

Flash Sale Engineering

by **@EmilStolarsky**



Who's this ugly baby?





Flash Sales



Black Friday







Kanye West

Super Bowl Ads

Have you met the girl
named Goldie Blox?
She likes to think outside the box.





#KylieLipKit



A dark, atmospheric scene of a burning building. The building's facade is partially destroyed, with large holes and charred remains. Thick, billowing smoke rises from the rubble, illuminated by the intense orange and yellow flames. The surrounding area is dark, suggesting night or a heavily smoky environment.

Write Heavy Traffic



Xaiyanh
@X81YAN



Follow

Omg I was soooo close of getting a Posie K
WHYYY YOU CRASHHHH 😠😠😠😠😠

#KYLIECOSMETICS #KylieLipKit

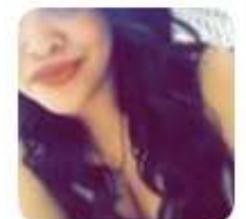


Xaiyanh
@X81YAN



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Omg I was soooo close of getting a Posie K
WHYYY YOU CR
#KYLIECOSMETI



yvette gonzales
@XoEvet



Follow

Why meeeee !
I'm just so sad right now. I'm gonna cry.
@KylieJenner its not your fault but this REALLY
FUCKEN SUCKS !
#KYLIECOSMETICS

7:20 PM - 28 Mar 2016



Meg Ahrenberg
@itsmegaberg



Follow

The epitome of [@kyliecosmetics](#)
#KYLIECOSMETICS

A screenshot of a web browser showing the Kylie Cosmetics website (shop.kyliecosmetics.com/cart). The page displays a 'Well Be Back Soon!' message on a sign. Below it, a yellow warning box states: 'Due to an unexpected technical problem, shop.kyliecosmetics.com is temporarily unavailable. Please check back in a few minutes – we'll be up and running in no time!'. There are three sections of help text for visitors and store owners.

What can I do?

- If you're a visitor to this store
Please try again in 5 or 10 minutes by refreshing the page.
- If you're the owner of this store
Operation engineers are aware of this problem and are working to get it solved. In the meantime, you can keep an eye on the status page for updates.



acCheyenne_
@CHEYY_TJJE



Follow

And now everything is sold out what the F
@KylieJenner #KylieLipKit #KYLIECOSMETICS



7:19 PM - 28 Mar 2016



e of getting a Posie K



yvette gonzales
@XoEvet



Follow

Why meeeee !
I'm just so sad right now. I'm gonna cry.
@KylieJenner its not your fault but this REALLY
FUCKEN SUCKS !
#KYLIECOSMETICS

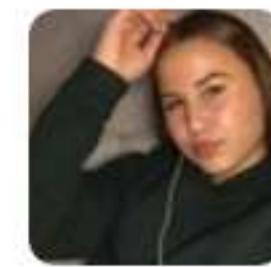
7:20 PM - 28 Mar 2016



Meg Ahrenberg
@itsmegaberg

The epitome of @kyliecosmetics
#KYLIECOSMETICS

A screenshot of a web browser showing the Kylie Cosmetics website. The page displays a 'Well Be Back Soon!' message with a yellow sign icon. Below it, a warning message states: 'Due to an unexpected technical problem, shop.kylie.com temporarily unavailable. Please check back in a few minutes. We're up and running in no time!' There are also sections for 'What can I do?' with links for visitors and store owners, and a footer note about operation engineers working to solve the issue.



acCheyenne_
@CHEYY_TJJE



Follow

And now everything is sold out what the F
@KylieJenner #KylieJennerKit #KYLIECOSMETICS



KG
 @_KarlaGomes



Follow

I find it ridiculous how hard it is to get
#Kyliecosmetics

LIKE
1



7:16 PM - 28 Mar 2016

I'm just so sad right now. I'm gonna cry.
@KylieJenner its not your fault but this REALLY
FUCKEN SUCKS !
#KYLIECOSMETICS

7:20 PM - 28 Mar 2016



☆Selin☆
@selinstyles94



Follow

DAMN 😭😭😭 #KylieLipKit
#KYLIECOSMETICS



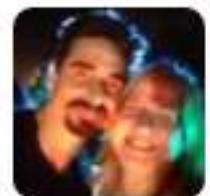
Due to an unexpected technical problem,
shop.kyliecosmetics.com is temporarily unavailable.
Check back in a few minutes – we'll be up and running in no time!

What can I do?



If you're a visitor to this store

Please try again in 5 or 10 minutes by refreshing.



Jennifer Lynn Klobus
@jenniferklobus

@kyliejenner @kyliecosmetics got as far as the payment processing but then the page timed out how do I know it went through?
#KYLIECOSMETICS

7:16 PM - 28 Mar 2016

eyenne_
YY_TJJE



Follow

' everything is sold out what the F Jenner #KylieLipKit #KYLIECOSMETICS



♥ fancykimme ♥
@dear_kimme



Follow



Follow

I'm hot now I got this after it said processing order in 2 mins #KylieLipKit #KYLIECOSMETICS
@KylieJenner fix it



Follow

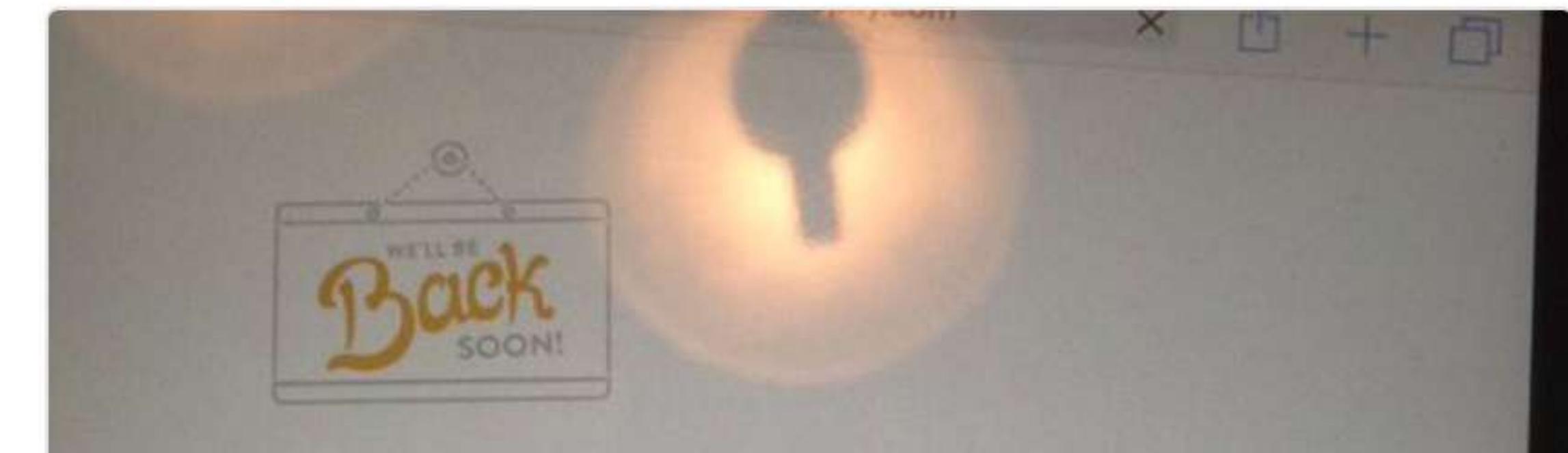


Sammie
@SammieAsfaw



Follow

WHHHHHYYYY. It's happened 6 times now!!
#KylieLipKit #KYLIECOSMETICS



7:20 I



☆Selin☆
@selinstyles94



[Follow](#)

DAMN 😭😭😭 #KylieLipKit
#KYLIECOSMETICS



beautèXcece 07/30



[Follow](#)

is anyone else getting this error?! 😬😬😬
#KYLIECOSMETICS #KylieLipKit
@kyliecosmetics @KylieJenner



®achna
@rachnananana



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Bad one today hais #kyliecosmetics



Rebecca bailey
 @_rebeccabailey



[Follow](#)

