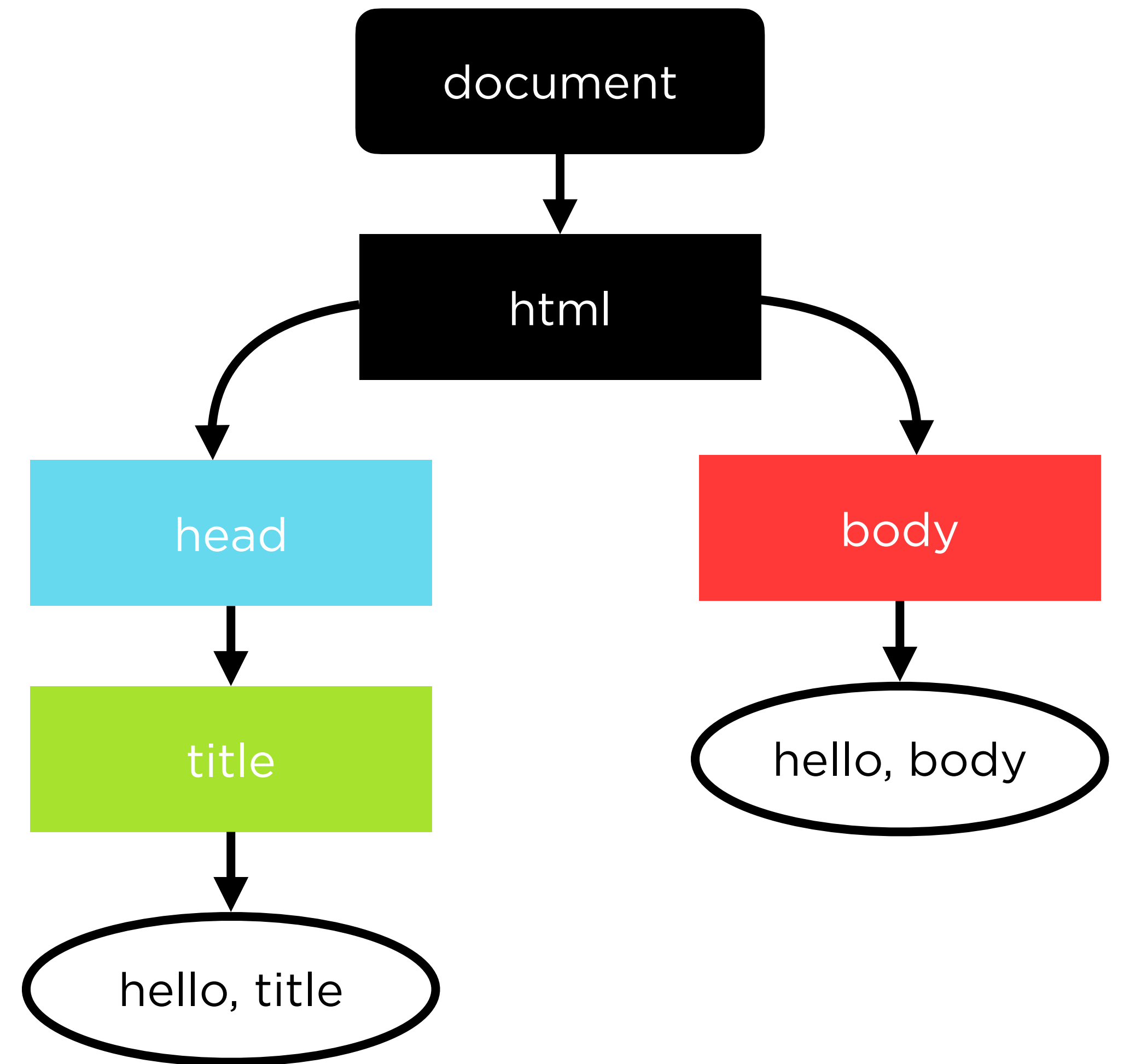


```
<!DOCTYPE html>
<html>
  <head>
    <title>

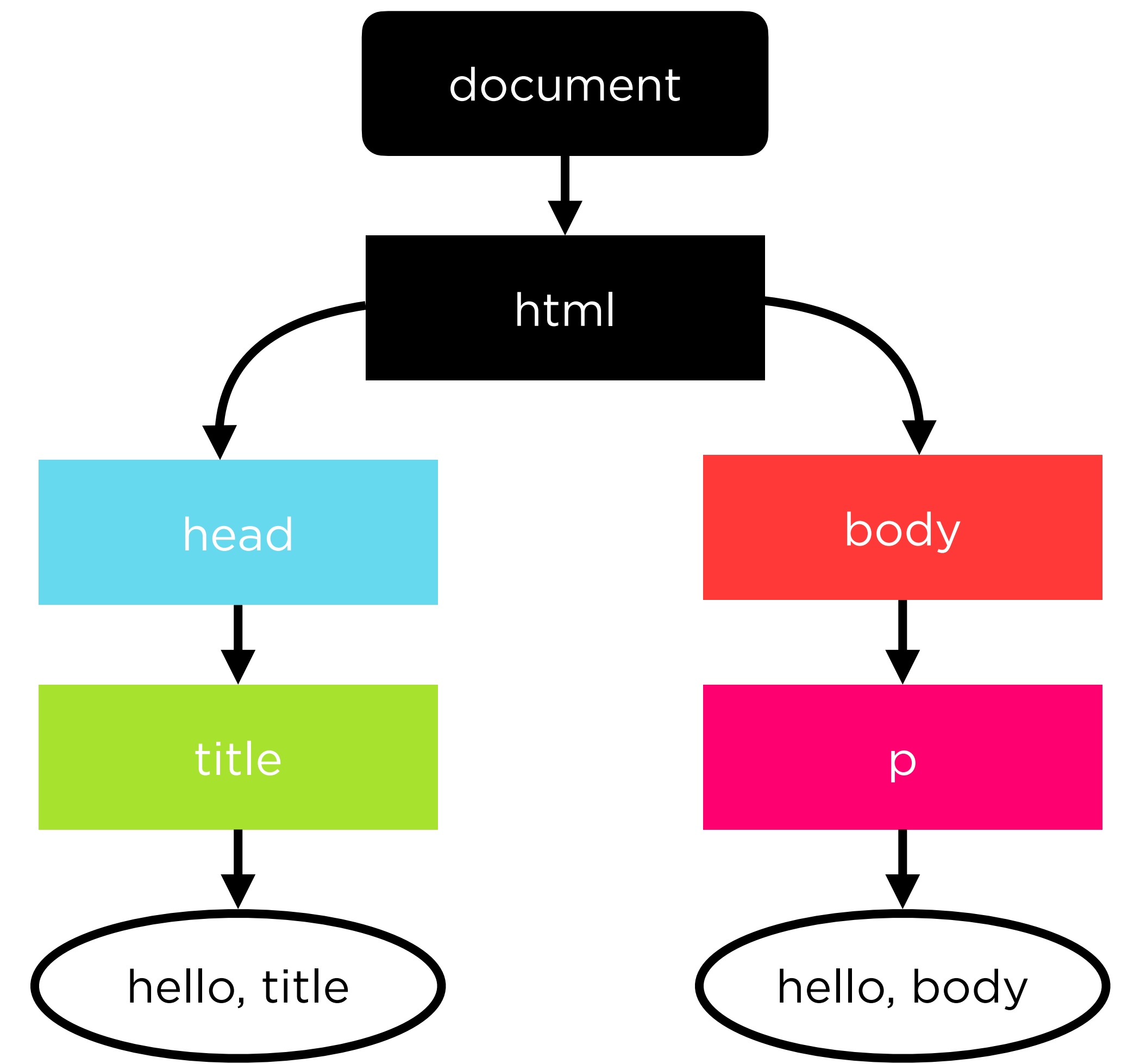
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

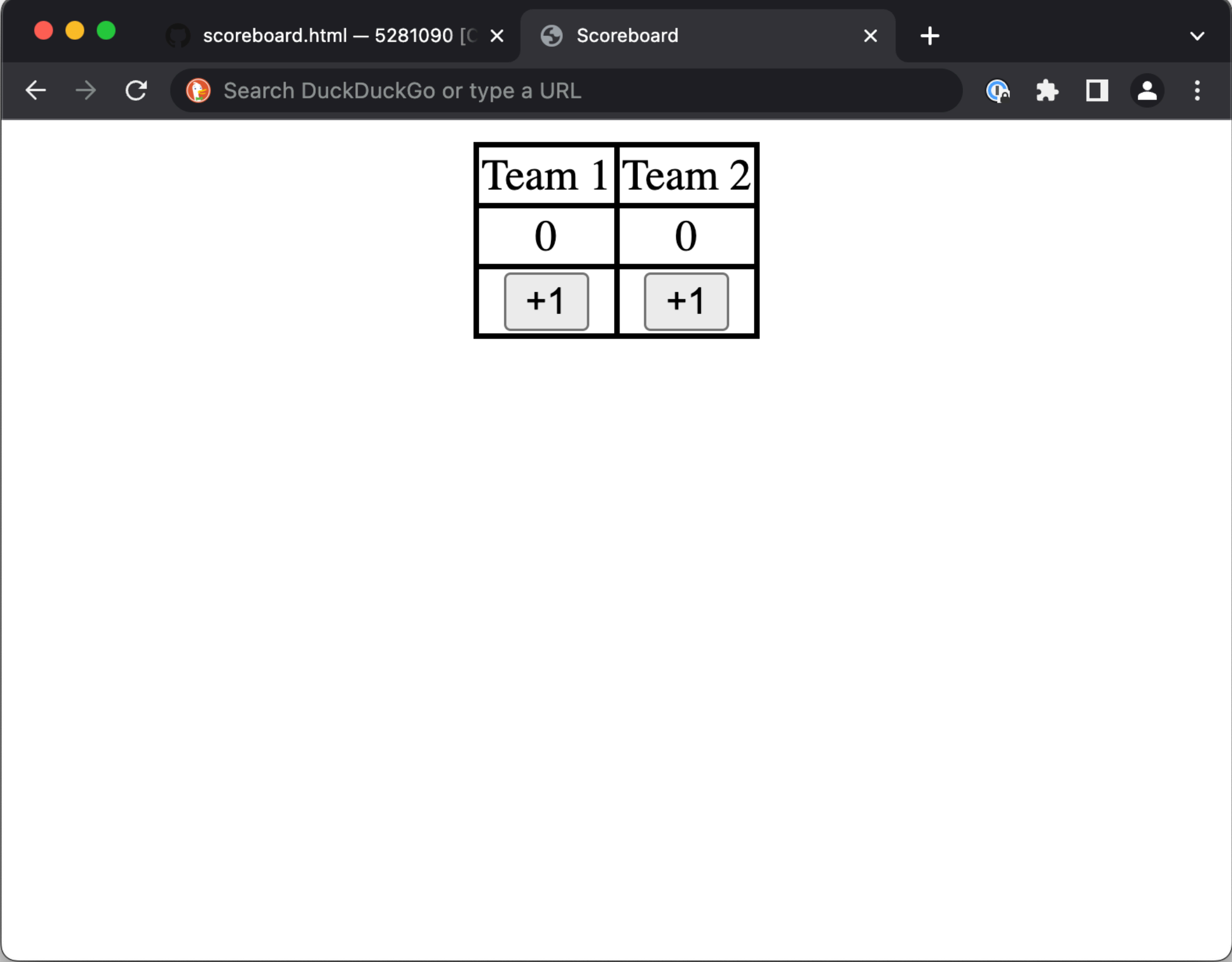


