https://devhints.io/react

Components

```
import React from 'react'
import ReactDOM from 'react-dom'
```

```
class Hello extends React.Component {
  render () {
    return <div className='message-box'>
      Hello {this.props.name}
    </div>
  }
}
```

```
const el = document.body
ReactDOM.render(<Hello name='John' />, el)
```

Use the React.js jsfiddle to start hacking. (or the unofficial jsbin)

Children

```
<AlertBox>
  <h1>You have pending notifications</h1>
</AlertBox>
```

```
class AlertBox extends Component {
  render () {
    return <div className='alert-box'>
      {this.props.children}
    </div>
  }
}
```

Children are passed as the `children` property.

Import multiple exports

```
import React, {Component} from 'react'
import ReactDOM from 'react-dom'
```

```
class Hello extends Component {
  ...
}
```

States

```
constructor(props) {
  super(props)
  this.state = { username: undefined }
}
```

```
this.setState({ username: 'rstacruz' })
```

```
render () {
  this.state.username
  const { username } = this.state
  ···
}
```

Use states (`this.state`) to manage dynamic data.

With Babel you can use proposal-class-fields and get rid of constructor

```
class Hello extends Component {
  state = { username: undefined };
  ...
}
```

See: States

Properties

```
<Video fullscreen={true} autoplay={false} />
```

```
render () {
  this.props.fullscreen
  const { fullscreen, autoplay } = this.props
  ···
}
```

Use `this.props` to access properties passed to the component.

See: Properties

Nesting

```
class Info extends Component {
  render () {
    const { avatar, username } = this.props

    return <div>
      <UserAvatar src={avatar} />
      <UserProfile username={username} />
    </div>
  }
}
```

As of React v16.2.0, fragments can be used to return multiple children without adding extra wrapping nodes to the DOM.

```
import React, {
  Component,
  Fragment
} from 'react'

class Info extends Component {
  render () {
    const { avatar, username } = this.props

    return (
      <Fragment>
        <UserAvatar src={avatar} />
        <UserProfile username={username} />
      </Fragment>
    )
  }
}
```

Nest components to separate concerns.

See: Composing Components

Defaults

Setting default props

```
Hello.defaultProps = {
  color: 'blue'
}
```

See: defaultProps

Setting default state

```
class Hello extends Component {
  constructor (props) {
    super(props)
    this.state = { visible: true }
  }
}
```

Set the default state in the `constructor()`.

And without constructor using Babel with proposal class fields.

```
class Hello extends Component {
  state = { visible: true }
}
```

See: Setting the default state

Other components

Functional components

```
function MyComponent ({ name }) {
  return <div className='message-box'>
    Hello {name}
  </div>
}
```

Functional components have no state. Also, their props are passed as the first parameter to a function.

See: Function and Class Components

Pure components

```
import React, {PureComponent} from 'react'

class MessageBox extends PureComponent {
  ···
}
```

Performance optimized version of `React.Component`. Doesn't rerender if props/state hasn't changed.

See: Pure components

Component API

```
this.forceUpdate()
```

```
this.setState({ ... })
this.setState(state => { ... })
```

```
this.state
this.props
```

These methods and properties are available for Component instances.

See: Component API

Lifecycle

Mounting

`constructor` (props)	Before rendering #
`componentWillMount()`	Don't use this #
`render()`	Render #
`componentDidMount()`	After rendering (DOM available) #
`componentWillUnmount()`	Before DOM removal #
`componentDidCatch()`	Catch errors (16+) #

Set initial the state on `constructor()`. Add DOM event handlers, timers (etc) on `componentDidMount()`, then remove them on `componentWillUnmount()`.

Updating

`componentDidUpdate` (prevProps, prevState, snapshot)	Use `setState()` here, but remember to compare props
`shouldComponentUpdate` (newProps, newState)	Skips `render()` if returns false
`render()`	Render
`componentDidUpdate` (prevProps, prevState)	Operate on the DOM here

Called when parents change properties and `.setState()`. These are not called for initial renders.

