

Midterm Review

CS 3550, Fall 2023

Taught by Prof. Pavel Panchekha

Networking

About the Web

Roughly how many websites are there?

What decade was the internet started?

What decade was the web started?

How do the internet and the web differ?

Name a common web browser.

About the Web

Roughly how many websites are there?

About a billion

What decade was the internet started?

1960s

What decade was the web started?

1990s

How do the internet and the web differ?

Web is HTTP + HTML over the
internet

Name a common web browser.

Chrome, Edge, Safari, Firefox

Define the following HTTP terms

Client-server architecture

Clients

Servers

Message-passing

Requests

Responses

Define the following HTTP terms

Client-server architecture

An architecture where each connection is made between two different types of programs, a client and a server. HTTP is a client-server architecture

Clients

A web browser like Google Chrome or command-line tool like curl

Servers

A web server like Apache or a web application using a framework like Django

Message-passing

An architecture where connections involve sending discrete messages back and forth, and where the protocol defines the types of messages and how they are formatted.

Requests

A message from an HTTP client to an HTTP server requesting a web page or other resource

Responses

A message from an HTTP server to an HTTP client sent in response to a request and typically including the content of the requested resource

Identify each part of these URL

`https://web1.google.com:80/search`

`http://facebook.com/user/834321`

Identify each part of these URL

https://web1.google.com:80/search

Scheme
Protocol

Hostname
Domain

Port
Path
Page

http://facebook.com/user/834321

Networking terms

What kind of thing is “en.wikipedia.org”?

What kind of thing is “197.132.12.57”?

What kind of thing is “fef3:f123:78e9::1e”?

Which one can be converted into which one? How?

What information does an IP lookup tool give you?

What information does the traceroute tool give you?

Networking terms

What kind of thing is “en.wikipedia.org”?

A domain name or hostname

What kind of thing is “197.132.12.57”?

An IPv4 address

What kind of thing is “fef3:f123:78e9::1e”?

An IPv6 address

Which one can be converted into which one? How?

A domain name can be converted into an IP address using a DNS lookup tool.

What information does an IP lookup tool give you?

An IP lookup tool will tell you which organization owns an IP address, and often where it is located geographically.

What information does the traceroute tool give you?

Typically, the sequence of routers a network connection passes between.

HTML

Explain each of these elements:

a	em	strong	code	time	data
p	pre	nav	header	footer	main
section	ul	ol	menu	li	title
br	hr	img	video	meta	link
form	label	input	button		
table	thead	tfoot	tr	td	th

Explain each of these elements:

a links	em emphasis	strong draw attention	code code	time time	data machine-readable
p paragraph	pre block of code	nav links to pages	header header	footer footer	main page-specific
section part of content	ul bulleted list	ol numbered list	menu list of links	li list item	title tab name
br hard line break	hr horizontal line	img image	video video	meta specify charset	link link to CSS
form contains inputs	label labels an input	input input (many types)	button button		
table table	thead column headers	tfoot “total” row	tr row	td cell	th header cell

Implement each of these in HTML:

The things I *love most* about the U:

1. The **classes**
2. The **campus**
3. The **community**

Please log in:

Username:

Password:

Log in

Assignment	Due date
Homework 1	Sept 9
Homework 2	Sept 23

Implement each of these in HTML:

The things I *love most* about the U:

1. The **classes**
2. The **campus**
3. The **community**

```
<p>The things I <em>love most</em> about the U:</p>
<ol>
<li>The <strong>classes</strong></li>
<li>The <strong>campus</strong></li>
<li>The <strong>community</strong></li>
</ol>
```

Please log in:

Username:

Password:

Log in

```
<form>
<h2>Please log in:</h2>
<div><label for="user">Username:</label> <input id="user"></div>
<div><label for="pwd">Password:</label> <input type="password" id="pwd"></div>
<div><button>Log in</button></div>
</form>
```

Assignment	Due date
Homework 1	Sept 9
Homework 2	Sept 23

```
<table>
<thead><tr><th>Assignment</th><th>Due date</th></tr></thead>
<tr><td>Homework 1</td><td><time datetime="2023-09-09">Sept 9</time></td></tr>
<tr><td>Homework 2</td><td><time datetime="2023-09-23">Sept 23</time></td></tr>
</table>
```

HTML Syntax Potpourri

How do you write the following in HTML?

The “<” character

The “>” character

The “&” character

The “” character

A comment

HTML Syntax Potpourri

How do you write the following in HTML?