```
<!DOCTYPE html>
<html>
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

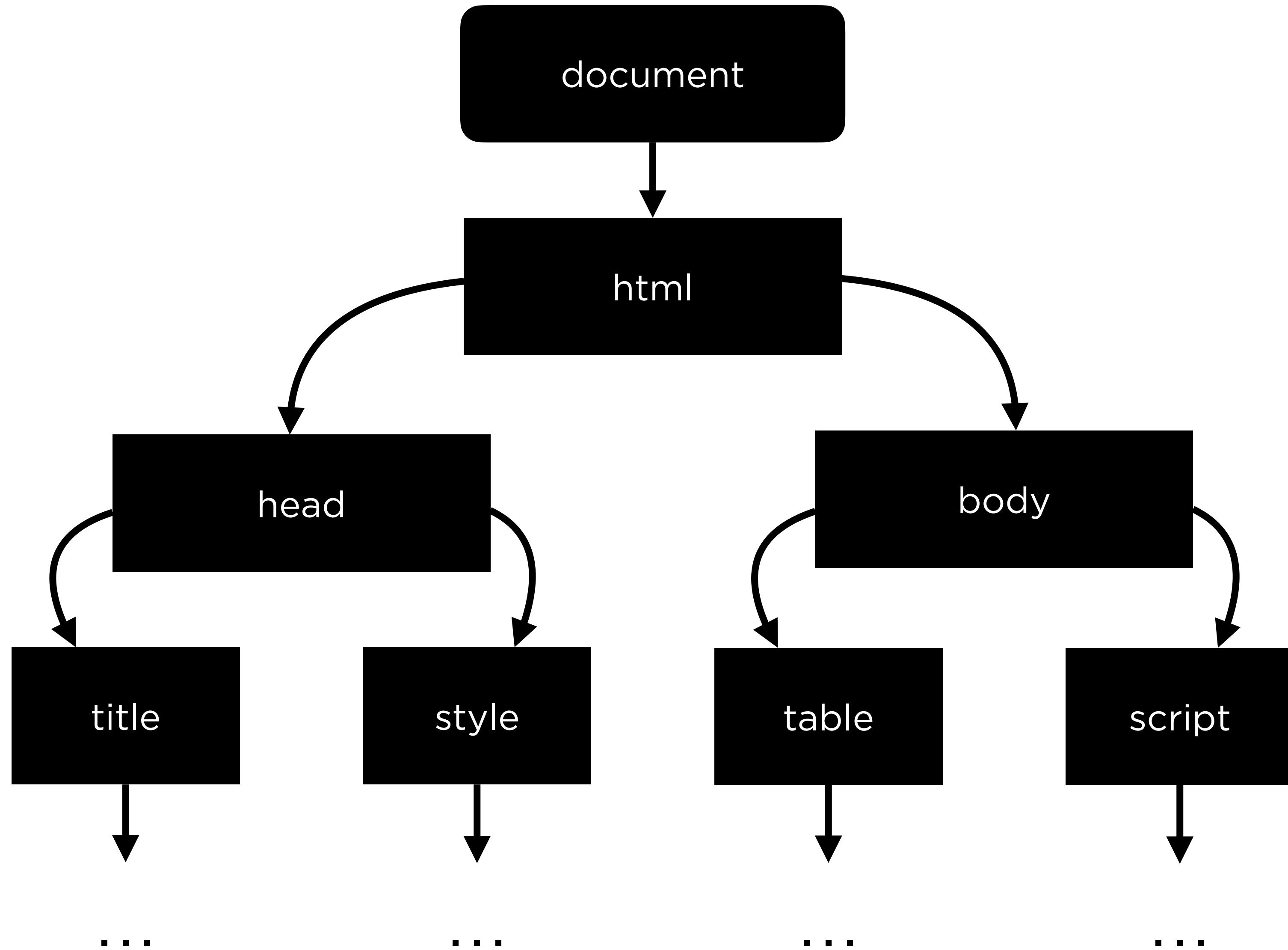


```
<!DOCTYPE html>
<html>
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    <p>hello, body</p>
  </body>
</html>
```

