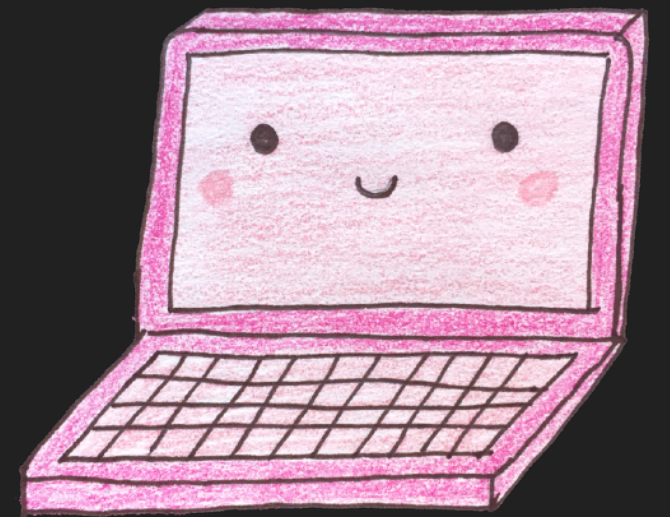
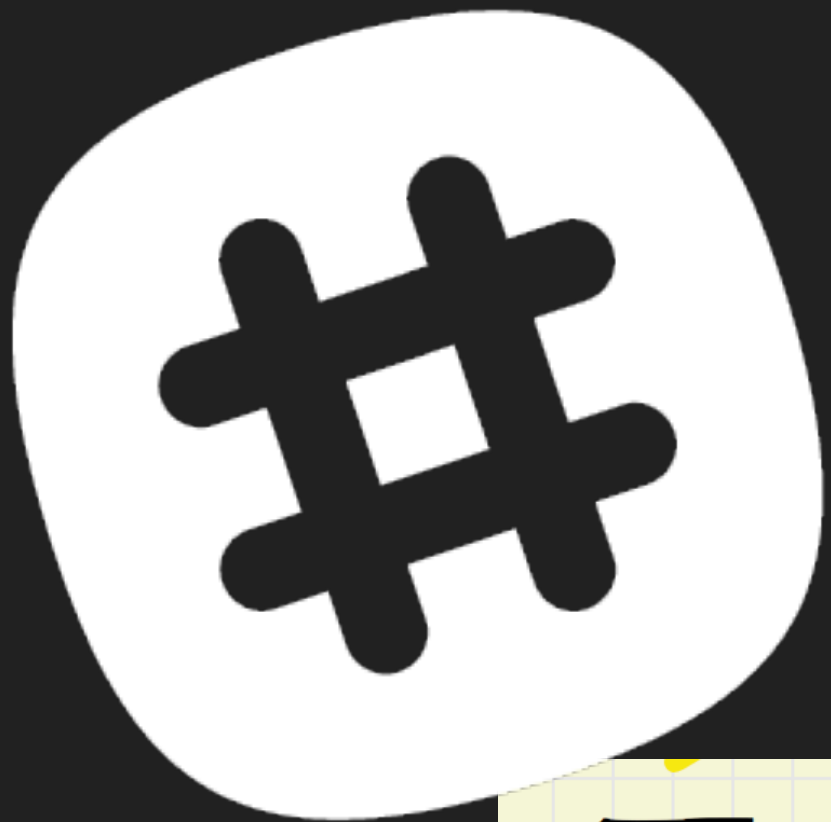


*\*fantastic\**  
~~frontend~~ render  
performance  
tricks and  
why we  
do them

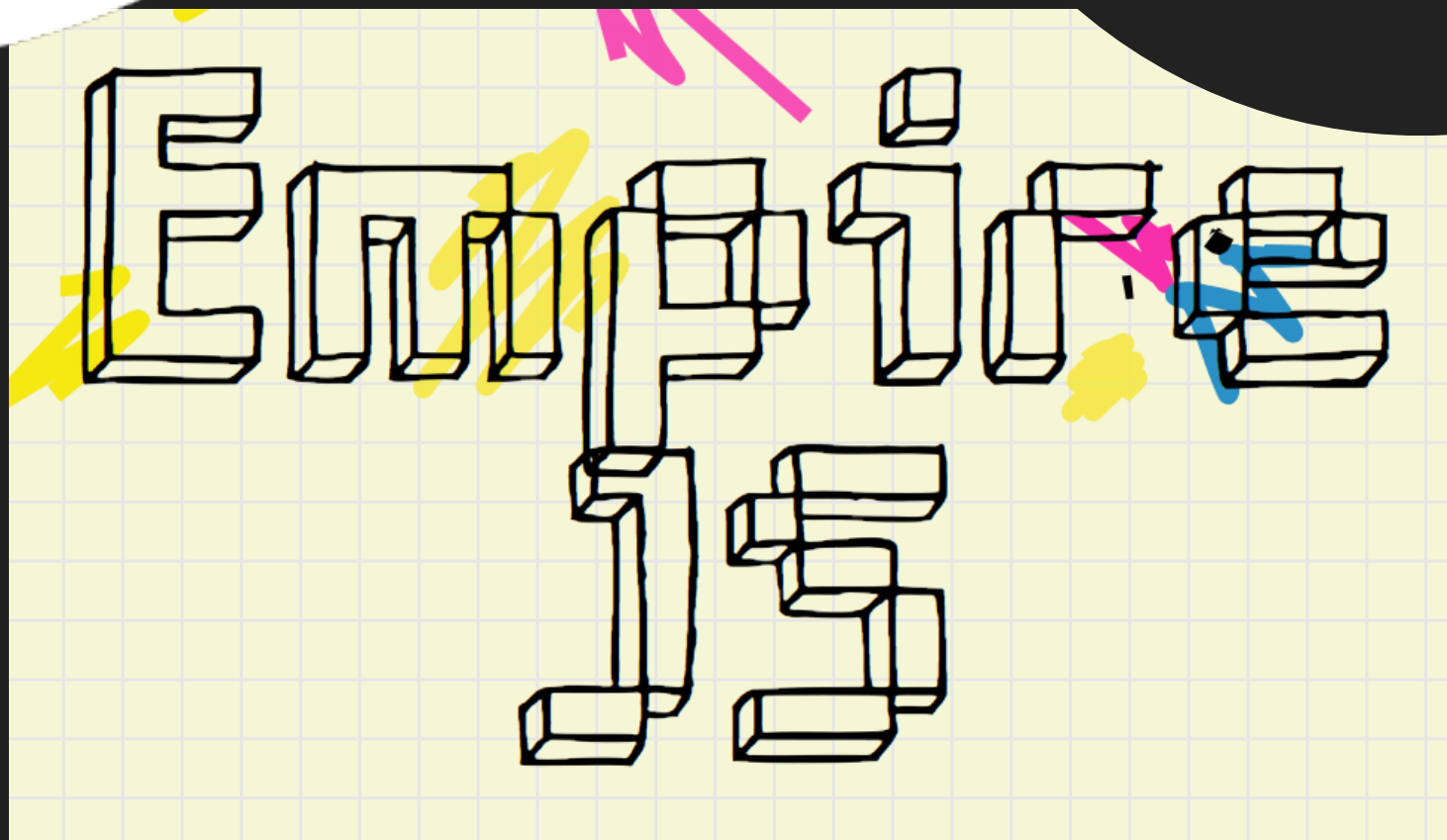
whee!