Why 😭😭😭 #KylieLipKit #KYLIECOSMETICS
@kyliecosmetics @KylieJenner



Angelique 🤜
@Angeliqueeex13

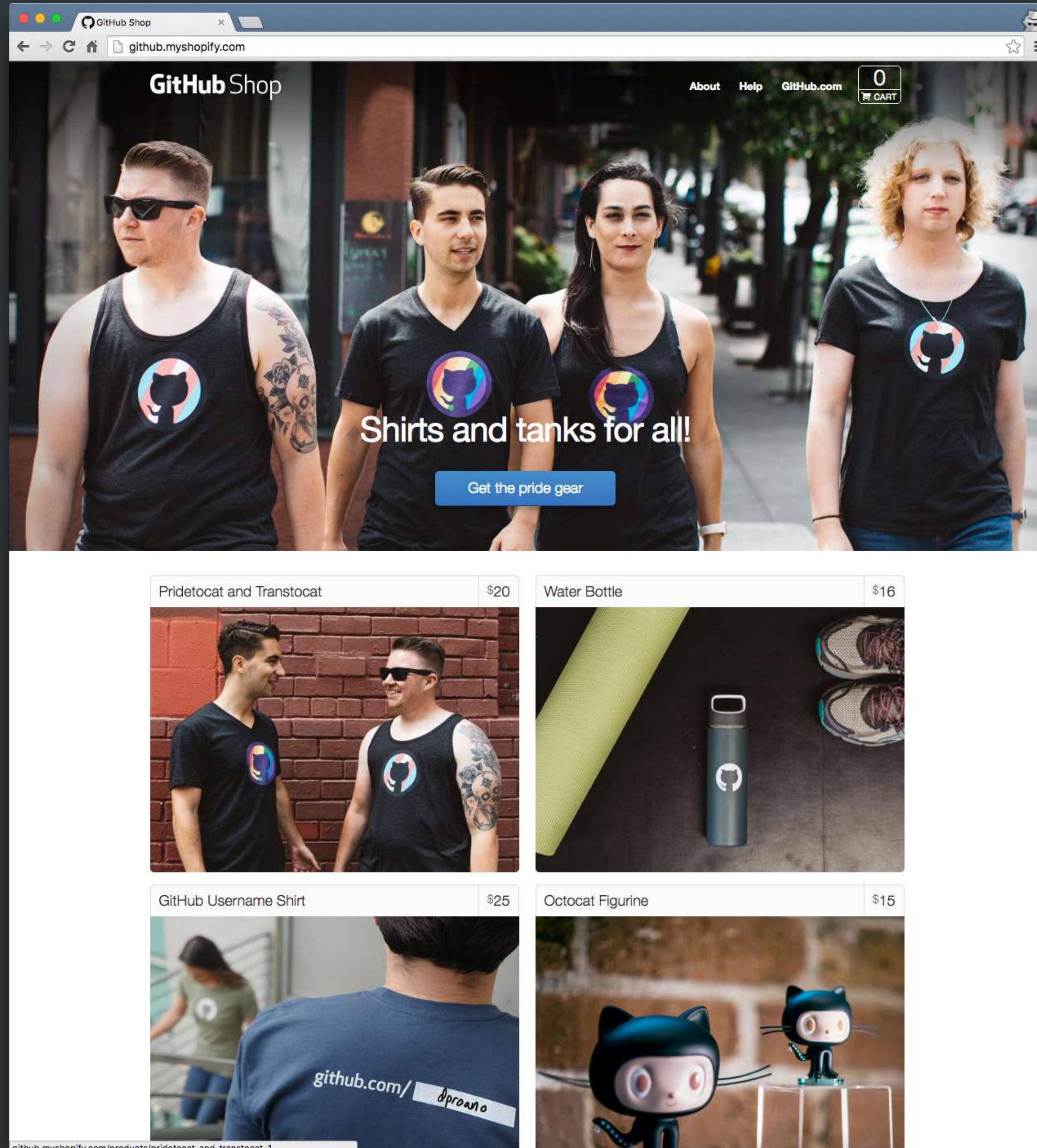


[Follow](#)

Trying to buy #DolceK #KylieLipKit and i want to cry because #KYLIECOSMETICS is having difficulties 😭