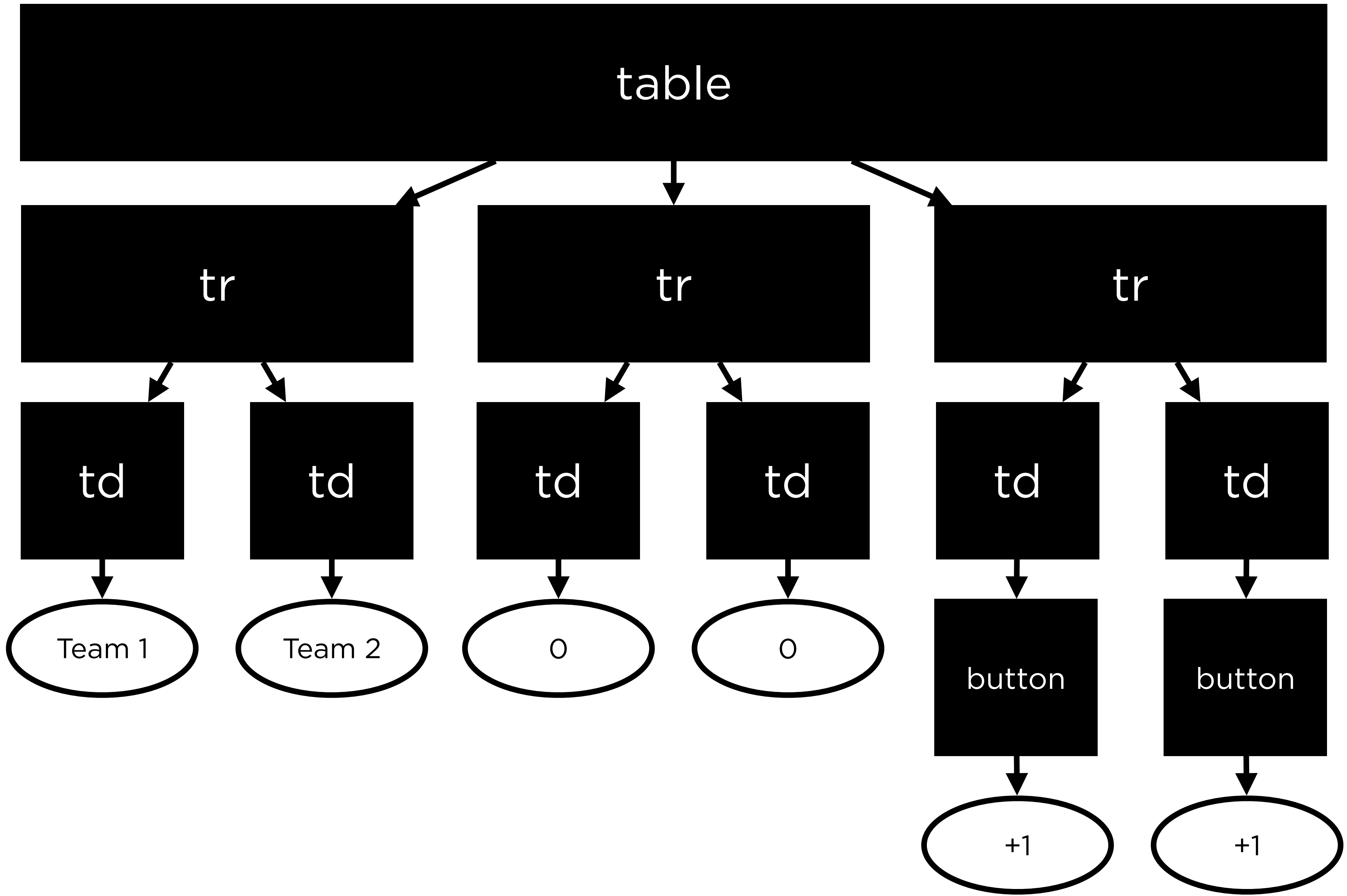


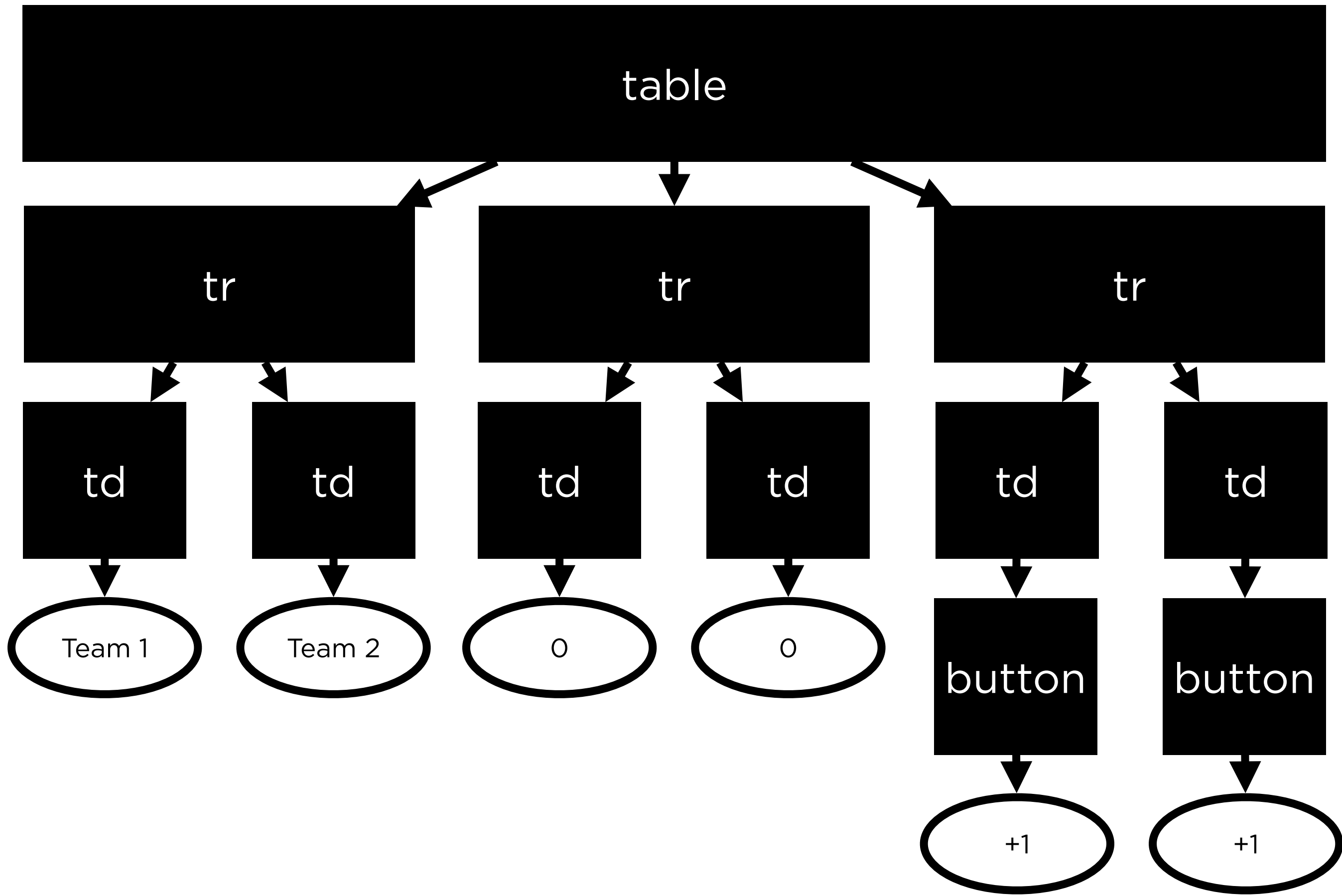


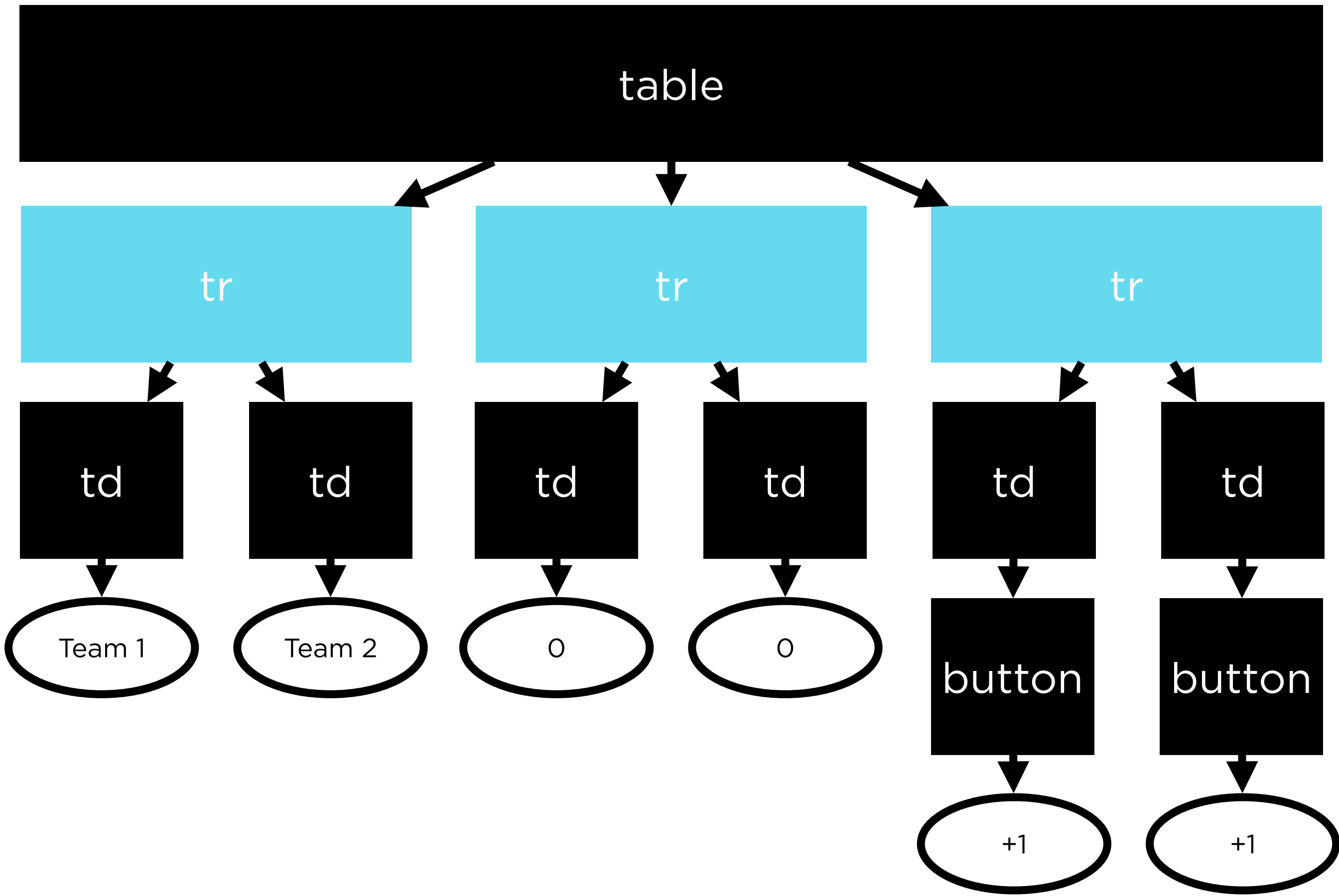
Team 1	Team 2
