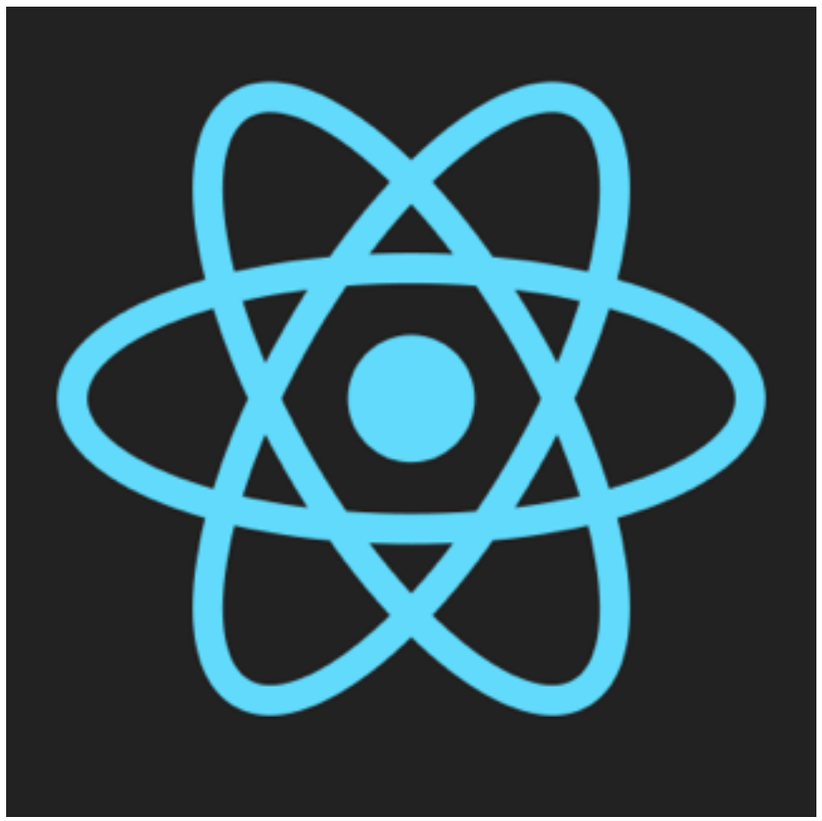
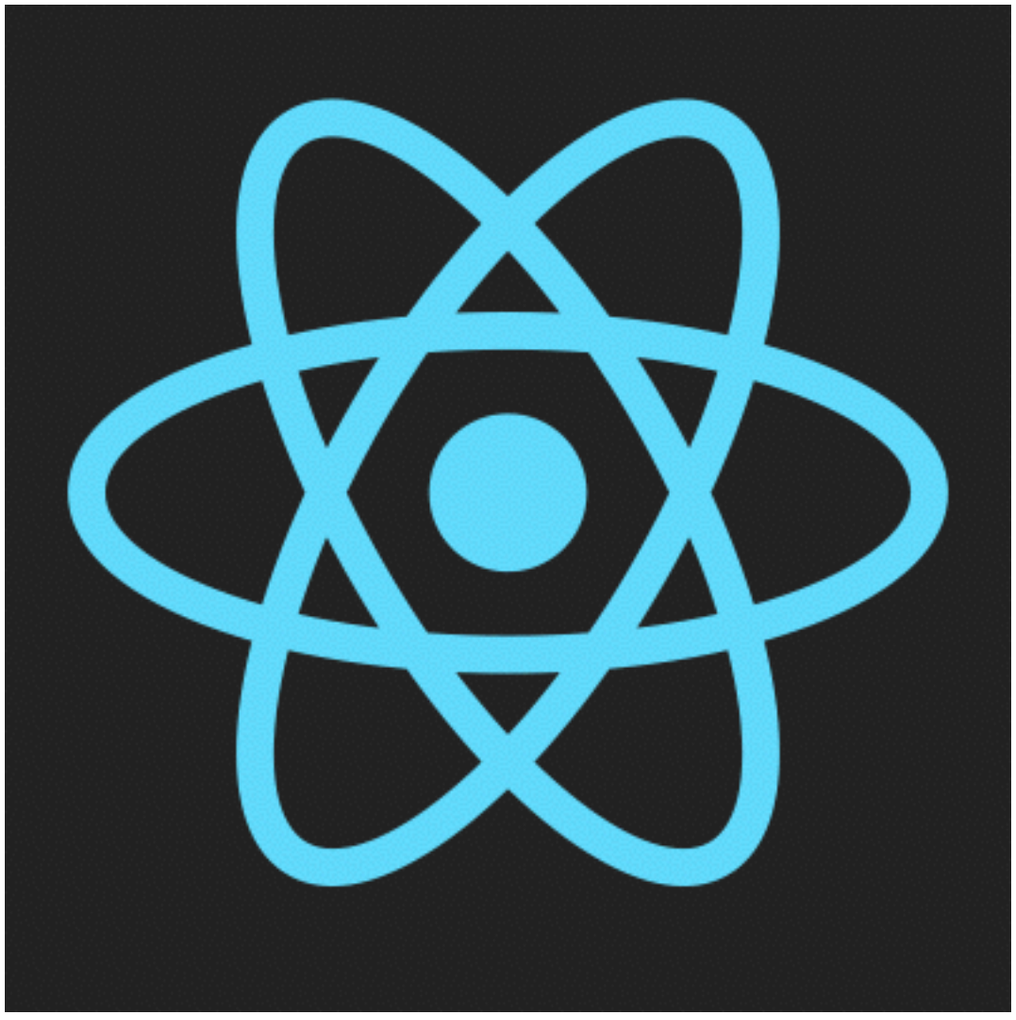
React



Üstün Özgür
@ustunozgur
ustunozgur.com

React.js

User Interface Library



History

JSConf May 2013

Open source

Ben Alman
@cowboy

Following

Facebook: Rethink established best practices™

RETWEETS
18

FAVORITES
18

12:40 AM - 30 May 2013

[–] **masyl** 24 points 1 year ago

For a split second I had to ask myself if it was april 1st.

It breaks so many conventions that this library is bound to get more hate then love!

I'm all for diversity, but this one sure smells bad.

[–] **Lokaltog** 85 points 1 year ago

Is it just me or does this look a bit messy and cumbersome to work with (and yet another syntax to learn)? What would some of the pros be by using this instead of e.g. Angular?

http://www.reddit.com/r/programming/comments/1fak87/react_facebooks_latest_javascript_client_library/