How Shopify works



THE INTERNET

LB

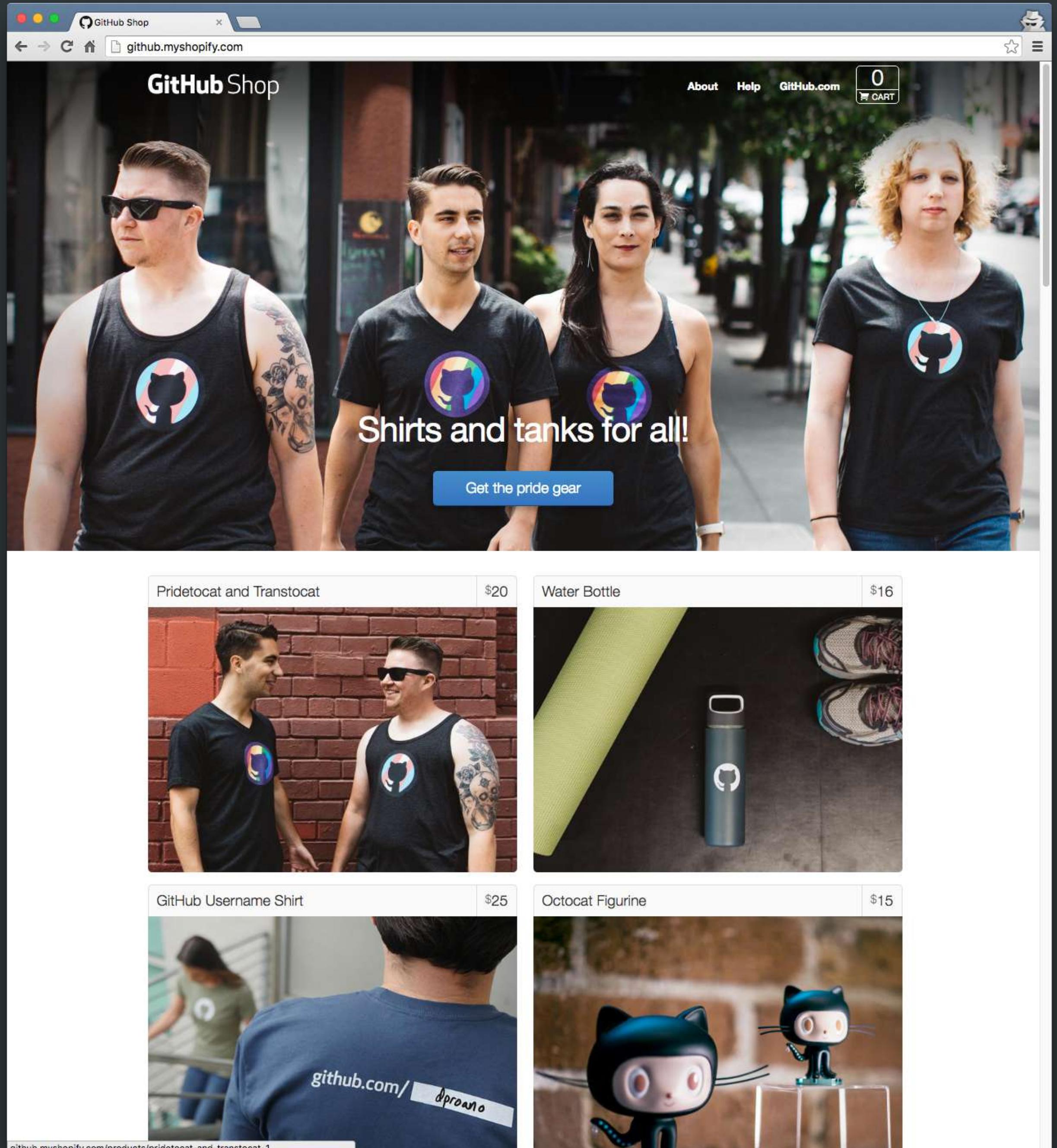
RAILS

MYSQL

MEMCACHED

REDIS

RESQUE WORKER



THE INTERNET



LB



RAILS

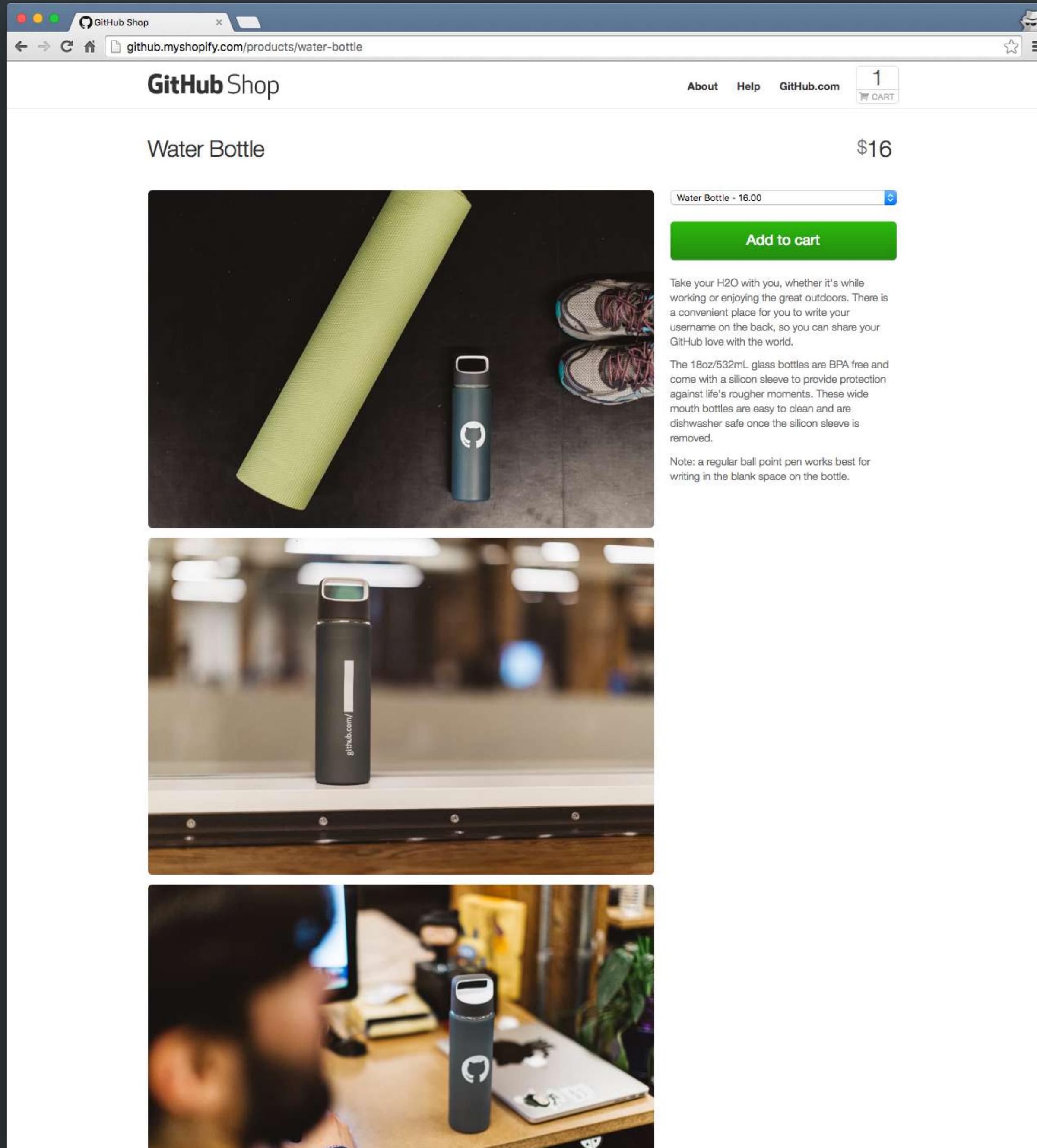


MYSQL

MEMCACHED

REDIS

RESQUE WORKER



THE INTERNET



LB



RAILS



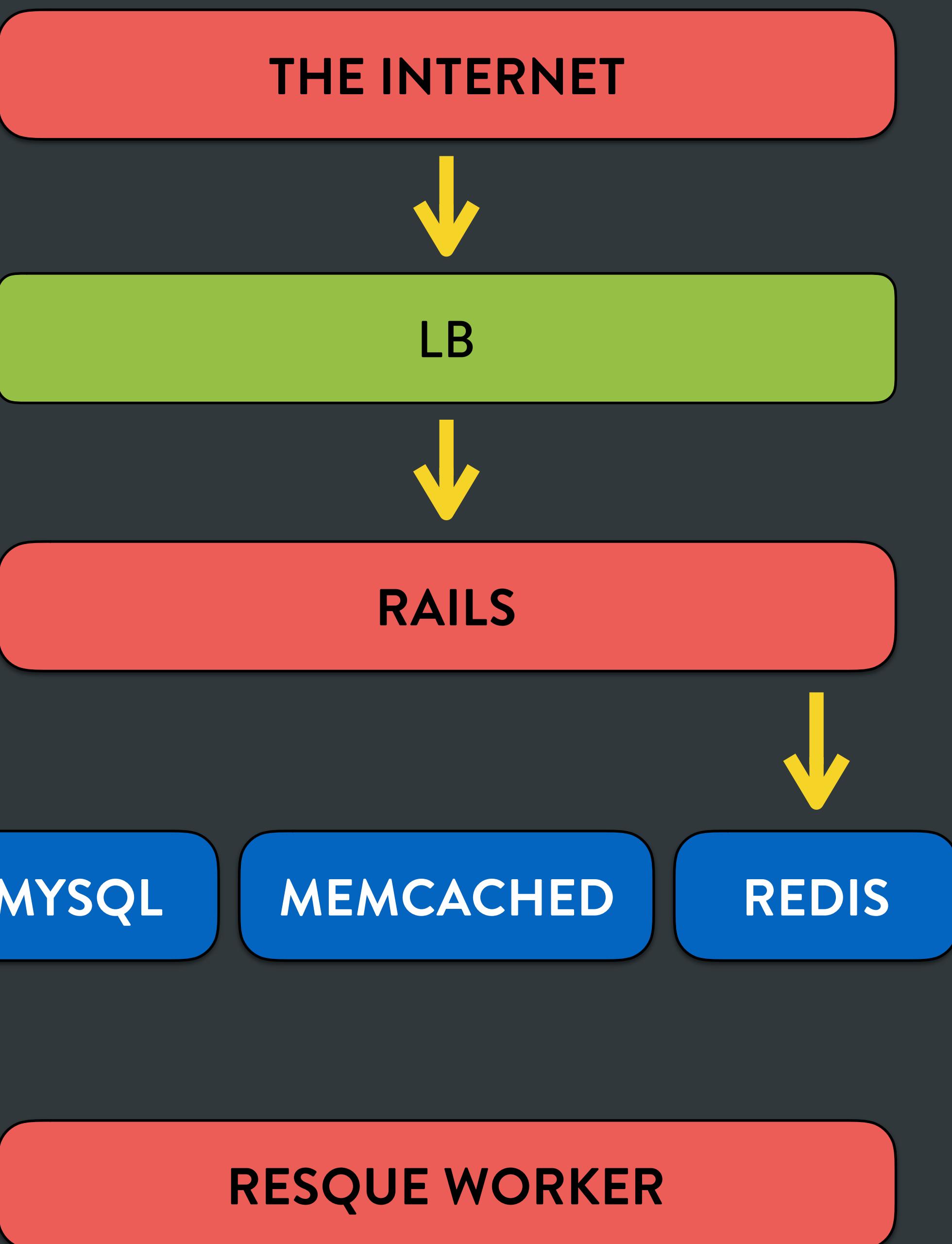
MYSQL

MEMCACHED

REDIS

RESQUE WORKER

A screenshot of a web browser displaying the GitHub Shop cart page at github.myshopify.com/cart. The page shows a single item in the cart: a "Water Bottle - Water Bottle" priced at \$16.00. The cart summary includes a "Cart" button, a "continue shopping" link, a note about preferring PayPal, a PayPal checkout button, a "Leave a note (optional)" field, and a "Checkout" button. At the bottom, there are links for "About", "Help", "FAQ", and "Store Policy". The footer contains the GitHub logo and the text "© 2016 GitHub Inc. All rights reserved."



GitHub - Checkout

https://checkout.shopify.com/514802/checkouts/1cbd2070d5388ee5b7b053dba843d928?_ga=1.76564113.504894197.1467163900

GitHub

Cart > Customer information > Shipping method > Payment method

Customer information

Email

Shipping address

First name Last name

Company (optional)

Address Apt, suite, etc. (optional)

City

Country Canada Province Ontario Postal code

Phone

Save this information for next time

< Return to cart Continue to shipping method

All rights reserved GitHub

THE INTERNET



LB



RAILS



MySQL

MEMCACHED

REDIS

RESQUE WORKER

A screenshot of a GitHub checkout page. At the top, it says "GitHub - Checkout". The URL is https://checkout.shopify.com/514802/checkouts/1cbd2070d5388ee5b7b053dba843d928?_ga=1.244149889.504894197.1467163900. The page shows a cart item: "Water Bottle" (Water Bottle) for \$16.00. Below the cart is a "Gift card or discount code" input field with an "Apply" button. The shipping information is listed: Subtotal \$16.00, Shipping \$17.05, and Total USD \$33.05. The shipping method section shows two options: "USPS First-Class Package International Service" (\$17.05) and "USPS Priority Mail International" (\$37.73). A blue "Continue to payment method" button is at the bottom. On the left, there's a "Shipping address" section with the recipient's details: Emil Stolarsky, Shopify, 150 Elgin Street, 8th Floor, Ottawa ON K2P 1L4, Canada, 8887467439. There's also a link to "Edit shipping address". The navigation bar at the top includes "Cart", "Customer information", "Shipping method", and "Payment method".

