Front-End Development

React

#2 Learn Once, Write Anywhere

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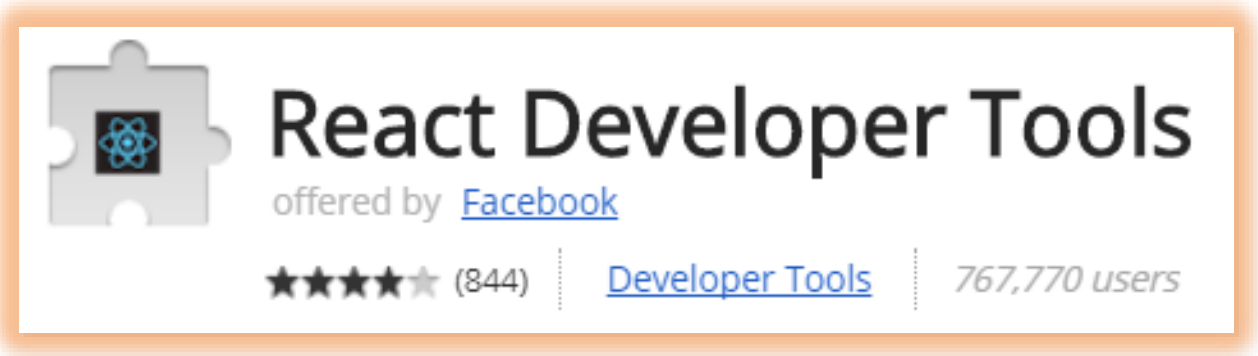
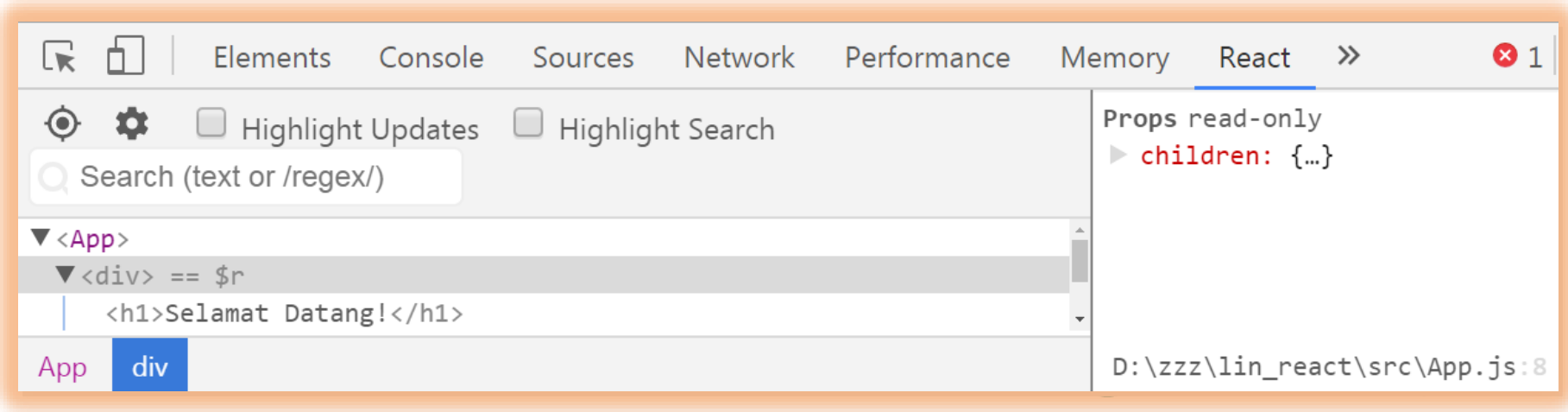
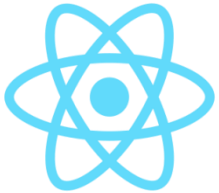
React Dev Tools



- Add React Dev Tools on Chrome from: *https://chrome.google.com/webstore/*





State & Props

- There are 2 types of data that control a component: *State* & *Props*.
- *Props* are set by the parent and they're fixed throughout the lifetime of a component. For data that is going to change, we have to use *State*.

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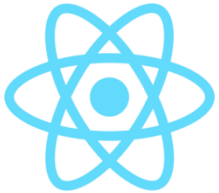

State

- In general, we should initialize state in the `constructor`, and then call `setState` when we want to change it.
- State is mutable, and defines at any given time, the current state of the React component that is being rendered.