See: Component specs

Hooks (New)

State Hook

```
import React, { useState } from 'react';

function Example() {
  // Declare a new state variable, which we'll call "count"
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(count + 1)}>
        Click me
      </button>
    </div>
  );
}
```

Hooks are a new addition in React 16.8.

See: Hooks at a Glance

Building your own hooks

Define FriendStatus

```
import React, { useState, useEffect } from 'react';

function FriendStatus(props) {
  const [isOnline, setIsOnline] = useState(null);

  useEffect(() => {
    function handleStatusChange(status) {
      setIsOnline(status.isOnline);
    }

    ChatAPI.subscribeToFriendStatus(props.friend.id, handleStatusChange);
    return () => {
      ChatAPI.unsubscribeFromFriendStatus(props.friend.id, handleStatusCha
    };
  }, [props.friend.id]);

  if (isOnline === null) {
    return 'Loading...';
  }
  return isOnline ? 'Online' : 'Offline';
}
```

Effects may also optionally specify how to "clean up" after them by returning a function.

Use FriendStatus

```
function FriendStatus(props) {
  const isOnline = useFriendStatus(props.friend.id);

  if (isOnline === null) {
    return 'Loading...';
  }
  return isOnline ? 'Online' : 'Offline';
}
```

See: Building Your Own Hooks

Declaring multiple state variables

```
function ExampleWithManyStates() {
  // Declare multiple state variables!
  const [age, setAge] = useState(42);
  const [fruit, setFruit] = useState('banana');
  const [todos, setTodos] = useState([{ text: 'Learn Hooks' }]);
  // ...
}
```

Effect hook

```
import React, { useState, useEffect } from 'react';

function Example() {
  const [count, setCount] = useState(0);

  // Similar to componentDidMount and componentDidUpdate:
  useEffect(() => {
    // Update the document title using the browser API
    document.title = `You clicked ${count} times`;
  }, [count]);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(count + 1)}>
        Click me
      </button>
    </div>
  );
}
```

If you're familiar with React class lifecycle methods, you can think of `useEffect` Hook as `componentDidMount`, `componentDidUpdate`, and `componentWillUnmount` combined.

By default, React runs the effects after every render — including the first render.

Hooks API Reference

Also see: Hooks FAQ

Basic Hooks	
`useState`(initialState)	
`useEffect`(() => { ... })	
`useContext`(MyContext)	value returned from `React.createContext`

Full details: Basic Hooks

Additional Hooks	
`useReducer`(reducer, initialArg, init)	
`useCallback`(() => { ... })	
`useMemo`(() => { ... })	
`useRef`(initialValue)	
`useImperativeHandle`(ref, () => { ... })	
`useLayoutEffect`	identical to `useEffect`, but it fires synchronously after all DOM mutations
`useDebugValue`(value)	display a label for custom hooks in React DevTools

Full details: Additional Hooks

DOM nodes

References

```
class MyComponent extends Component {
  render () {
    return <div>
      <input ref={el => this.input = el} />
    </div>
  }

  componentDidMount () {
    this.input.focus()
  }
}
```

Allows access to DOM nodes.

See: Refs and the DOM

DOM Events

```
class MyComponent extends Component {
  render () {
    <input type="text"
        value={this.state.value}
        onChange={event => this.onChange(event)} />
  }

  onChange (event) {
    this.setState({ value: event.target.value })
  }
}
```

Pass functions to attributes like onChange.

See: Events

Other features

Transferring props

```
<VideoPlayer src="video.mp4" />
```

```
class VideoPlayer extends Component {
  render () {
    return <VideoEmbed {...this.props} />
  }
}
```

Propagates `src="..."` down to the sub-component.

See Transferring props

Top-level API

```
React.createClass({ ... })
React.isValidElement(c)
```

```
ReactDOM.render(<Component />, domnode, [callback])
ReactDOM.unmountComponentAtNode(domnode)
```

```
ReactDOMServer.renderToString(<Component />)
ReactDOMServer.renderToStaticMarkup(<Component />)
```

There are more, but these are most common.