NETFLIX

Instagram

WhatsApp

airbnb

facebook

Flipboard

Atlassian HipChat

KHANACADEMY

sellercrowd

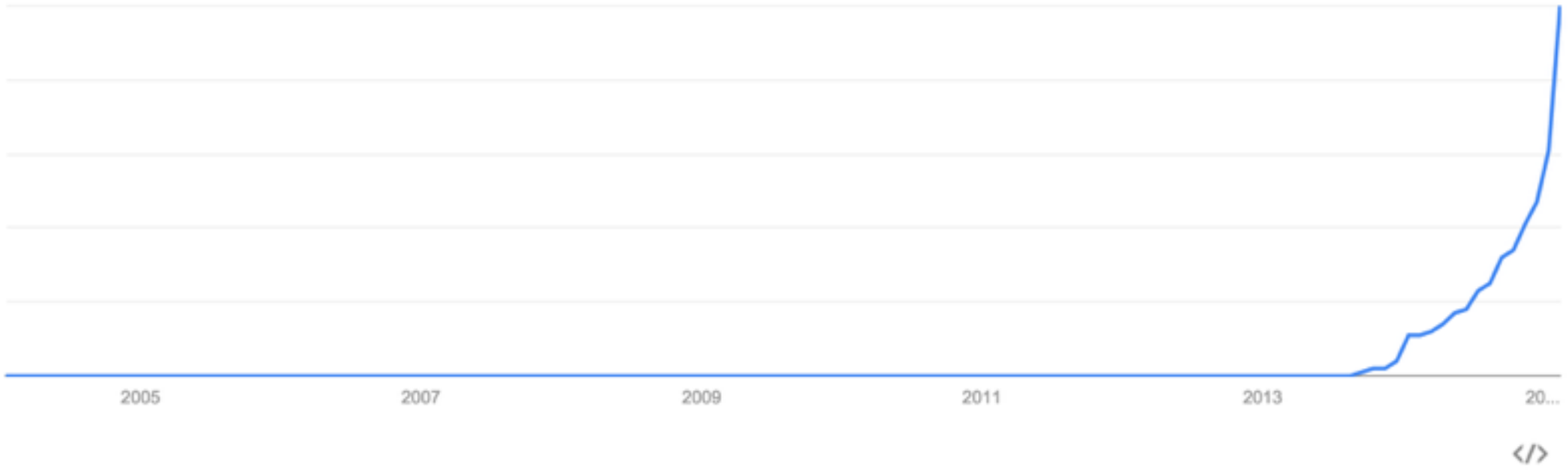
Compare Search terms

reactjs
Search term

+ Add term

Interest over time

News headlines Forecast



Compare Search terms

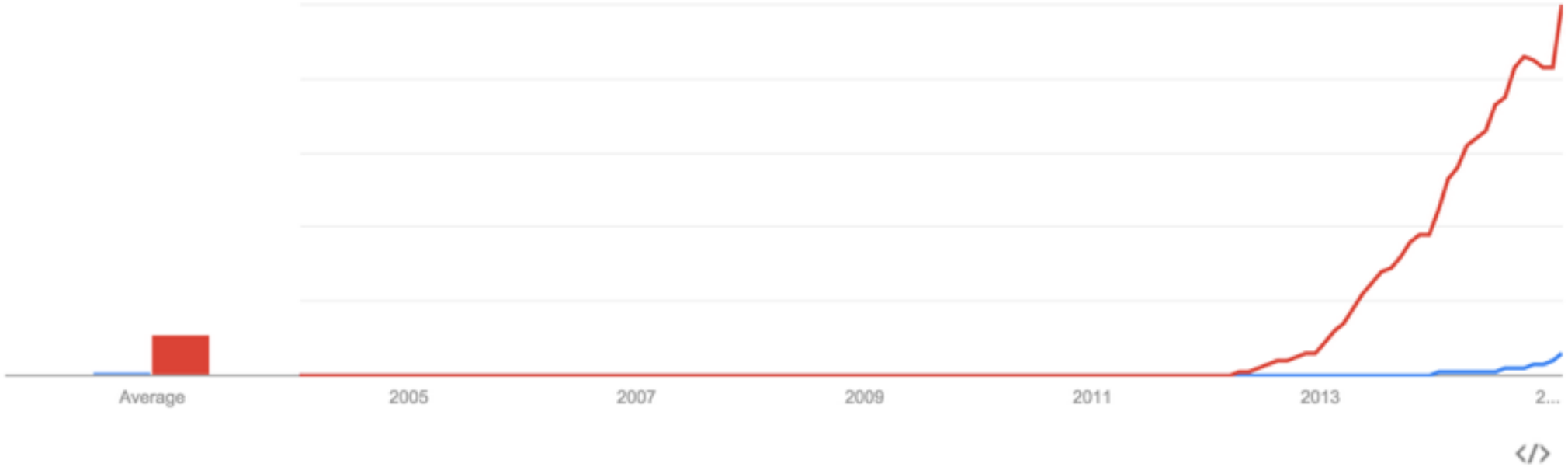
reactjs
Search term

angularjs
Search term

+ Add term

Interest over time

News headlines Forecast

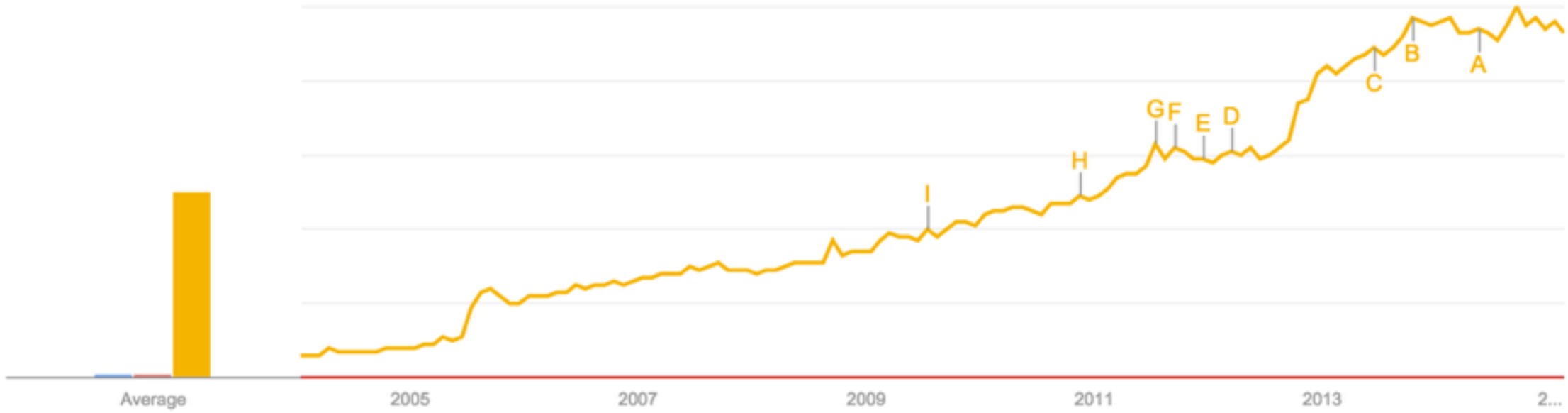


Compare Search terms

reactjs	angularjs	google	+ Add term
Search term	Search term	Search term	

Interest over time

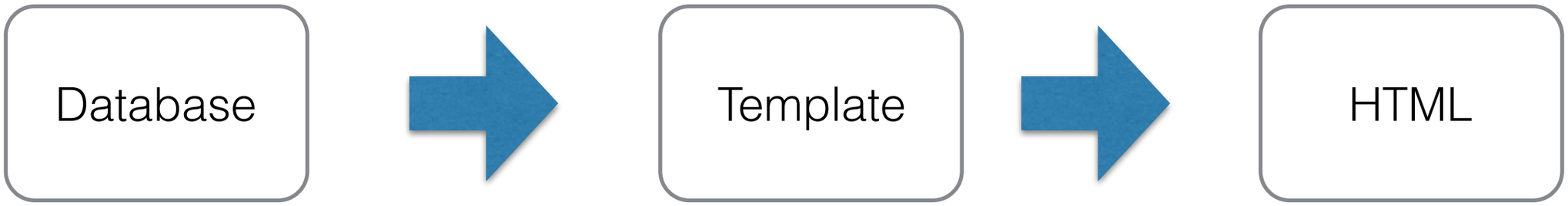
News headlines Forecast



Difficulties in Building User Interfaces

building large applications with data that changes over time, in a simple and fast manner

Server Side Interfaces



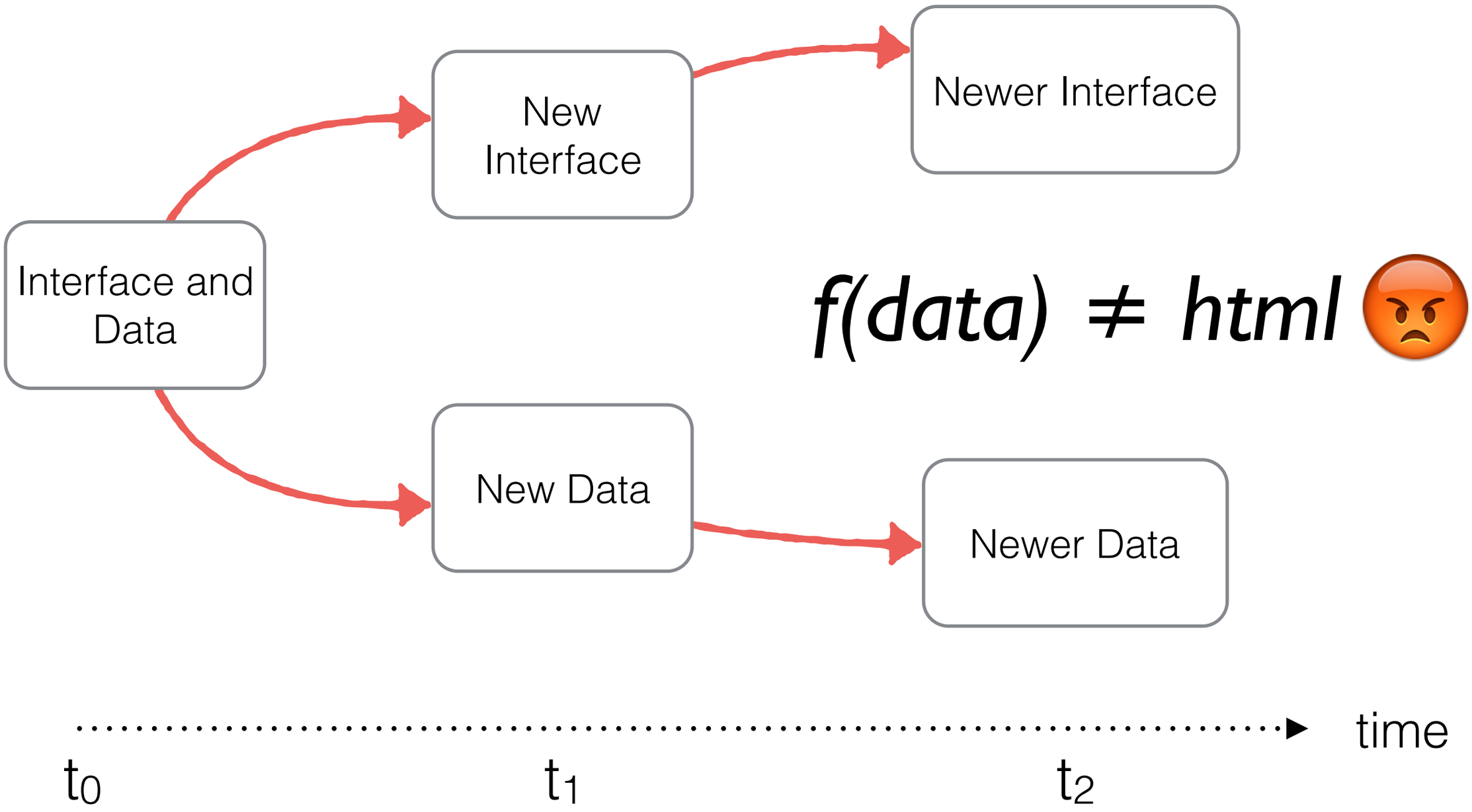
$$f(data) = html$$

$$t=t_0$$

JavaScript

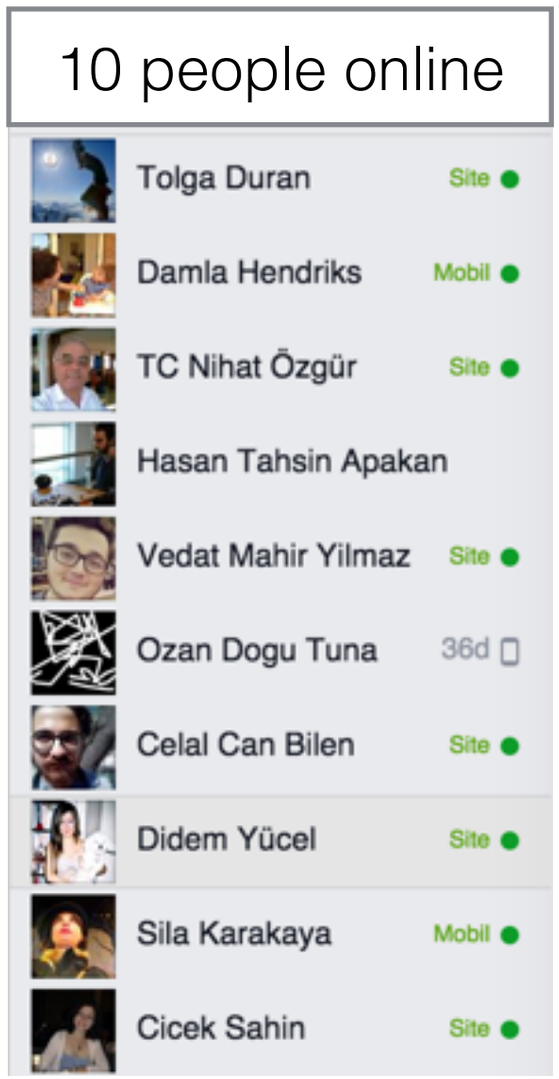
- Developed in 10 days by Eich
- "Lisp in C's clothing" - Crockford
- Very flexible, functional and object-oriented
- CoffeeScript, ES6, underscore...

