Delightful UX for Distributed Systems

MICHAEL NORTH
Levanto Financial
Erlang User Conference - September 8, 2016

Hello!

@MichaelLNorth

Levanto Financial

The Atlantic

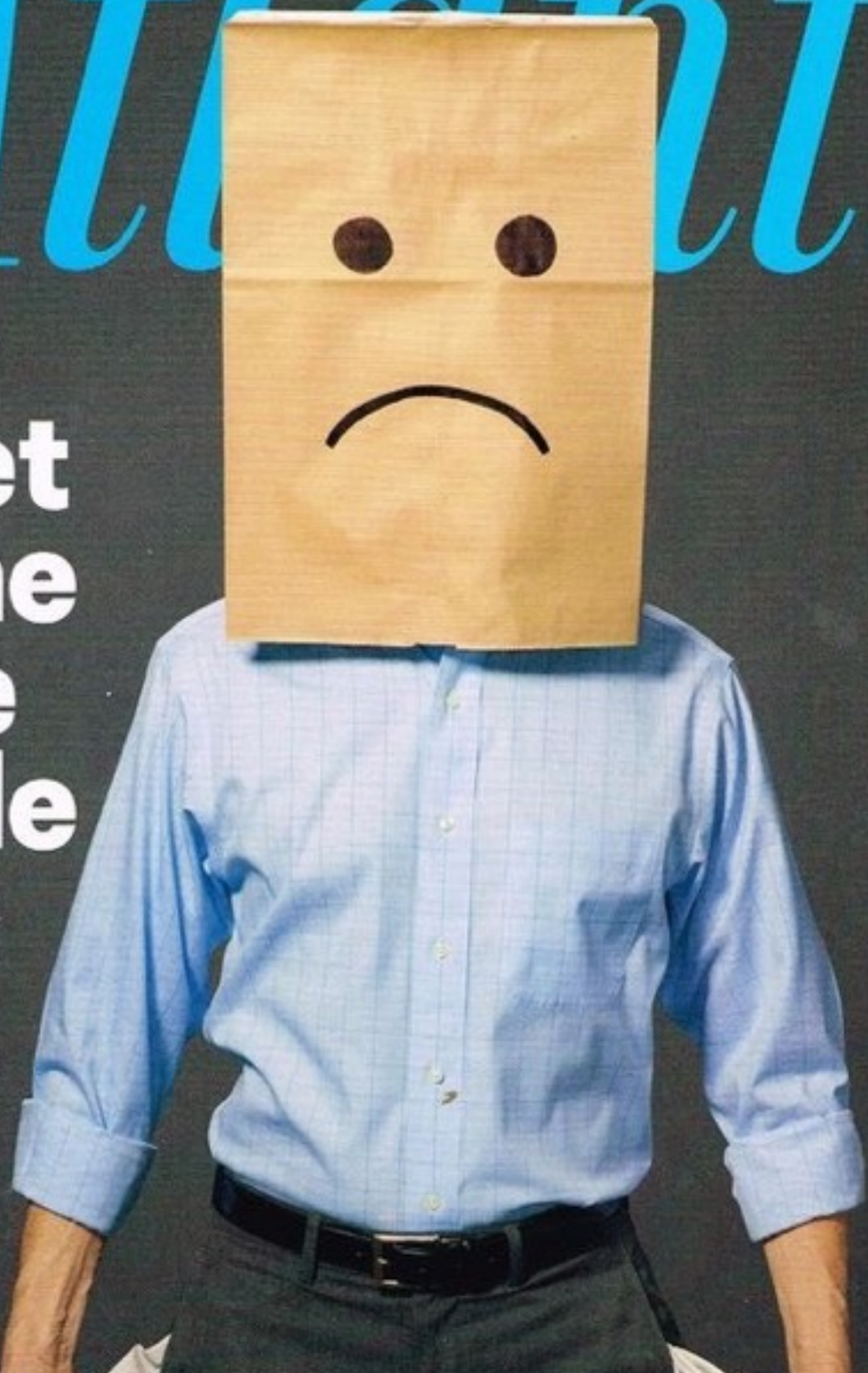
How Islam Created Europe
p. 22

The Right Way to Brag
p. 33

The Secret Shame of the Middle Class

Nearly half of Americans would have trouble finding $400 in a crisis. I'm one of them.

By NEAL GABLER



THE MONEY REPORT

Warren Buffett's Son Steps Up
p. 70

The Case for Loan Sharks
p. 64

FINDING EMERGENCY CASH

America's secret problem

48% Households struggle to cover $400 crisis

35% High-earning households struggle to find $1000

Technology Falls Short

4.7 Budgeting apps and services tried before us

14 Bank, credit, insurance, loan and bill-payment accounts

$270K Average household annual income

Technology Falls Short

Technology

Technology

Technology

+

Experts

Transportation

BOATBOUND
UBER
BlaBlaCar
RelayRides
JustPark
Side·car
zimride

Finance

Zopa
PROSPER
TransferWise
LendingClub

Consumer goods

RENT THE RUNWAY
TRADESY
yerdle
GEARCOMMONS
Girl Meets Dress.com
NeighborGoods
thredUP
pley

Space

HomeAway
roomorama
LiQUIDSPACE
SharedEarth.com
CouchSurfing
airbnb
wework
pivotdesk

Personal services

POSTMATES
TaskRabbit
Instacart
Bellhops

Professional services

fiverr
Wonolo
Elance | oDesk
crowdSPRING
HourlyNerd
BRAIN POWER BY THE HOUR

Your Dev Environment is a Scumbag Liar

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~~Your Dev Environment is a Scumbag Liar~~

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FFS, it doesn't need to be perfect

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~~FFS, it doesn't need to be perfect~~

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Build great UX today!

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low latency

always available

fault tolerant

easy to fix

auto conflict-resolving

We all work on UX

scalable

collaboration-oriented

quick to release

consistent

any device, any time

Unreliable

Trustworthy

Slow

Responsive

Approximate

Clear

Think in terms of Distributed Systems

more give, less take

Print Page | Increase Font Size | Close

nab Internet Banking

NAB Internet Banking

You're using a browser that isn't supported for NAB Internet Banking. This can affect how Internet Banking looks and works. Our System Requirements list the browsers we support.

If you're using an older browser, an upgrade can increase your chances of blocking viruses and phishing websites. This means that the information you use online, including your Internet Banking details, is safer.

We recommend that you download the latest version of either Internet Explorer or Firefox, and then come back to Internet Banking.

Microsoft Internet Explorer

Get Firefox

Michael Overell @mboverell · 25 Oct 2009

Chrome not supported by NAB. Ha - welc[illegible]to 2009. Love the IE logo!

2 1

more give, less take

Print Page | Increase Font Size | Close

nab

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Get Firefox

Michael Overell
@mboverell

Follow

Chrome not supported by NAB. ha - welcome to 2015. Love the IE logo!

