React.js

A Brief Introduction

Daniel Gasienica
April 10, 2014

React is a JavaScript library for creating user interfaces by Facebook and Instagram.

“Building large applications with data that changes over time.”

Hello, World

A simple component

```
var HelloMessage = React.createClass({
  displayName: 'HelloMessage',
  render: function() {
    return React.DOM.div(null, "Hello ", this.props.name);
  }
});
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});
```

```
{id: 'message', className: 'hidden'}
```

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```
React.renderComponent(
  HelloMessage({name: "FiftyThree"}),
  mountNode
);
```

```
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
  <span data-reactid=".dbuc1iytj4.0">Hello </span>
  <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

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React.renderComponent(
  HelloMessage({name: "FiftyThree"}),
  mountNode /* e.g. `document.body` */
);
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```jsx
/** @jsx React.DOM */
var HelloMessage = React.createClass({
  render: function() {
    return <div>Hello {this.props.name}</div>;
  }
});
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  displayName: 'HelloMessage',
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    return React.DOM.div(null, "Hello ", this.props.name);
  }
});
```

```
React.renderComponent(
  <HelloMessage name="FiftyThree" />,
  mountNode
);
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```jsx
React.renderComponent(
  <HelloMessage name="FiftyThree" />,
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```

```html
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
   <span data-reactid=".dbuc1iytj4.0">Hello </span>
   <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

```coffee
HelloMessage = React.createClass
  displayName: 'HelloMessage'
  render: ->
    React.DOM.div null, "Hello", @props.name
```

```coffee
React.renderComponent(
  HelloMessage({name: "FiftyThree"}),
    mountNode
)
```

```html
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
  <span data-reactid=".dbuc1iytj4.0">Hello </span>
  <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