Client-side interfaces

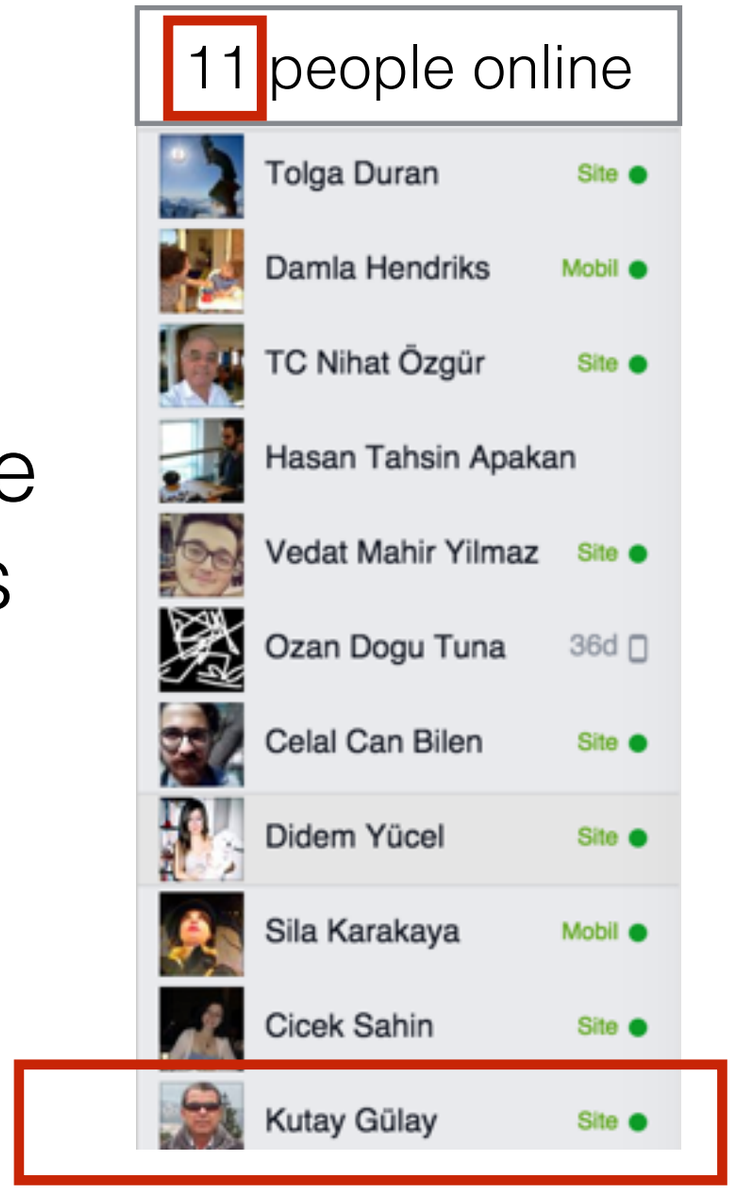


f(data) ≠ html 😡

Example: Chat



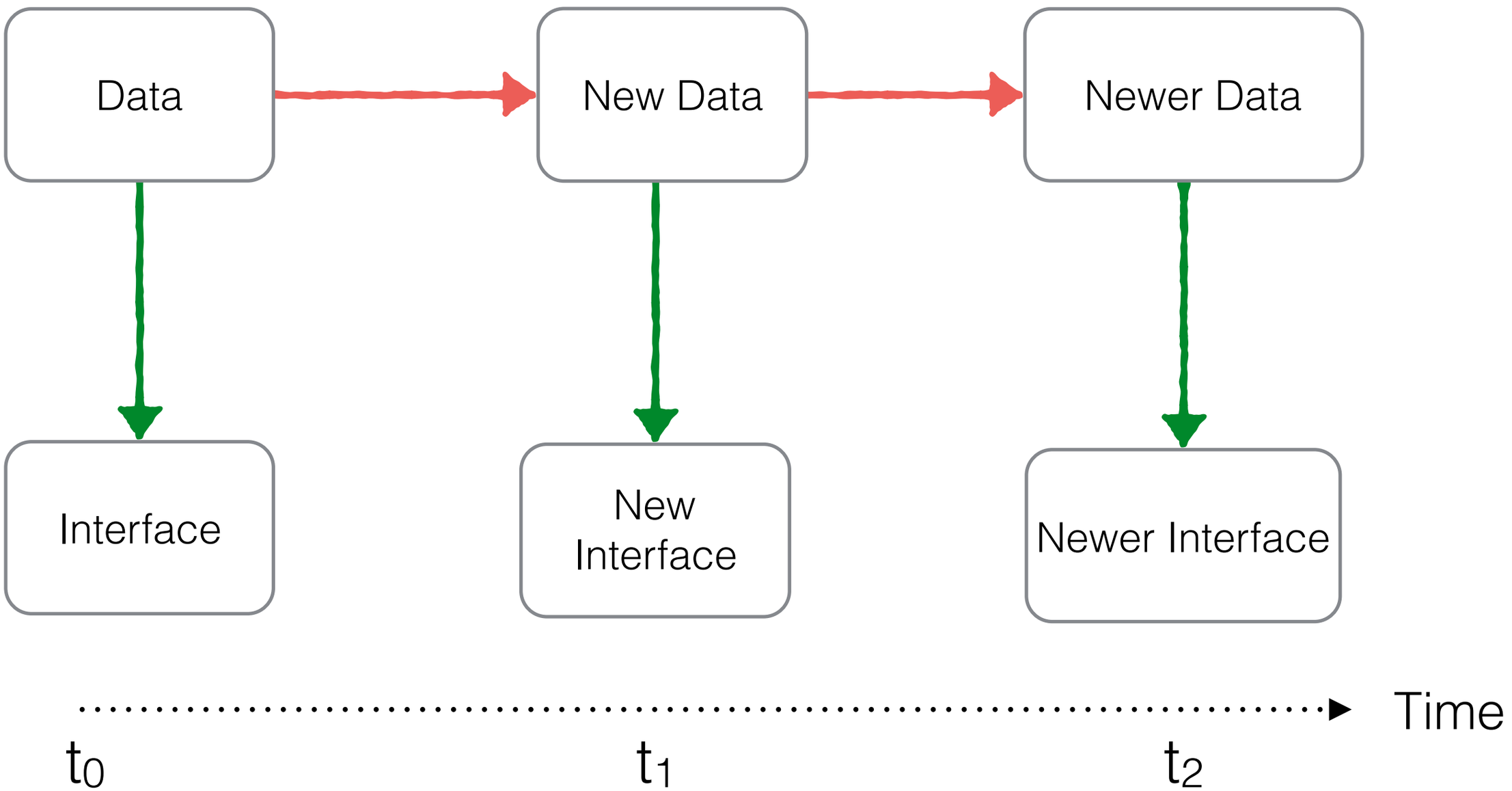
Single Data Change
Two View Changes



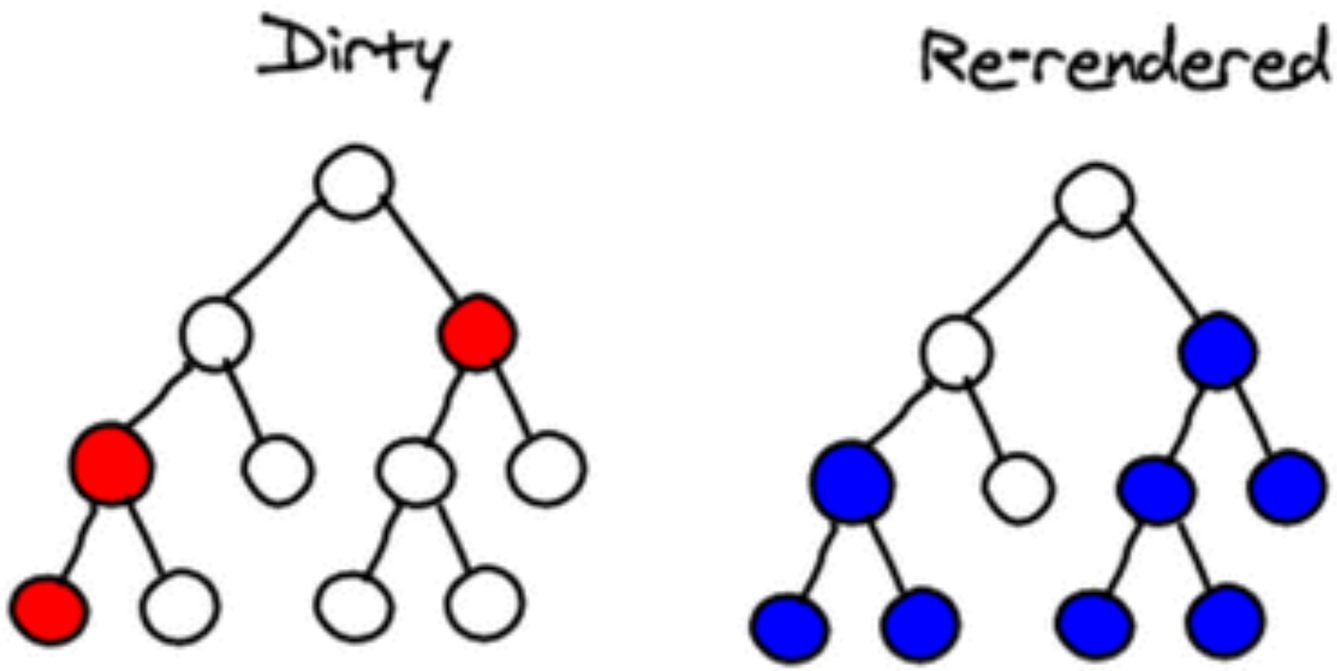

```
$('#people').append(htmlNewPerson)
$('#number').text($('#number').text + 1)
```