2:56 PM - 25 Oct 2015

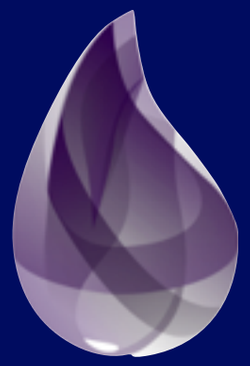
2 1

elixir

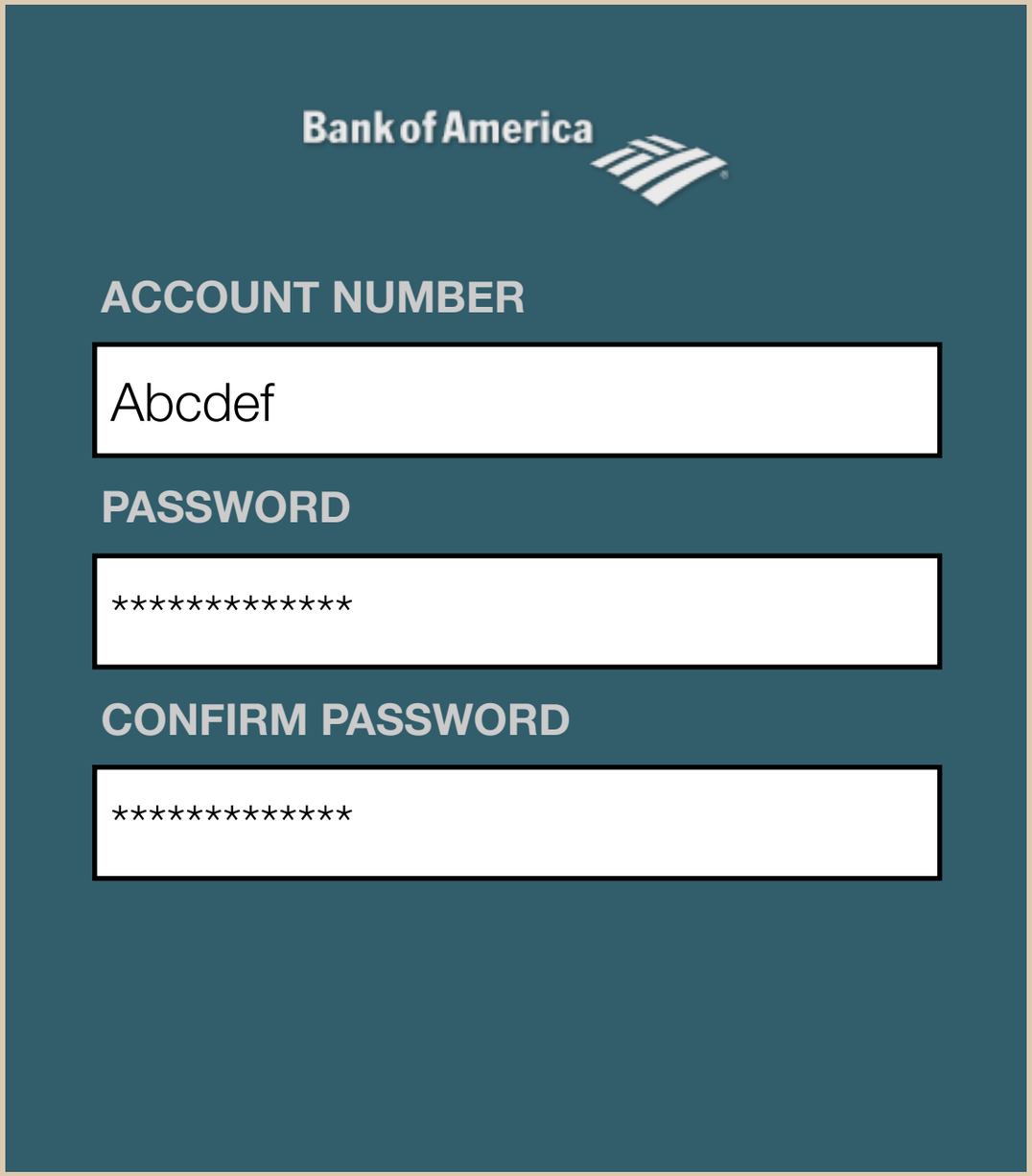
erlang for hipsters

ember
Phoenix Framework

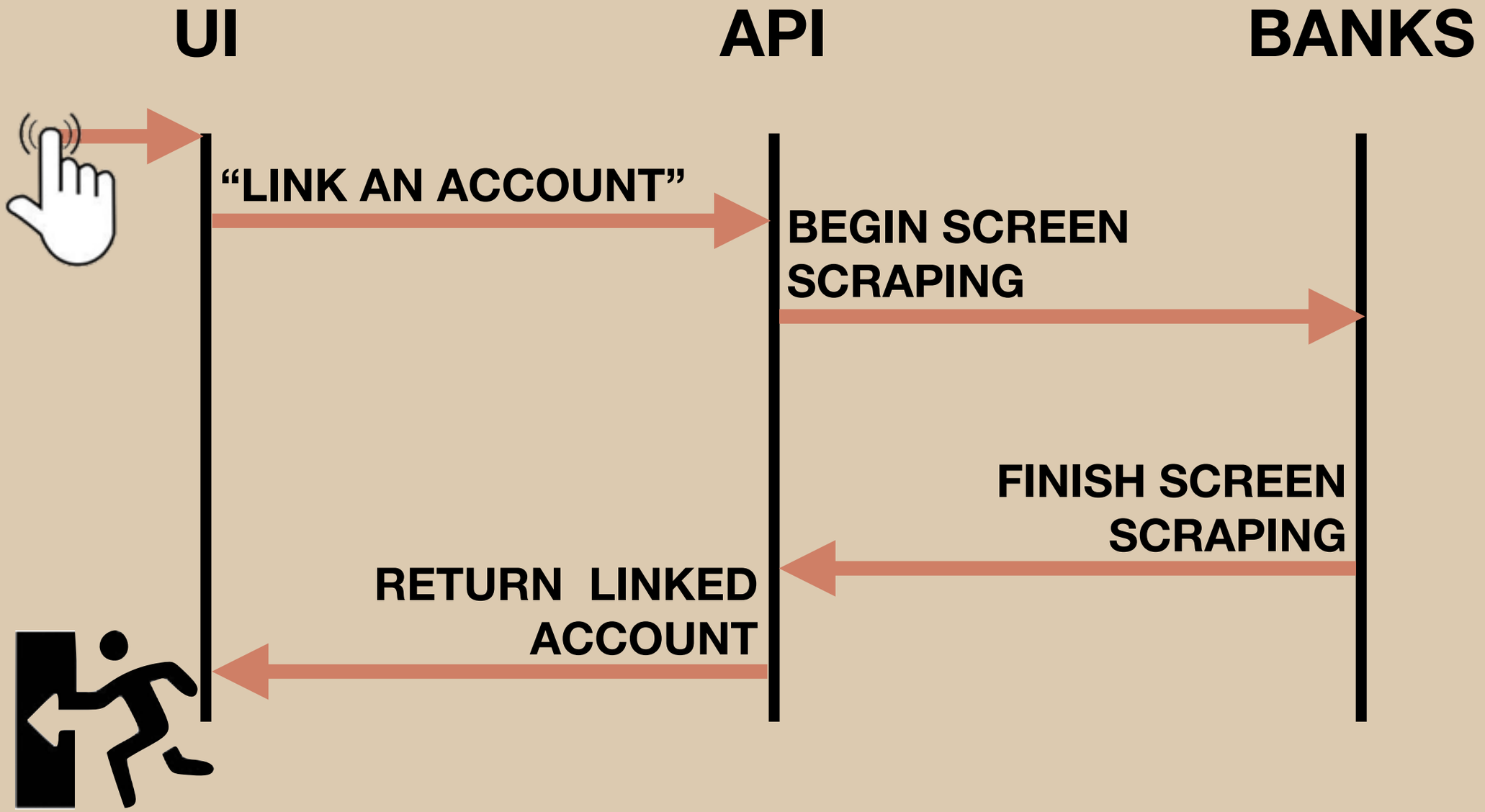
JS

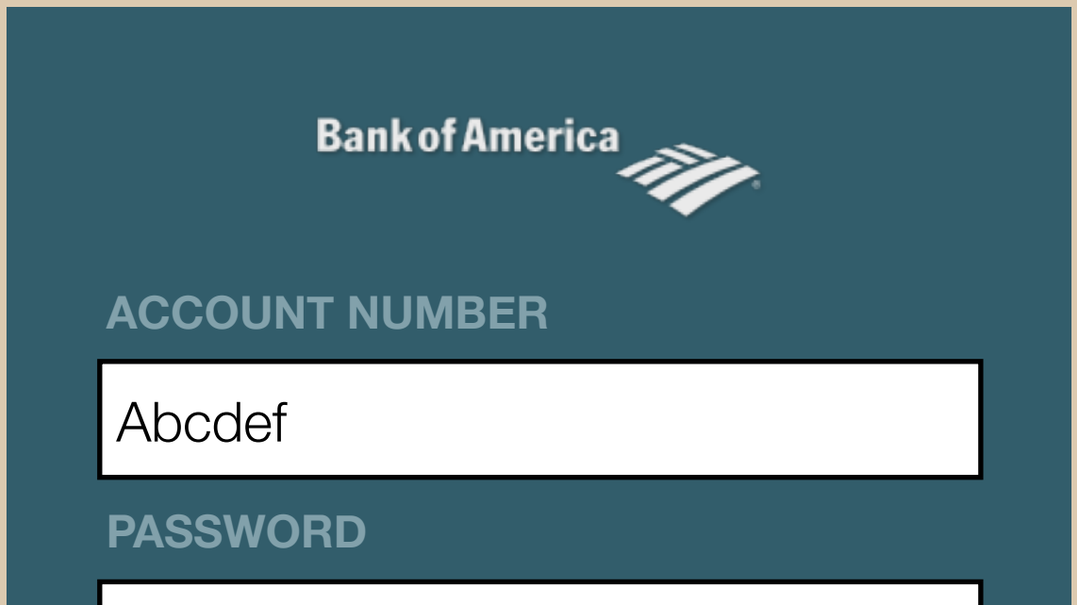


Connect a Bank Account

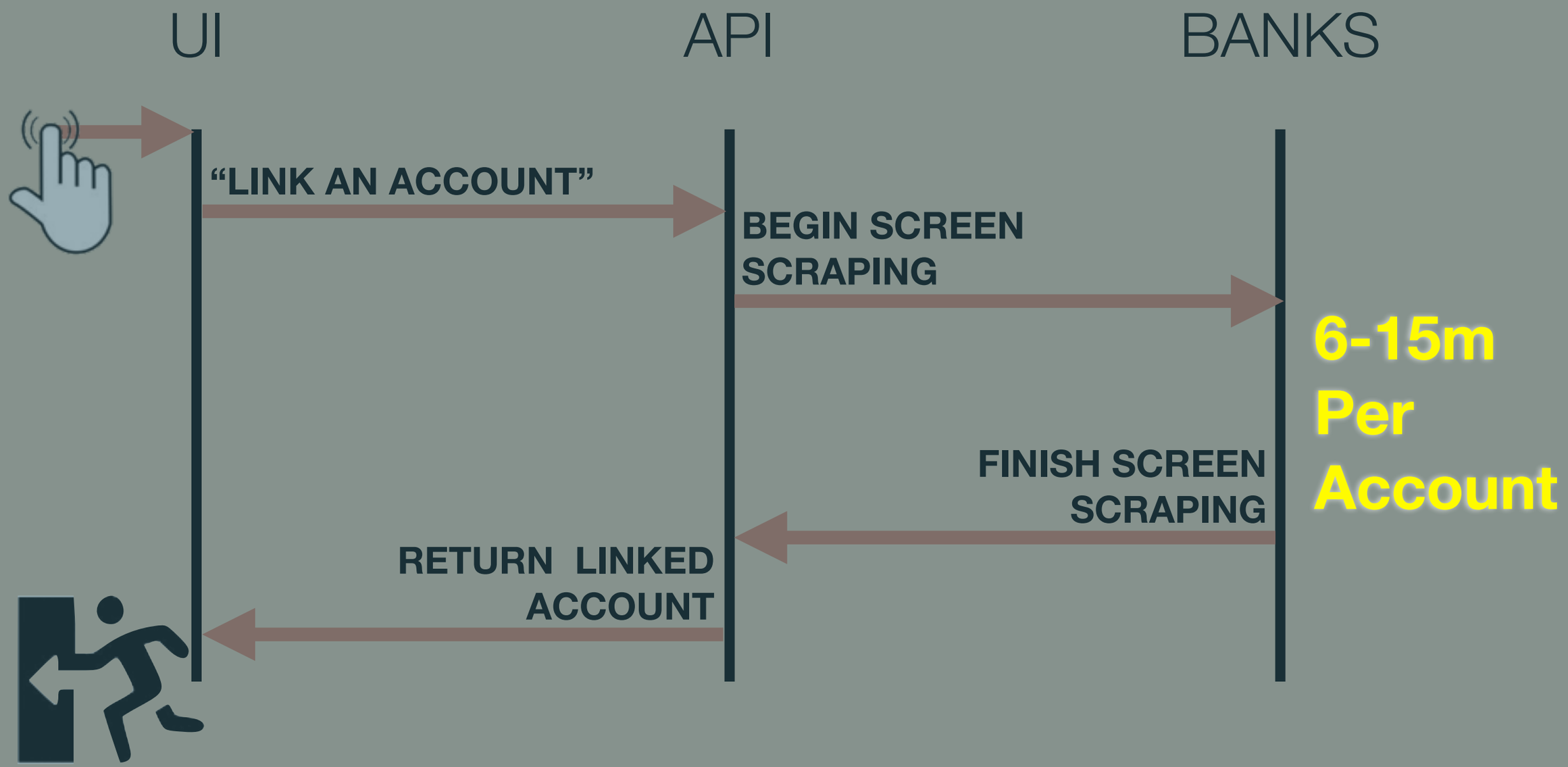


Long-running stuff
UNAVOIDABLY TIME-CONSUMING TASKS