Dummy Image

A stateful component

Dummy Image

f00

React.js

0088ff

```coffee
DummyImage = React.createClass
  displayName: 'DummyImage'

  getInitialState: ->
    keyword: ‘Dummy Image'
    color: 'f00'

  handleKeywordChange: (event) ->
    @setState {keyword: event.target.value}

  handleColorChange: (event) ->
    {value} = event.target
    return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
    @setState {color: value}

  handleImageClick: (event) ->
    @setState {color: Math.random().toString(16)[2...8]}

  render: ->
    React.DOM.div null, [
      React.DOM.input
        value: @state.keyword
        onChange: @handleKeywordChange

      React.DOM.input
        value: @state.color
        onChange: @handleColorChange

      React.DOM.br null

      React.DOM.img
        onClick: @handleImageClick
        src: "http://dummyimage.com/600x400/#{@state.color}/ffffff&\
          text=#{encodeURIComponent @state.keyword}"
    ]

React.renderComponent DummyImage(), document.body
```

```
DummyImage = React.createClass
  displayName: 'DummyImage'

  getInitialState: ->
    keyword: ‘Dummy Image'
    color: 'f00'

  handleKeywordChange: (event) ->
    @setState {keyword: event.target.value}

  handleColorChange: (event) ->
    {value} = event.target
    return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
    @setState {color: value}

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        onChange: @handleColorChange

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      React.DOM.img
        onClick: @handleImageClick
        src: "http://dummyimage.com/600x400/#{@state.color}/ffffff&\
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React.renderComponent DummyImage(), document.body
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DummyImage = React.createClass
  displayName: 'DummyImage'
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DummyImage = React.createClass
  displayName: 'DummyImage'

  getInitialState: ->
    keyword: ‘Dummy Image'
    color: 'f00'

  handleKeywordChange: (event) ->
    @setState {keyword: event.target.value}

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    {value} = event.target
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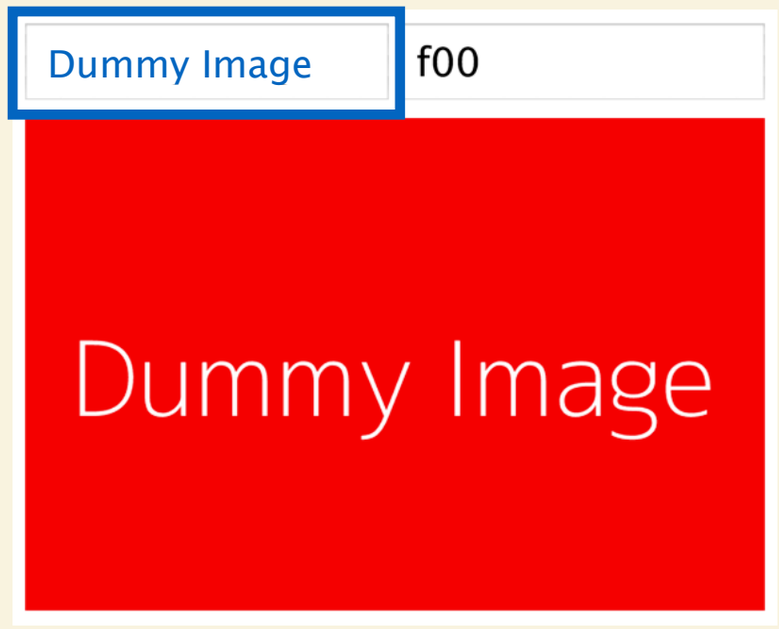

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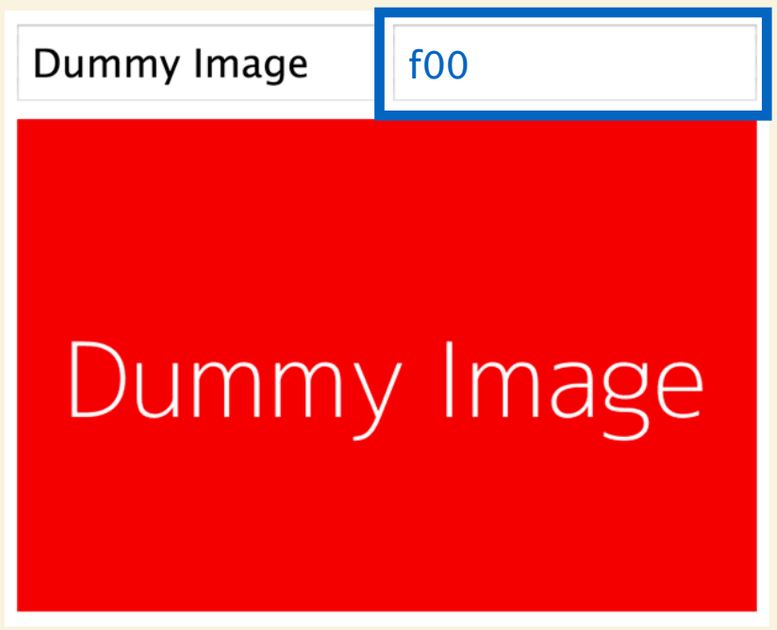

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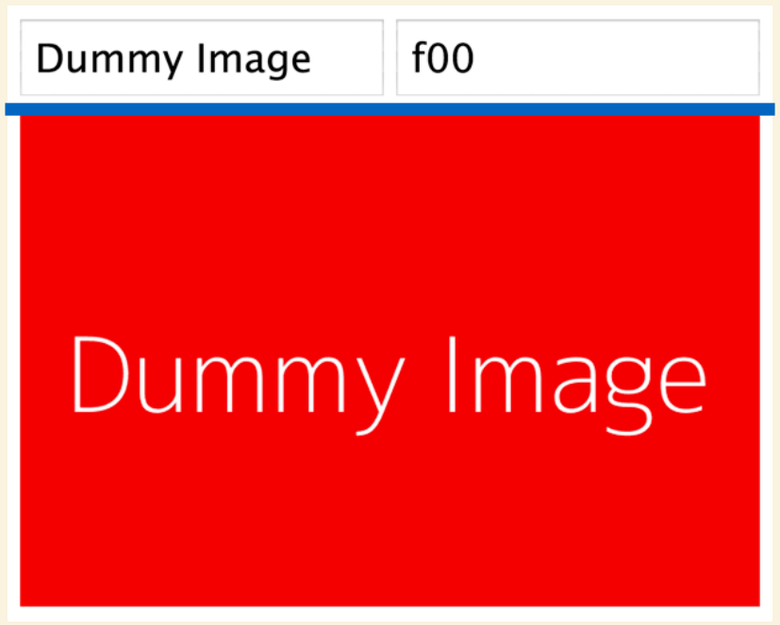

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```coffee
DummyImage = React.createClass
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  getInitialState: ->
    keyword: 'Dummy Image'
    color: 'f00'

  handleKeywordChange: (event) ->
    @setState {keyword: event.target.value}

  handleColorChange: (event) ->
    {value} = event.target
    return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
    @setState {color: value}

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    @setState {color: Math.random().toString(16)[2...8]}

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        onClick: @handleImageClick