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src/App.js

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

class App extends Component {
    render() {
        return (
            <h1>Selamat datang!</h1>
        );
    }
}

export default App;
```

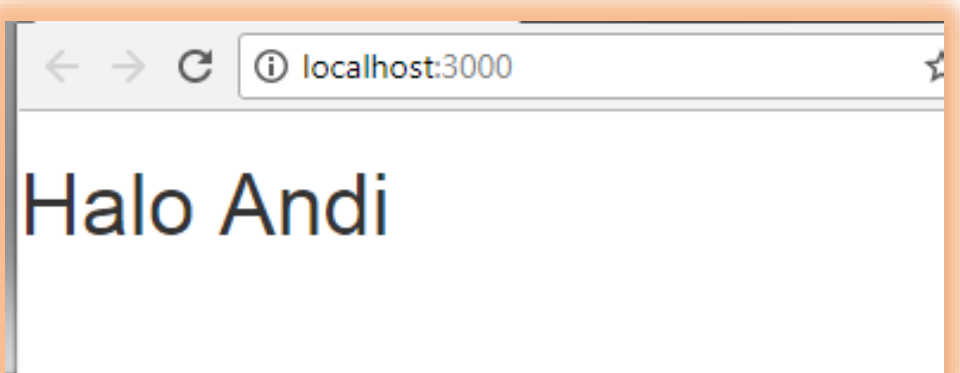
src/App.js

State #1

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

class App extends Component {
    constructor(){
        super();
        this.state = {nama:'Andi'};
    }
    render() {
        return (
            <h1>Halo {this.state.nama}</h1>
        );
    }
}

export default App;
```



src/App.js

State #2

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

class App extends Component {
    constructor(){
      super();
      this.state = {nama:'Andi', usia:21};
    }
render() {
    return (
        <div>
            <h1>Halo {this.state.nama}</h1>
            <h1>Usia {this.state.usia} th</h1>
        </div>
    );
}
}

export default App;
```

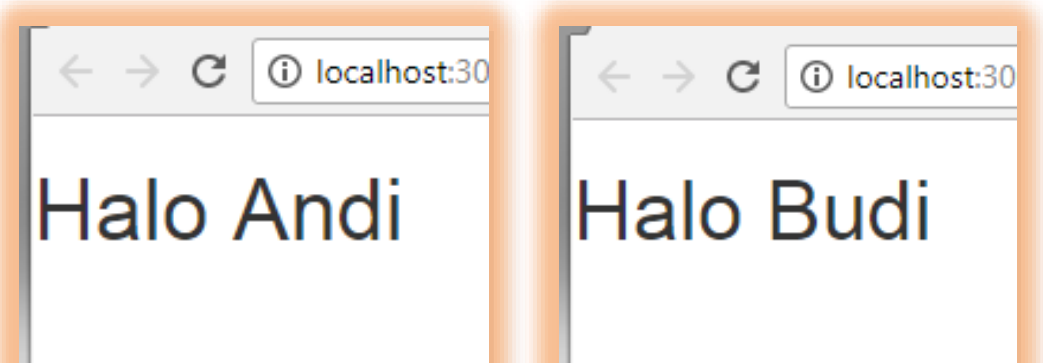
Halo Andi

Usia 21 th

src/App.js

Updating State

```
import React, { Component } from 'react';
class App extends Component {
    constructor(){
        super();
        this.state = {nama:'Andi'};
    }
    render() {
        setTimeout(() => {
            this.setState({nama: 'Budi'});
        }, 3000)
        return (
            <h1>Halo {this.state.nama}</h1>
        );
    }
}
export default App;
```



Props

- Most components can be customized with different parameters when they are created. These creation parameters are called *Props (Properties)*.
- It lets you make a component that is used in many different places in your app, with slightly different properties in each places.
- For short, props are static properties on a React component that are immutable (cannot be changed).

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src/App.js

Props #1

```
import React, { Component } from 'react';
import Footer from './component/Footer';

class App extends Component {
  render() {
    var teks = "Hak cipta dilindungi";
    return (
      <div>
        <h1>Selamat datang!</h1>
        <Footer konten={teks} />
      </div>
    );
  }
}
export default App;
```

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src/component/Footer.js

Props #1

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

class Footer extends Component {
  render() {
    return (
      <div>
        <h4>{this.props.konten}</h4>
      </div>
    );
  }
}
export default Footer;
```