UI
API
BANKS
“LINK AN ACCOUNT”
BEGIN SCREEN SCRAPING
FINISH SCREEN SCRAPING
RETURN LINKED ACCOUNT


Bank of America
ACCOUNT NUMBER
Abcdef
PASSWORD

1¼ HOURS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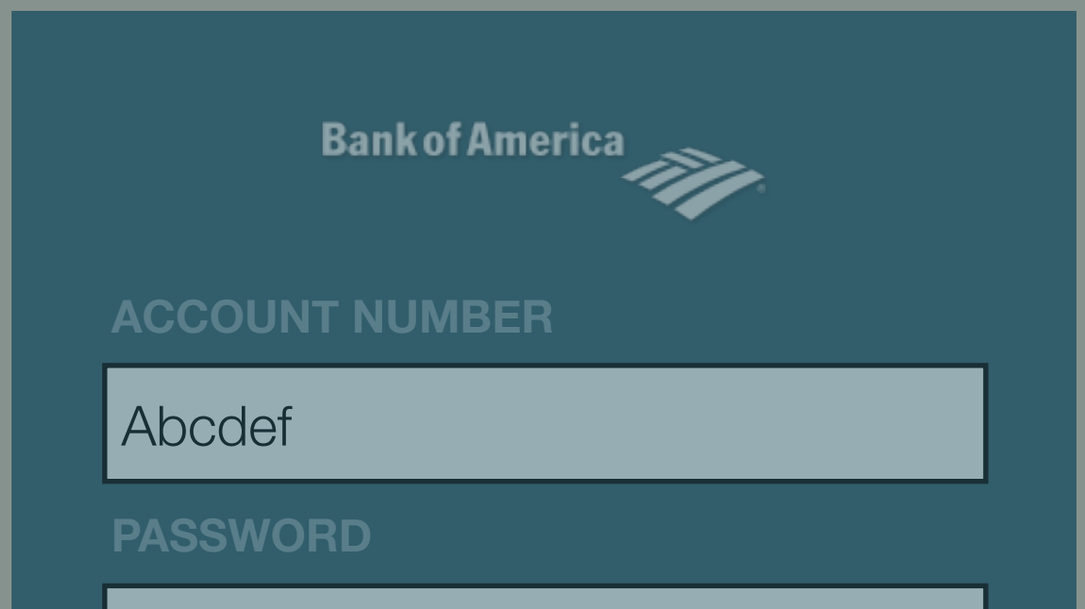
6-15m Per Account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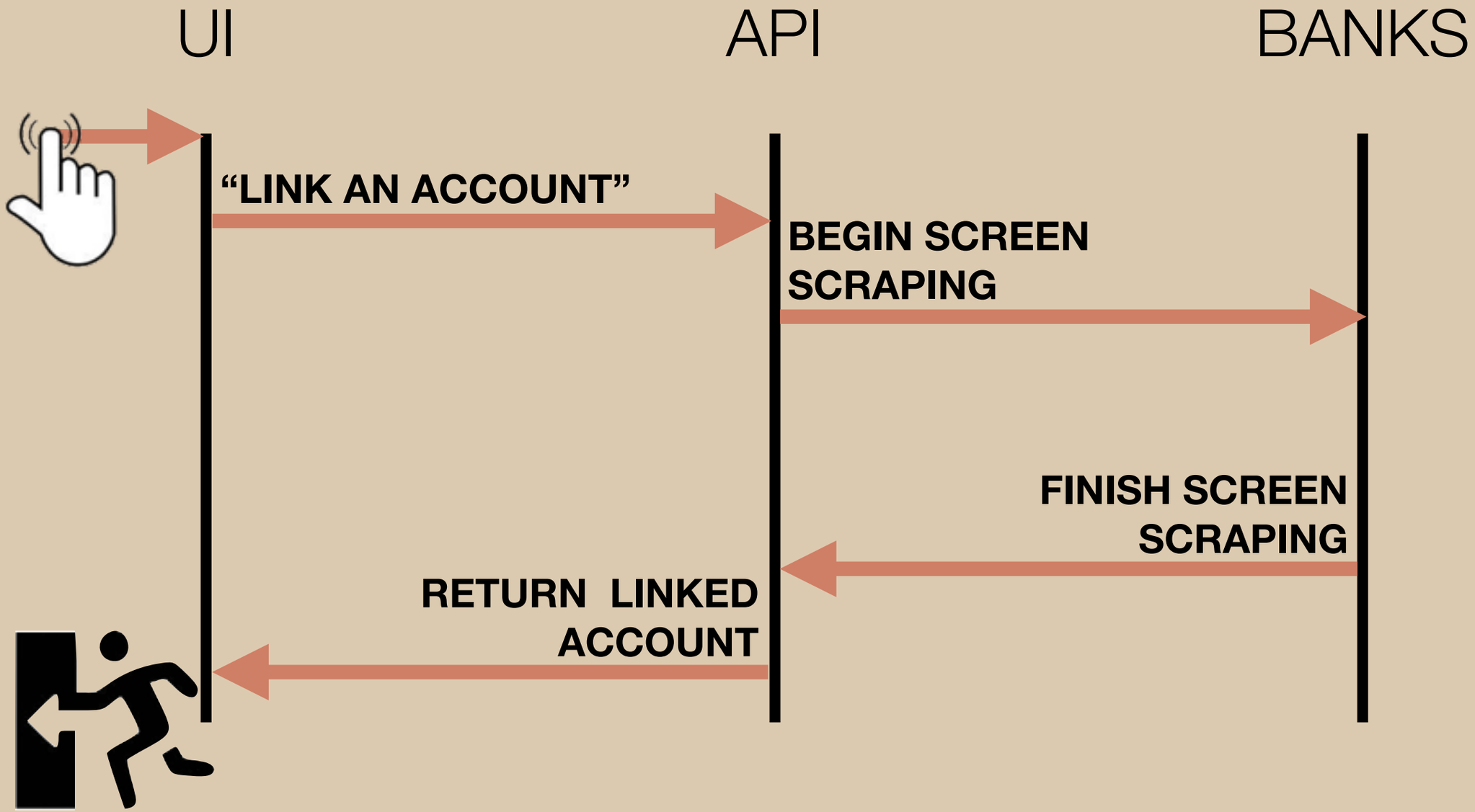