        src: "http://dummyimage.com/600x400/#{@state.color}/ffffff&\
          text=#{encodeURIComponent @state.keyword}"
    ]

React.renderComponent DummyImage(), document.body
```

```coffee
getInitialState: ->
  keyword: 'Dummy Image'
  color: 'f00'

handleKeywordChange: (event) ->
  @setState {keyword: event.target.value}

handleColorChange: (event) ->
  {value} = event.target
  return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
  @setState {color: value}

handleImageClick: (event) ->
  @setState {color: Math.random().toString(16)[2...8]}
```

```coffee
getInitialState: ->
  keyword: 'Dummy Image'
  color: 'f00' # red

handleKeywordChange: (event) ->
  @setState {keyword: event.target.value}

handleColorChange: (event) ->
  {value} = event.target
  return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
  @setState {color: value}

handleImageClick: (event) ->
  @setState {color: Math.random().toString(16)[2...8]}
```

```
getInitialState: ->
  keyword: 'Dummy Image'
  color: 'f00'

handleKeywordChange: (event) ->
  @setState {keyword: event.target.value}

handleColorChange: (event) ->
  {value} = event.target
  return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
  @setState {color: value}

handleImageClick: (event) ->
  @setState {color: Math.random().toString(16)[2...8]}
```

```
getInitialState: ->
  keyword: 'Dummy Image'
  color: 'f00'

handleKeywordChange: (event) ->
  @setState {keyword: event.target.value}

handleColorChange: (event) ->
  {value} = event.target
  return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
  @setState {color: value}

handleImageClick: (event) ->
  @setState {color: Math.random().toString(16)[2...8]}
```

```
getInitialState: ->
  keyword: 'Dummy Image'
  color: 'f00'

handleKeywordChange: (event) ->
  @setState {keyword: event.target.value}

handleColorChange: (event) ->
  {value} = event.target
  return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
  @setState {color: value}

handleImageClick: (event) ->
  @setState {color: Math.random().toString(16)[2...8]}
```

```coffee
DummyImage = React.createClass
  displayName: 'DummyImage'

  getInitialState: ->
    keyword: 'Dummy Image'
    color: 'f00'

  handleKeywordChange: (event) ->
    @setState {keyword: event.target.value}

  handleColorChange: (event) ->
    {value} = event.target
    return unless value.match /// ^[A-Fa-f0-9]{0, 6}$ ///
    @setState {color: value}

  handleImageClick: (event) ->
    @setState {color: Math.random().toString(16)[2...8]}

  render: ->
    React.DOM.div null, [
      React.DOM.input
        value: @state.keyword
        onChange: @handleKeywordChange

      React.DOM.input
        value: @state.color
        onChange: @handleColorChange

      React.DOM.br null

      React.DOM.img
        onClick: @handleImageClick
        src: "http://dummyimage.com/600x400/#{@state.color}/ffffff&\
          text=#{encodeURIComponent @state.keyword}"
    ]

React.renderComponent DummyImage(), document.body
```

```
React.renderComponent DummyImage(), document.body
```