0	0
+1	+1

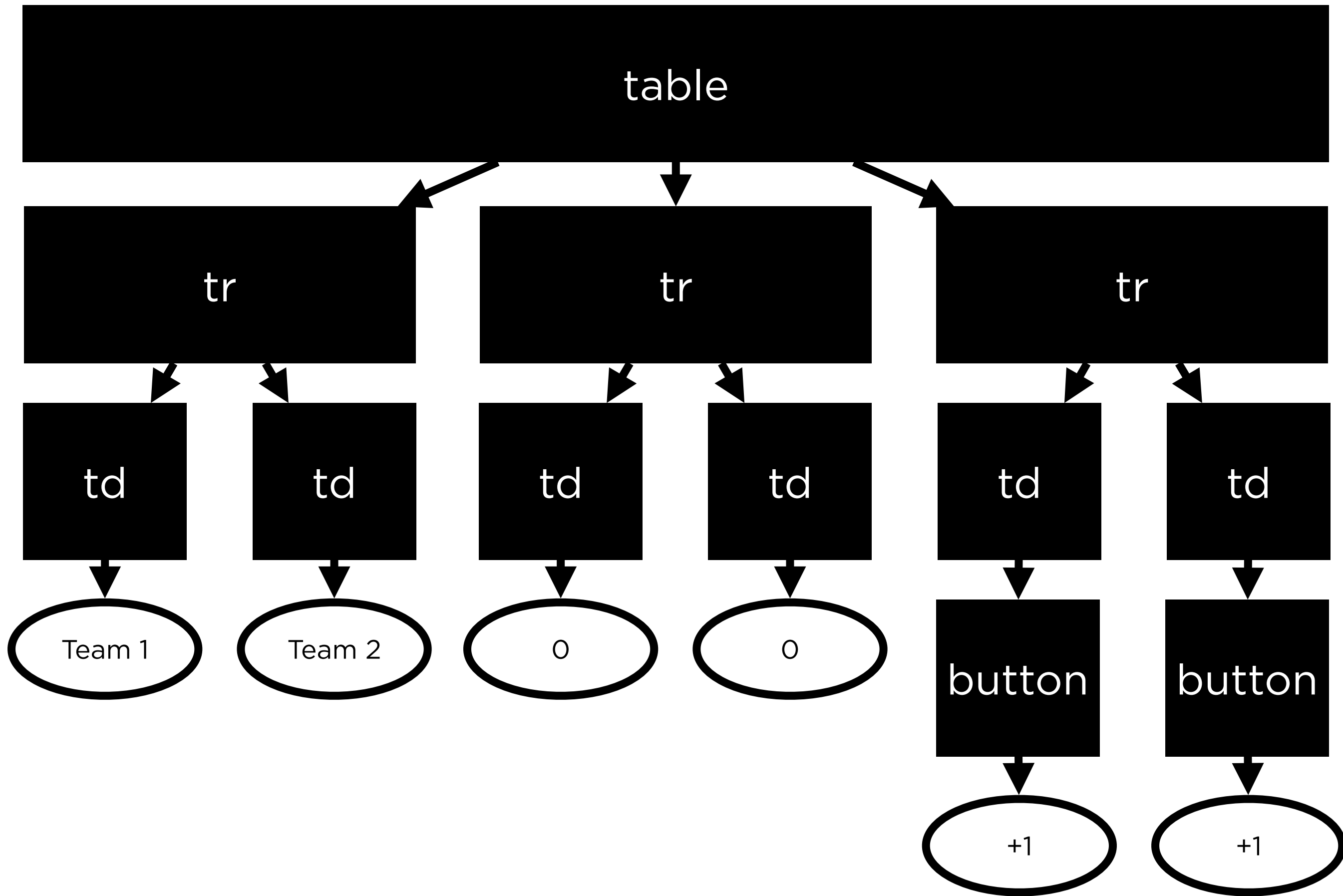




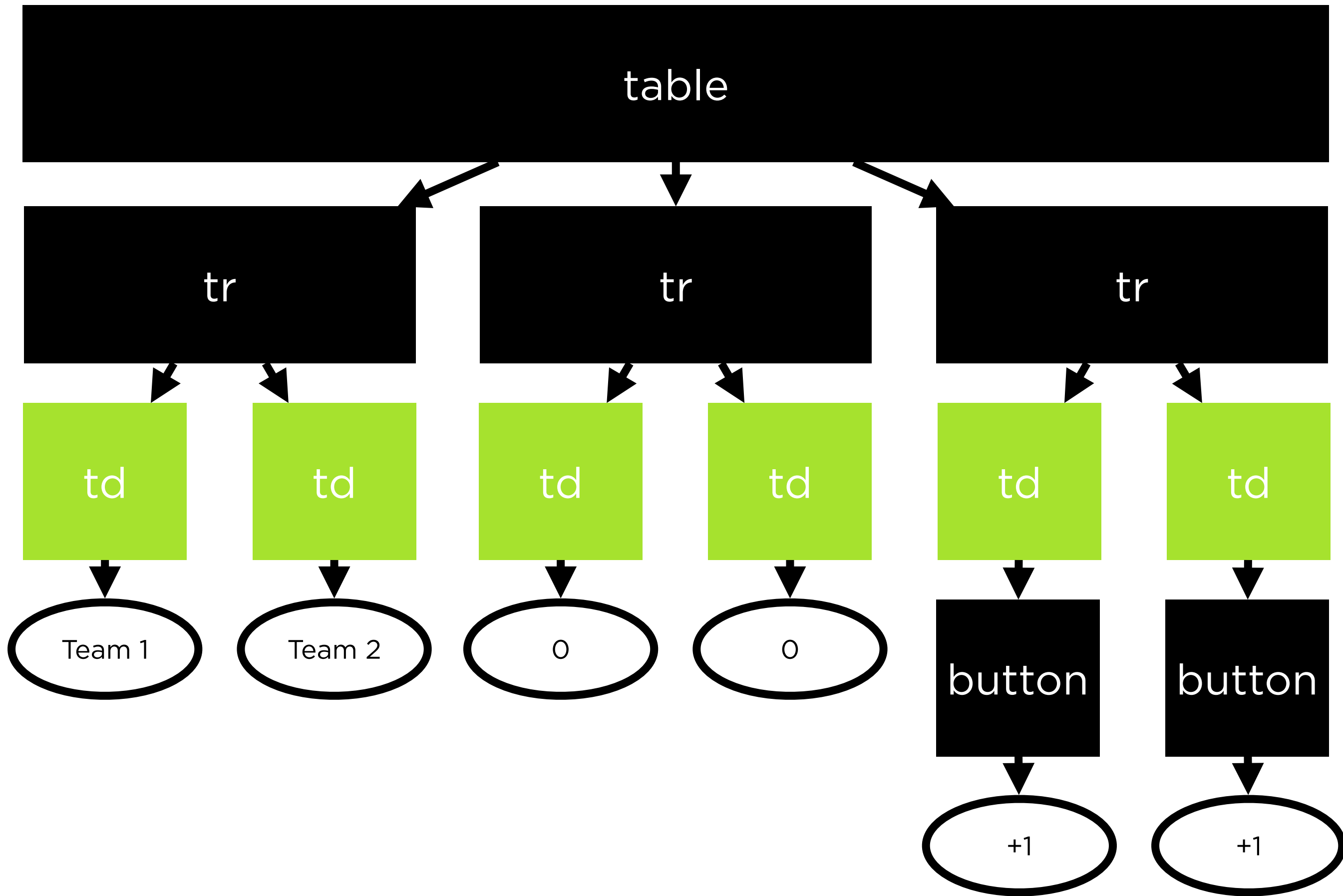


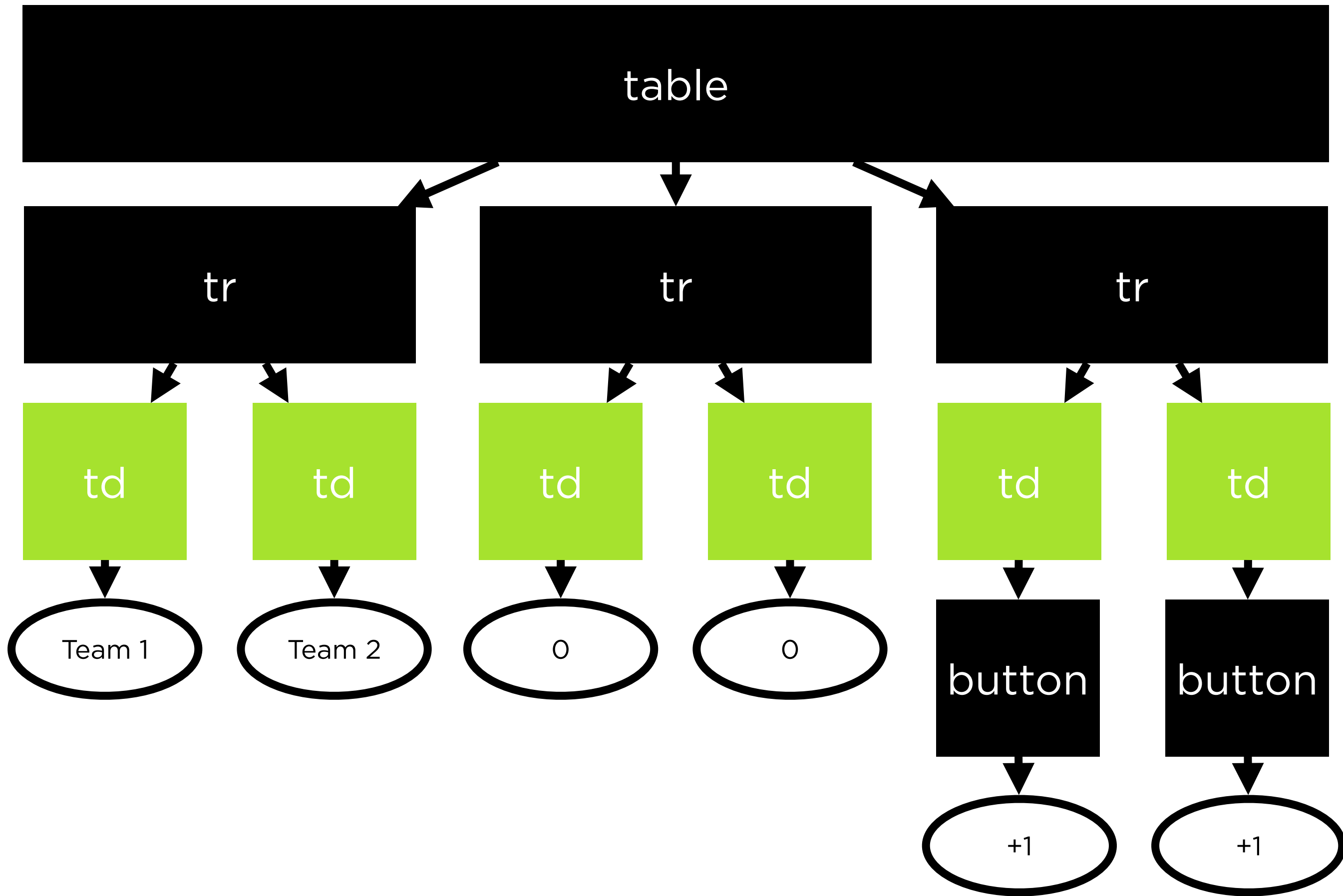