@zeigenvector  
jenna.is/at-tpt



Brooklyn



2018.empirejs.org



**[object Object] @ RevConf**

@zeigenvector



If you think frontend engineering is lesser or easier, I dare you to delve into the world that is frontend performance optimization.

1:22 AM - 16 May 2018

94 Retweets 408 Likes



loading

+

rendering

# loading

(keep things small)

+

# rendering

# loading

+

(keep things small)  
(keep things smart)

# rendering

# loading

+

(keep things small)

(keep things smart)

# rendering

(keep things smooth)



# loading

+

(keep things small)

(keep things smart)

# rendering

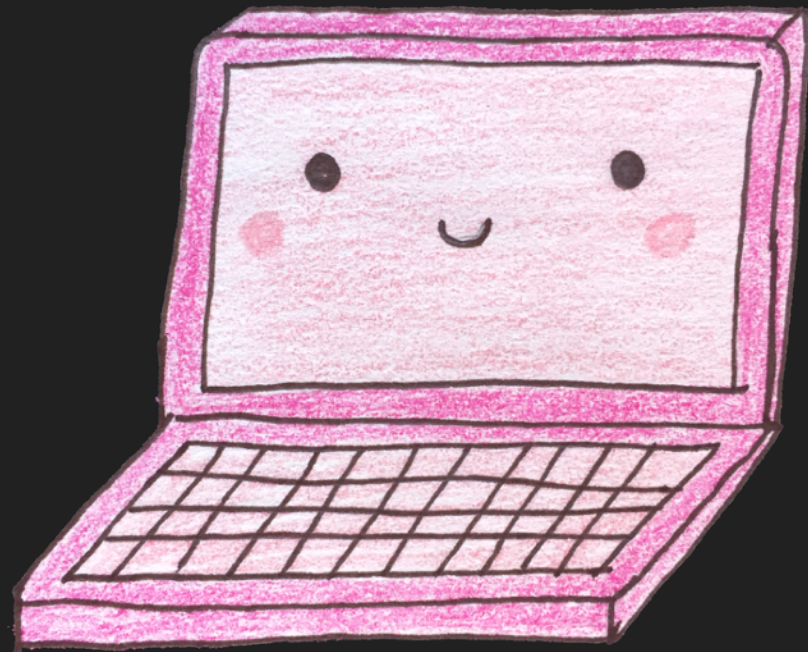
(keep things smooth)

but wait

how do

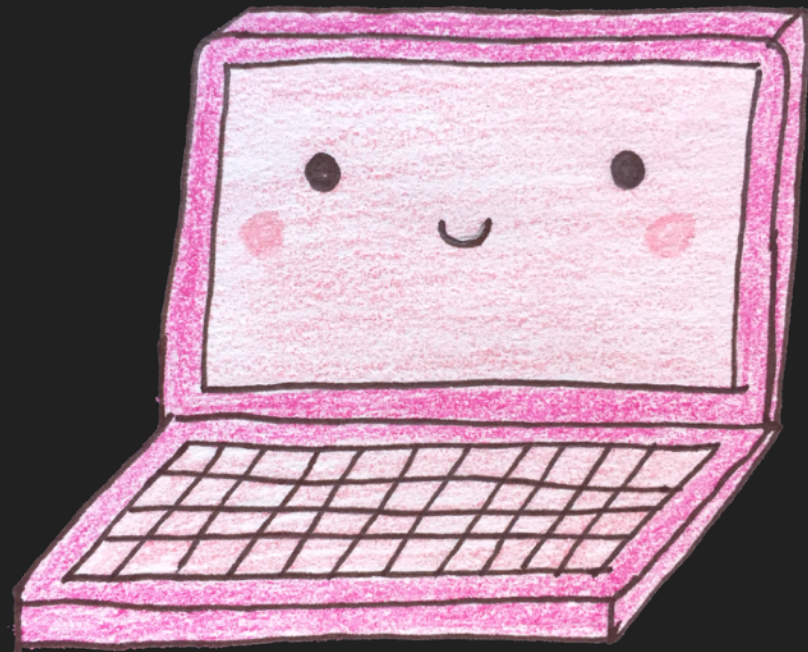
websites?

# how do websites?



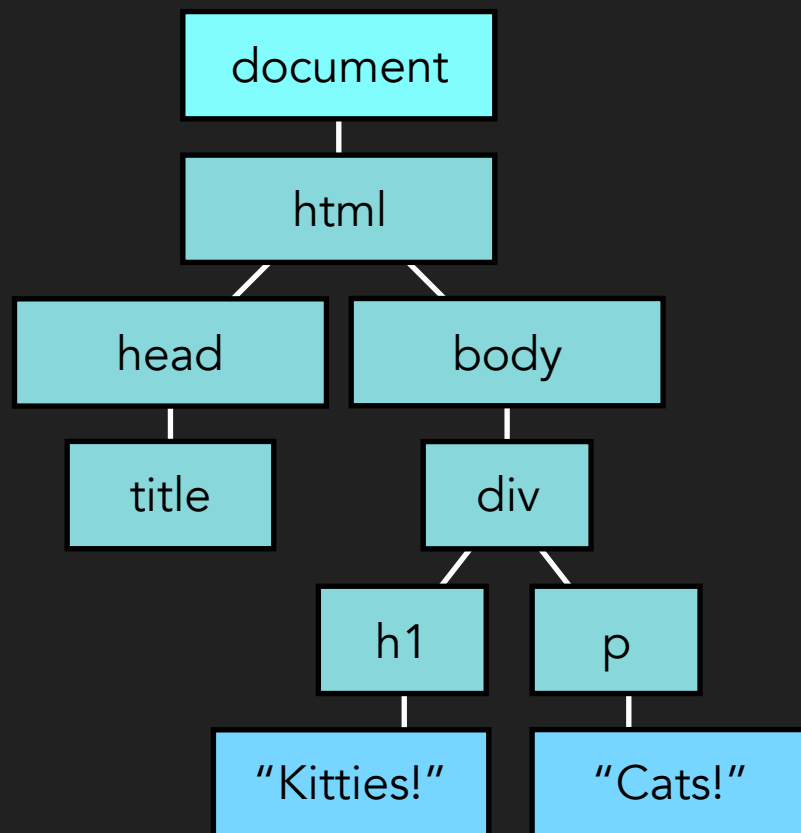
We did everything right,  
Bytes are on the client side  
♪ ♪ ♪