Re-render the view all the time

New View = *f(data) = html* New Data



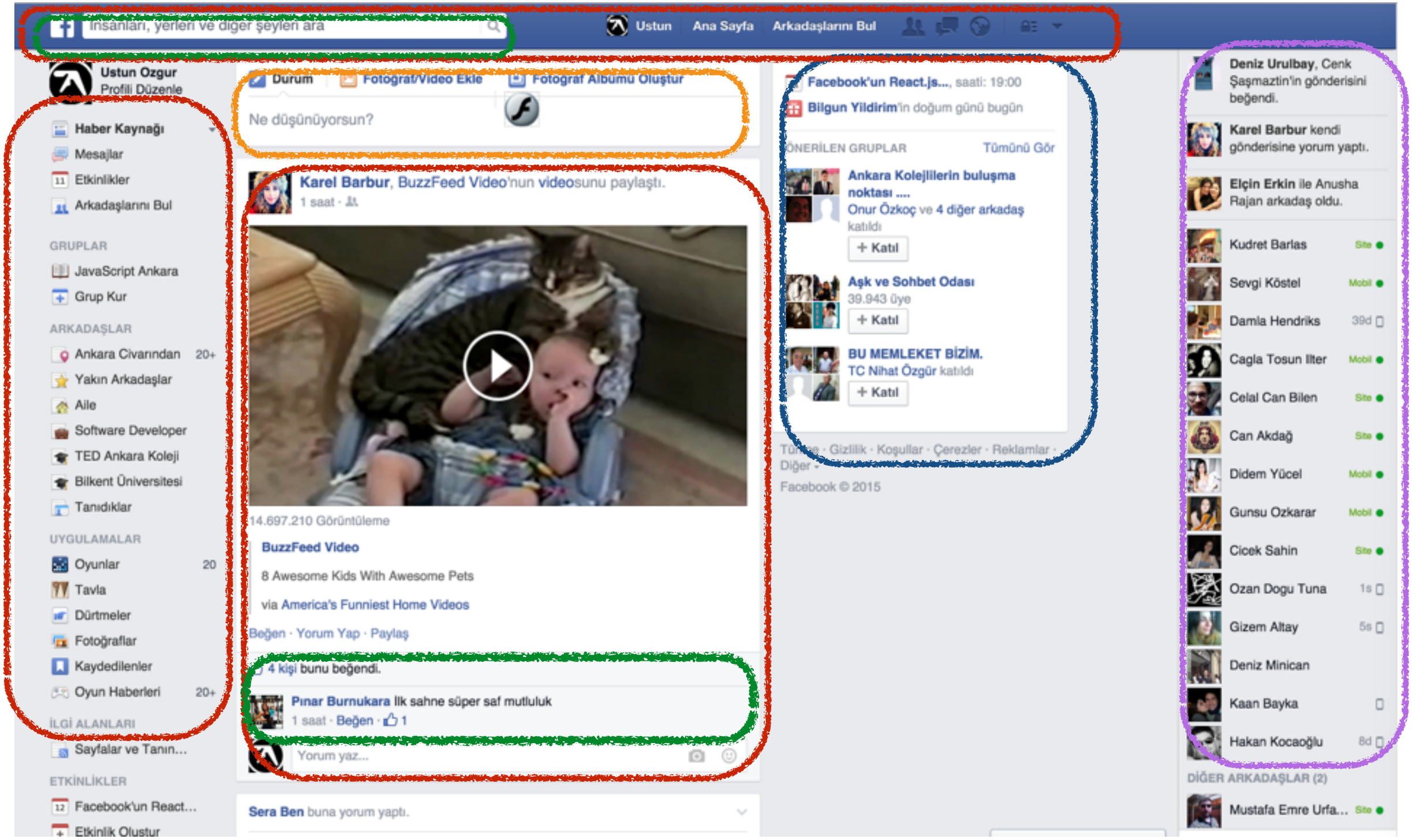
Virtual DOM



Main Principle

Programmer should be focusing on the data structure behind the user interface and changes in it and should define how the data is going to be viewed just a single time

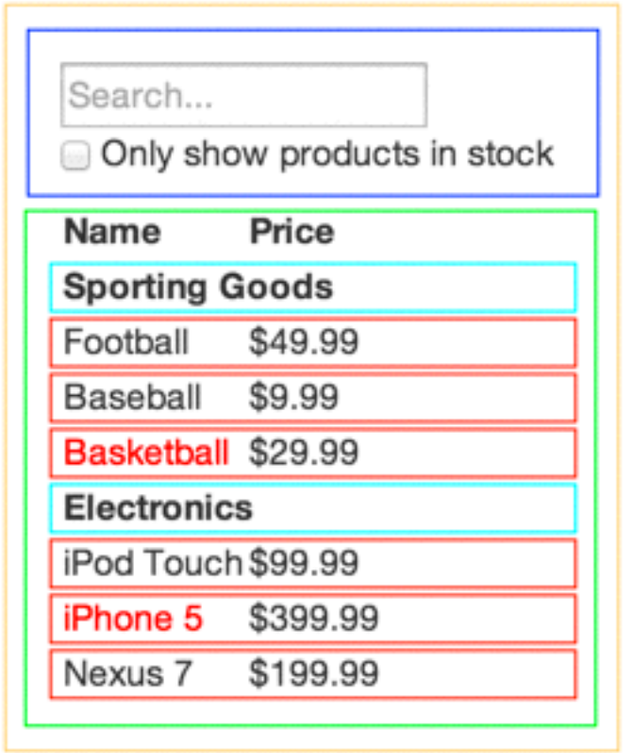
Components

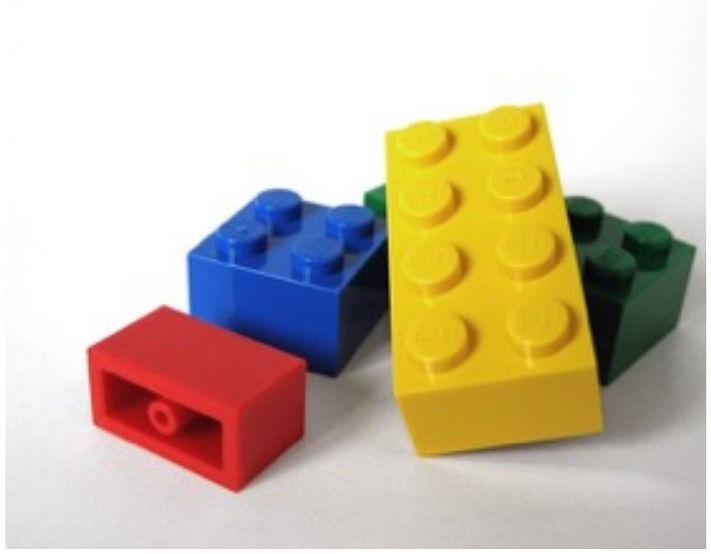

İnsanları, yerleri ve diğer şeyleri ara
Ustun
Ana Sayfa
Arkadaşlarını Bul
Ustun Ozgur
Profili Düzenle
Haber Kaynağı
Mesajlar
Etkinlikler
Arkadaşlarını Bul
GRUPLAR
JavaScript Ankara
Grup Kur
ARKADAŞLAR
Ankara Civarından 20+
Yakın Arkadaşlar
Aile
Software Developer
TED Ankara Koleji
Bilkent Üniversitesi
Tanıdıklar
UYGULAMALAR
Oyunlar 20
Tavla
Dürtmeler
Fotoğraflar
Kaydedilenler
Oyun Haberleri 20+
İLGİ ALANLARI
Sayfalar ve Tanın...
ETKİNLİKLER
Facebook'un React...
Etkinlik Oluştur
Durum
Fotoğraf/Video Ekle
Fotoğraf Albümü Oluştur
Ne düşünüyorsun?
Karel Barbur, BuzzFeed Video'nun videosunu paylaştı.
1 saat ·
14.697.210 Görüntüleme
BuzzFeed Video
8 Awesome Kids With Awesome Pets
via America's Funniest Home Videos
Beğen · Yorum Yap · Paylaş
4 kişi bunu beğendi.
Pınar Burnukara İlk sahne süper saf mutluluk
1 saat · Beğen · 1
Yorum yaz...
Sera Ben buna yorum yaptı.
Facebook'un React.js..., saati: 19:00
Bilgun Yildirim'in doğum günü bugün
ÖNERİLEN GRUPLAR
Tümünü Gör
Ankara Kolejlilerin buluşma noktası ....
Onur Özkoç ve 4 diğer arkadaş katıldı
+ Katıl
Aşk ve Sohbet Odası
39.943 üye
+ Katıl
BU MEMLEKET BİZİM.
TC Nihat Özgür katıldı
+ Katıl
Türkçe · Gizlilik · Koşullar · Çerezler · Reklamlar · Diğer
Facebook © 2015
Deniz Urulbay, Cenk Şaşmaztin'in gönderisini beğendi.
Karel Barbur kendi gönderisine yorum yaptı.
Elçin Erkin ile Anusha Rajan arkadaş oldu.
Kudret Barlas Site
Sevgi Köstel Mobil
Damla Hendriks 39d
Cagla Tosun Ilter Mobil
Celal Can Bilen Site
Can Akdağ Site
Didem Yücel Mobil
Gunsu Ozkarar Mobil
Cicek Sahin Site
Ozan Dogu Tuna 1s
Gizem Altay 5s
Deniz Minican
Kaan Bayka
Hakan Kocaoğlu 8d
DİĞER ARKADAŞLAR (2)
Mustafa Emre Urfa... Site

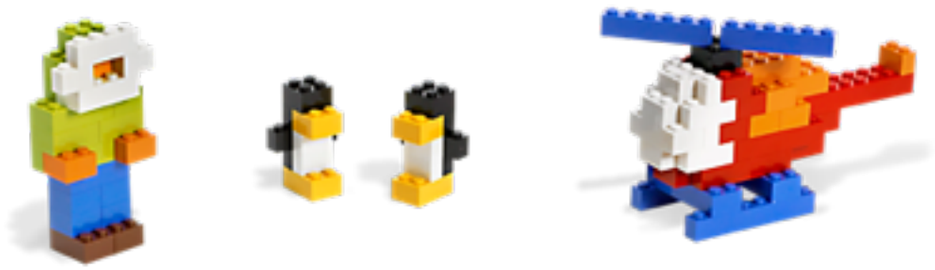
Search...

Only show products in stock

Name	Price
Sporting Goods	
Football	$49.99
Baseball	$9.99
Basketball	$29.99
Electronics	
iPod Touch	$99.99
iPhone 5	$399.99
Nexus 7	$199.99








BANK

A Simple Component

A Simple Component: HelloWorld

```
var HelloWorld = React.createClass({
  render: function () {
    return <div>Hello World</div>;
  }
})
```