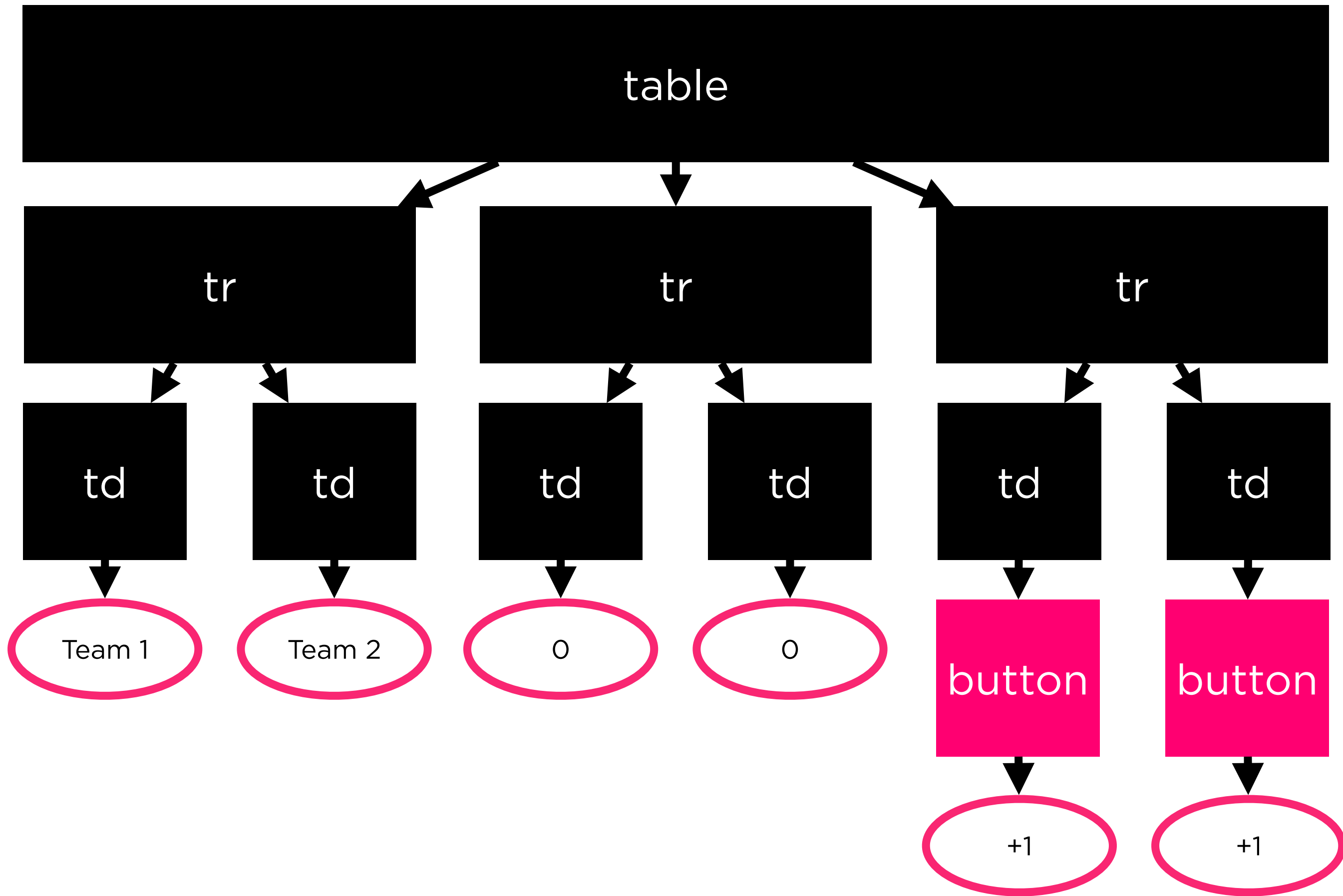


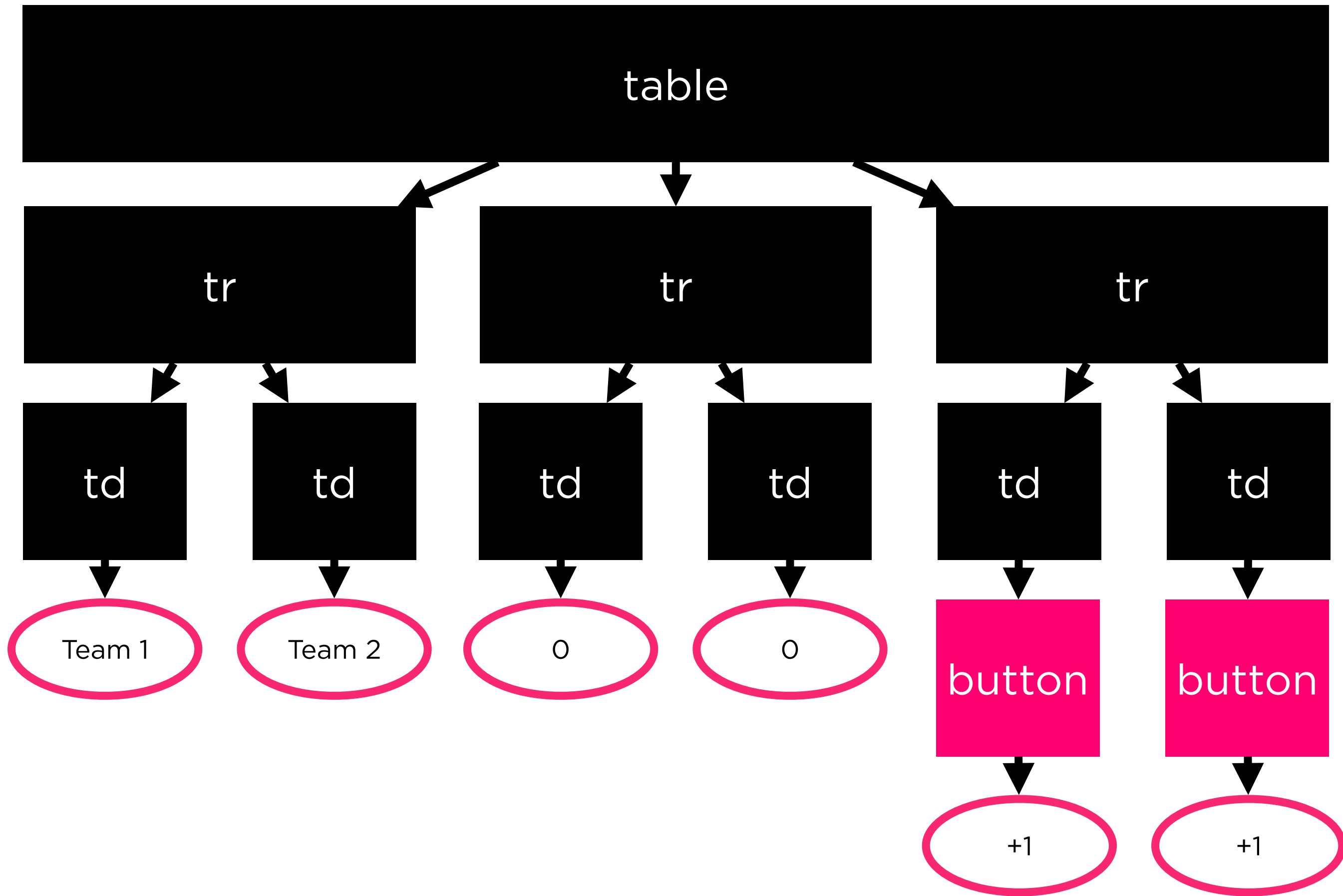



A table with three empty rows, representing the visual output of the DOM tree.



Team 1	Team 2
0	0
<input type="button" value="+1"/>	<input type="button" value="+1"/>