# how do websites?

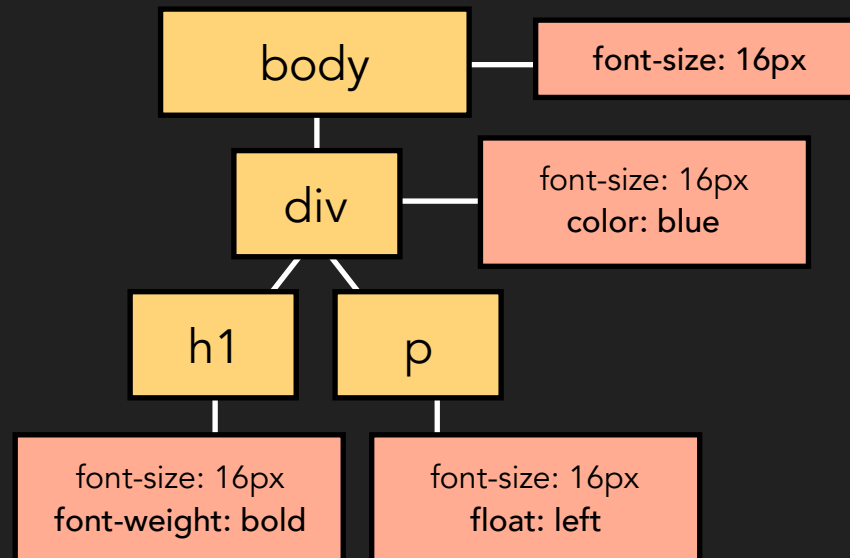
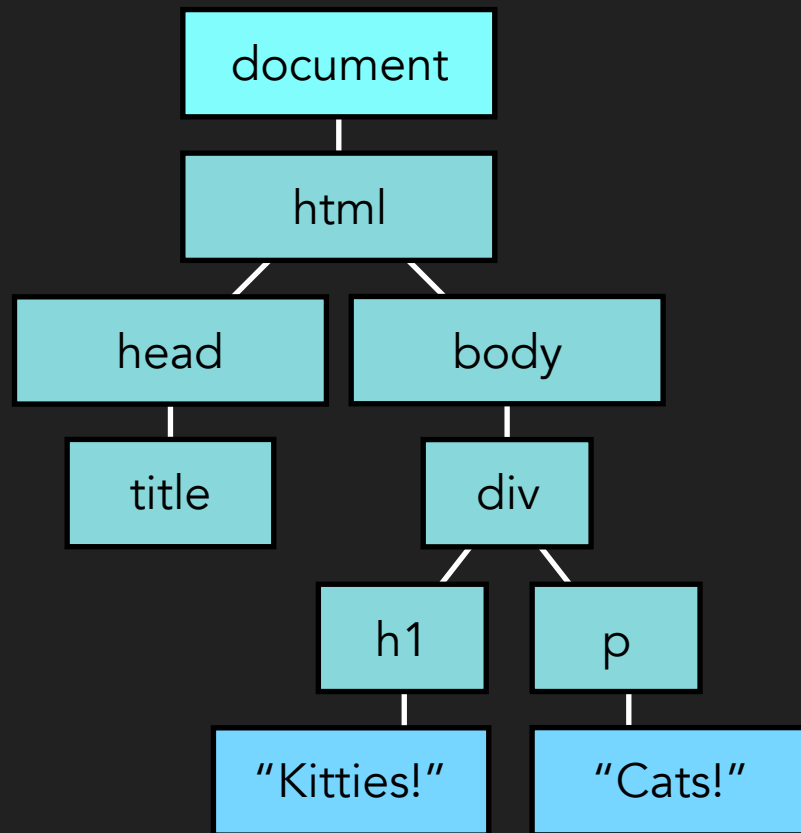


Are you listening?  
(Whoa-oh-oh-oh-oh)  
Please come back.  
(Whoa-oh-oh-oh-oh)  
I'll tell you what do I need  
I'll tell you what do I need  
Whoa-oh, whoa-oh  
♪ ♪ ♪

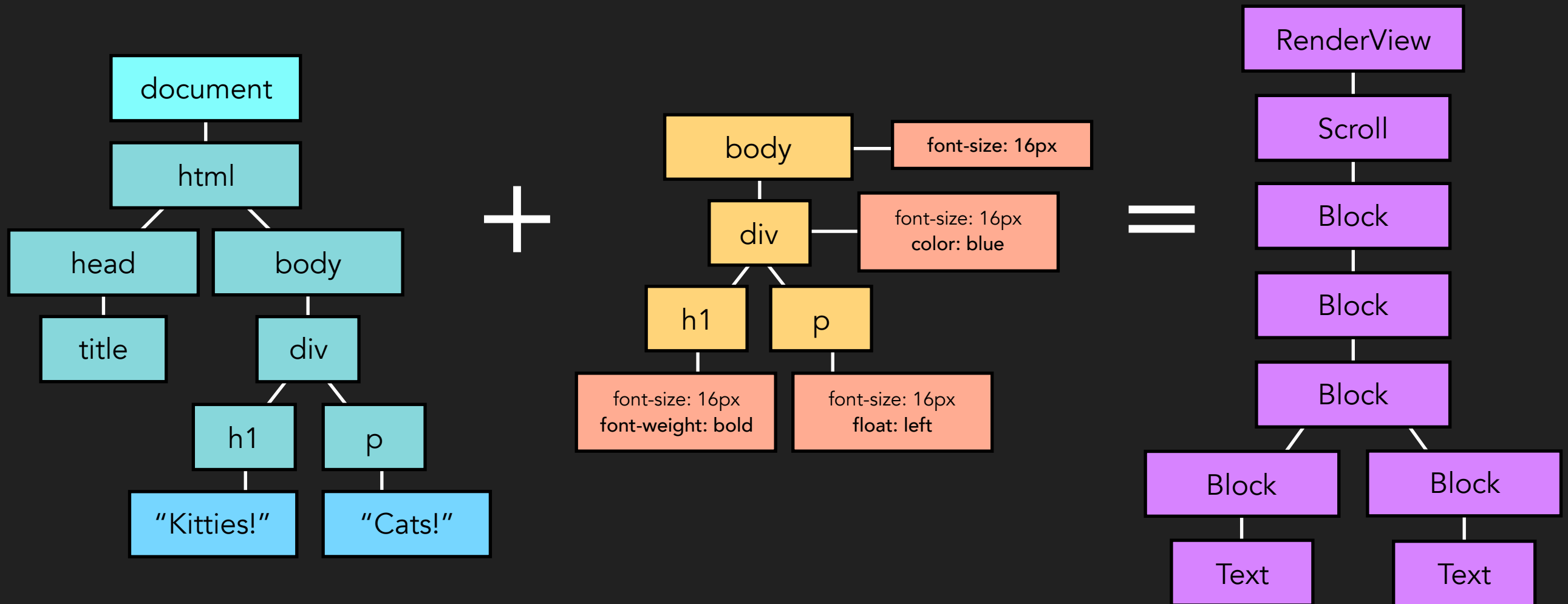
# how do websites?