JSX

```
React.createElement("div", null, "Hello World")
```

Mounting on the Page

```
ReactDOM.render(<HelloWorld/>, document.body)
```

Component to be Mounted

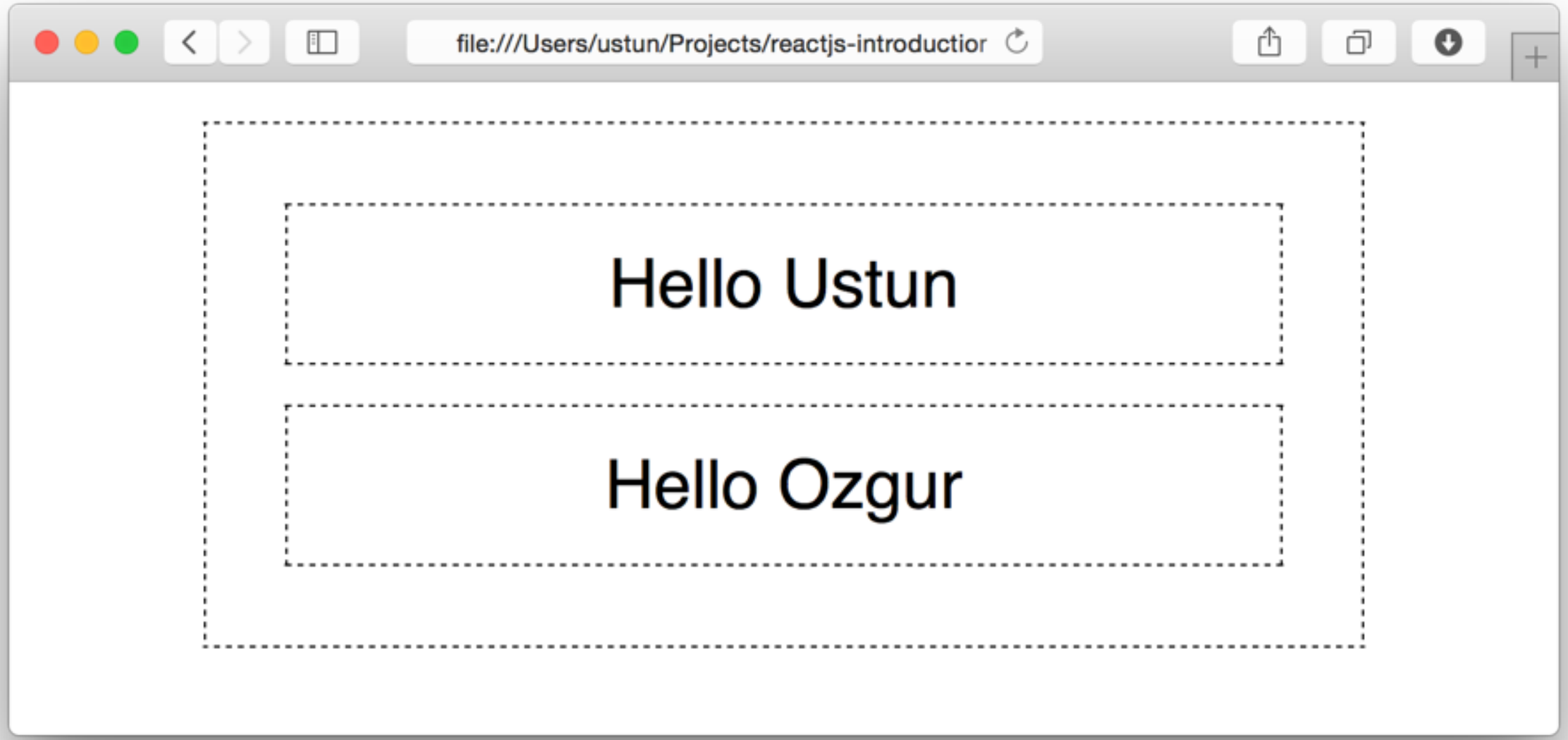
Existing DOM Node
for Mounting

A Compound Component: Greeting

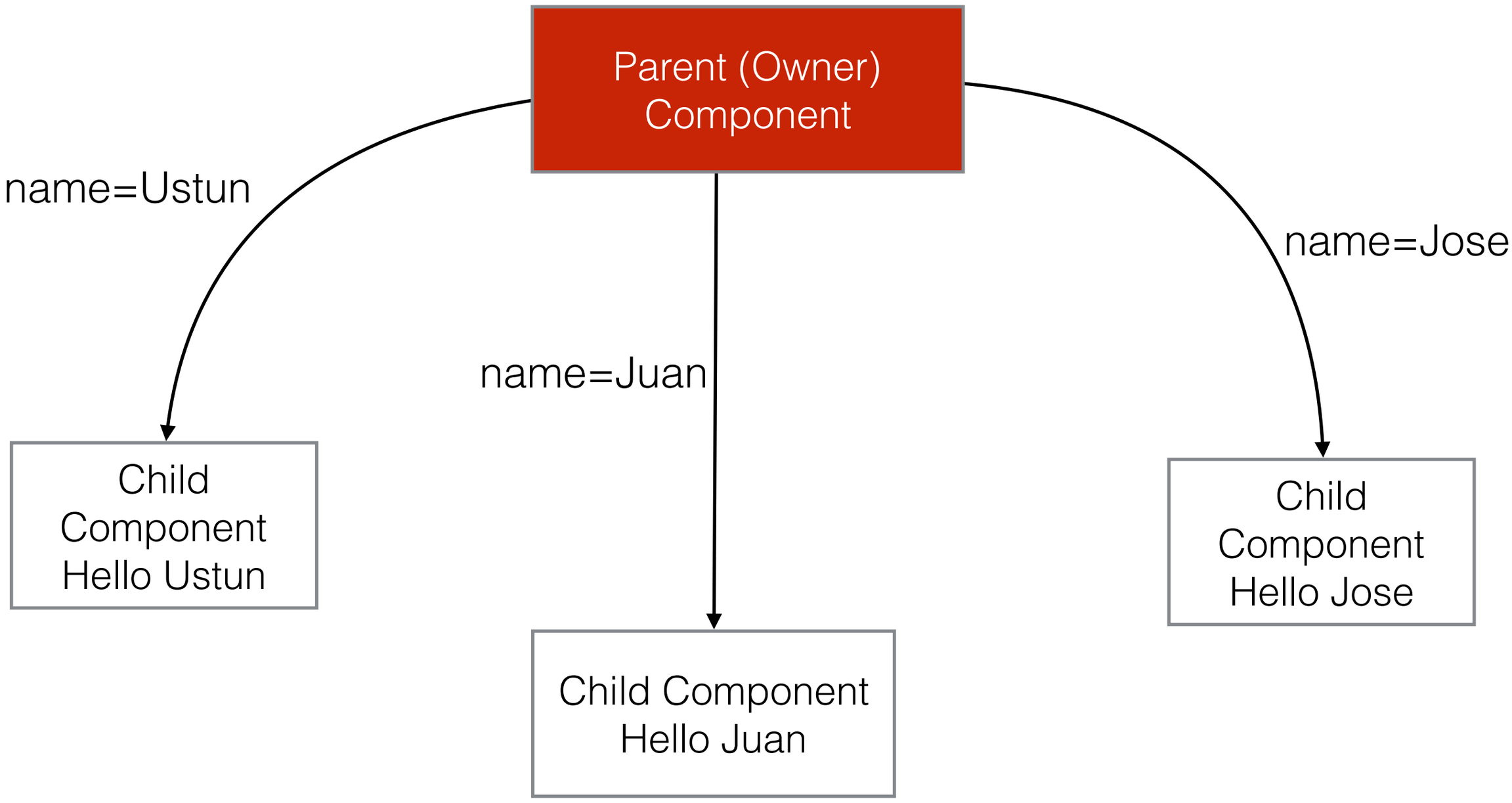
Compound Component: Greeting

```
var Greeting = React.createClass({
  render: function () {
    return (
      <div>
        <HelloWorld/>
        <HelloWorld/>
      </div>)
  }
})
```

Parametrized Components



Parametrized Components



HelloWorld with props (properties)

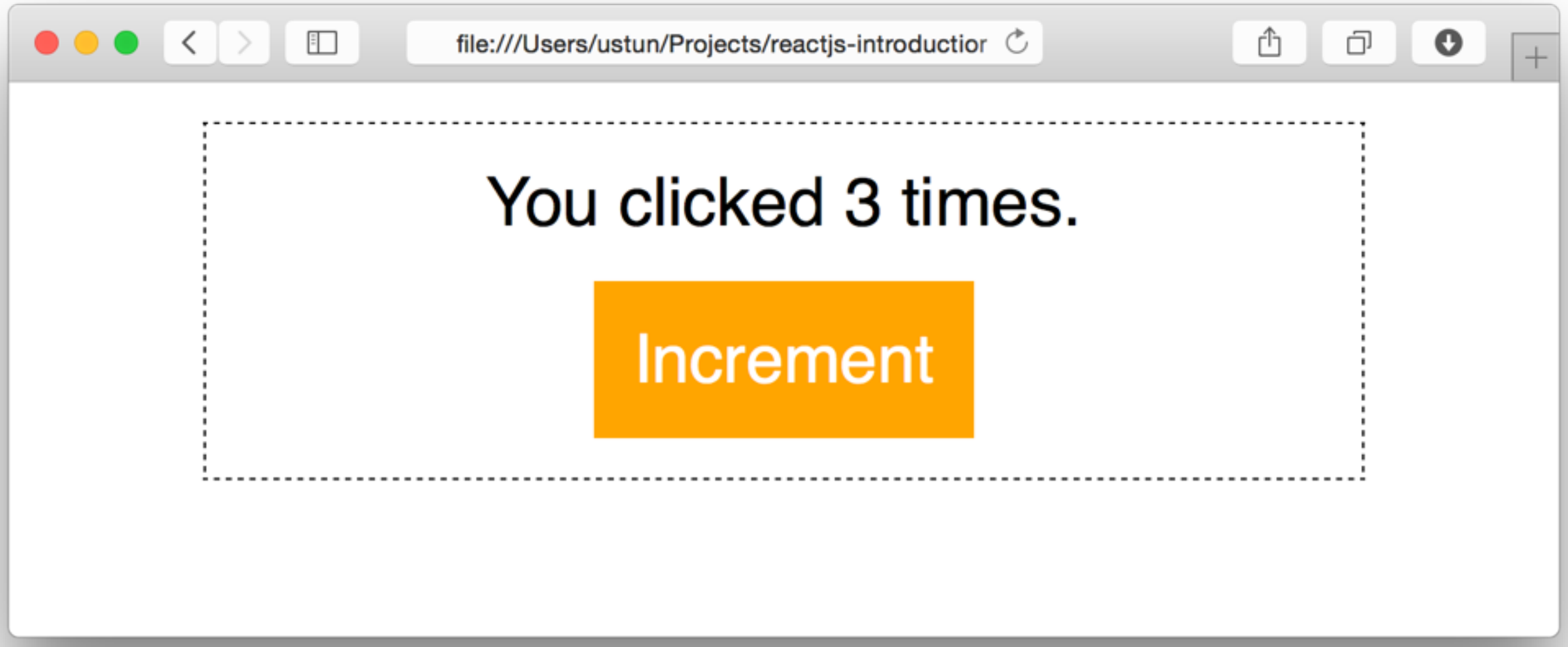
```
var HelloWorld = React.createClass({
  render: function () {
    return <div>Hello {this.props.name}</div>
  }
})
```