The “<” character <

The “>” character >

The “&” character &

The “” character "

A comment <!-- comment here -->

Write HTML from a screenshot

The screenshot shows the MDN Web Docs page for the `<time>` element. The URL is developer.mozilla.org/en-US/docs/Web/HTML/Element/time#try_it. The page includes a navigation bar with links to References, Guides, Plus, Blog, Play, AI Help (BETA), Theme, Log in, and Sign up for free. The main content area shows the `<time>` element highlighted in a pink box. Below it is a code editor with an `HTML` tab selected, displaying the following code:

```
1 <p>
2   The Cure will be celebrating their
3   40th anniversary on <time
4     datetime="2018-07-07">July 7</time>
5   in London's Hyde
6   Park.
7 </p>
8 <p>
9   The concert starts at 20:00
10  and you'll be able to enjoy the
11  band for at least 2h 30m.
12 </p>
```

The output pane shows the rendered HTML: "The Cure will be celebrating their 40th anniversary on **July 7** in London's Hyde Park. The concert starts at **20:00** and you'll be able to enjoy the band for at least **2h 30m**". To the right, there is a sidebar titled "In this article" with links to Try it, Attributes, Usage notes, Examples, Technical summary, Specifications, Browser compatibility, and See also. A Mozilla VPN advertisement is also present.

Good exercise to do

Accessibility definitions

What is “universal accessibility”?

Name 3 common disabilities

Name 3 temporary disabilities

What is the “autofocus” attribute?

What is the “tabindex” attribute?

Accessibility definitions

What is “universal accessibility”?

Everyone is affected, temporarily if not permanently, by various limitations and disabilities. Therefore accessibility work helps almost everyone, not just “the disabled”.

Name 3 common disabilities

Colorblindness, bad vision; Parkinson's; dyslexia

Name 3 temporary disabilities

Lost glasses, broken arm, lack of sleep (hard to focus)

What is the “autofocus” attribute?

Boolean attribute on <input> to move cursor there on page load

What is the “tabindex” attribute?

Integer attribute on <input> or other elements to change how tabbing through elements works. Negative tabindex means element is skipped when tabbing. Positive tabindex gives order (from 1).

Find the accessibility issue

```
<div class="sidebar">  
  
  <p>NERVA</p>  
  
  <div class="sidebar-content">  
  
    <img src='...'/>  
  
    <table>  
      <tr><td>Country of origin</td>  
          <td>United States</td></tr>  
          ...  
    </table>  
  
  </div>  
  
</div>
```

From Wikipedia, the free encyclopedia

NERVA



The NERVA-XE engine, shown here in its test stand at the ETS-1 facility, was a nuclear thermal rocket engine developed by NASA's Marshall Space Flight Center. It used liquid hydrogen as a propellant and a nuclear heat source to heat the hydrogen to a high temperature for combustion. The engine was successfully tested in 1969, reaching a thrust of 246,663 N (55,452 lb_f) in vacuum.

Contents [hide]

- (Top)
- Origins
- Underlying
- Design concept
- Test site
- Organization
- Transfer to
- Space Nuclear
- Towards Re
- Engine deve
- Kiwi
- NERVA NR
- NERVA XE
- Rocket an
- Cancellation
- Post-NERVA

See also

Footnotes

Notes

References

External links

Country of origin	United States
Designer	Los Alamos Scientific Laboratory
Manufacturer	Aerojet (engine) Westinghouse (reactor)
Application	Upper stage engine
Status	Retired
Liquid-fuel engine	
Propellant	Liquid hydrogen
Performance	
Thrust, vacuum	246,663 N (55,452 lb _f)

Find the accessibility issue

```
<div class="sidebar">  
  
  <p>NERVA</p> Wrong element, should be <h2> or similar  
  
  <div class="sidebar-content">  
  
    <img src='...'> No textual alternative Write one  
  
    <p>NERVA XE in ETS-1</p>  
  
    <table>  
  
      <tr><td>Country of origin</td> Wrong element, should be <th>  
          <td>United States</td></tr>  
  
      ...  
  
    </table>  
  
  </div>  
  
</div>
```

From Wikipedia, the free encyclopedia

NERVA



The NERVA-XE engine, shown here in the ETS-1 test facility, was a nuclear thermal rocket engine developed by NASA's Marshall Space Flight Center. It used liquid hydrogen as a propellant and a nuclear heat source to heat the propellant. The engine was successfully tested in 1969.

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See also

- Footnotes
- Notes
- References
- External links

Country of origin United States

Designer Los Alamos Scientific Laboratory

Manufacturer Aerojet (engine)
Westinghouse (reactor)

Application Upper stage engine

Status Retired

Liquid-fuel engine

Propellant Liquid hydrogen

Performance

Thrust, vacuum 246,663 N
(55,452 lb_f)

Find the accessibility issue

```
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  <p>NERVA</p> Wrong element, should be <h2> or similar  
  
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    <img src='...'> No textual alternative  
  
    <p>NERVA XE in ETS-1</p>  
  
    <table>  
      <tr><td>Country of origin</td>  
        <td>United States</td></tr>  
        Wrong element, should be <td> or <th>  
      ...  
    </table>  
  
  </div>  
  
</div>
```

Write one

“The NERVA XE rocket engine seen from the side standing vertically in the ETS-1 test stand. Scaffolding and test equipment can be seen attached to the rocket. Two technicians in the image provide scale for the massive 23-foot-tall rocket.”