# how do websites?



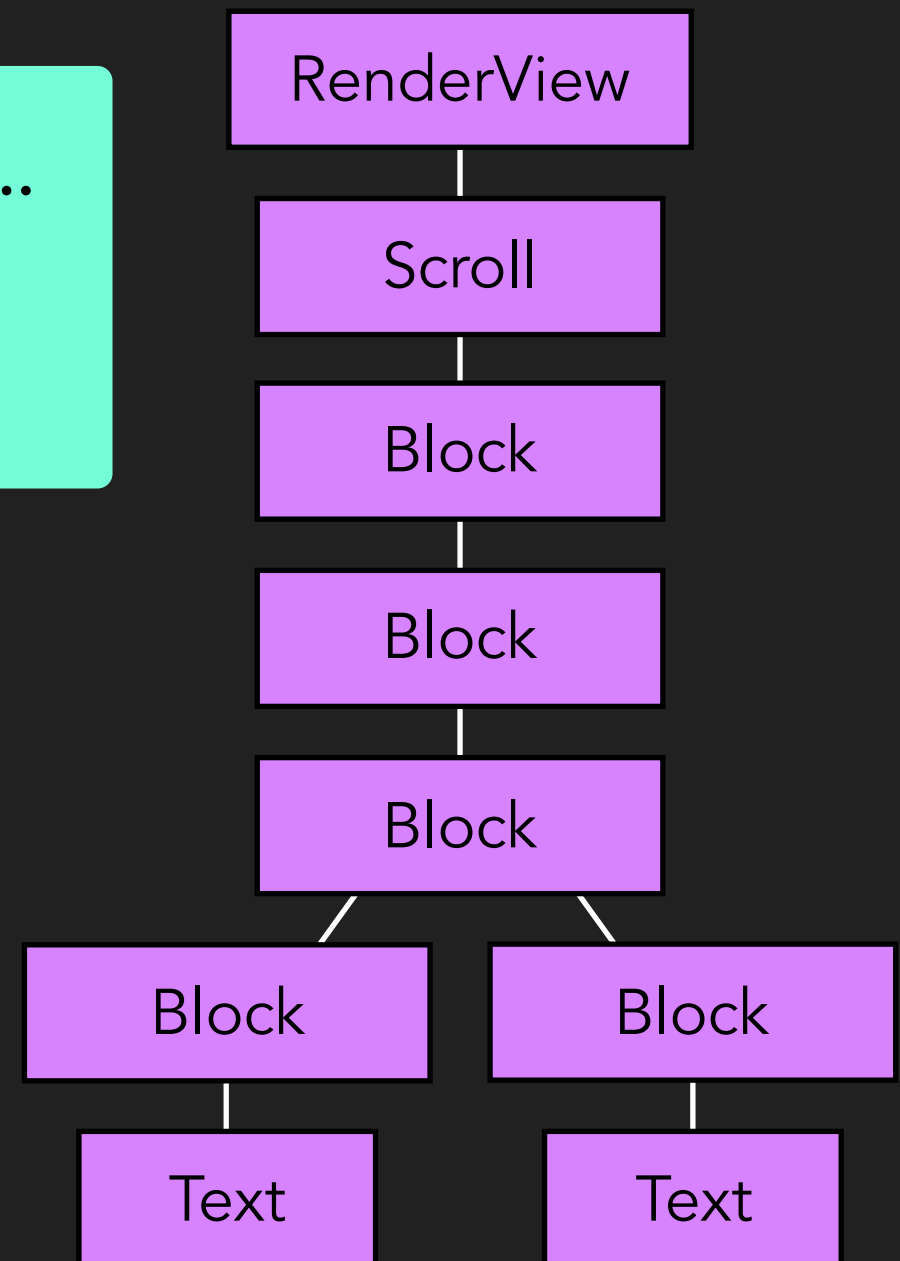
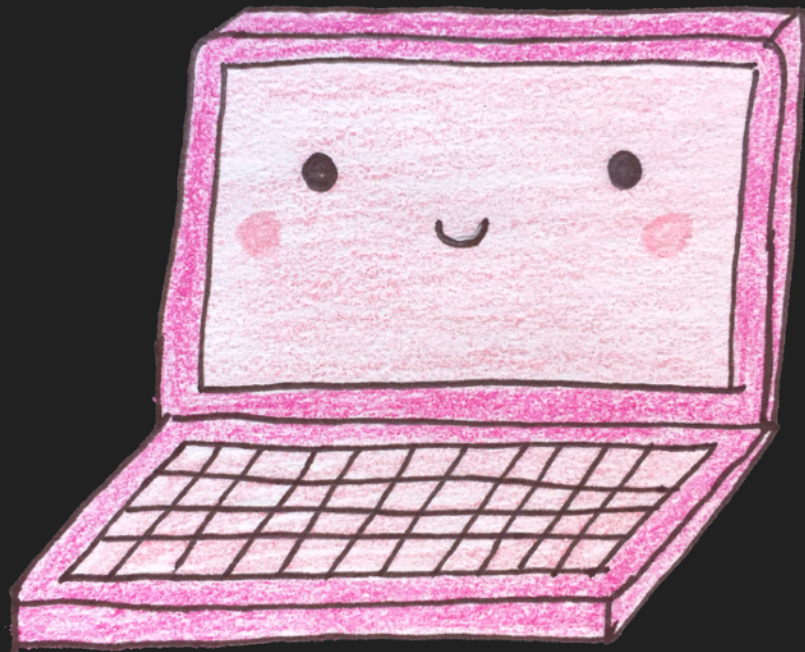
# how do websites?



# how do websites?

Cause the render's gonna...  
rend, rend, rend?