# 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>

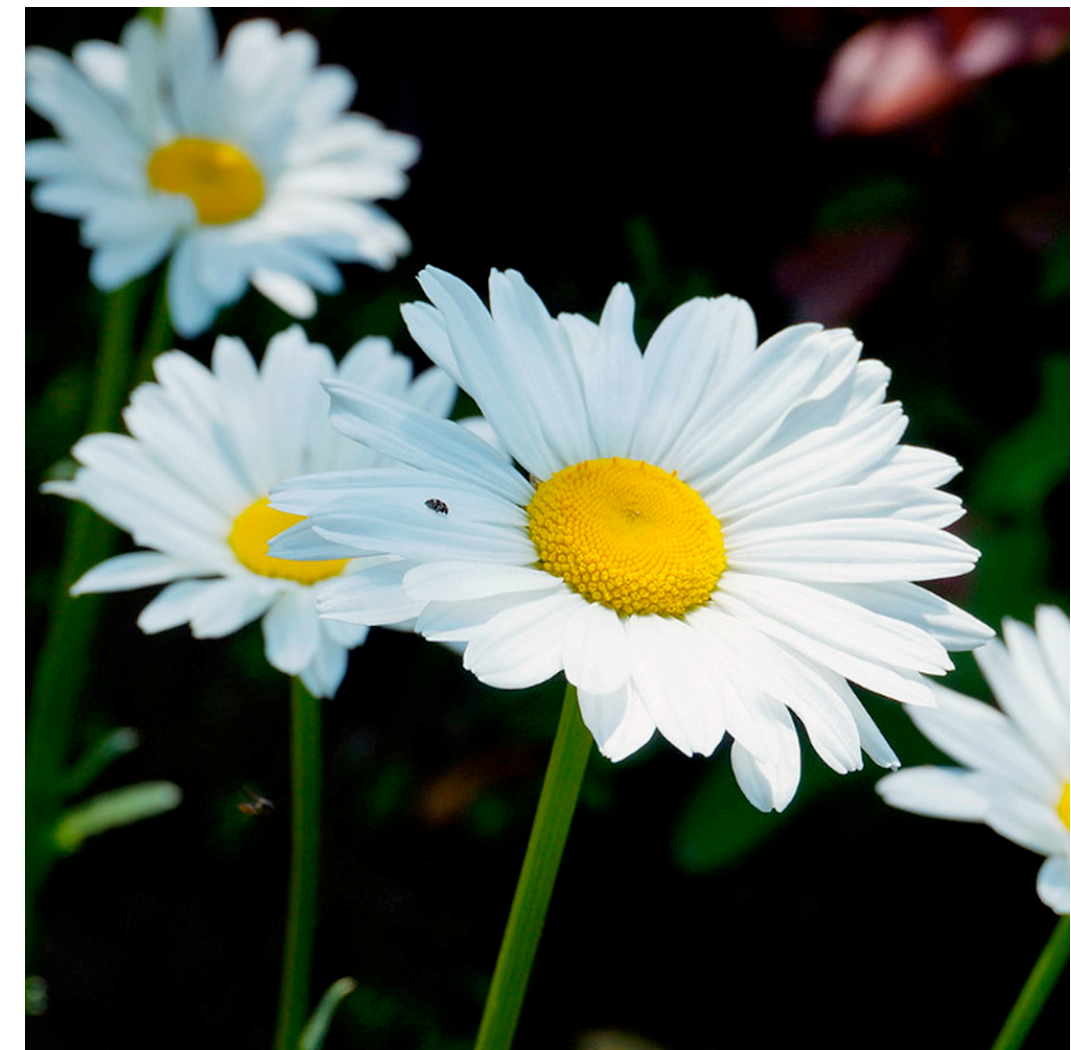
# Images

Adding photos to your page

```
<img></img>
```



```
</img>
```



```
</img>
```



# Your turn!

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

- A title
- Additional table rows
- Instructions for the scoreboard
- Images
- Something else!

<https://developer.mozilla.org/en-US/docs/Web/HTML/Element>


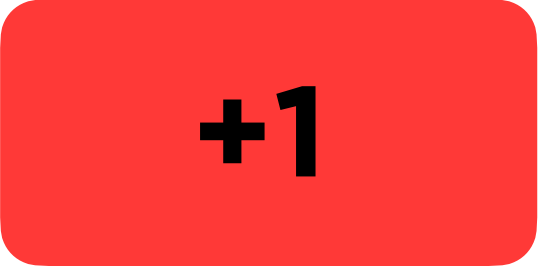
# CSS

Styling web pages

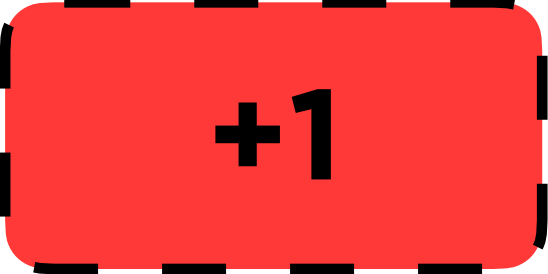
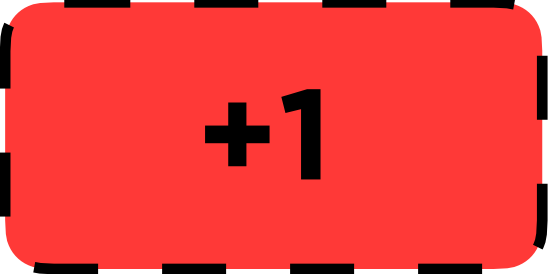
```
selector {  
  property: value;  
}
```

<b>Team 1</b>	<b>Team 2</b>
<b>0</b>	<b>0</b>
<b>+1</b>	<b>+1</b>

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

Team 1	Team 2
0	0
	

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

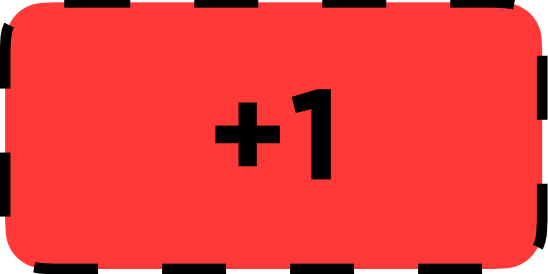
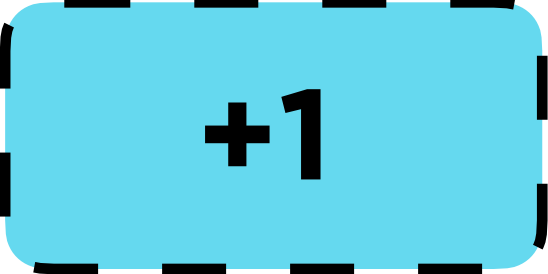
Team 1	Team 2
0	0
	