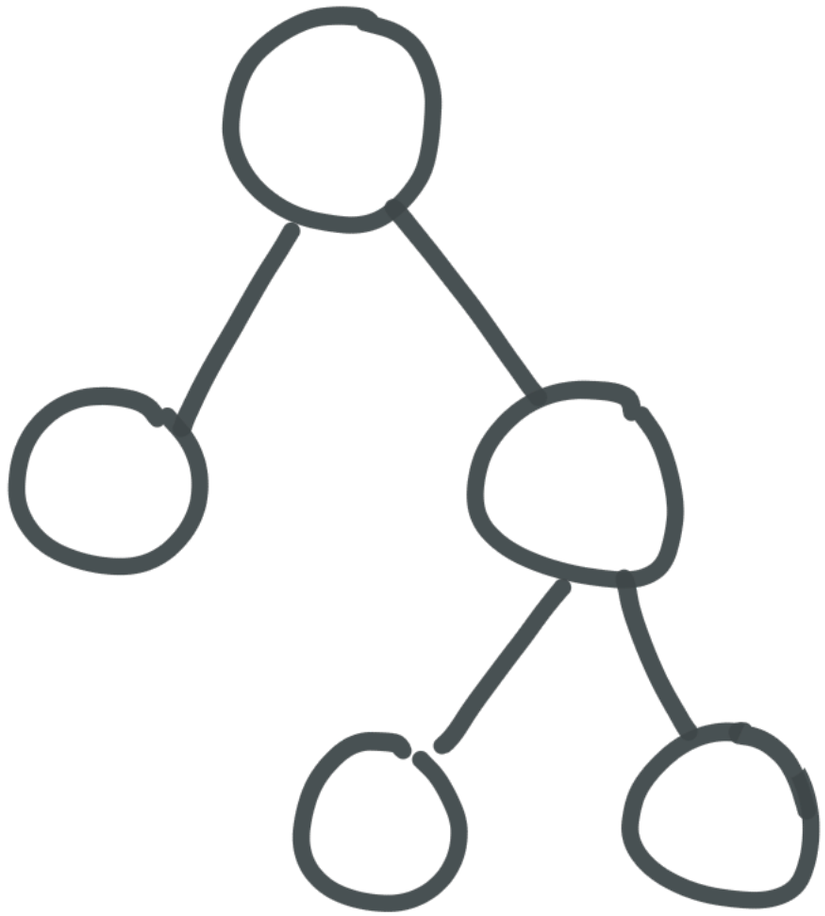
```
React.renderComponent DummyImage(), document.body
```

```
React.renderComponent DummyImage(), document.body
```