THE INTERNET



LB



RAILS

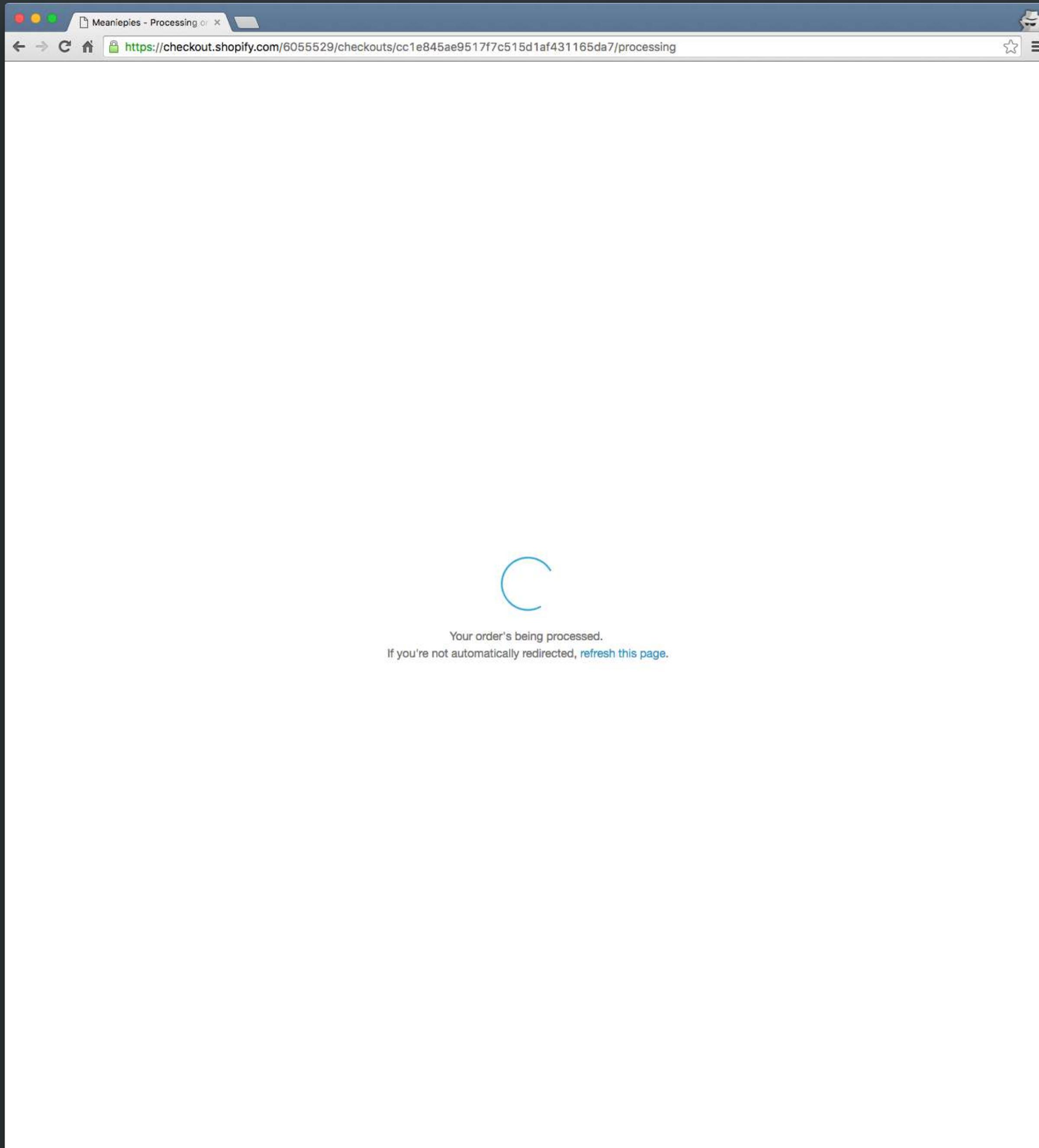


MYSQL

MEMCACHED

REDIS

RESQUE WORKER



THE INTERNET

LB

RAILS

MYSQL

MEMCACHED

REDIS



RESQUE WORKER

THE INTERNET

Not Really Github

Order #1277
Thank you Emil!



Your shipment is confirmed

We've accepted your order, and we're getting it ready. A confirmation email has been sent to emil@shopify.com. Come back to this page for updates on your shipment status.

Customer information

Shipping address	Billing address
Emil Stolarsky Shopify 150 Elgin Street 8th Floor Ottawa ON K2P 1L4 Canada 8887467439	Emil Stolarsky Shopify 150 Elgin Street 8th Floor Ottawa ON K2P 1L4 Canada 8887467439

Shipping method	Payment method
Anything	B ending with 1 — \$15.00

Need help? [Contact us](#)

[Continue shopping](#)

1	Water Bottle - Water Bottle	\$42.00
Subtotal		\$5.00
Shipping		\$10.00
Total	CAD	\$15.00

LB

RAILS

MYSQL

MEMCACHED

REDIS



RESQUE WORKER

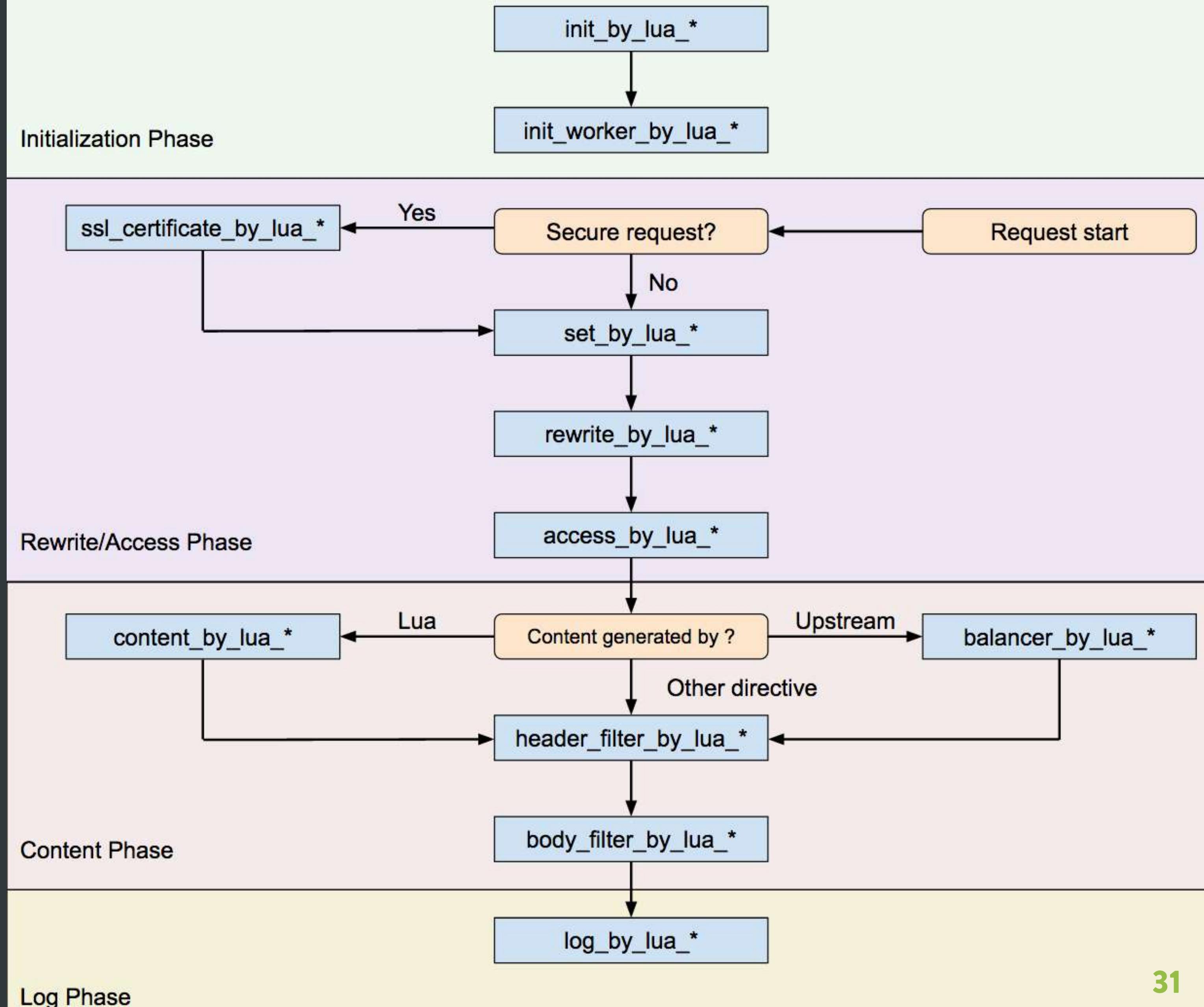
1. Right Tool
2. Heat Shield
3. Order out of Chaos

Nginx

Robust Piece of Software

Lua

Order of Lua Nginx Module Directives



1. Right Tool
2. Heat Shield
3. Order out of Chaos

Back Pressure

Kylie Cosmetics™ | The Kylie Lip Kit

Emil Stolarsky...

kyliecosmetics.com/checkout

LIKE. LITERALLY. SO MUCH DEMAND.

We are experiencing overwhelming demand for today's sale. Please hold tight and do not refresh this page or you will lose your spot.

If a spot opens up before your product sells out, you will be sent to your shopping cart, however we can't guarantee you will get your products during today's sale. There are "literally" so many people trying to check out at the same time that we have created this holding zone so that the site won't crash. We can guarantee that we're making more and will be back as soon as we can with another sale.

Thank you for your patience and support, and good luck!

A photograph of four women standing in front of a height chart. From left to right: a woman with red hair in a white top and brown shorts; a woman in a pink jumpsuit; a woman in a green velvet jacket and black top; and a woman in a gold top and black shorts. The height chart has markings from 3'0" to 6'0" in increments of 6 inches.