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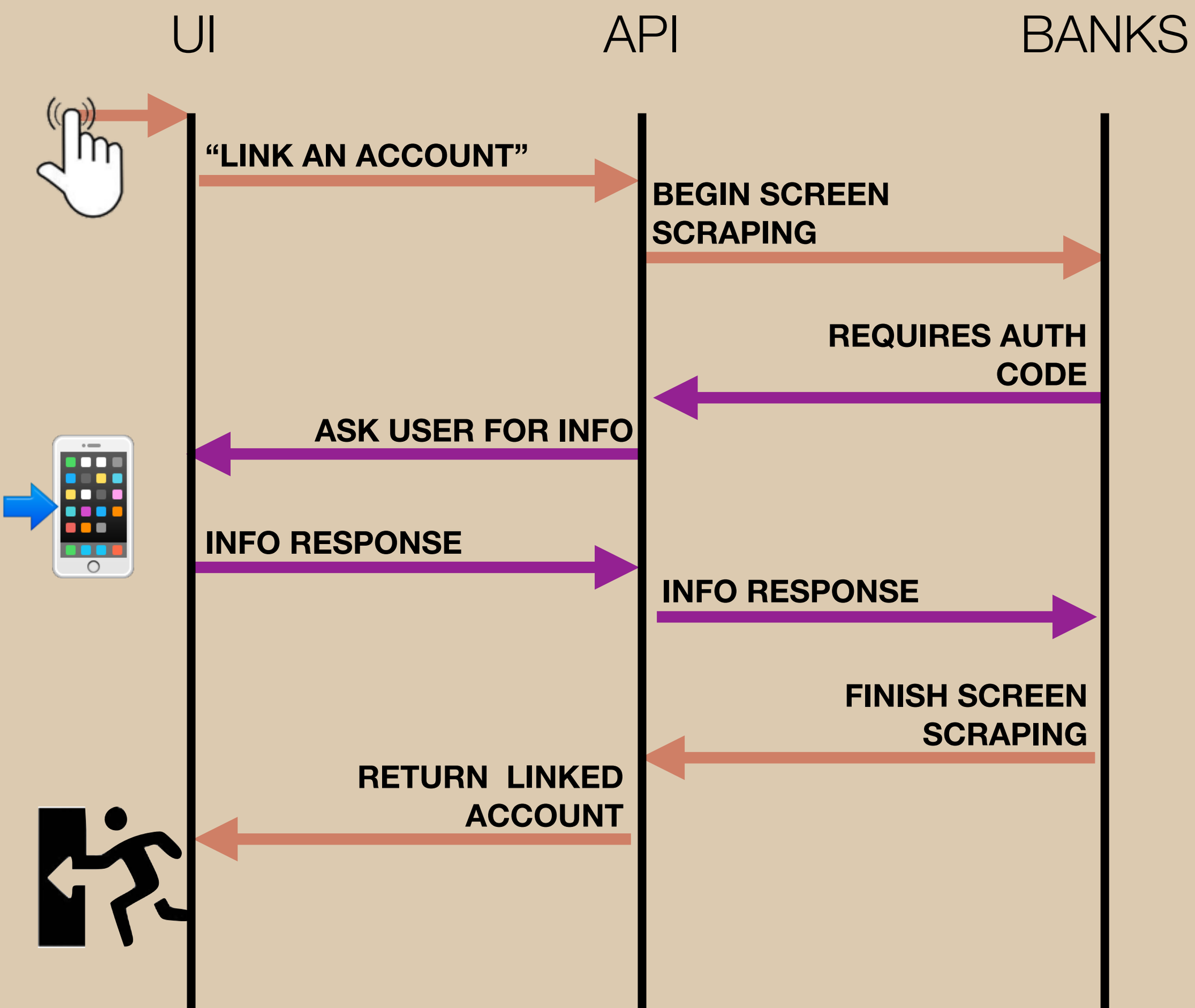
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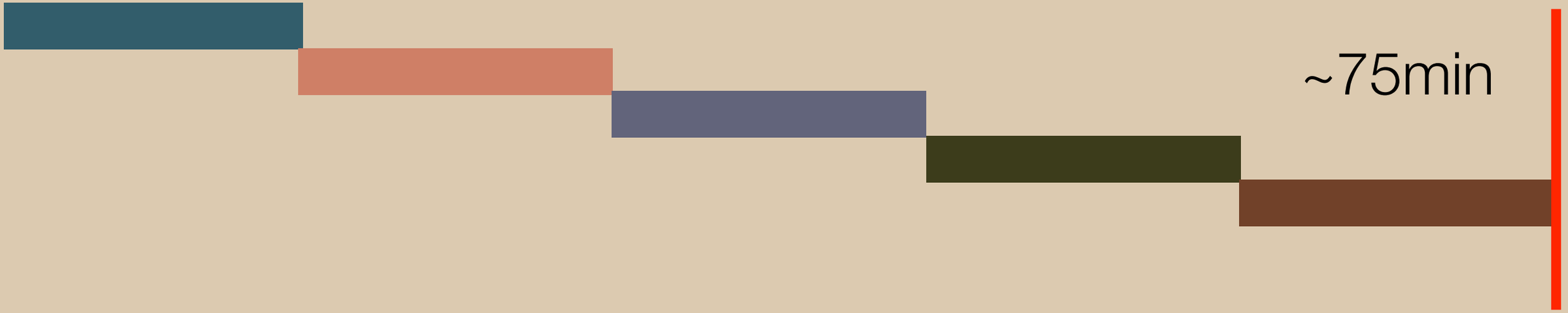
BANKS
“LINK AN ACCOUNT”
BEGIN SCREEN SCRAPING
REQUIRES AUTH CODE
ASK USER FOR INFO
INFO RESPONSE
INFO RESPONSE
FINISH SCREEN SCRAPING
RETURN LINKED ACCOUNT