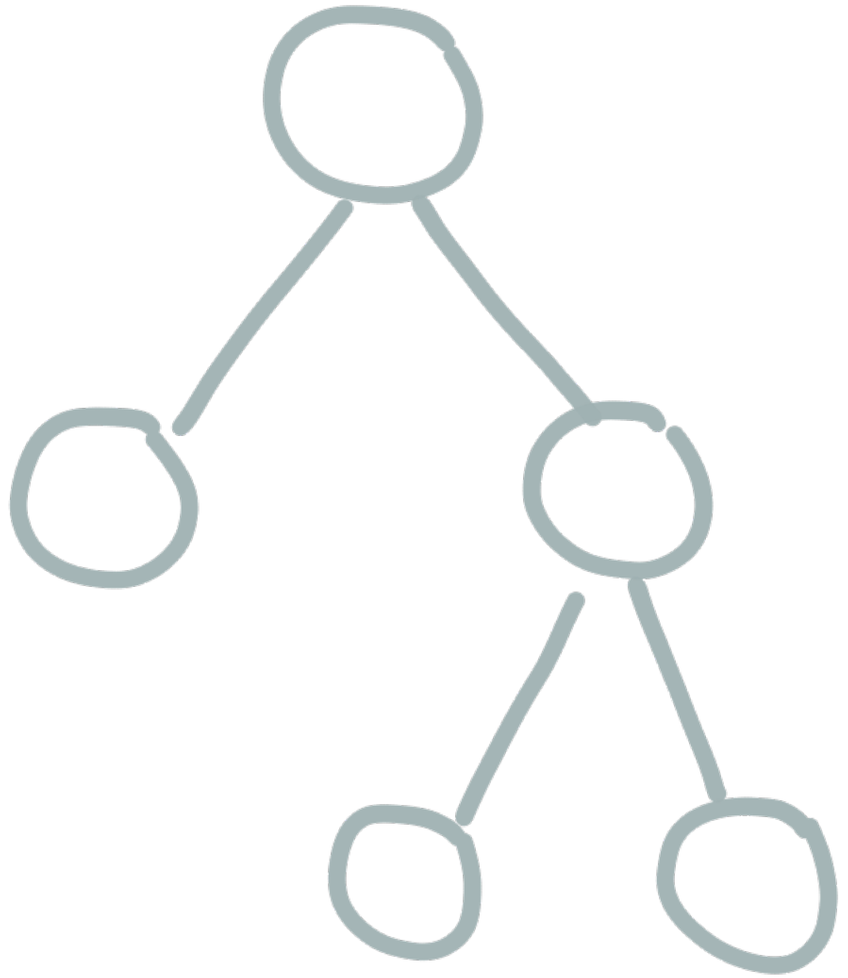
```
React.renderComponent DummyImage(), document.body
```