See: React top-level API

JSX patterns

Style shorthand

```
const style = { height: 10 }
return <div style={style}></div>
```

```
return <div style={{ margin: 0, padding: 0 }}></div>
```

See: Inline styles

Conditionals

```
<Fragment>
  {showMyComponent
    ? <MyComponent />
    : <OtherComponent />}
</Fragment>
```

Short-circuit evaluation

```
<Fragment>
  {showPopup && <Popup />}
  ...
</Fragment>
```

Inner HTML

```
function markdownify() { return "<p>...</p>"; }
<div dangerouslySetInnerHTML={{__html: markdownify()}} />
```

See: Dangerously set innerHTML

Lists

```
class TodoList extends Component {
  render () {
    const { items } = this.props

    return <ul>
      {items.map(item =>
        <TodoItem item={item} key={item.key} />)}
    </ul>
  }
}
```

Always supply a `key` property.

New features

Returning multiple elements

You can return multiple elements as arrays or fragments.

Arrays

```
render () {
  // Don't forget the keys!
  return [
    <li key="A">First item</li>,
    <li key="B">Second item</li>
  ]
}
```

Fragments

```
render () {
  // Fragments don't require keys!
  return (
    <Fragment>
      <li>First item</li>
      <li>Second item</li>
    </Fragment>
  )
}
```

See: Fragments and strings

Returning strings

```
render() {
  return 'Look ma, no spans!';
}
```

You can return just a string.

See: Fragments and strings

Portals

```
render () {
  return React.createPortal(
    this.props.children,
    document.getElementById('menu')
  )
}
```

This renders `this.props.children` into any location in the DOM.

See: Portals

Errors

```
class MyComponent extends Component {
  ···
  componentDidCatch (error, info) {
    this.setState({ error })
  }
}
```

Catch errors via `componentDidCatch`. (React 16+)