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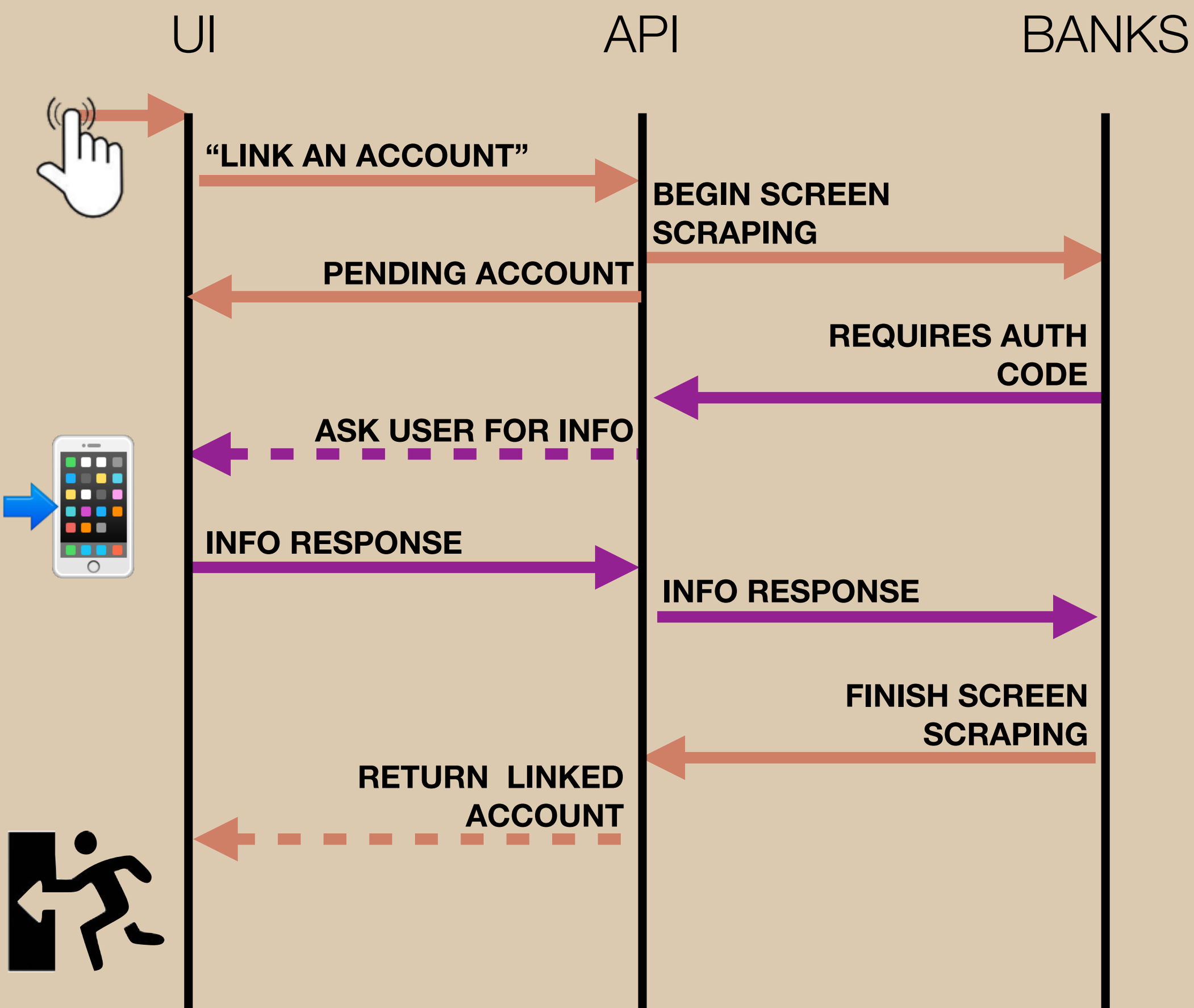
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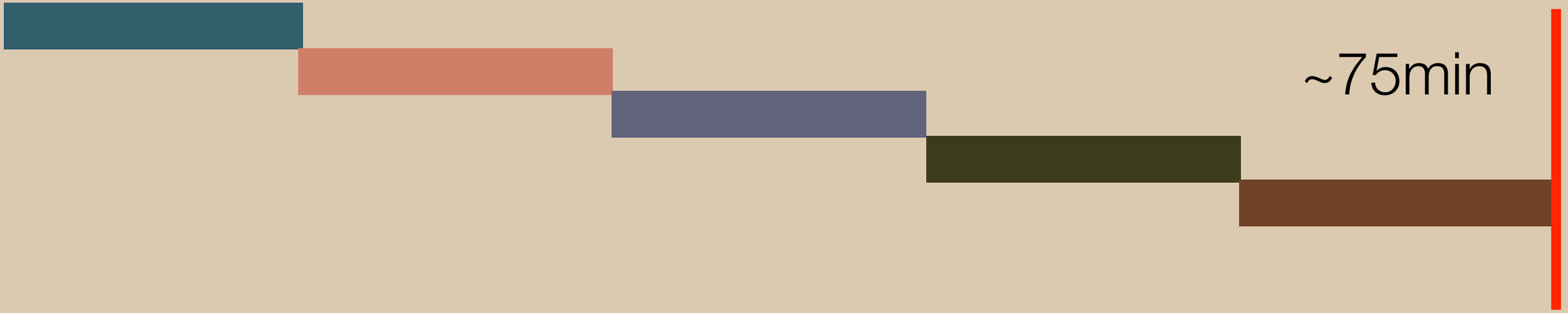