KANYE WEST - THE LIFE

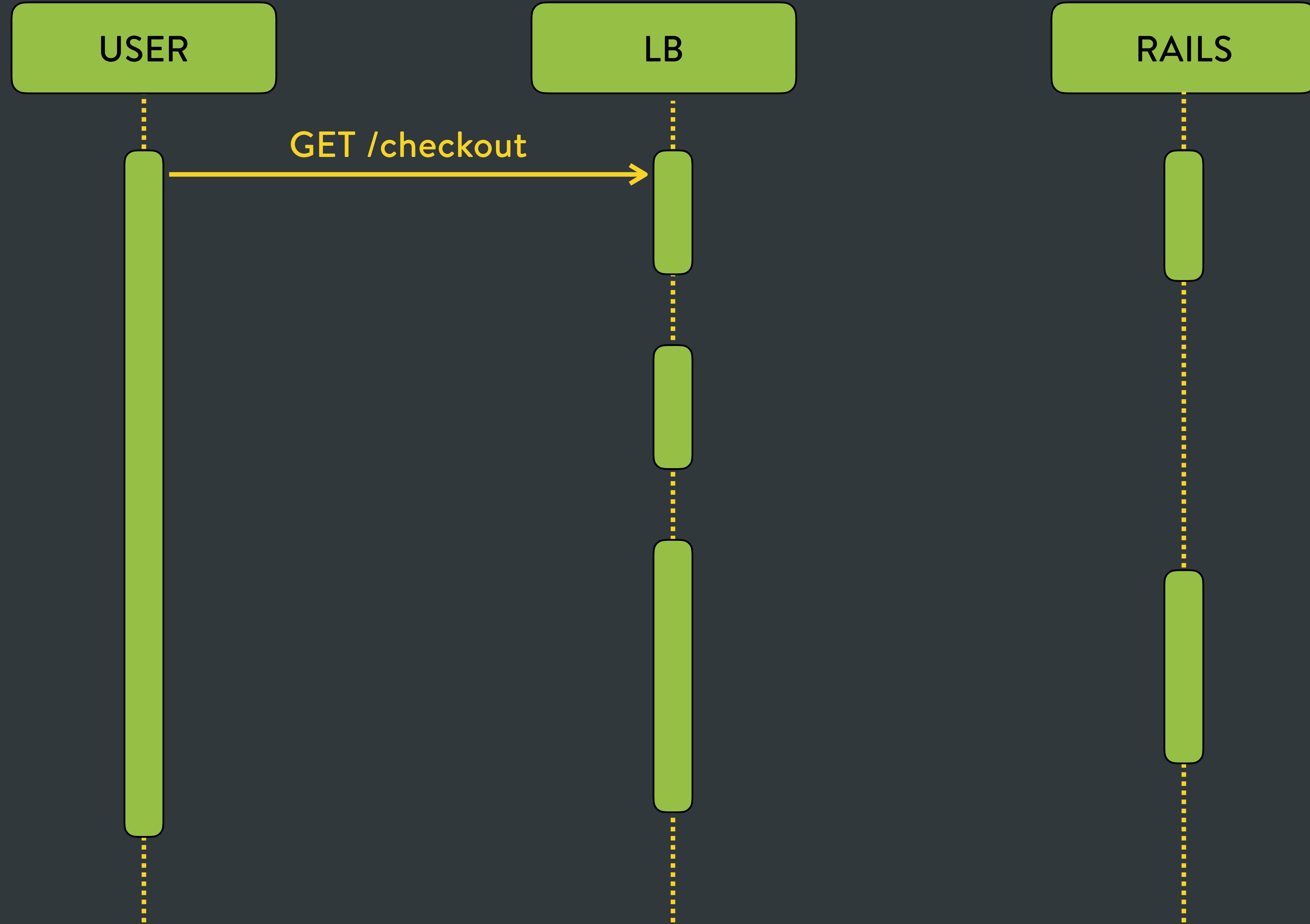
Emil Stolarsky...