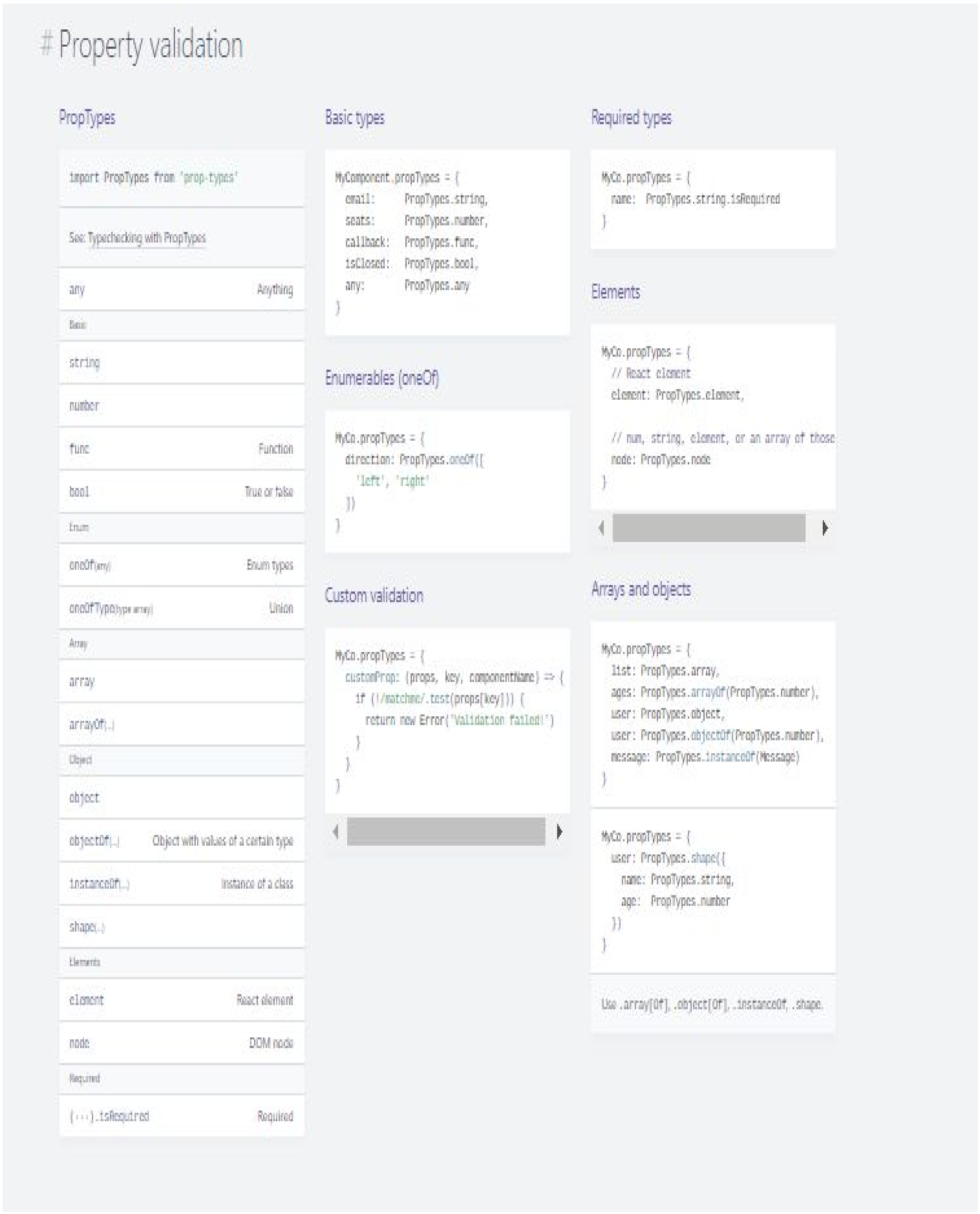
See: Error handling in React 16

Hydration

```
const el = document.getElementById('app')
ReactDOM.hydrate(<App />, el)
```

Use `ReactDOM.hydrate` instead of using `ReactDOM.render` if you're rendering over the output of ReactDOMServer.

See: Hydrate



Property validation

PropTypes

```
import PropTypes from 'prop-types'
```

See: Typechecking with PropTypes

`any`	Anything
Basic	
`string`	
`number`	
`func`	Function
`bool`	True or false
Enum	
`oneOf`(any)	Enum types
`oneOfType`(type array)	Union
Array	
`array`	
`arrayOf`(...)	
Object	
`object`	
`objectOf`(...)	Object with values of a certain type
`instanceOf`(...)	Instance of a class
`shape`(...)	
Elements	
`element`	React element
`node`	DOM node
Required	
`(···).isRequired`	Required

Basic types

```
MyComponent.propTypes = {
  email:      PropTypes.string,
  seats:      PropTypes.number,
  callback:   PropTypes.func,
  isClosed:   PropTypes.bool,
  any:        PropTypes.any
}
```

Enumerables (oneOf)

```
MyCo.propTypes = {
  direction: PropTypes.oneOf([
    'left', 'right'
  ])
}
```

Custom validation

```
MyCo.propTypes = {
  customProp: (props, key, componentName) => {
    if (!/matchme/.test(props[key])) {
      return new Error('Validation failed!')
    }
  }
}
```

Required types

```
MyCo.propTypes = {
  name:  PropTypes.string.isRequired
}
```

Elements

```
MyCo.propTypes = {
  // React element
  element: PropTypes.element,

  // num, string, element, or an array of those
  node: PropTypes.node
}
```

Arrays and objects

```
MyCo.propTypes = {
  list: PropTypes.array,
  ages: PropTypes.arrayOf(PropTypes.number),
  user: PropTypes.object,
  user: PropTypes.objectOf(PropTypes.number),
  message: PropTypes.instanceOf(Message)
}
```

```
MyCo.propTypes = {
  user: PropTypes.shape({
    name: PropTypes.string,
    age:  PropTypes.number
  })
}
```

Use `.array[Of]`, `.object[Of]`, `.instanceOf`, `.shape`.

Links:
https://reactjs.org/
https://reactcheatsheet.com/