The screenshot shows the NERVA article on Wikipedia. The main image is a photograph of the NERVA XE rocket engine standing vertically in the ETS-1 test stand. The sidebar contains the following information:

Status	Retired
Liquid-fuel engine	
Propellant	Liquid hydrogen
Performance	
Thrust, vacuum	246,663 N (55,452 lb _f)

Below the table, there is a list of links: United States, Los Alamos Scientific Laboratory, Aerojet (engine), Westinghouse (reactor), Upper stage engine, and a link to the "External links" section.

CSS

CSS Selectors

Explain these CSS selectors:

.description

#popup a.close.menu

tbody > tr:nth-child(2n)

ol li + li

nav a:hover

CSS Selectors

Explain these CSS selectors:

.description

Any element with the “description” class

#popup a.close.menu

A link () with the “close” and “menu” classes inside an element with the “popup” ID

tbody > tr:nth-child(2n)

Any even-numbered table row (|) that is the child of a element
| |

ol li + li

Every list item (-) inside an ordered list (
) that follows another list item (-)

nav a:hover

A link () that is currently being hovered on inside the navigation bar ()

Which CSS property changes?

The font used		The background color of an element	
Whether or not it's bold		Whether an element is transparent	
Whether or not it's italics		How thick the border is	
Whether or not it's underlined		What color the border is	
How big the text is		How rounded the border is	
What color the text is		Draws a shadow behind an element	

Which CSS property changes?

The font used	<code>font-family</code>	The background color of an element	<code>background-color</code>
Whether or not it's bold	<code>font-weight</code>	Whether an element is transparent	<code>opacity</code>
Whether or not it's italics	<code>font-style</code>	How thick the border is	<code>border-width</code>
Whether or not it's underlined	<code>text-decoration</code>	What color the border is	<code>border-color</code>
How big the text is	<code>font-size</code>	How rounded the border is	<code>border-radius</code>
What color the text is	<code>color</code>	Draws a shadow behind an element	<code>box-shadow</code>

CSS Definitions

What is “cascading”?

Give an example.

What is “inheritance”?

Give an example.

What are “shorthand properties”?

Give an example.

CSS Definitions

What is “cascading”?

If two rules match an element, the more specific one wins.

Give an example.

```
ul { color: blue } ul ul { color: red }
```

What is “inheritance”?

Default for some properties is the parent's value

Give an example.

```
html { font-family: 'Times New Roman', serif }
```

What are “shorthand properties”?

One CSS property that assigns several properties as once

Give an example.

```
border: 1px solid red;
```

Which CSS property changes?