JSX

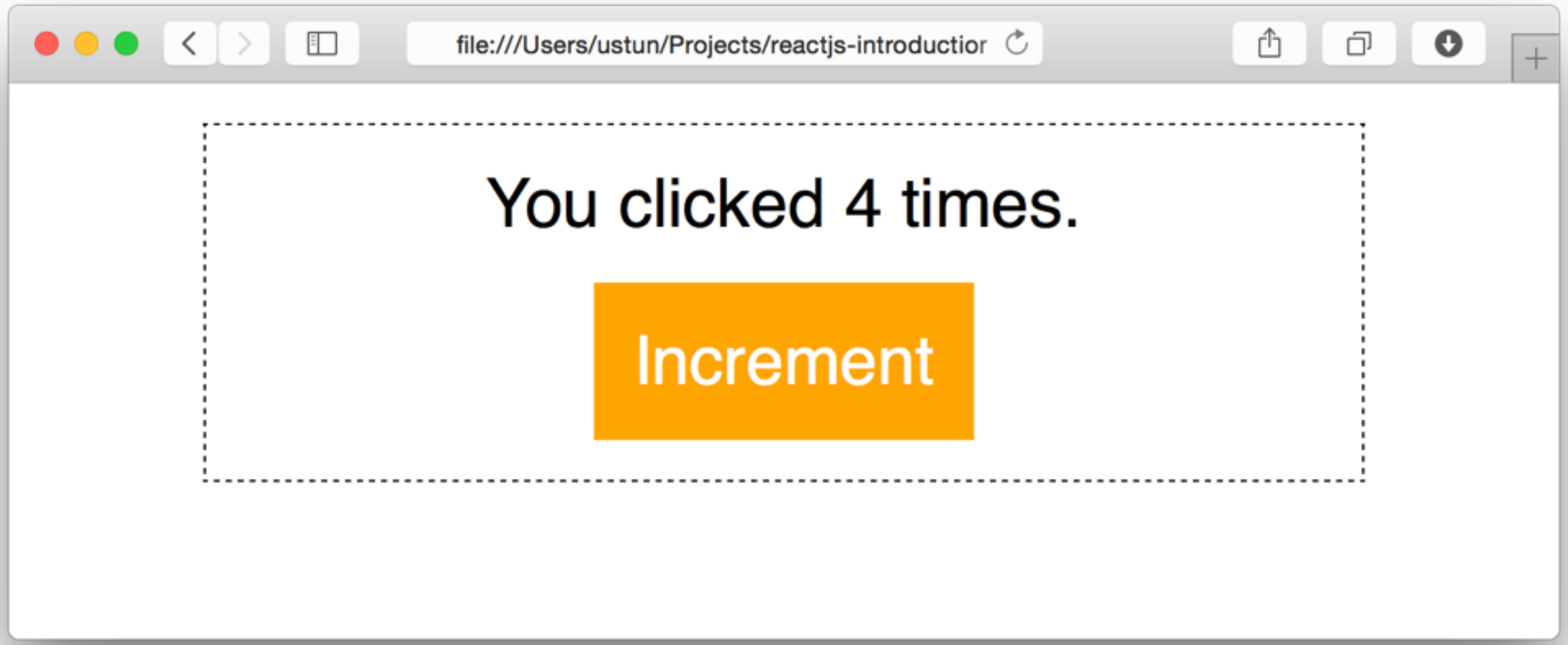
```
React.createElement("div", null,
      "Hello",this.props.name)
```

```
var Greeting = React.createClass({
    render: function () {
      return <div>
          <HelloWorld name="Üstün" />
          <HelloWorld name="Özgür" />
      </div>
    }
})
```

Mutable Data: *state*



Mutable Data: *state*



```
var Counter = React.createClass({
    getInitialState: function () {
      return {counter: 0};
    },
    render: function () {
        <div>You clicked {this.state.count} times</div>
    }
})
```

```
var Counter = React.createClass({
  getInitialState: function () {
    return {counter: 0};
  },
  render: function () {
    return (<div>
      You clicked {this.state.counter}times.
      <button>Increment</button>
    </div>);
  }
})
```

```
var Counter = React.createClass({
  getInitialState: function () {
    return {counter: 0};
  },
  increment: function () {
    // What should we write here?
  },
  render: function () {
    return (
      <div>
        You clicked {this.state.counter} times.
        <button onClick={this.increment}>Increment</button>
      </div>;
    }
})
```

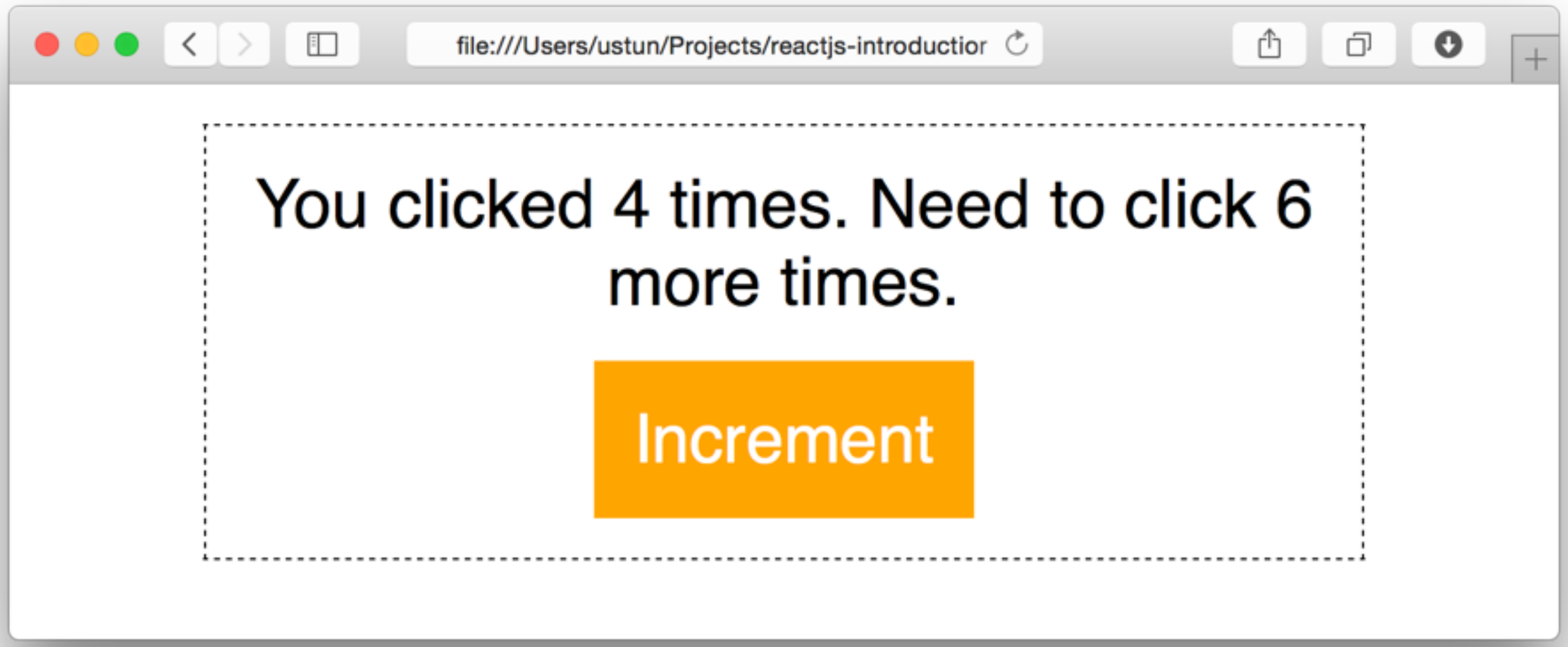
```
var Counter = React.createClass({
  getInitialState: function () {
    return {counter: 0};
  },
  artir: function () {
    var currentCount = this.state.counter;
    this.setState({counter: currentCount + 1});
  },
  render: function () {
    return (
      <div>
        You clicked {this.state.counter} times.
        <button onClick={this.increment}>Increment</button>
      </div>)
    }
})
```

setState!

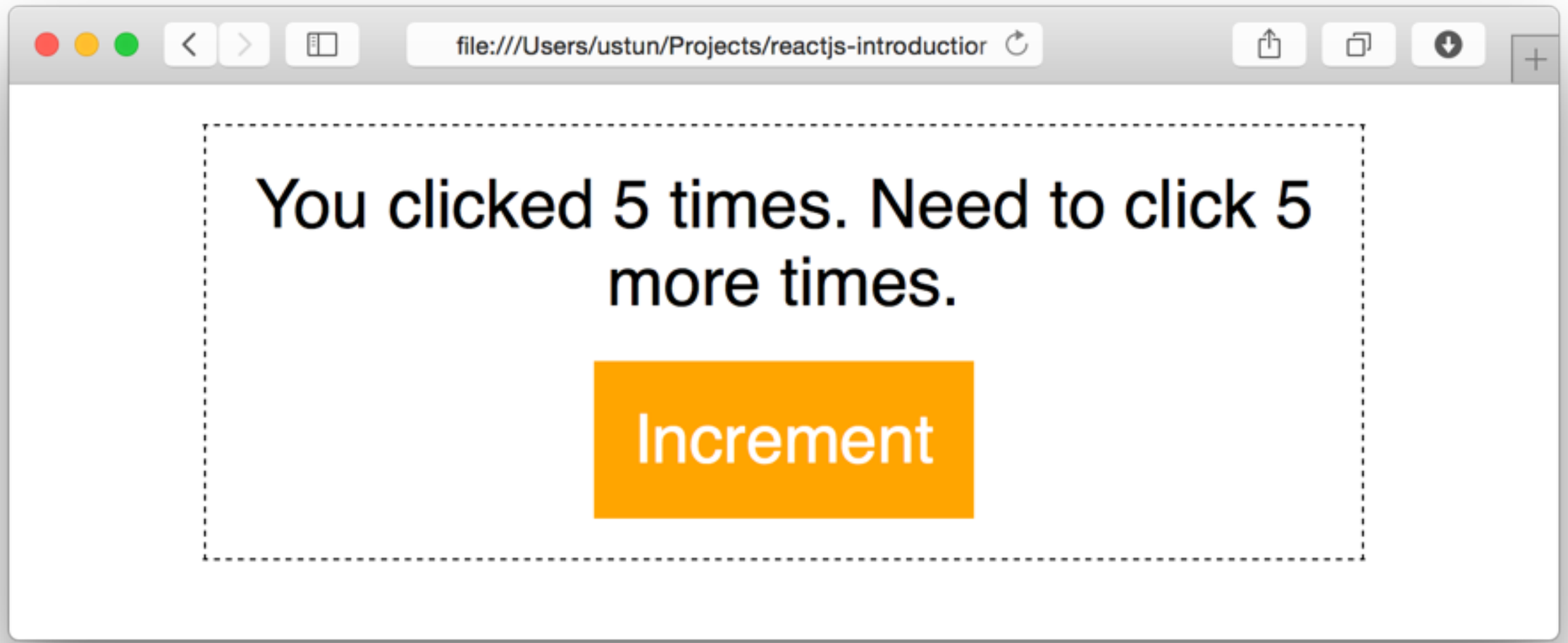
All state changes are explicit

- State change in AngularJS
- Digest loop
- Slowness in big applications
- Might be hard to reason about how the application works