Bank of America

ACCOUNT NUMBER

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PASSWORD

1¼ HOURS

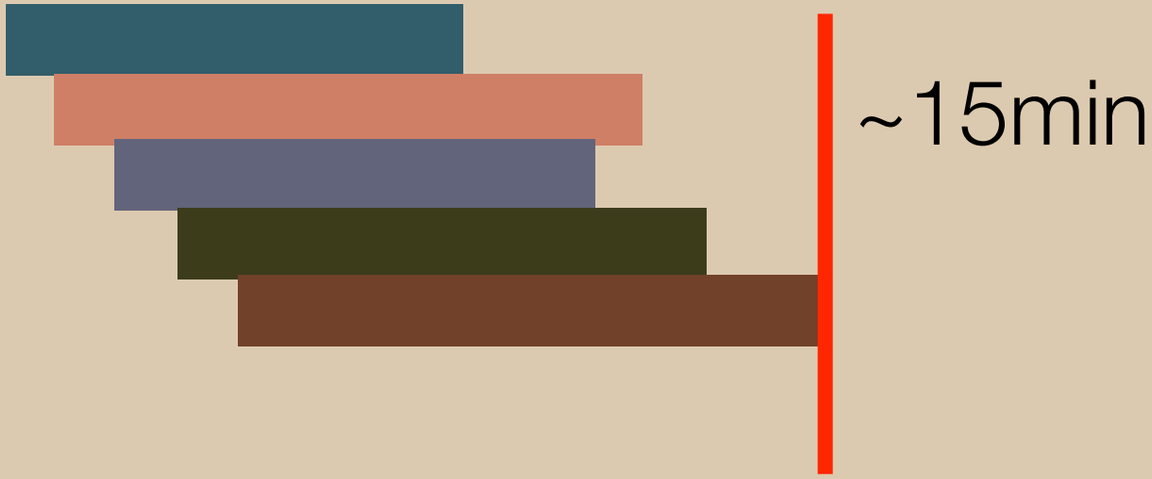
15 MINUTES

Bank of America

ACCOUNT NUMBER

Abcdef

PASSWORD



Bank of America

ACCOUNT NUMBER

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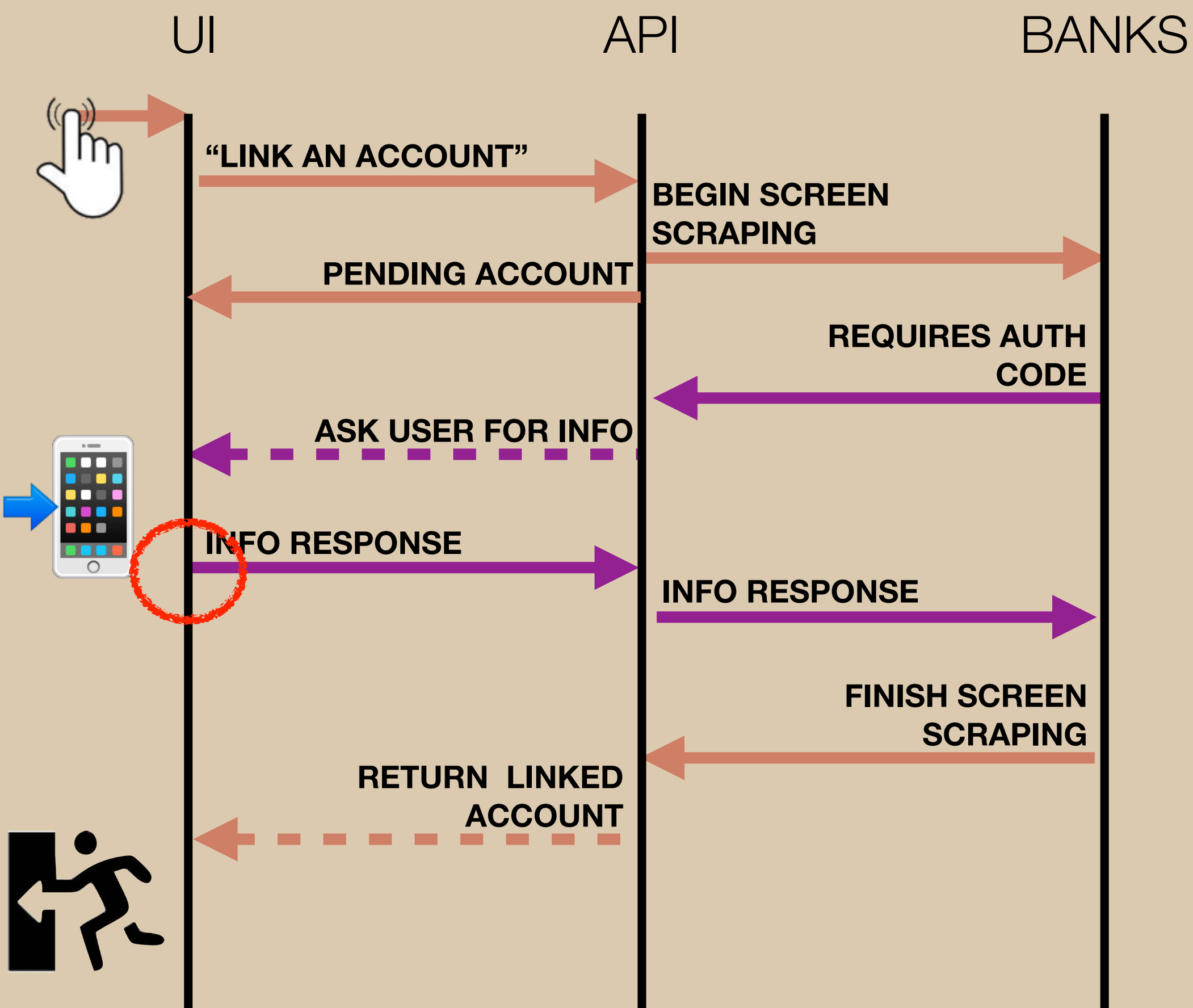
PASSWORD