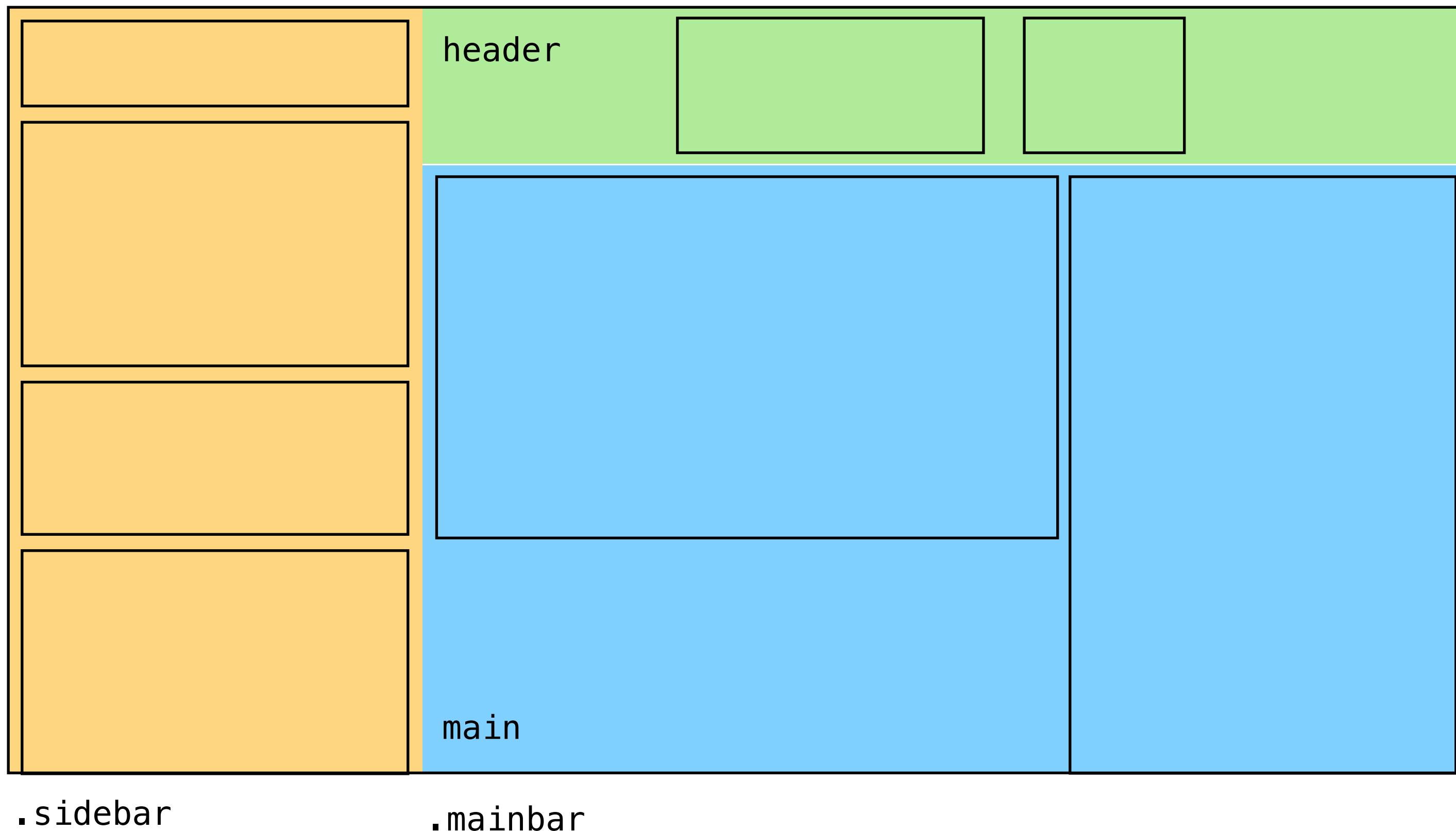
Give an example value for:		Define these units:	
color		vh	
line-height		%	
opacity		rem	
border		vw	
flex-grow		px	

Which CSS property changes?

Give an example value for:		Define these units:	
color	black, #fe4532	vh	1/100 of the window height
line-height	2	%	1/100 of parent value
opacity	0.9	rem	Default text size (16px)
border	1px solid pink	vw	1/100 of window width
flex-grow	2	px	One CSS pixel