Behind the Scenes

In-Memory



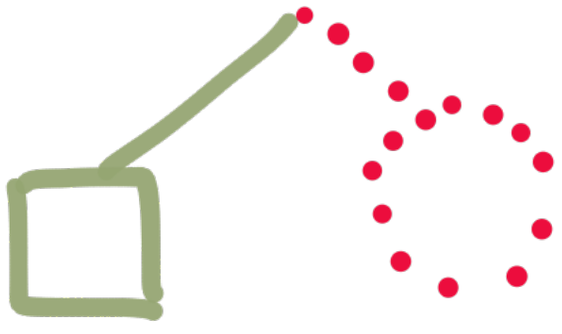
DOM



In-Memory

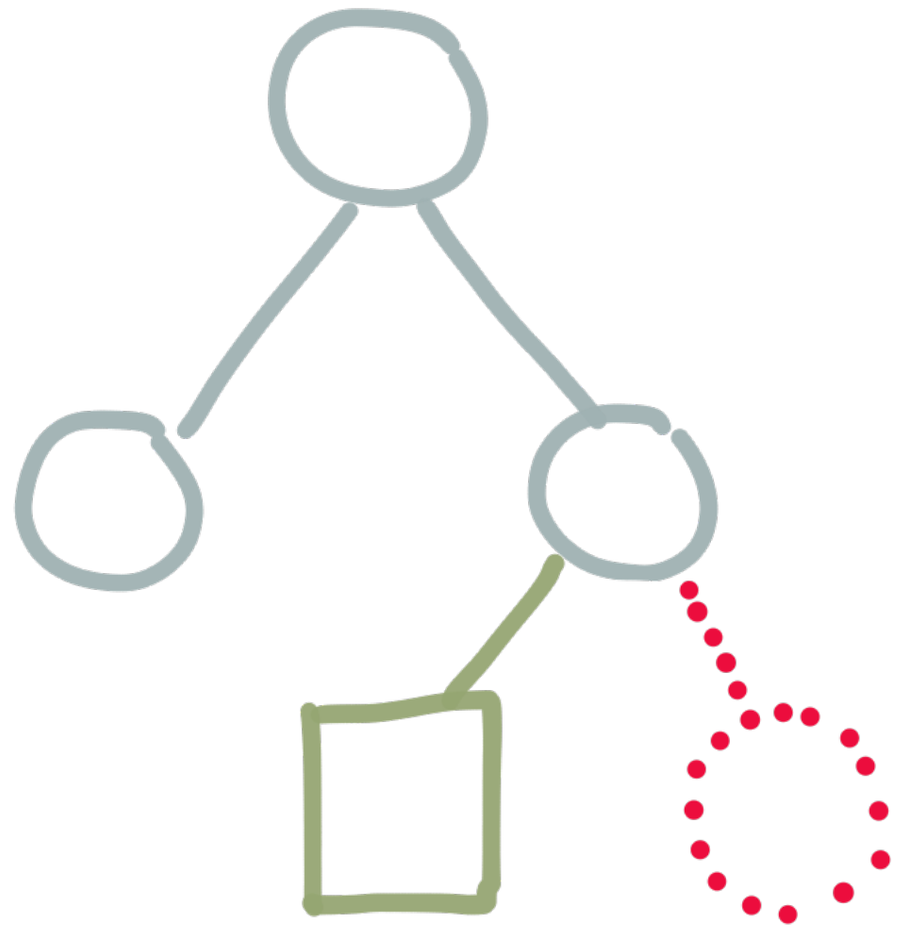
Old State

New State



Diff

DOM



Benefits

simple

fast

synthetic events

Goodies

PropTypes

```coffee
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```

```coffee
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
```

```coffeescript
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```



```coffeescript
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
```

```coffee
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```

```coffee
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
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```
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```



```
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
```

```coffee
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```

```coffee
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
```

```coffeescript
React.createClass
  displayName: 'Avatar'

  propTypes:
    # Required
    user: React.PropTypes.object.isRequired

    # Optional
    includeLink: React.PropTypes.bool
    size: React.PropTypes.oneOf ['micro', 'small',
      'medium', 'large']
```

```coffeescript
Avatar
  includeLink: 'http://gasi.ch/'
  size: 'medium'
```

Server-Side Rendering

```coffee
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
app.get '/', (req, res) ->
    props =
        currentUser:
            firstName: 'Daniel'
            lastName: 'Gasienica'
    content = React.renderComponentToString App props
    res.render 'app.toffee', {content, props}
```

```
<!doctype html>
<html>
<body>
    #{raw content}
    <script src="http://fb.me/react-0.10.0.js"></script>
    <script src="/scripts/app.js"></script>
    <script>
        React.renderComponent(App(#{props}), document.body);
    </script>
</body>
</html>
```

```
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
   <span data-reactid=".dbuc1iytj4.0">Hello </span>
   <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

```
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
  <span data-reactid=".dbuc1iytj4.0">Hello </span>
  <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

```
<div data-reactid=".dbuc1iytj4" data-react-checksum="-695455966">
  <span data-reactid=".dbuc1iytj4.0">Hello </span>
  <span data-reactid=".dbuc1iytj4.1">FiftyThree</span>
</div>
```

CSSTransitionGroup

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'

  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
```

Enter Styles*

```
.notification
  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'
  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
```

Enter Styles*

```
.notification
  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'

  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
```

Enter Styles*

```
.notification
  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1

.notification-enter-active
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'

  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
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Enter Styles*

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  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'

  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
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Enter Styles*

```
.notification
  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Component

```
render: ->
  React.addons.CSSTransitionGroup
    transitionName: 'notification'

  ,
    if @state.notification
      Notification {message: @state.notification}
    else
      []
```

Enter Styles*

```
.notification
  &-enter
    opacity: 0.01
    transition: opacity 0.2s ease-in

    &-active
      opacity: 1
```

Leave Styles*

```
.notification
  &-leave
    opacity: 1
    transition: opacity 0.1s ease-in

    &-active
      opacity: 0.01
```

* Stylus

Why am I excited about React?

simple

declarative

composable

encourages
good practices

CoffeeScript

Streamline.js

React.js

Node.js

Neo4j

Give It Five Minutes

or: write one component

Questions?