# **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
<b>+1</b>	<b>+1</b>

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

<b>Team 1</b>	<b>Team 2</b>
<b>0</b>	<b>0</b>
<b>+1</b>	<b>+1</b>

# **Class Selectors**

Selecting groups of elements

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

Team 1	Team 2
0	0
<b>+1</b>	<b>+1</b>



```
.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 **scoreboard.html**, experiment by adding your choice of...

- An id, class, and type selector
- A resized image
- A background image or color
- Updated font size and family
- Something else!

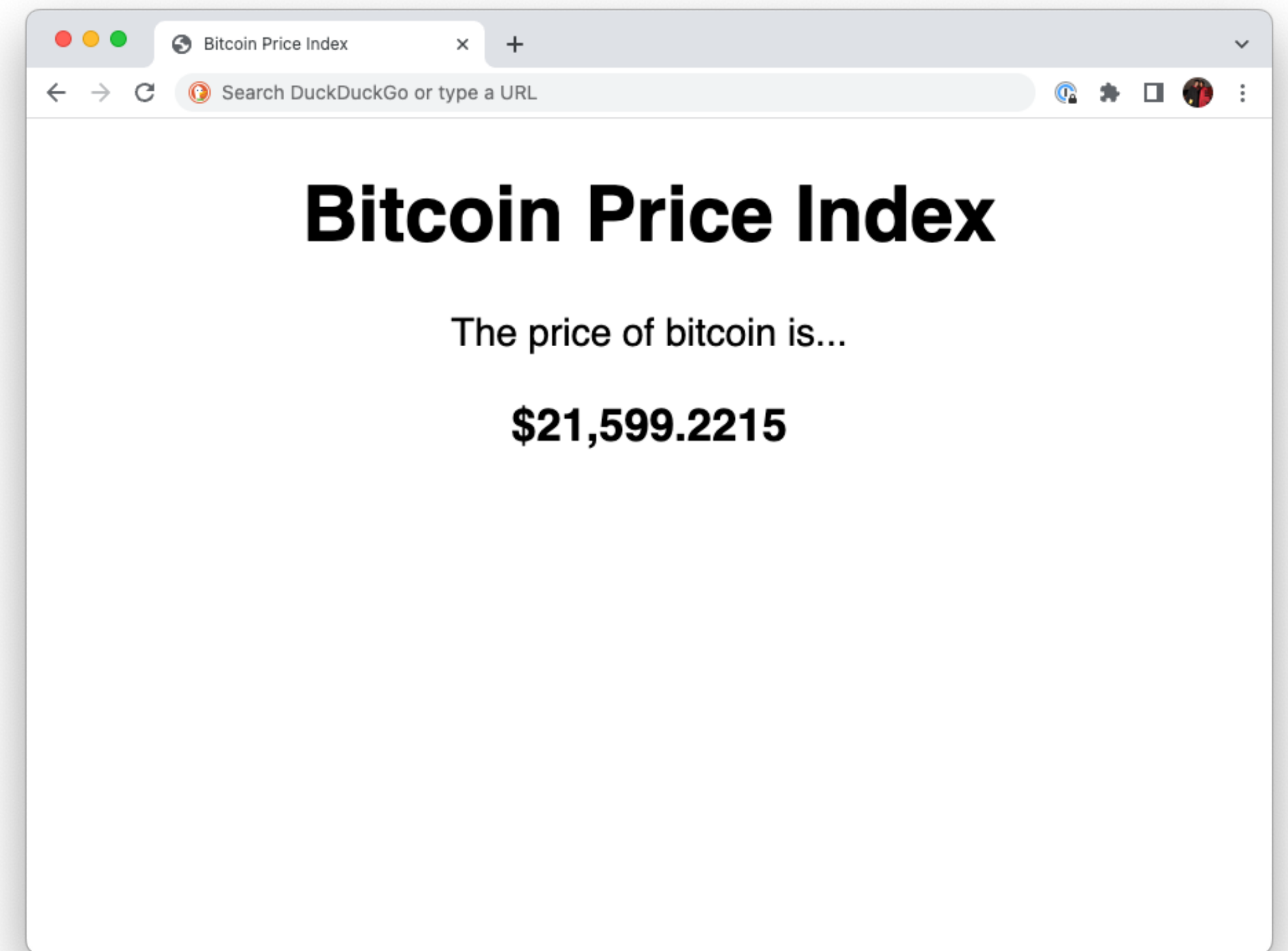
<https://developer.mozilla.org/en-US/docs/Web/CSS/Reference>



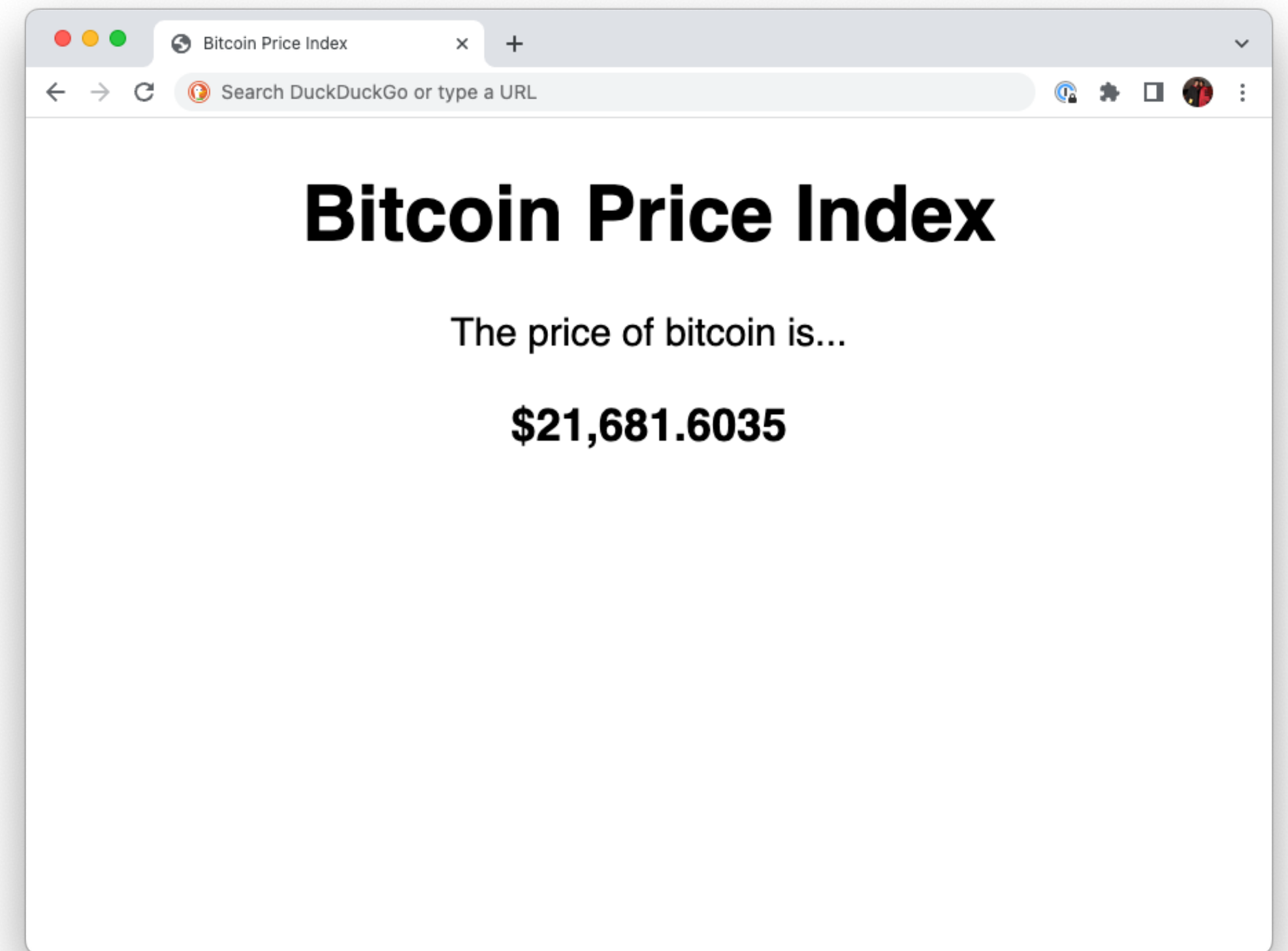
# **bitcoin.html**

Generating web pages with Python

```
<!DOCTYPE html>
<html lang="en">
  ...
  <body>
    <h1>Bitcoin Price Index</h1>
    <p>The price of Bitcoin is...</p>
    <h3>21,599.2215</h3>
  </body>
</html>
```



```
<!DOCTYPE html>
<html lang="en">
  ...
  <body>
    <h1>Bitcoin Price Index</h1>
    <p>The price of Bitcoin is...</p>
    <h3>21,681.6035</h3>
  </body>
</html>
```



```
<!DOCTYPE html>
<html lang="en">
  ...
  <body>
    <h1>Bitcoin Price Index</h1>
    <p>The price of Bitcoin is...</p>
    <h3>{{ bitcoin }}</h3>
  </body>
</html>
```

render\_template.py

```
def main():  
    # Query CoinDesk API  
    # Render page from template  
  
main()
```

template.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>{{ bitcoin }}</h3>  
    </body>  
</html>
```

render\_template.py

```
def main():  
    # Query CoinDesk API  
    # Render page from template  
  
main()
```

template.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>{{ bitcoin }}</h3>  
    </body>  
</html>
```

render\_template.py

```
def main():  
    # Query CoinDesk API  
  
    # Render page from template  
  
main()
```

template.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>{{ bitcoin }}</h3>  
    </body>  
</html>
```

bitcoin.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>21,599.2215</h3>  
    </body>  
</html>
```

render\_template.py

```
def main():  
    # Query CoinDesk API  
    # Render page from template  
  
main()
```

template.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>{{ bitcoin }}</h3>  
    </body>  
</html>
```

bitcoin.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>21,599.2215</h3>  
    </body>  
</html>
```



render\_template.py

```
def main():  
    # Query CoinDesk API  
  
    # Render page from template  
  
main()
```

template.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>{{ bitcoin }}</h3>  
    </body>  
</html>
```

bitcoin.html

```
<!DOCTYPE html>  
<html lang="en">  
    ...  
    <body>  
        <h1>Bitcoin Price Index</h1>  
        <p>The price of Bitcoin is...</p>  
        <h3>21,681.6035</h3>  
    </body>  
</html>
```

# Bitcoin Price Index

Update **render\_template.py** and **template.html** to render the price of Bitcoin in other currencies available to you through the CoinDesk API.

# Bootstrap

Sprucing up your site

# Submission

- **Submit code files to Gradescope** by Wednesday, February 15, 3:10 PM.
- Graded based on completion, but please double check to be sure your files are named correctly:
  - scoreboard.html **not** scoreboard (1).html