♪ ♪ ♪

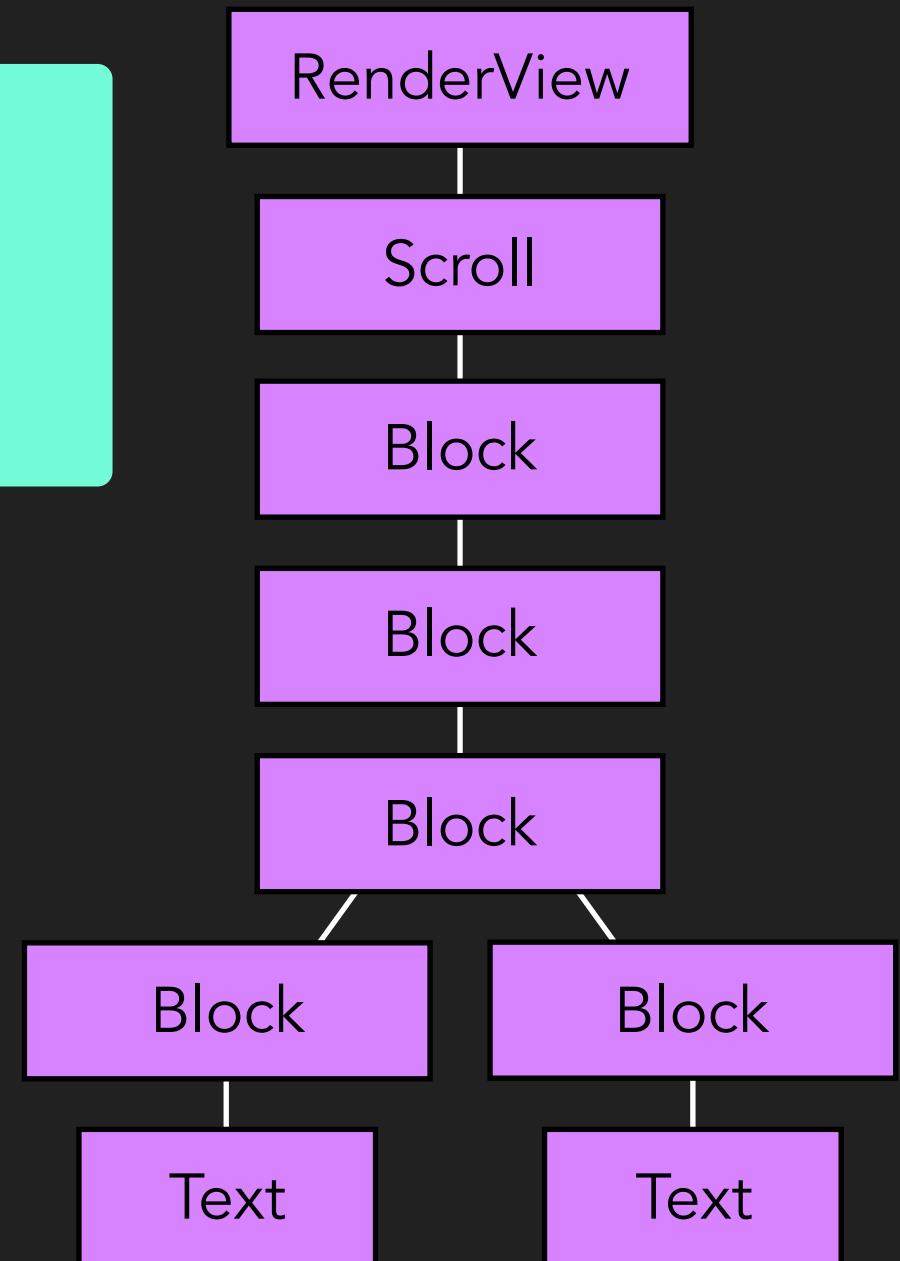
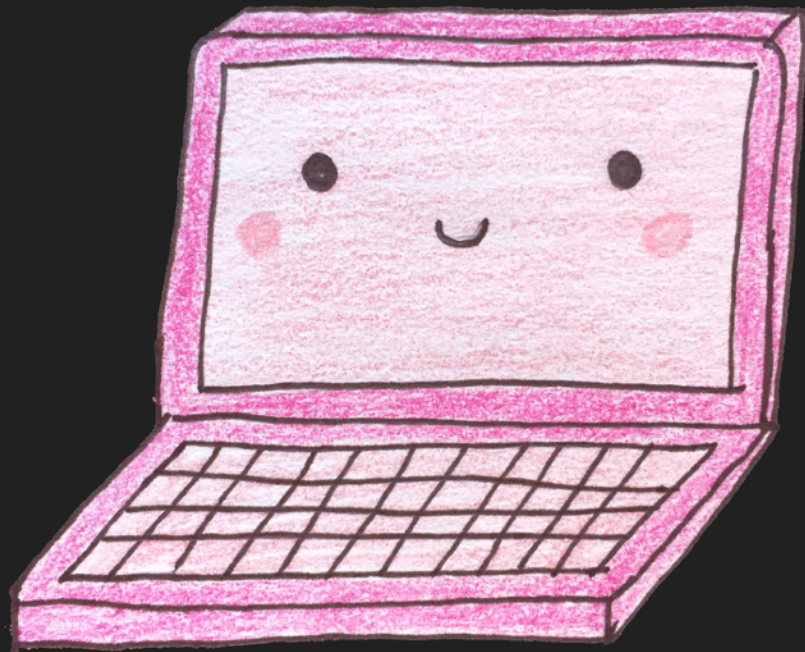




# how do websites?

And the painter's gonna  
paint, paint, paint...

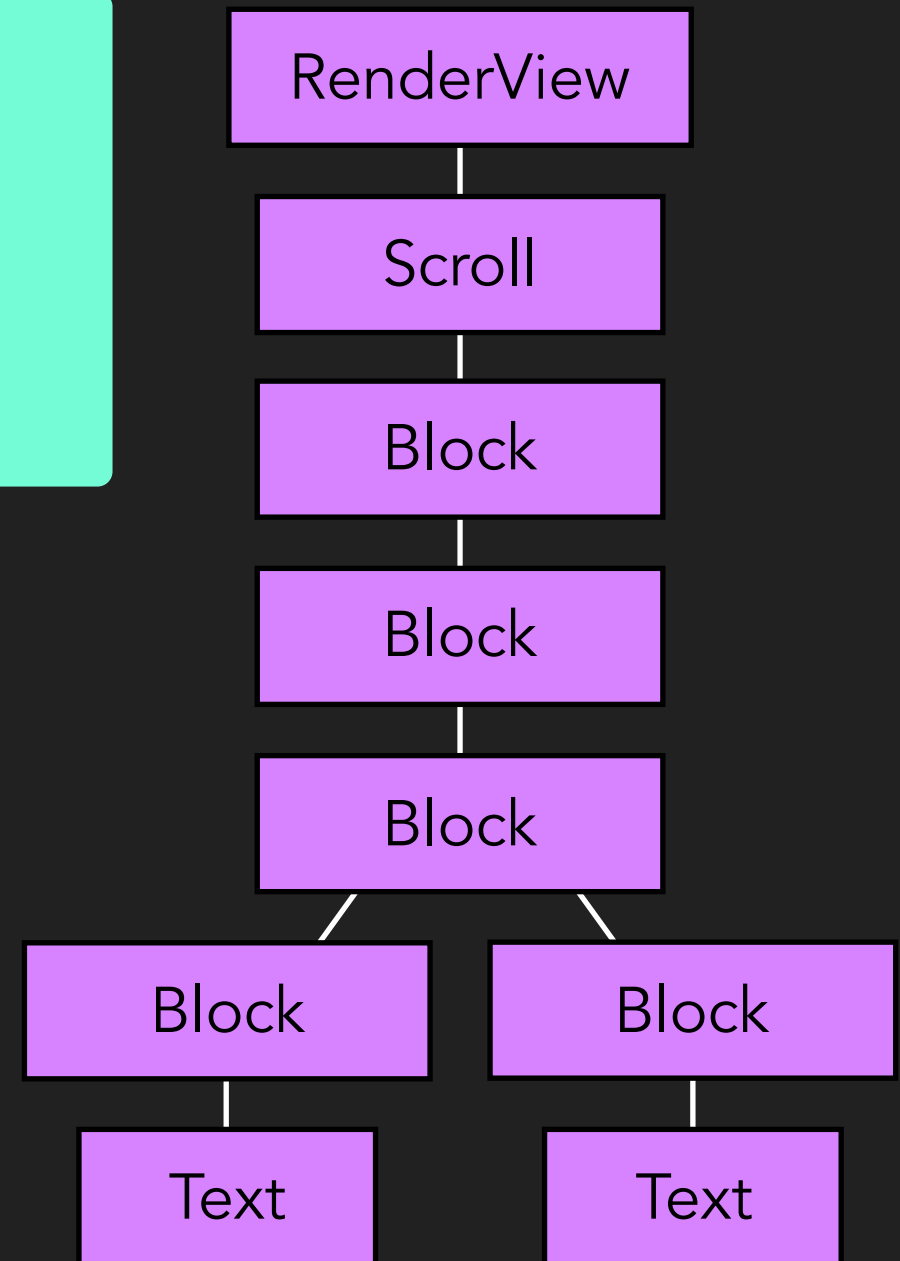
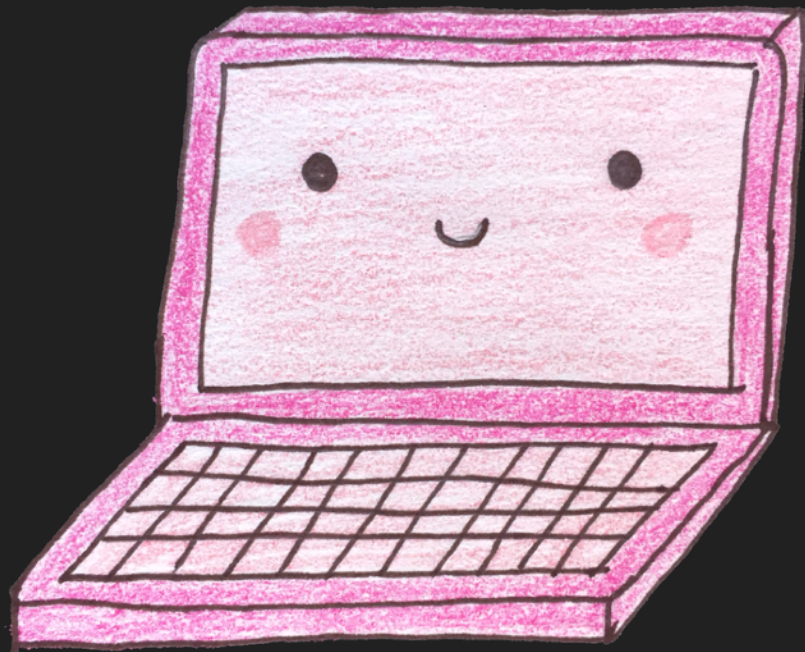
♪ ♪ ♪