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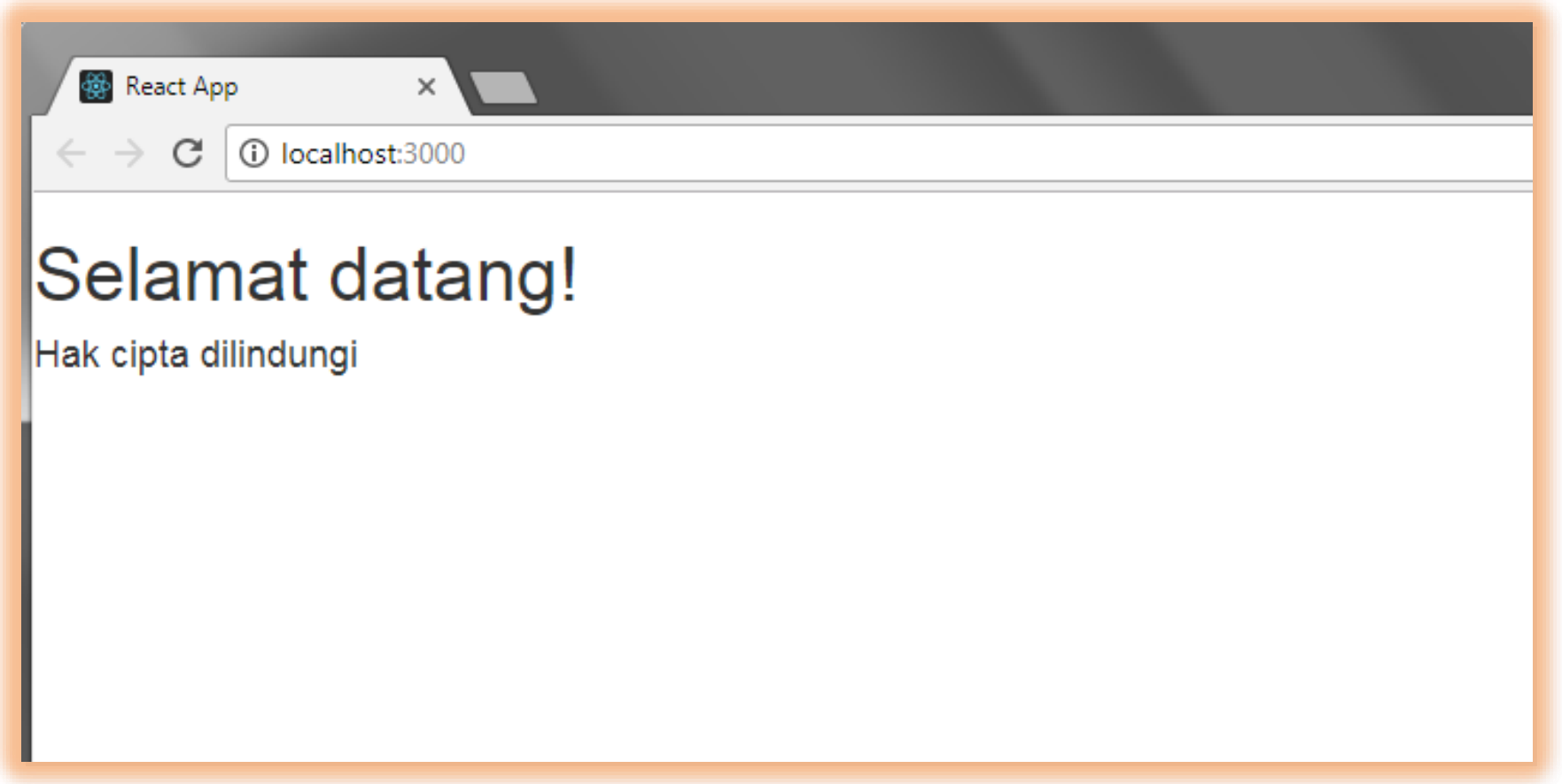
Props #1



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src/App.js

Props #2

```
import React, { Component } from 'react';
import Footer from './component/Footer';

class App extends Component {
  render() {
    var andi = {nama:"Andi",usia:24};
    return (
      <div>
        <h1>Selamat datang!</h1>
        <Footer id={andi.nama} umur={andi.usia}/>
      </div>
    );
  }
}
export default App;
```