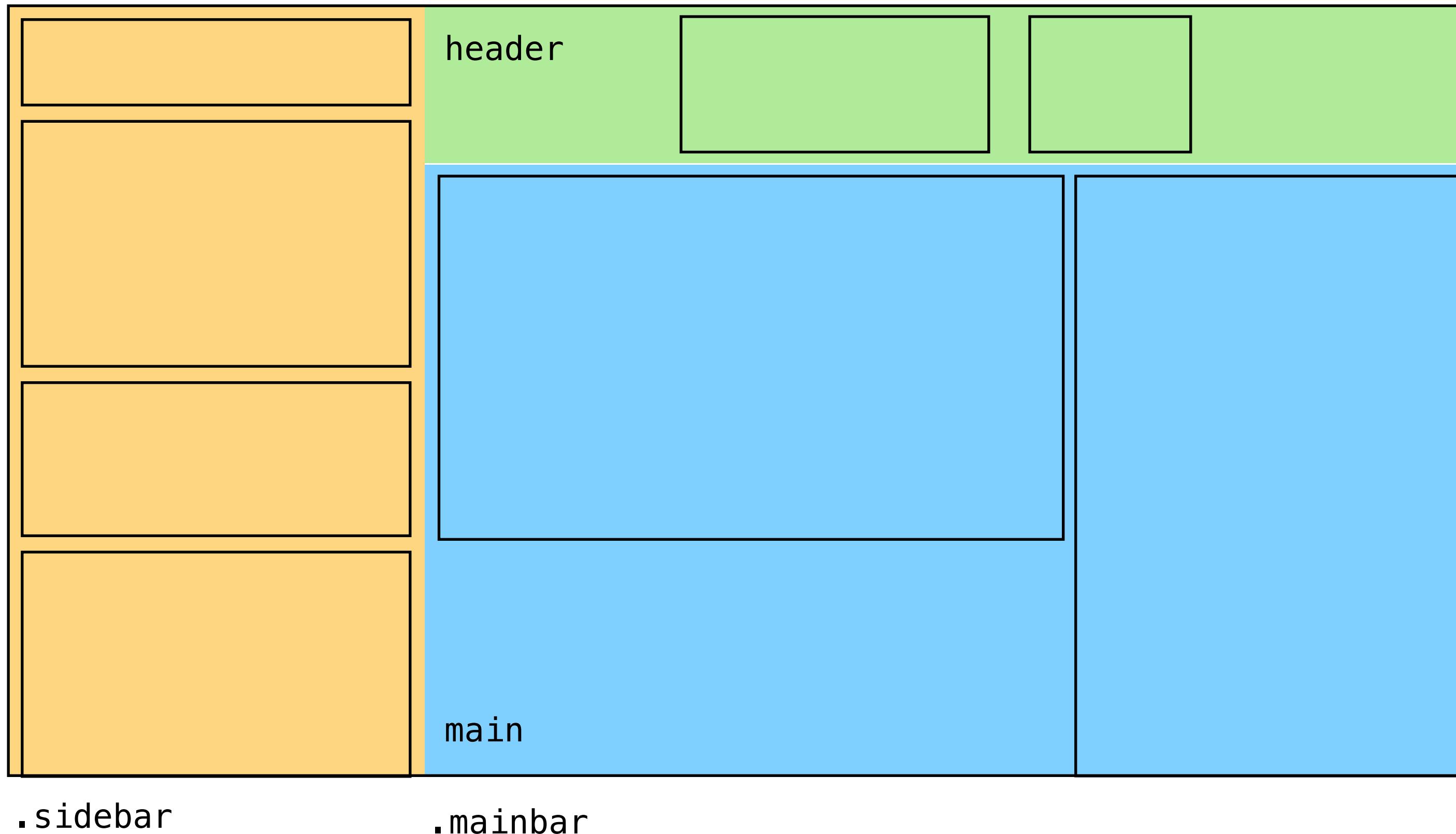
Make this with flex-box

body



Make this with flex-box

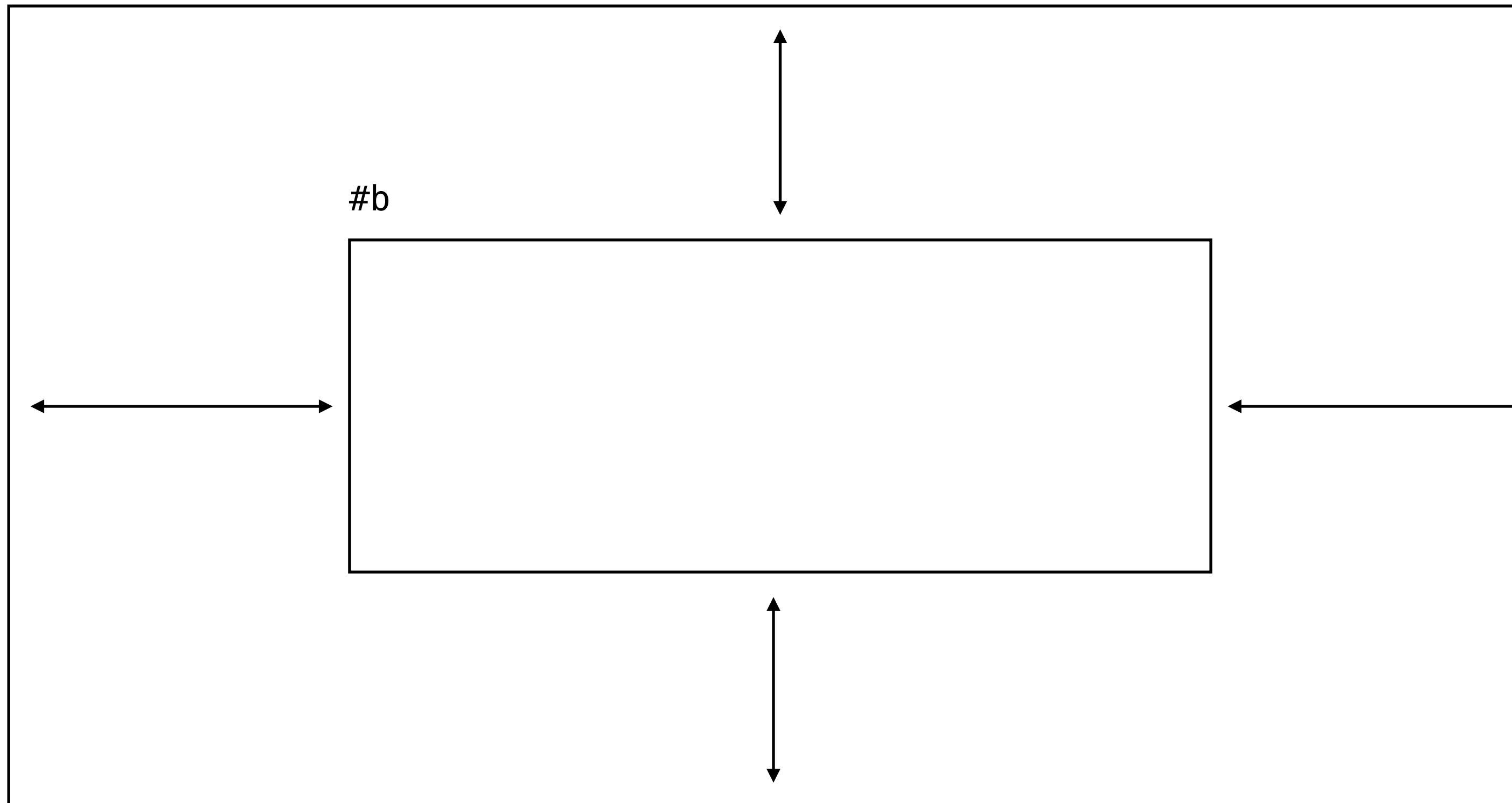
body



```
body { display: flex;  
flex-direction: row; }  
  
.sidebar { display: flex;  
flex-direction: column;  
width: 200px;  
gap: 1rem; padding: 1rem; }  
  
.mainbar { display: flex;  
flex-direction: column;  
flex-grow: 1; }  
  
header { display: flex;  
flex-direction: row;  
justify-content: center;  
gap: 2rem; padding: 1rem; }  
  
main { display: flex;  
flex-direction: row;  
align-items: start;  
gap: 1rem; padding: 1rem; }
```