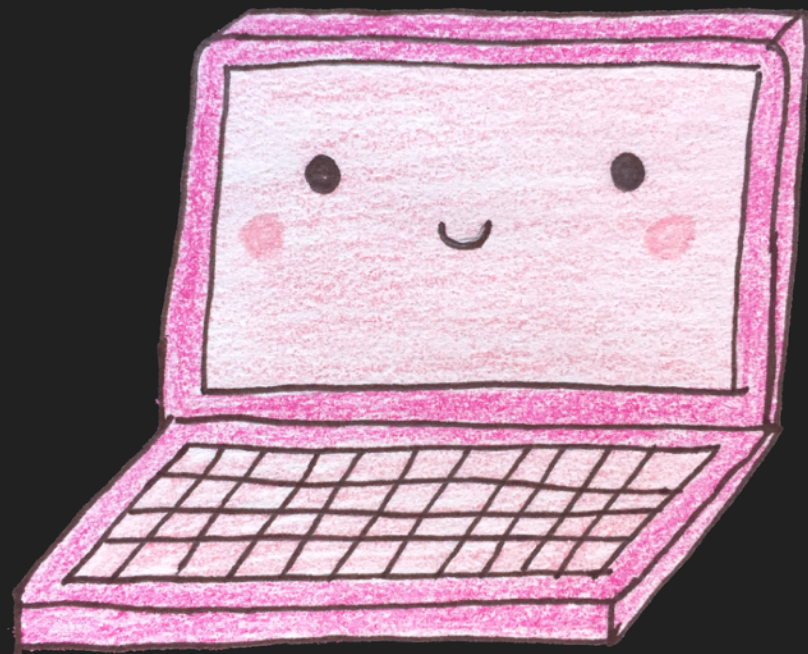
# how do websites?

And the GPU's gonna  
composite, composite,  
composite...

♪ ♪ ♪

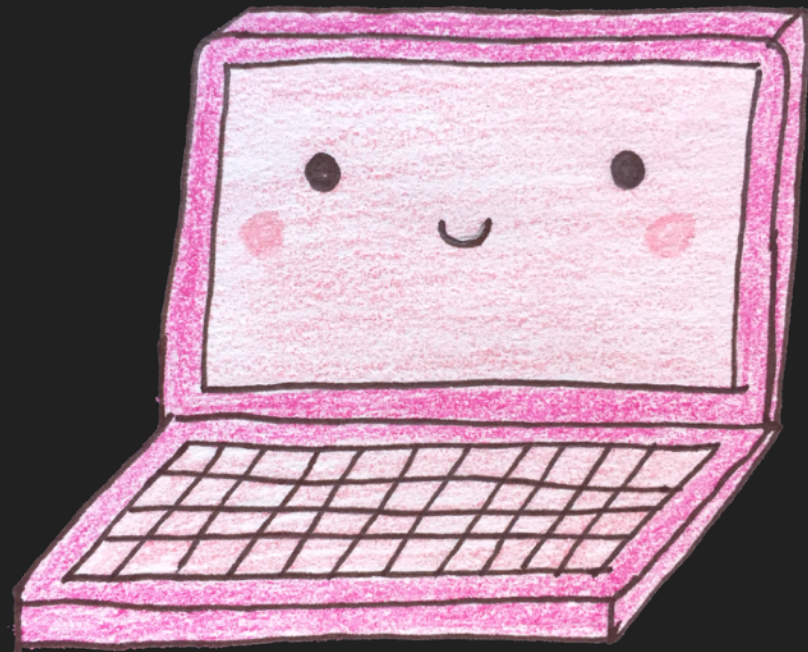


# how do websites?



Loop loop ba-doop loop ba-doop  
Loop ba-doop ba-doop  
Ba-doop loop ba-doop loop  
Ba-doop loop ba-doop, ba-doop,  
ba-doop  
♪ ♪ ♪

# how do websites?

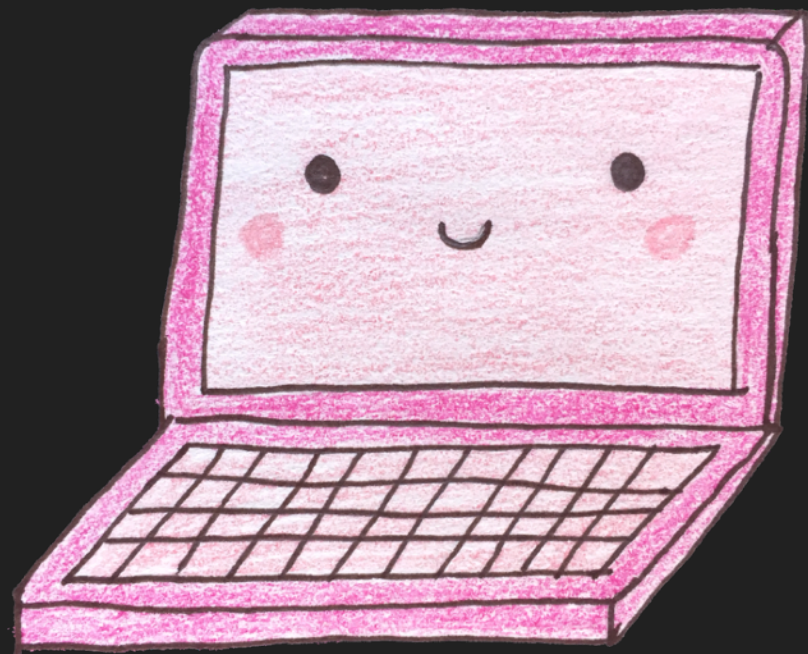


Here's to never ending circles  
And building them on top of me  
And here's to another no, man  
You won't get a render  
You won't get a render  
♪ ♪ ♪