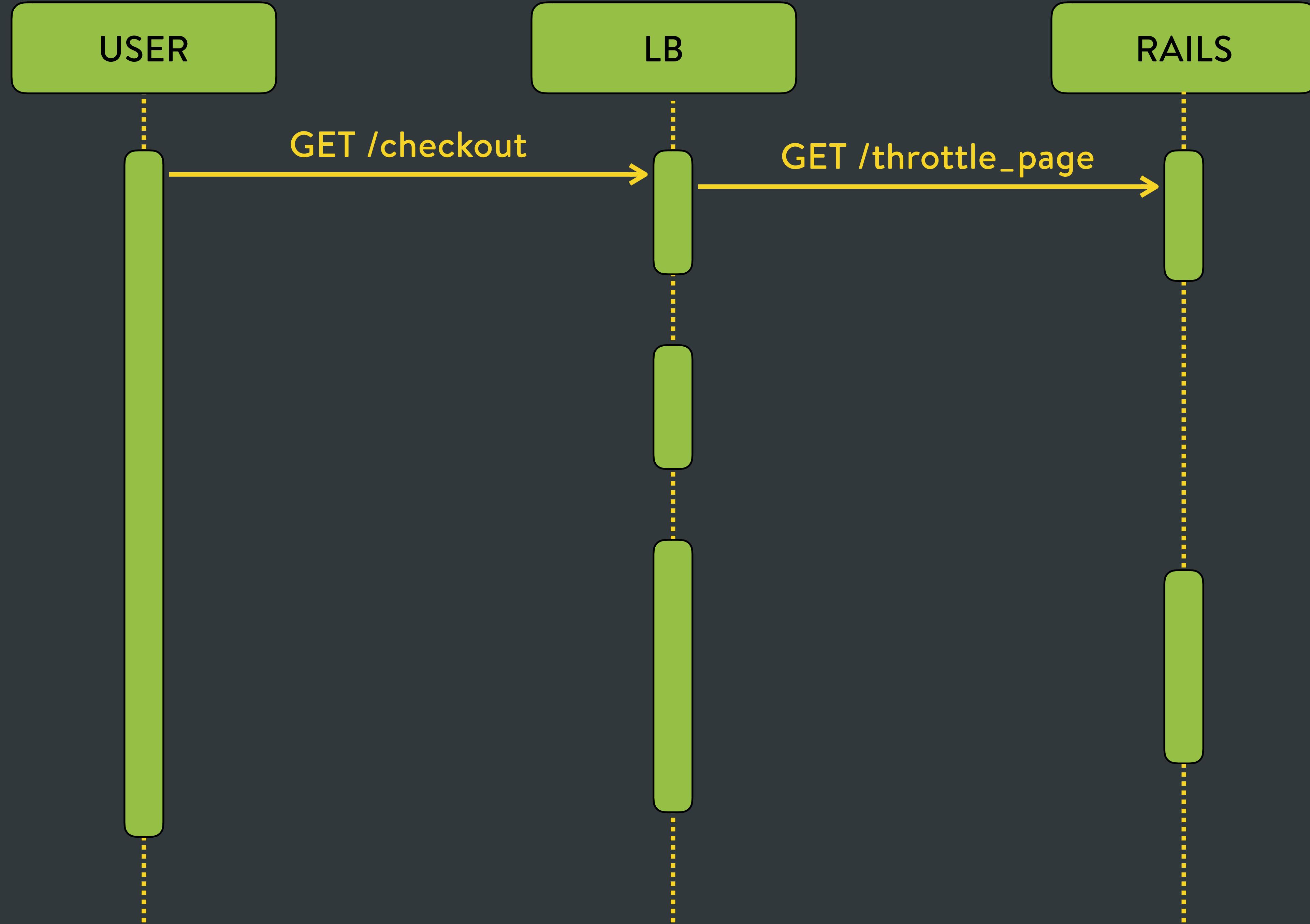
kanyewest.com/checkout

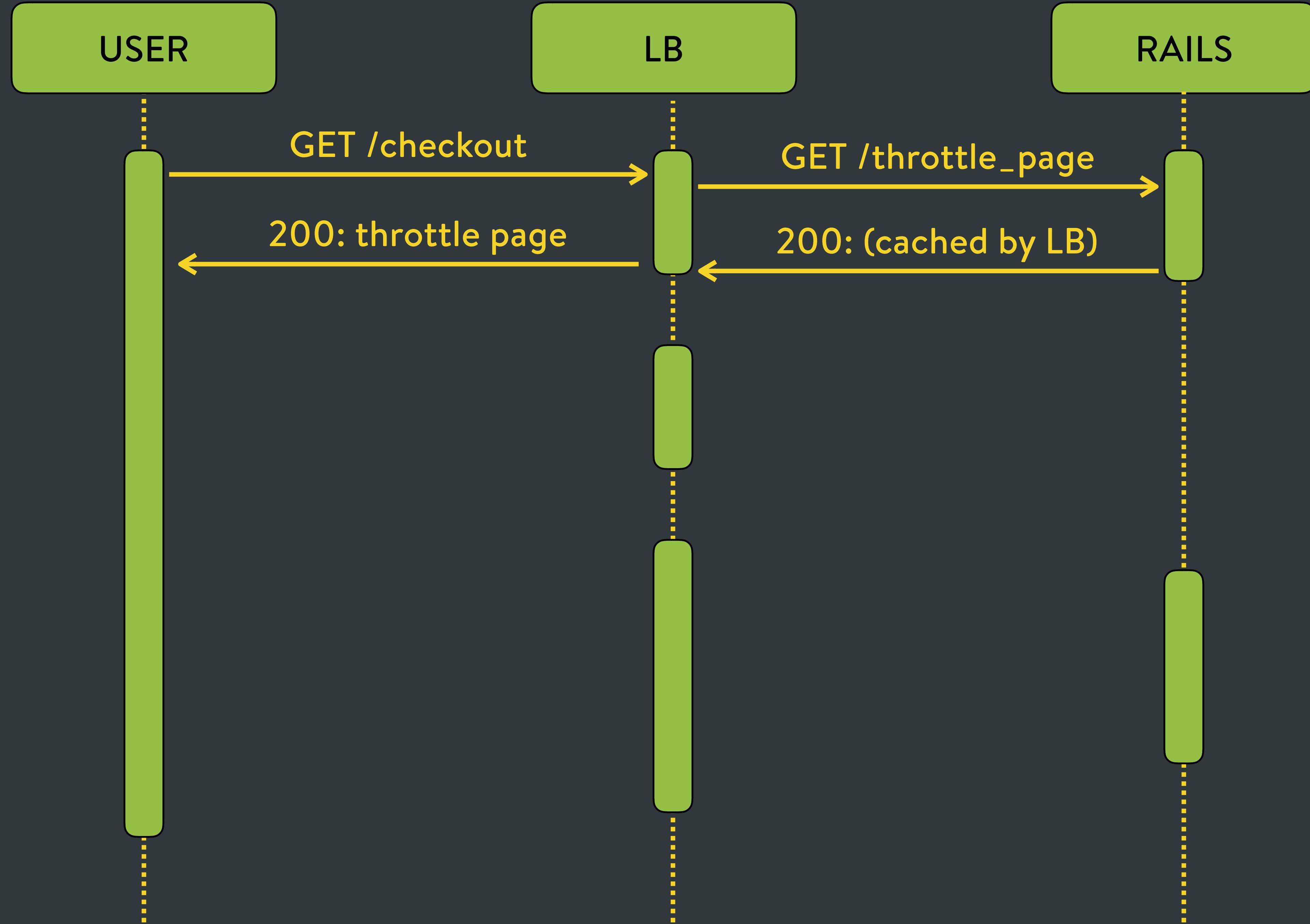
EXCUSE US FOR THE WAIT & HEARTBREAK

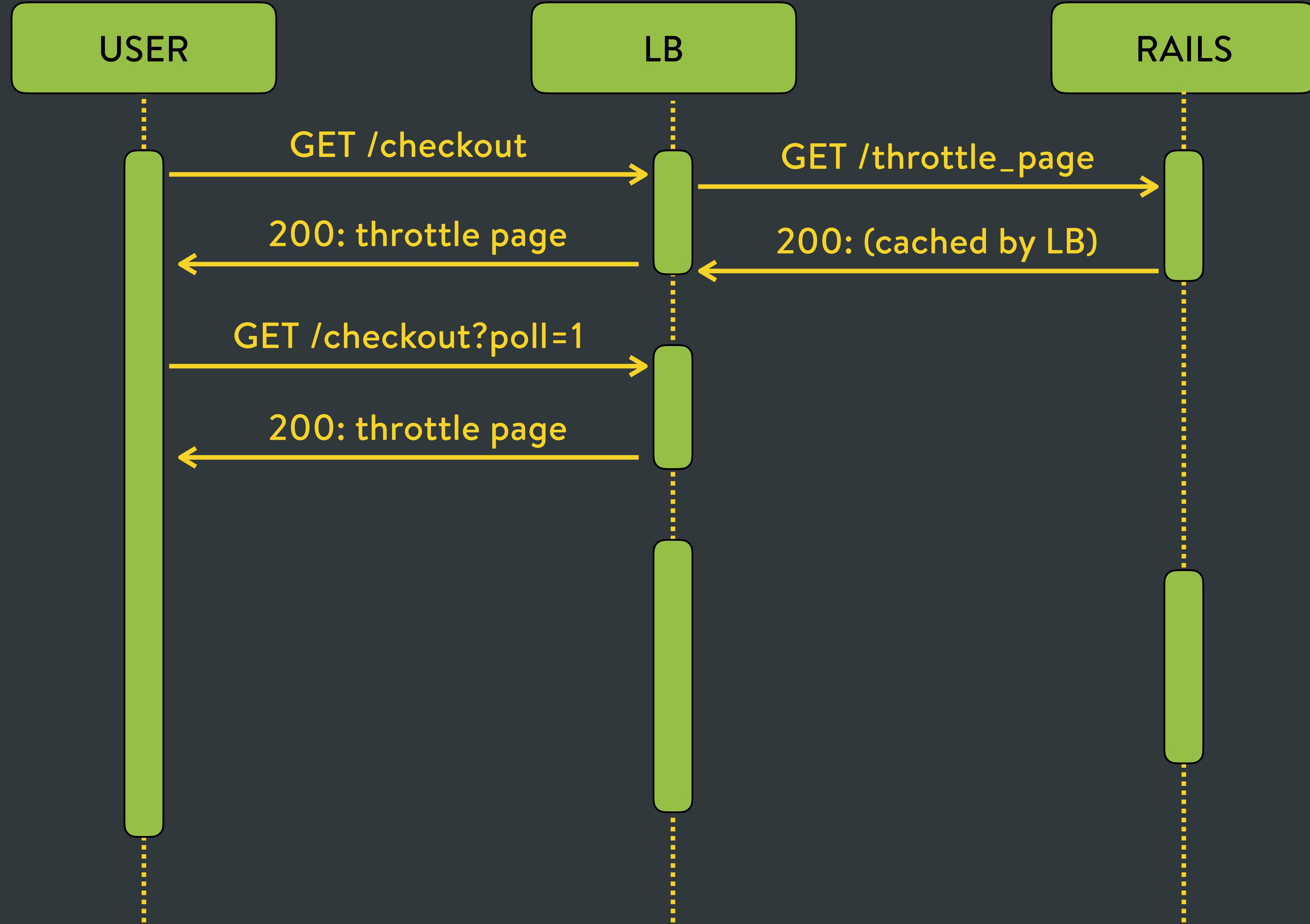
BUT THERE'S SO MUCH DEMAND

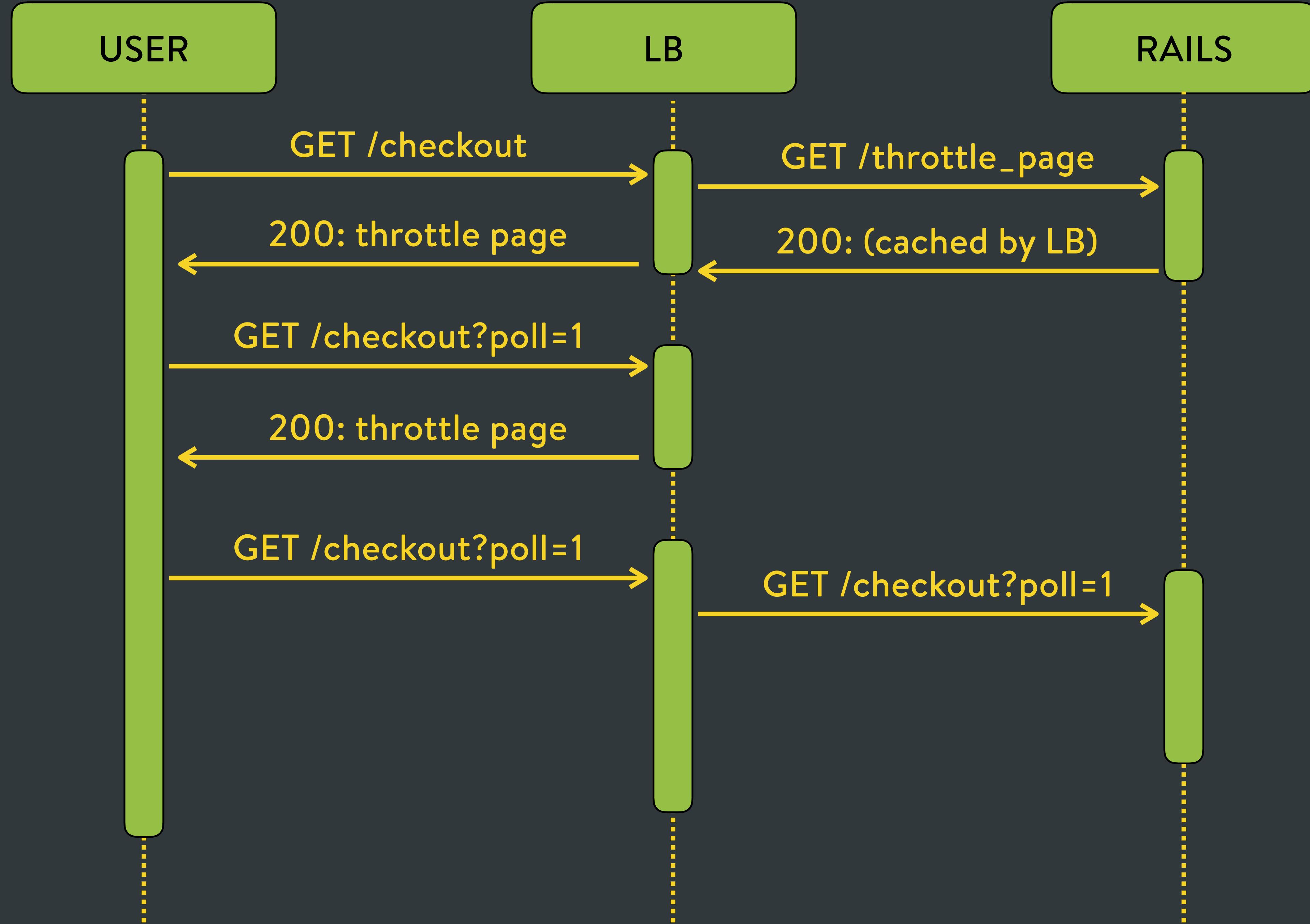
WE'RE TRYING TO GET YOU TO THE CHECKOUT. WHEN A SPOT OPENS UP,
WE'LL AUTOMATICALLY REDIRECT YOU.
DO NOT REFRESH OR YOU'LL LOSE YOUR SPOT.