Label all of the gaps

#a



#a {

margin: 4px 1px 3px 7px;
padding: 2px 8px 9px 5px;

}

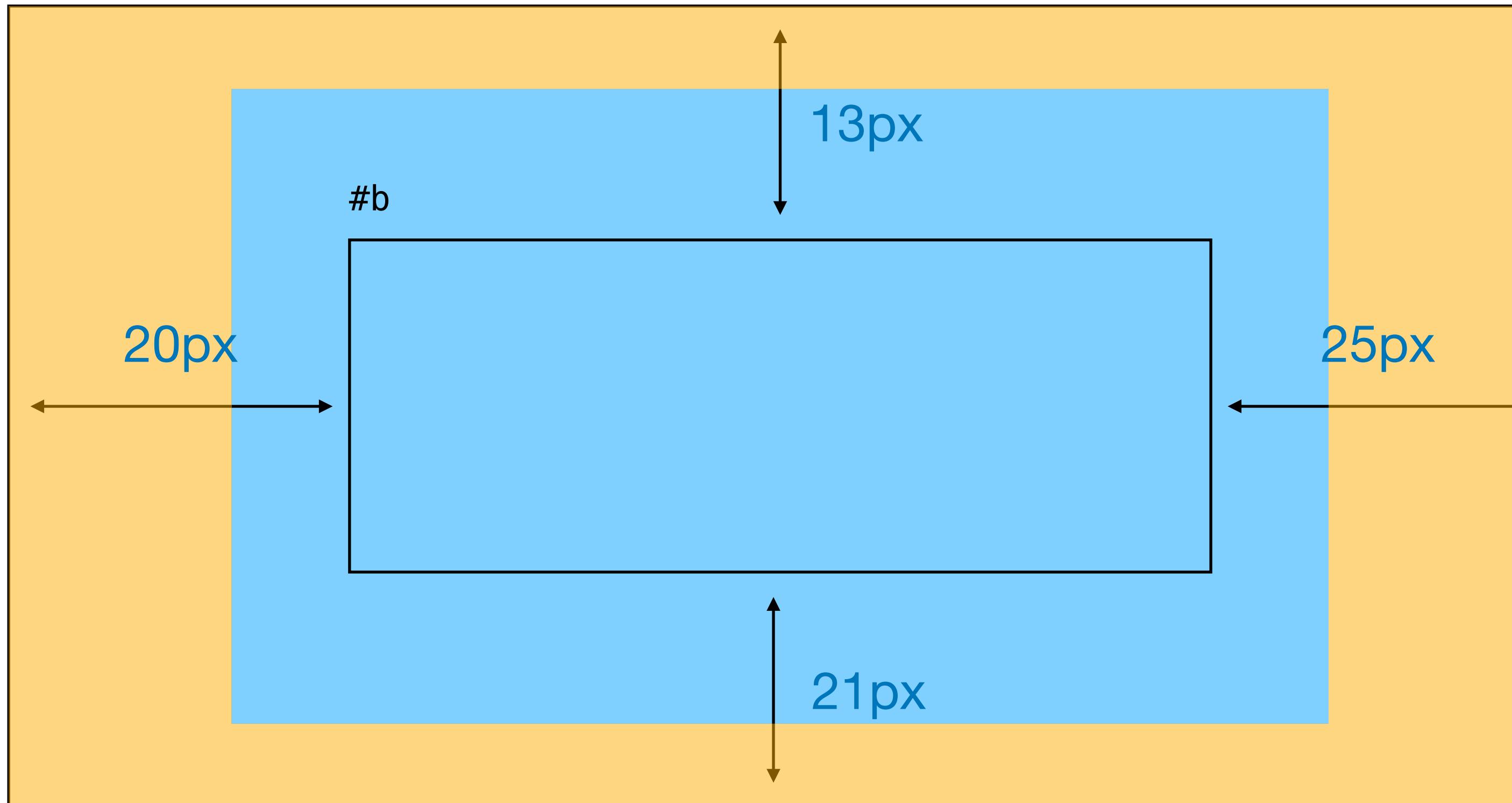
#b {

margin: 11px 17px 12px 15px;
padding: 14px 13px 19px 16px;

}

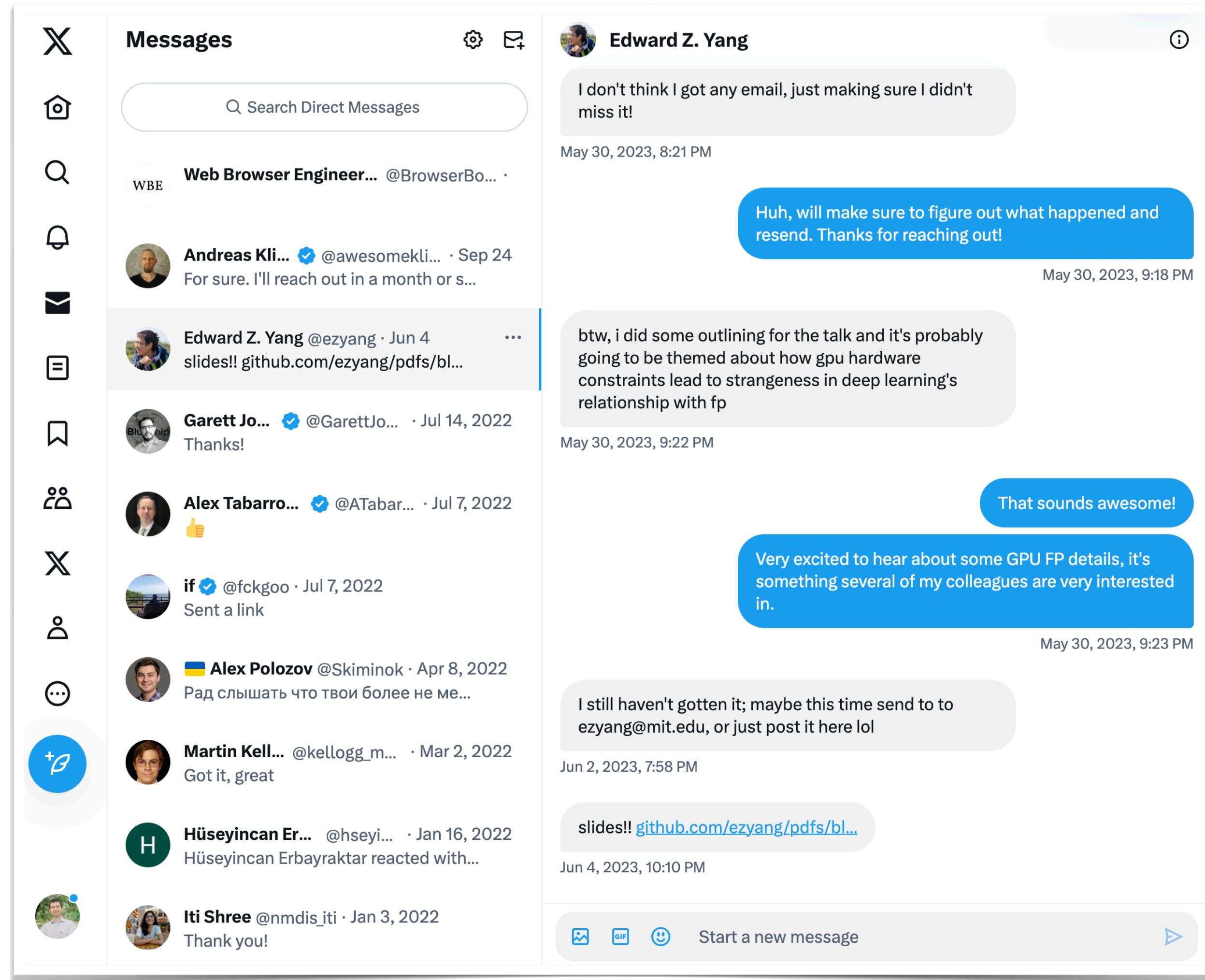
Label all of the gaps

#a



```
#a {  
    margin: 4px 1px 3px 7px;  
    padding: 2px 8px 9px 5px;  
}  
  
#b {  
    margin: 11px 17px 12px 15px;  
    padding: 14px 13px 19px 16px;  
}
```