We Can Do Better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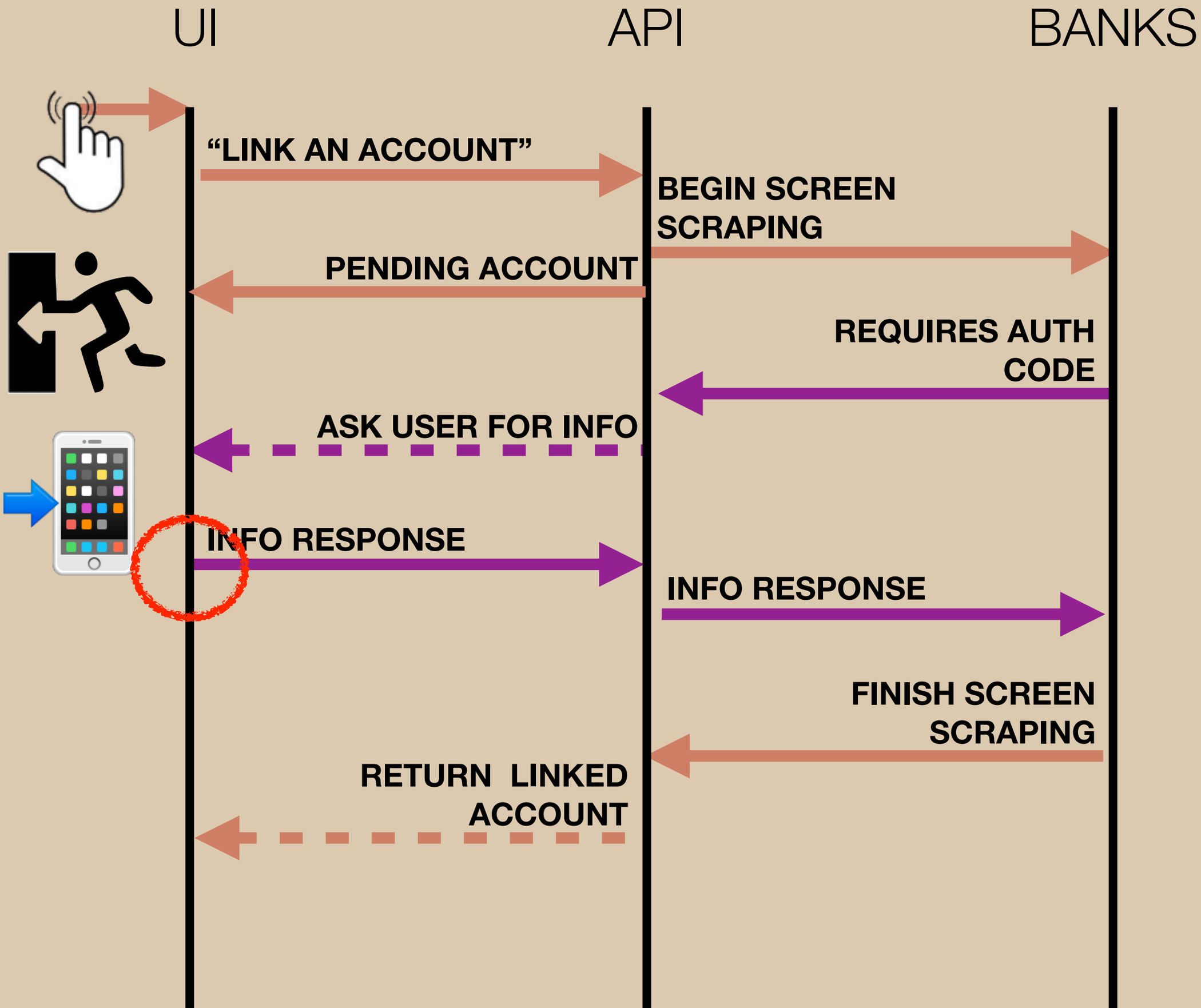
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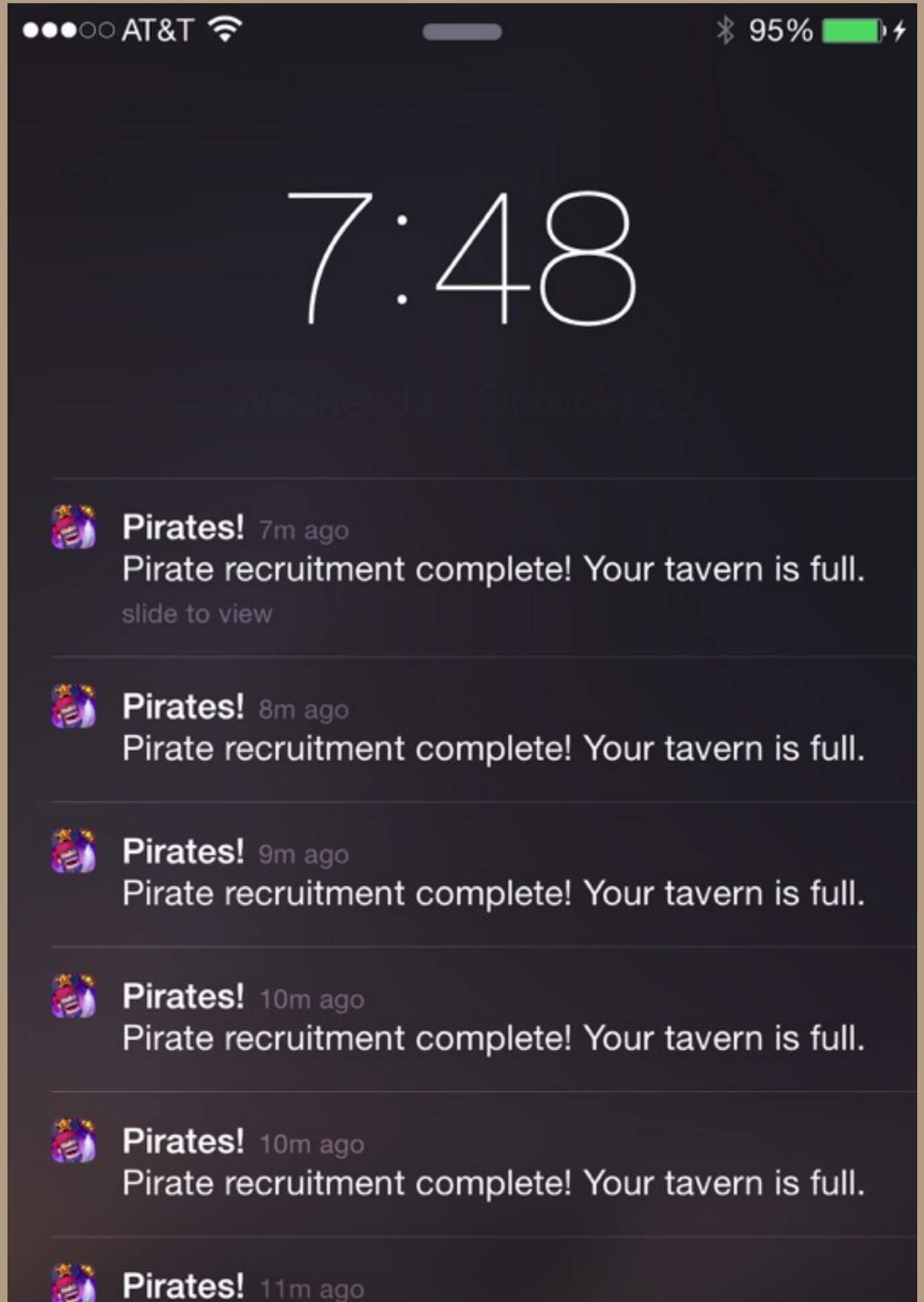
Interruptible Flow