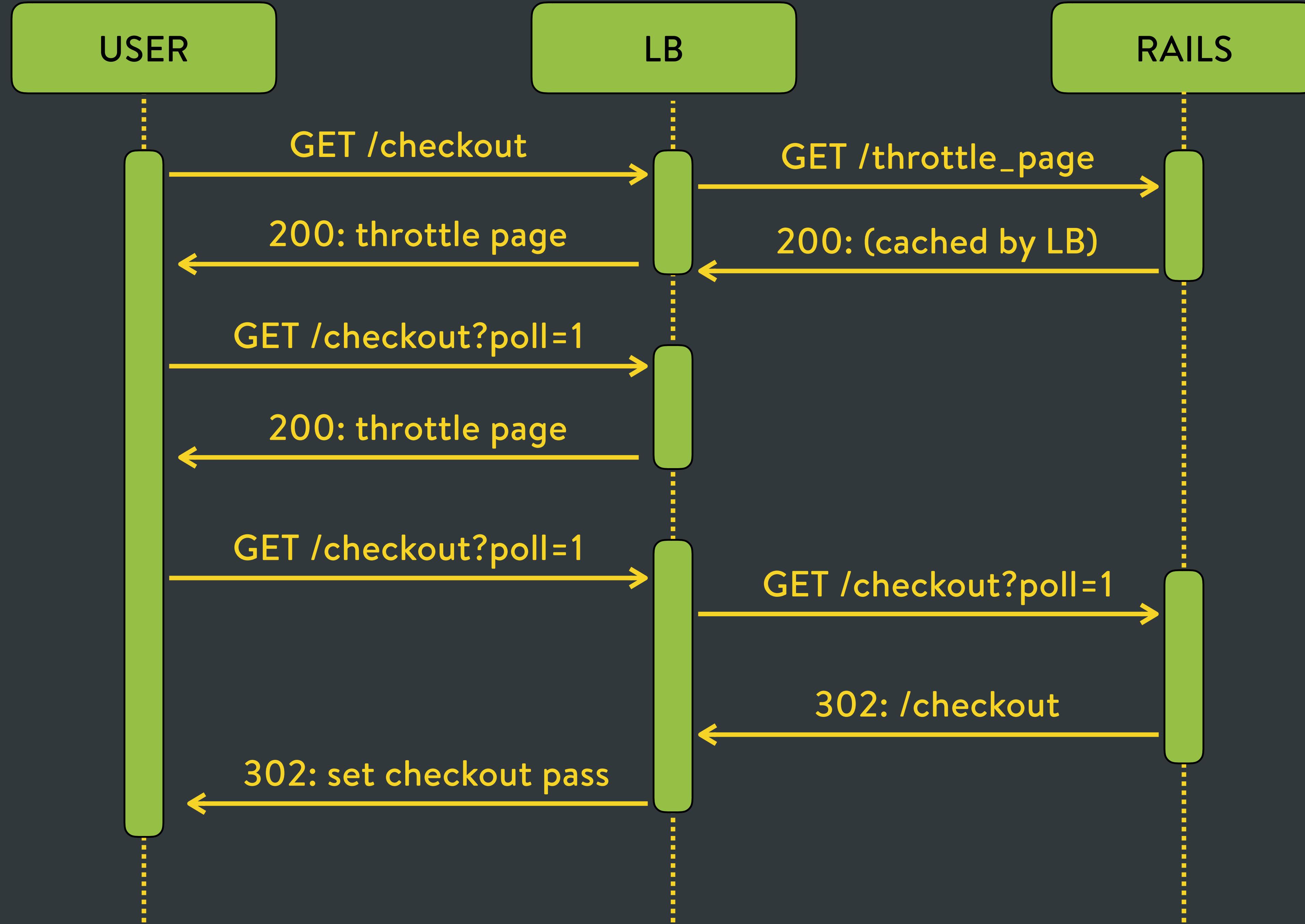












1. Right Tool
2. Heat Shield
3. Order out of Chaos

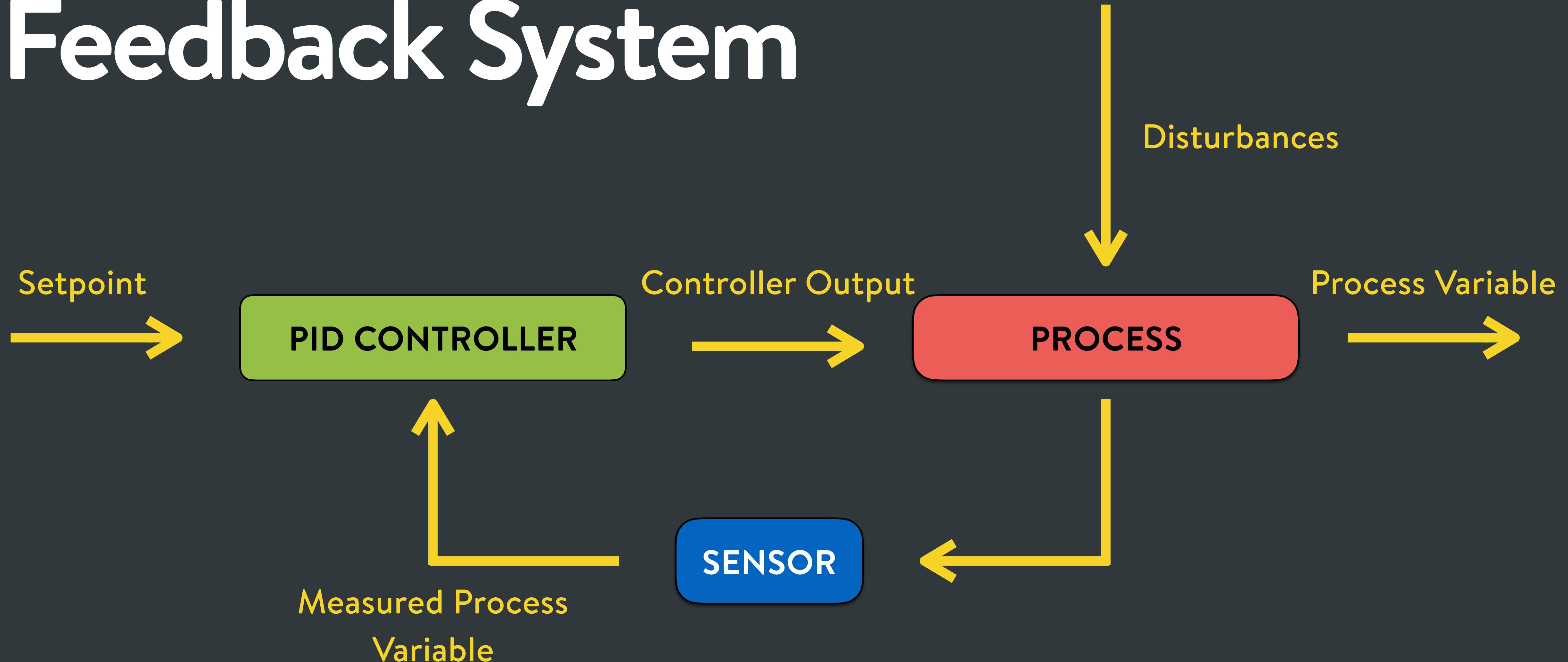




Stateless* fair queueing

* - Almost Stateless

Feedback System

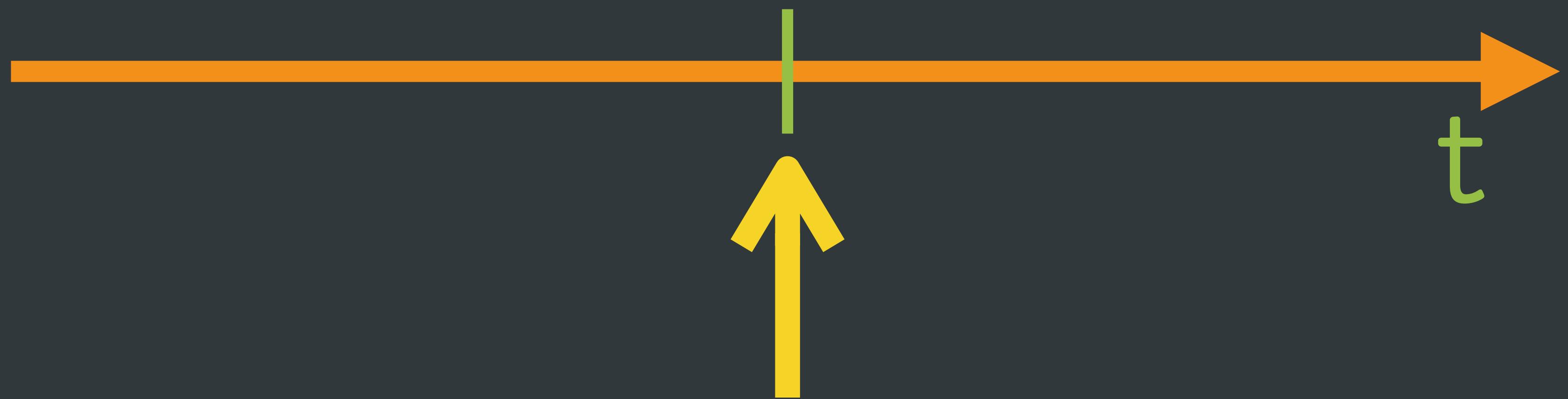


Stateless fair queueing



Timeline of timestamp in cookie

Stateless fair queueing



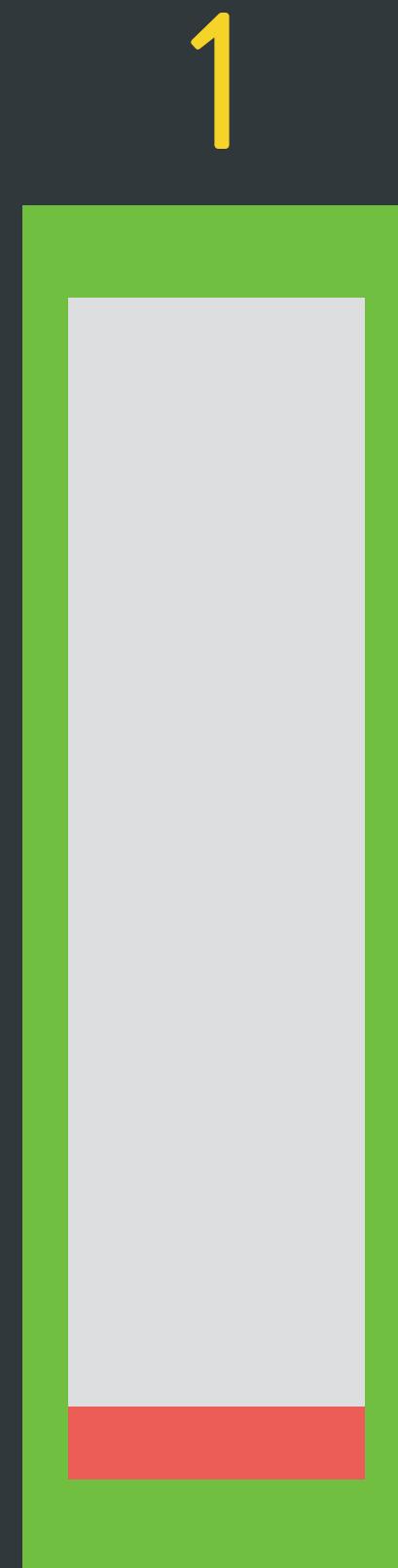
Lag delimiter

Stateless fair queueing



Stateless fair queueing

Bucket of high priority requests (max 16) →



Stateless fair queueing

1