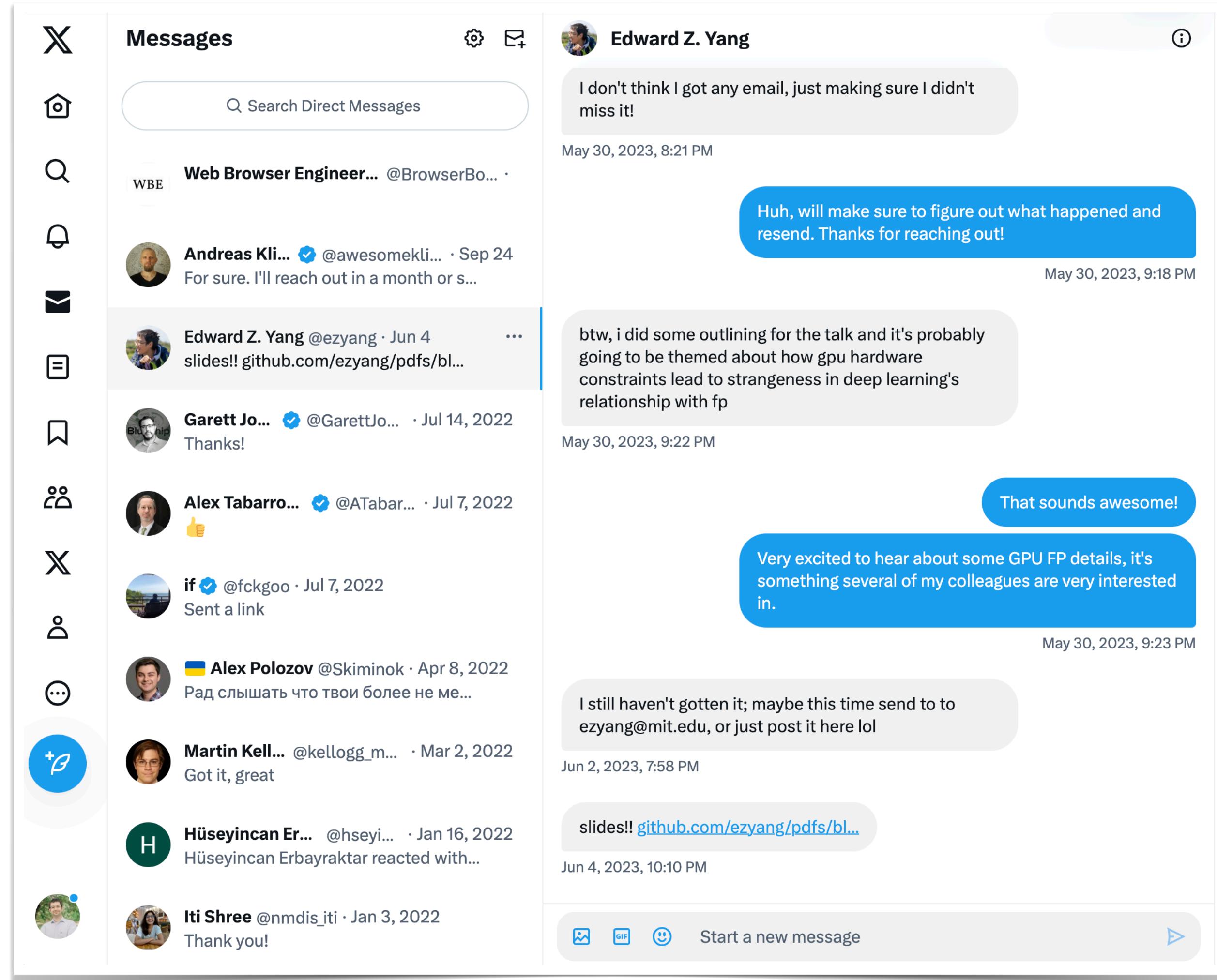
Design principles



What aspect of Layout does Twitter use to represent the navigation hierarchy?

Why does spacing between chat bubbles differ?

Design principles



What aspect of Layout does Twitter use to represent the navigation hierarchy?

Horizontal position (left is parent)

Why does spacing between chat bubbles differ?

To group messages sent at a similar time