Counter that Counts Forward and Backwards



Counter that Counts Forward and Backwards



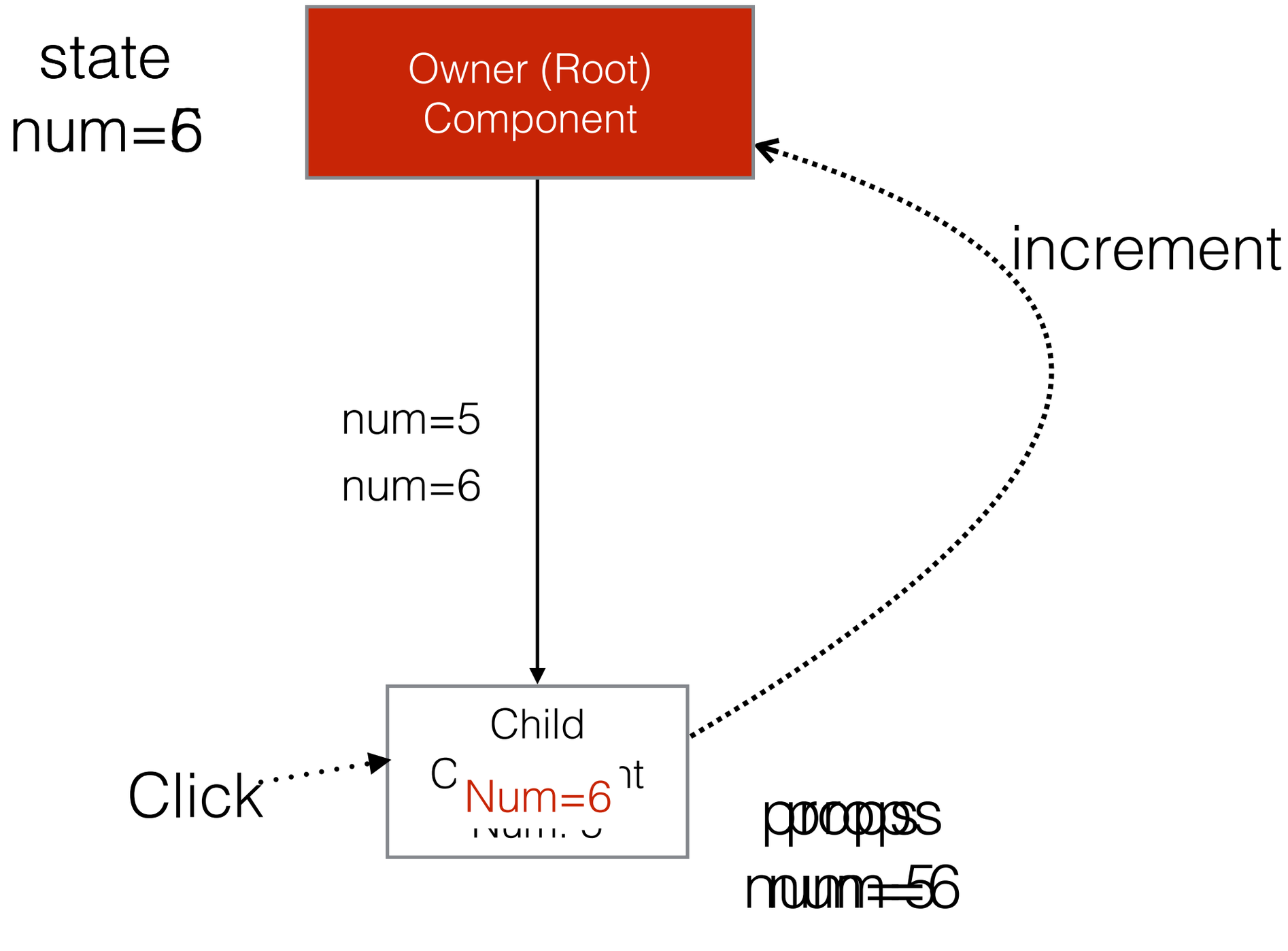
Root data vs. Derived Data

- Single counter value: Single state variable
- Two view values: Derived Data
    - Compute in render method using the state variable

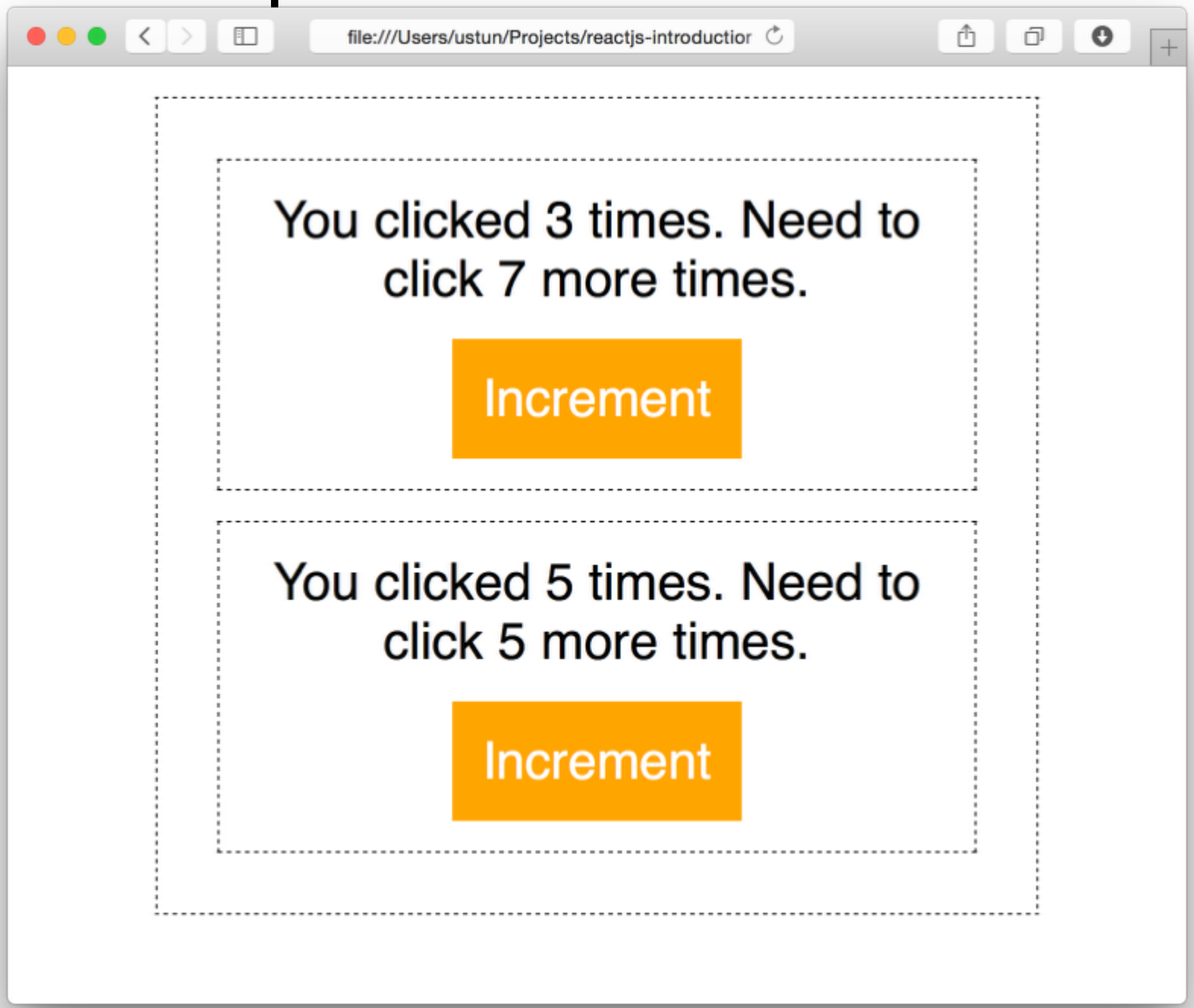
```
var Counter = React.createClass({
  getInitialState: function () {
    return {counter: 0};
  },
 artir: function () {
    var currentCount = this.state.counter;
    this.setState({counter: currentCount + 1});
   },
 render: function () {
    return (
      <div>
        You clicked {this.state.counter} times.
        You have to click {10 - this.state.counter} more times.
        <button onClick={this.increment}>Increment</button>
      </div>)
    }
})
```