high priority



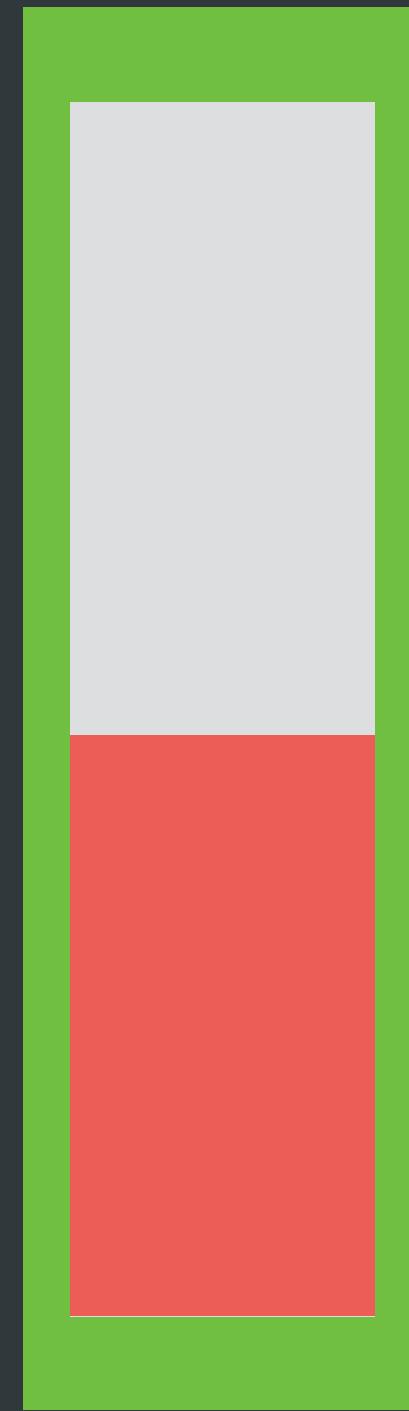
Stateless Fair queueing

16



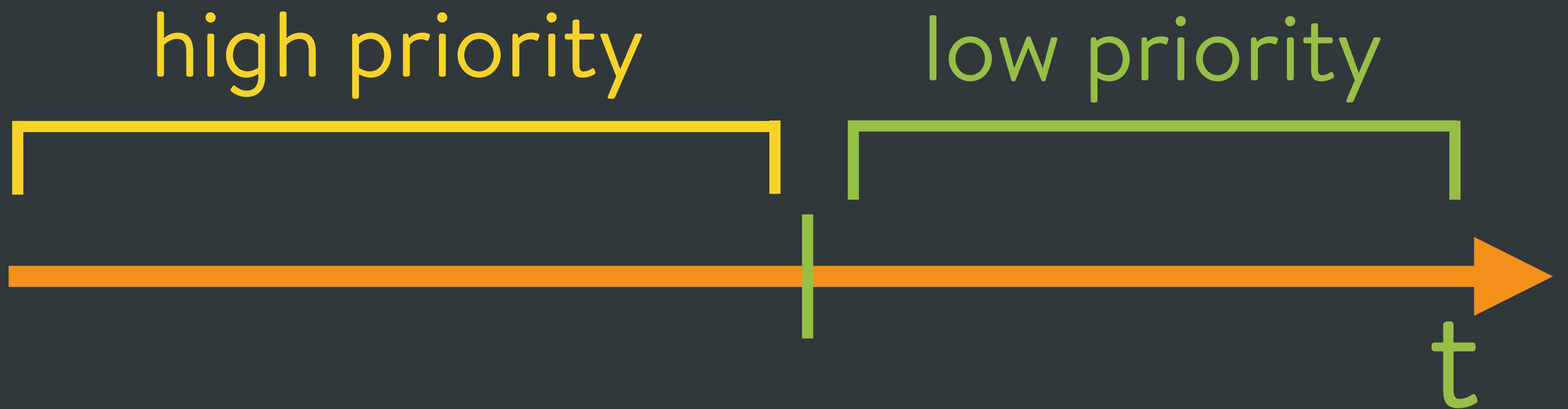
Stateless Fair queueing

8

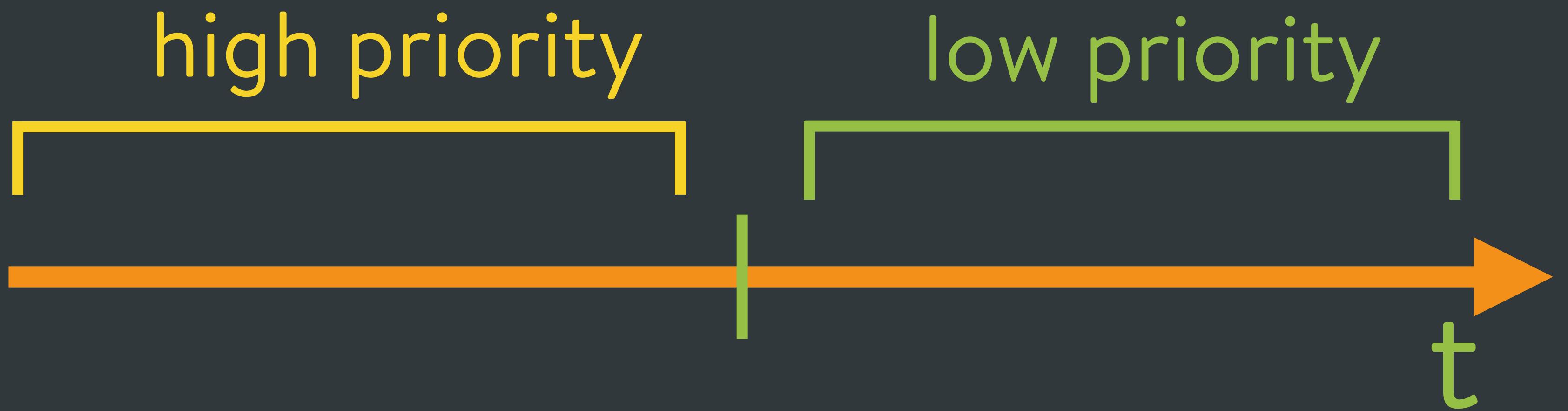


Stateless Fair queueing

12



Stateless Fair queueing



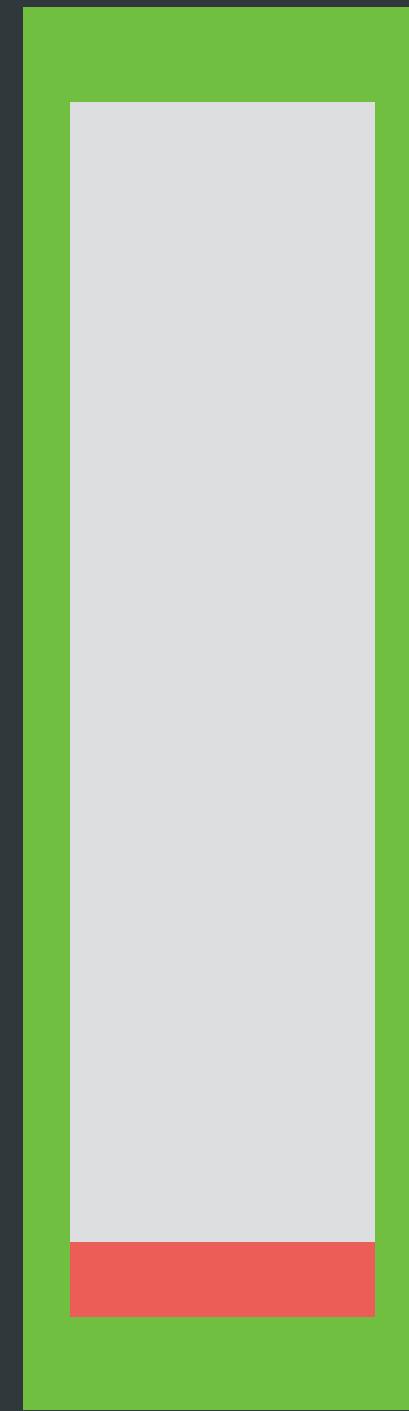
10



Stateless fair queueing

1

high priority



But... Why?

16729

Reputation

Flash Sales Payments

Payments Gaming

Gaming Tweets

Nginx

Throttling Queueing

We're hiring!



Thanks!

Follow me on Twitter @EmilStolarsky