keep  
things  
smooth



# keep things smooth

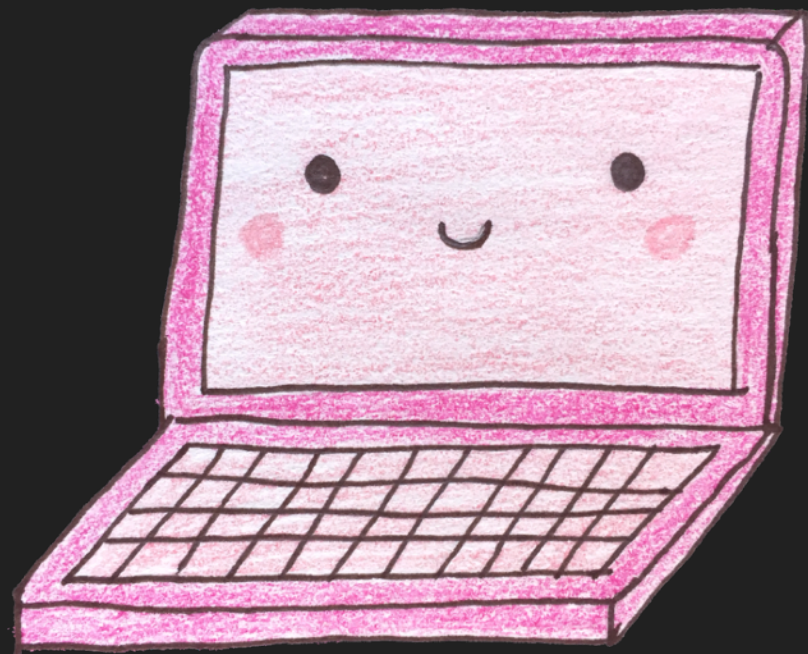


You got the kind of scrollin'  
That can be so ~smooth~, yeah  
Get rid of junk, make it real  
Or else forget about it

♪ ♪ ♪

# keep things smooth

## use requestAnimationFrame



Debounce bounce bounce  
bounce bounce bounce  
bounce bounce bounce  
bounce



# keep things smooth

## use requestAnimationFrame

```
· window.addEventListener('resize', (e) => {  
·   · if (this.bottomTriangleSpan < window.innerWidth) {  
·     · window.requestAnimationFrame(this.drawTrianglesFromIndex.bind(this));  
·     · this.bottomTriangleSpan = window.innerWidth;  
·   · }  
· });
```



# keep things smooth

## use `requestAnimationFrame`

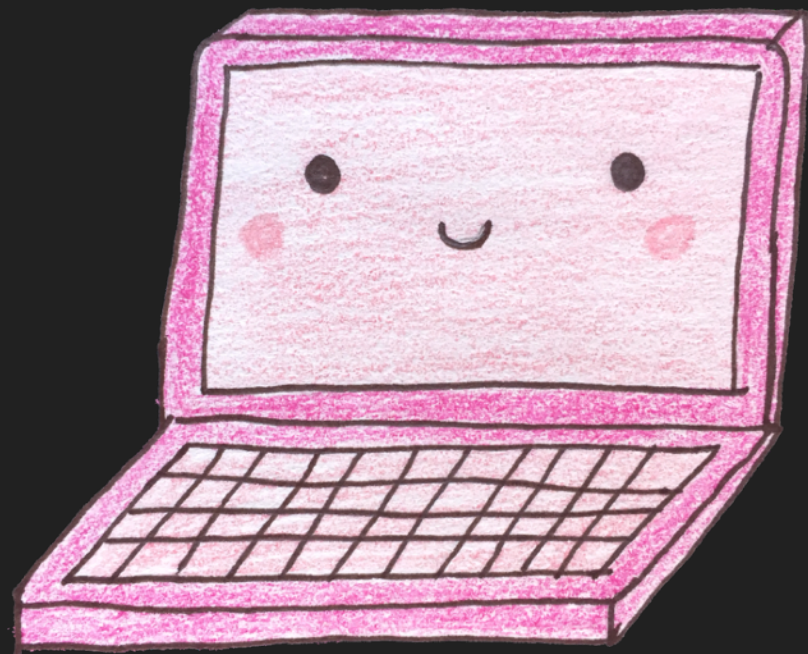


Baby, I'm not always  
There when you call,  
But I'm always on time  
And I gave you my all,  
Now baby, be mine