Single Change

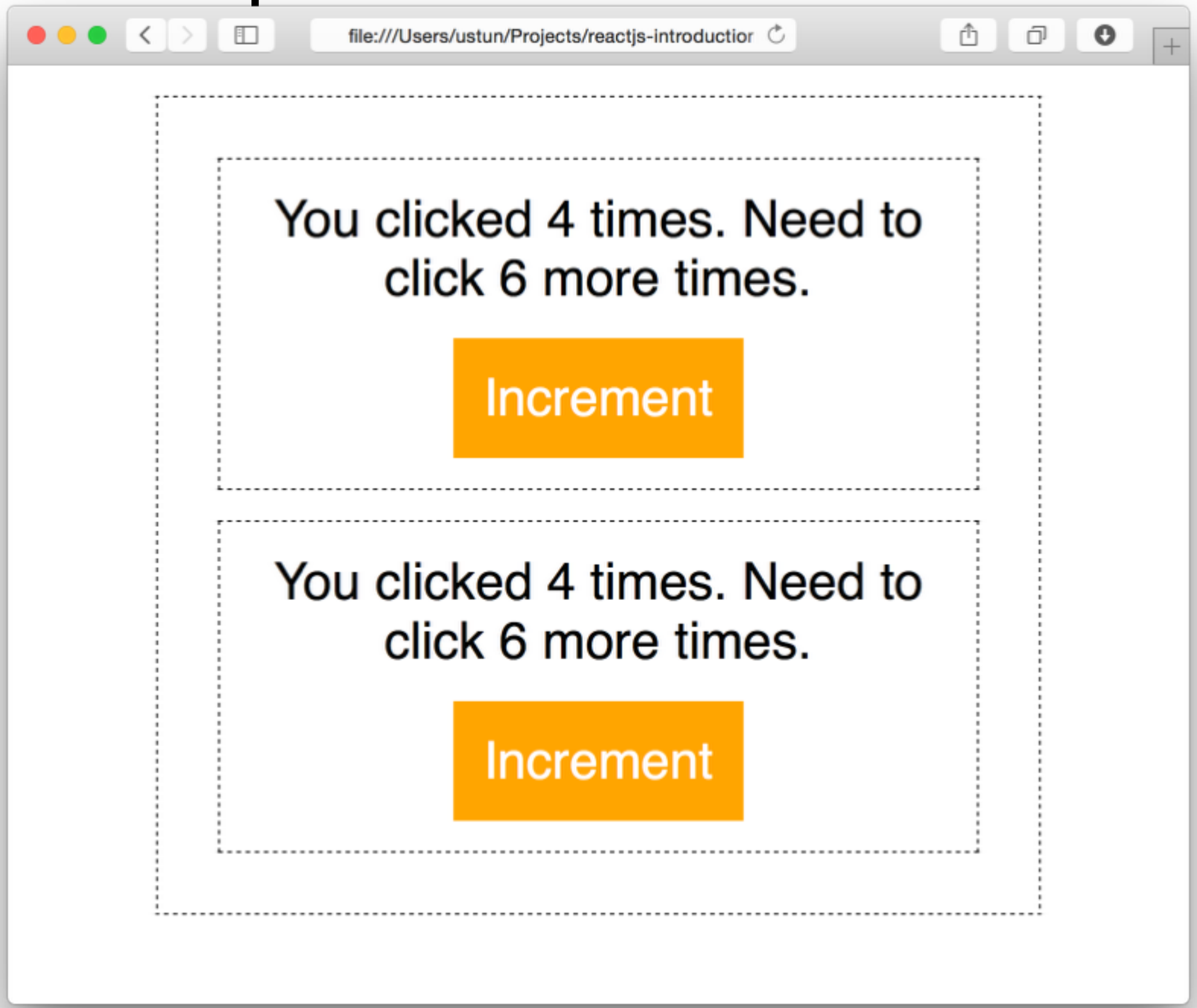
Owner-Child Component Communication



Example: Two Counters



Example: Two Counters



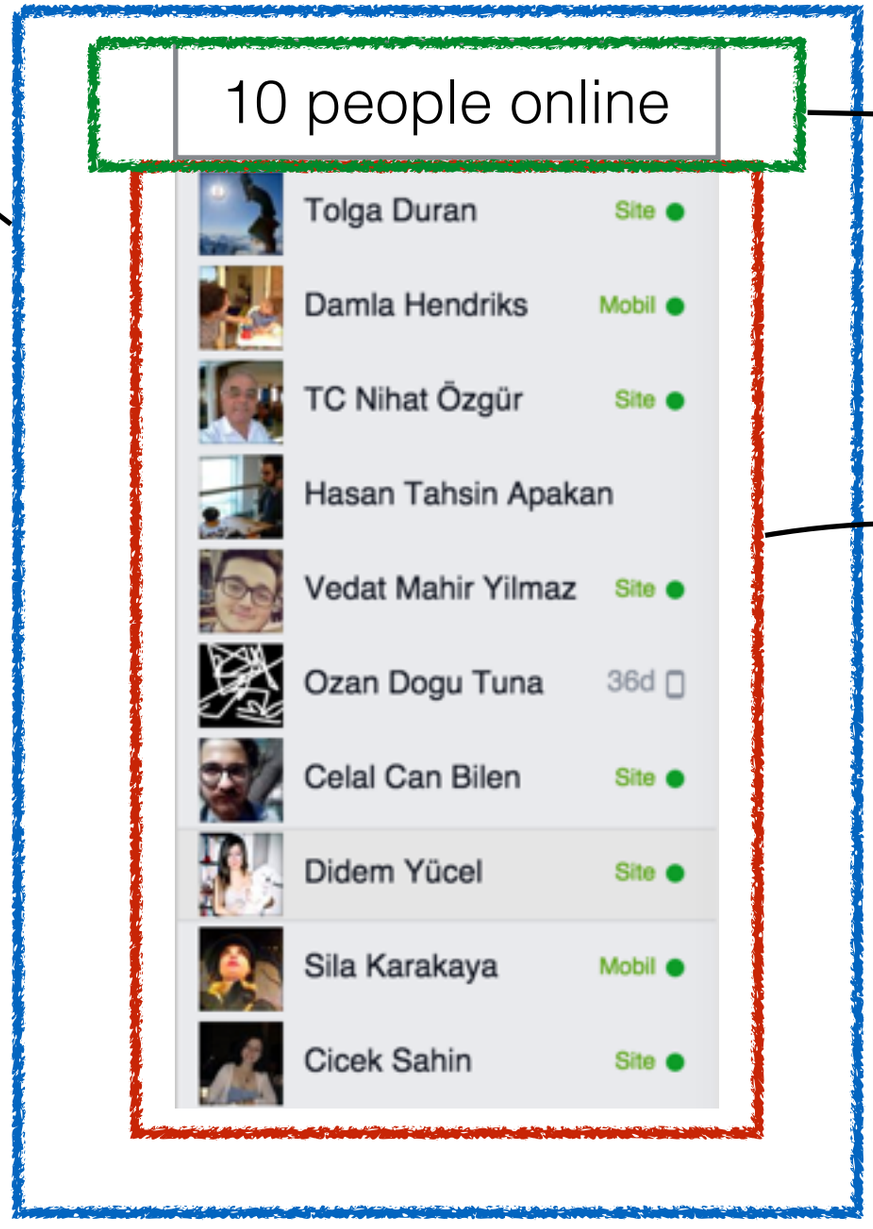
Where Should We Hold State?

- Parent component?

- Child component?

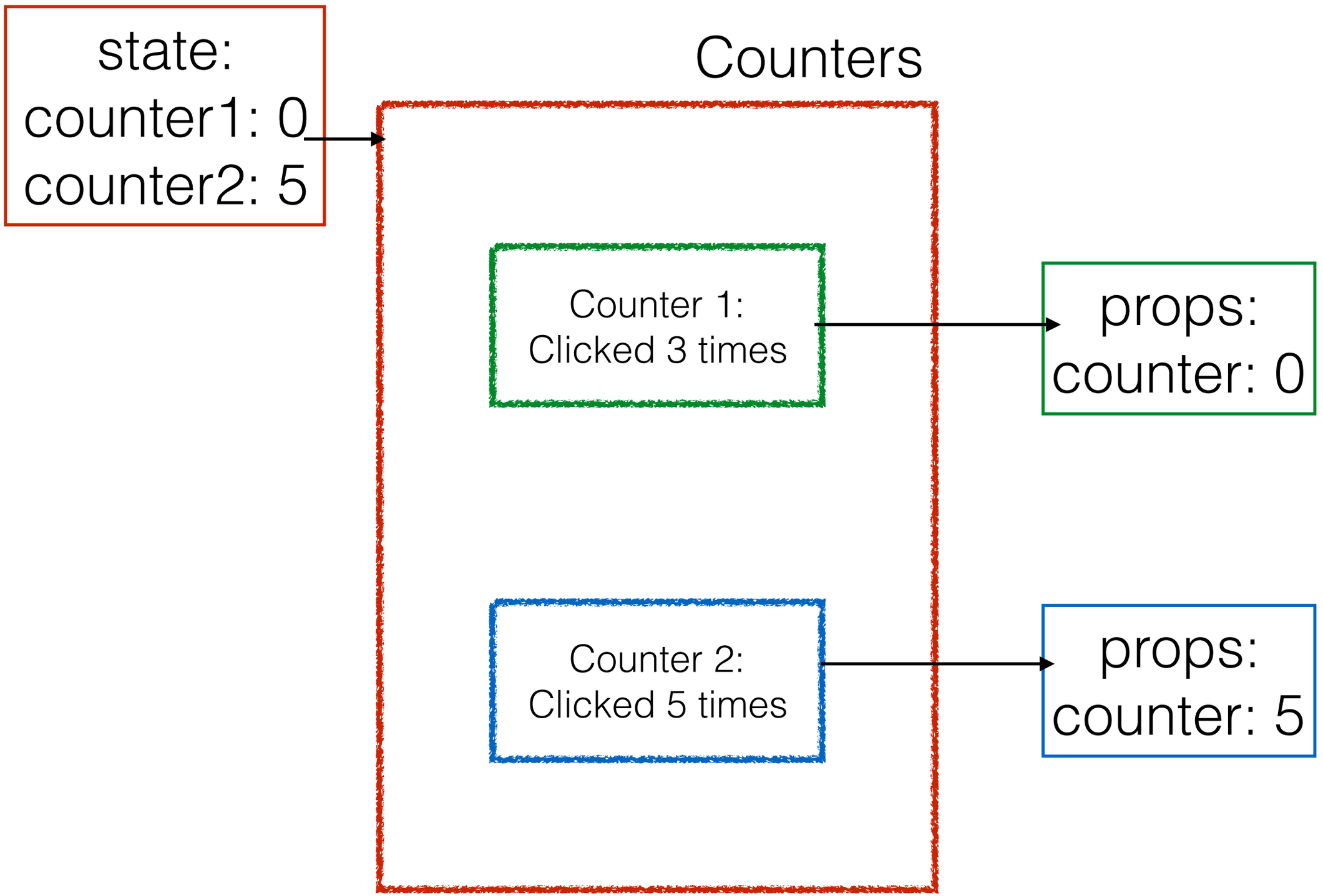
Example: Chat

Chat Component



Number Component

Person List Component


state:
counter1: 0
counter2: 5
Counters
Counter 1:
Clicked 3 times
props:
counter: 0
Counter 2:
Clicked 5 times
props:
counter: 5

```
var Counter = React.createClass({
 render: function () {
   return (
   <div>
     Clicked {this.props.counter} times
     Need to click {10 - this.props.counter}
more times.
     <button onClick={this.props.increment}>
Increment </button>
   </div>);
  }
})
```

```
var Counters = React.createClass({
  getInitialState: function () {
    return {counter1: 3,  counter2: 5};
  },

  incrementCounter1: function () {
     this.setState({counter1: this.state.counter1 + 1,
                    counter2: this.state.counter2 - 1});
  },

 incrementCounter2: function () {
     this.setState({counter1: this.state.counter1 - 1,
                    counter2: this.state.counter2 + 1});
  },

  render: function () {
     return (
       <div>
              <Counter counter={this.state.counter1}
              increment={this.incrementCounter1}/>

              <Counter counter={this.state.counter2}
              increment={this.incrementCounter2}/>

          </div>);
  }
})
```

```
var Counters = React.createClass({
  getInitialState: function () {
    return {counter1: 3,  counter2: 5};
  },
  incrementCounter1: function () {
     this.setState({counter1: this.state.counter1 + 1,
                    counter2: this.state.counter2 - 1});
  },
 incrementCounter2: function () {
     this.setState({counter1: this.state.counter1 - 1,
                    counter2: this.state.counter2 + 1});
  },
  render: function () {
     return (
       <div>
            <Counter counter={this.state.counter1} increment={this.incrementCounter1}/>
            <Counter counter={this.state.counter2} increment={this.incrementCounter2}/>
          </div>);
  }
})
```

Other Important Topics

- iPhone & Android applications w/ React Native
- server side rendering w/ node.js
- Chrome extension React DevTools
- Facebook's Flux library for big apps

Conclusion

- All state changes are explicit
- Applications divided into Components
- Always re-rendering for data-view syncronization - VirtualDOM

Conclusion

- Repo for today:
- https://github.com/ustun/react-workshop
- https://github.com/ustun/reactjs-introduction
- Slides and Transcript
- @ustunozgur
- ustun@ustunozgur.com