BRINGING THE USER BACK IN


AT&T
95%
7:48
Wednesday, October 22
Pirates! 7m ago
Pirate recruitment complete! Your tavern is full.
slide to view
Pirates! 8m ago
Pirate recruitment complete! Your tavern is full.
Pirates! 9m ago
Pirate recruitment complete! Your tavern is full.
Pirates! 10m ago
Pirate recruitment complete! Your tavern is full.
Pirates! 10m ago
Pirate recruitment complete! Your tavern is full.
Pirates! 11m ago

Notification Delivery

phoenix presence
browser events

In app notification

3m

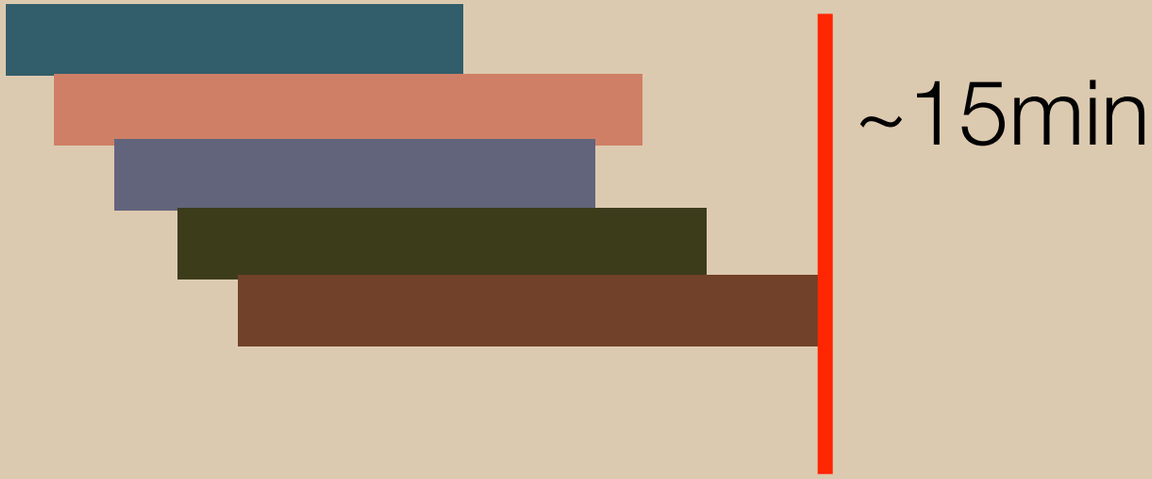
blocking modal

Push notification

7m

pixel

Email



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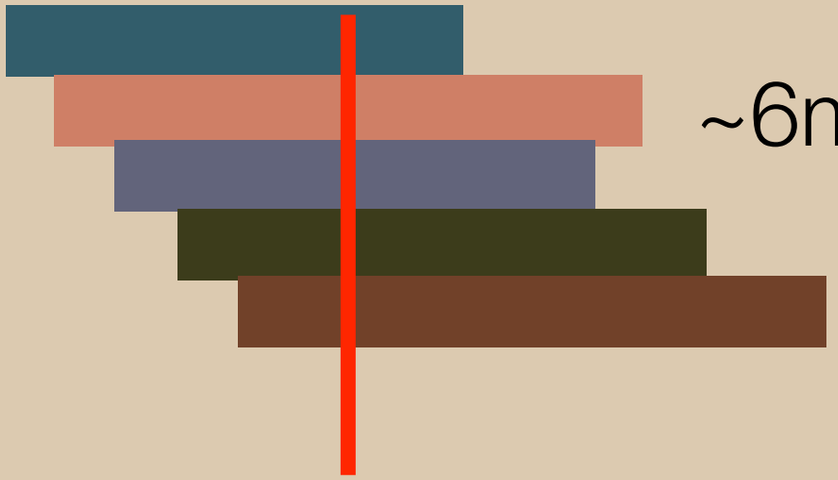

~6min

Bank of America

ACCOUNT NUMBER

Abcdef

PASSWORD

Push to Client:

Notification

IN-APP NOTIFICATION MESSAGE

Invalidate

EVICT RECORD(S) FROM THE STORE AND RE-FETCH

GatherForm

GLOBAL DIALOG, WITH A DYNAMIC FORM TO FILL OUT

Clear

LOGOUT, DUMP LOCALSTORAGE, REBOOT

Depending on Unreliable Systems

MAXIMIZE INDEPENDENCE

BROWSER
API
BANKS

1. **Connect to new accounts, or other sites**

2. **Repair broken connections**

3. **Pull new transaction data**

1. **Connect to new accounts, or other sites**

AES-encrypted Queue

2. **Repair broken connections**

AES-encrypted Queue

3. **Pull new transaction data**

We'll live

1. **Connect to new accounts, or other sites**

AES-encrypted Queue

2. **Repair broken connections**

AES-encrypted Queue

3. **Pull new transaction data**

We’ll live, but let users know data is “frozen”

Transparency

We’re unable to retrieve bank account data, as of 11:45pm on Saturday.

BROWSER
API
BANKS

BROWSER

API

BANKS

BROWSER

API

BANKS

- Fetch records
- Search for banking institutions to connect
- Re-categorize transactions
- Create new “budgets”

- Fetch records

localStorage cache (except transactions)

- Search for banking institutions to connect

cache most popular 5% institutions (constitutes 95% of accounts)

- Re-categorize transactions

DISABLED

- Create new “budgets”

localStorage Queue

Transparency Again!

Going back online

- Assume everything has changed
  - Persist localStorage-queued records
  - Flush cached data from localStorage
    - But only when we establish valid connection with our API!
- Re-authorize via Channel

DELIGHTFUL UX FOR DISTRIBUTED SYSTEMS

Erlang USER CONFERENCE

Keep users in the loop
TRANSPARENCY

Loosely couple
RELIABILITY BREEDS TRUST

Limited offline support is ok
DON’T BE AFRAID TO DISABLE

Don’t wait for “perfect”
BUILD AMAZING UX TODAY