♪ ♪ ♪

# keep things smooth

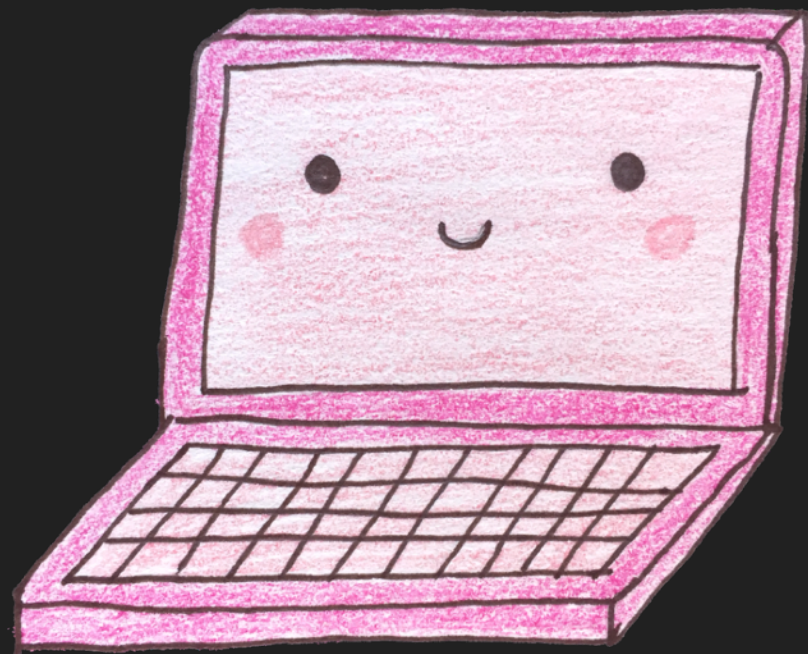
## use web workers



Give it away  
Give it away  
Give it away  
Give it away now  
♪ ♪ ♪

# keep things smooth

## use web workers

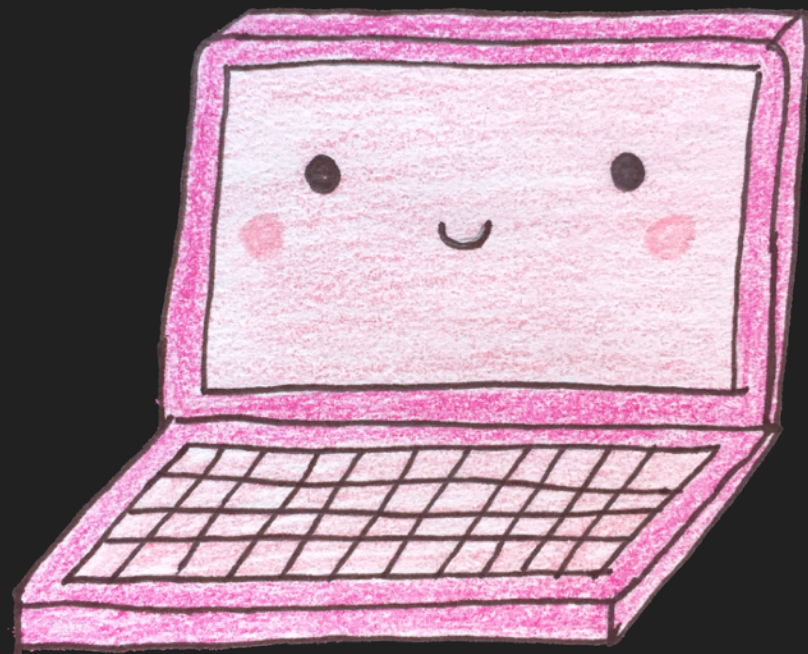


When what you have  
Will take too long  
Move along, move along  
Like I know you do

♪ ♪ ♪

# keep things smooth

## animate with transform + opacity



I, I, I, I, I, I  
Know how to transform  
I transform, I transform  
I'm a transformer  
I, I, I, I, I, I  
Know how to transform  
I transform (I can do it!)  
I'll transform (I can do it!)  
I'm a transformer  
♪ ♪ ♪

# keep things smooth

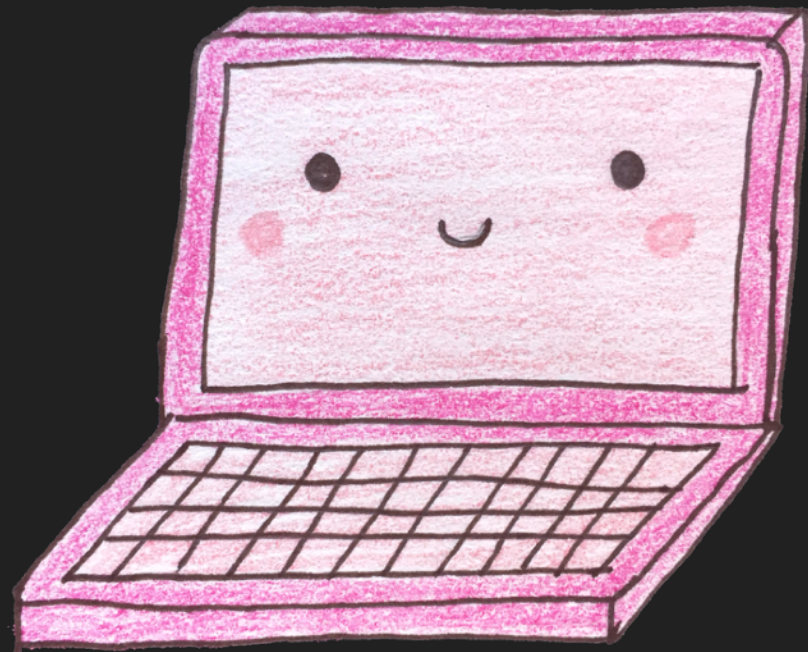
animate with transform + opacity

```
.moving-element {  
    will-change: transform;  
}
```



# keep things smooth

## use a css methodology



CSS, take it easy  
For there is something  
that we can do.  
CSS, take it easy  
BEM it on me  
Or BEM it on you.  
♪ ♪ ♪

# keep things smooth

use a css methodology

```
.box:nth-last-child(-n+1) .title {  
  /* styles */  
}
```

<https://developers.google.com/web/fundamentals/performance/rendering/reduce-the-scope-and-complexity-of-style-calculations>

# keep things smooth

use a css methodology

```
.Box_title--special {  
  /* styles */  
}
```

<https://developers.google.com/web/fundamentals/performance/rendering/reduce-the-scope-and-complexity-of-style-calculations>



always

measure

first

# Resources

- [Front-End Performance Checklist 2018](#)
- [Optimizing the Critical Rendering Path](#)
- [Rendering Performance](#)
- [Philip Roberts: What the heck is the event loop anyway?](#)
- [window.requestAnimationFrame\(\)](#)
- [Using Web Workers](#)
- [Server Farm to Table, Annotated](#)

# Complete Tracklist

Santana ft. Rob Thomas - Smooth

Taylor Swift - Shake it Off

Salt-N-Pepa - Shoop

CHVRCHES - Never Ending Circles

R. Kelly - Ignition

Ja Rule ft. Ashanti - On Time

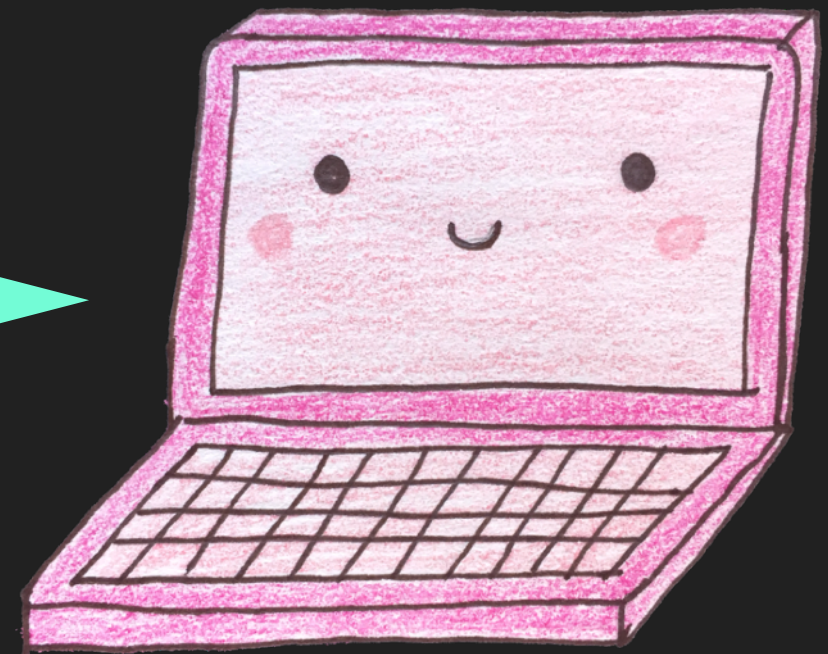
Red Hot Chili Peppers - Give it Away

The All-American Rejects - Move Along

Gnarls Barkley - Transformer

Mika - Relax, Take it Easy

\*something witty  
about a POP  
server...\*





# Thanks!



jenna.is/at-tpt



@zeigenvector