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src/component/Footer.js

Props #2

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

class Footer extends Component {
  render() {
    return (
      <div>
        <h4>Halo kakak {this.props.id}</h4>
        <h4>Usia {this.props.umur} th, ya?</h4>
      </div>
    );
  }
}
export default Footer;
```

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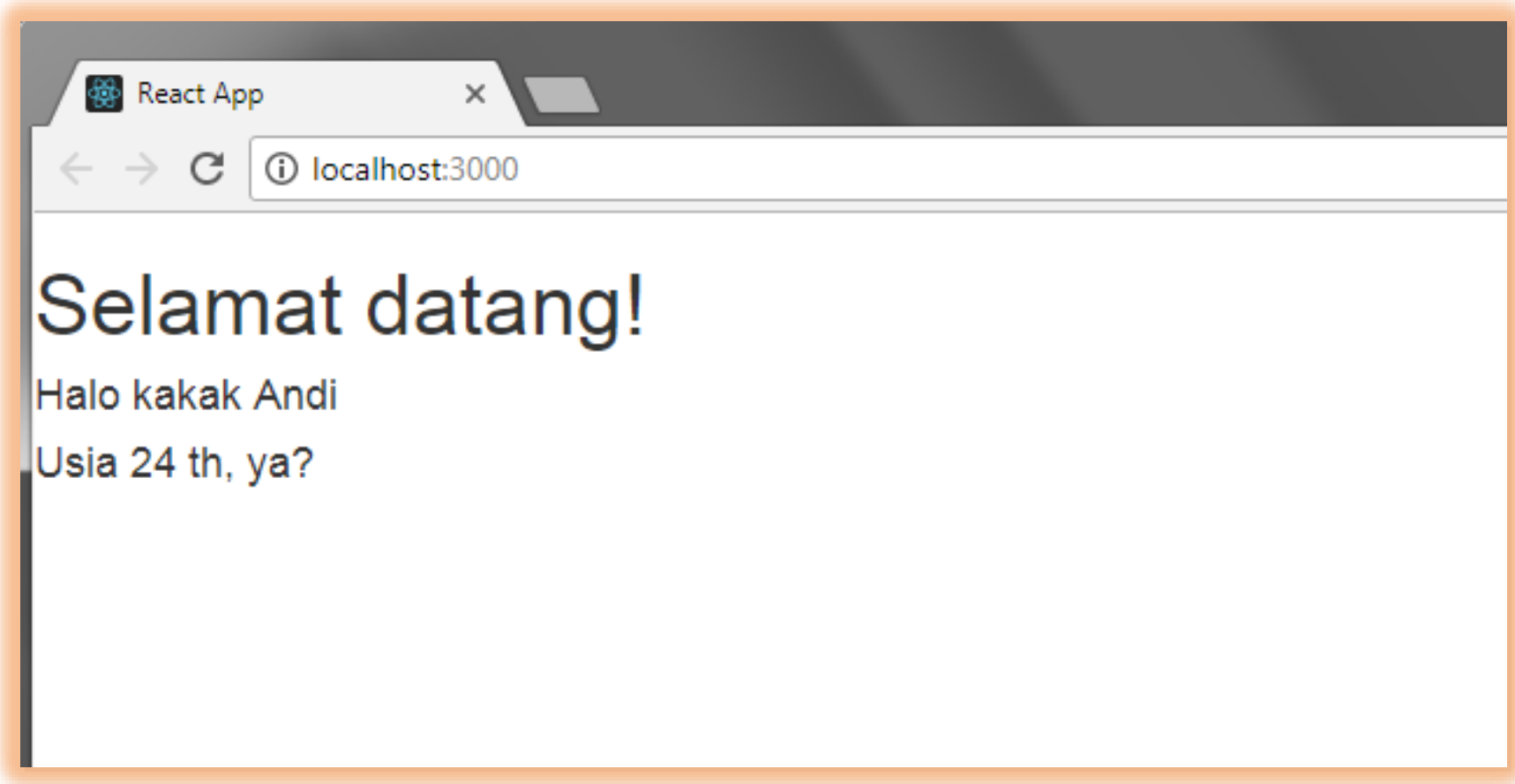
Props #2



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src/App.js

State → Props

```
import React, { Component } from 'react';
import Footer from './component/Footer';

class App extends Component {
  constructor(){
    super();
    this.state = {nama:'Andi'};
  }
  render() {
    return (
      <div>
        <Footer id={this.state.nama} />
      </div>
    );
  }
}
export default App;
```

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src/component/Footer.js

State → Props

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

class Footer extends Component {
  render() {
    return (
      <div>
        <h1>Halo {this.props.id}</h1>
      </div>
    );
  }
}
export default Footer;
```

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Handling Events

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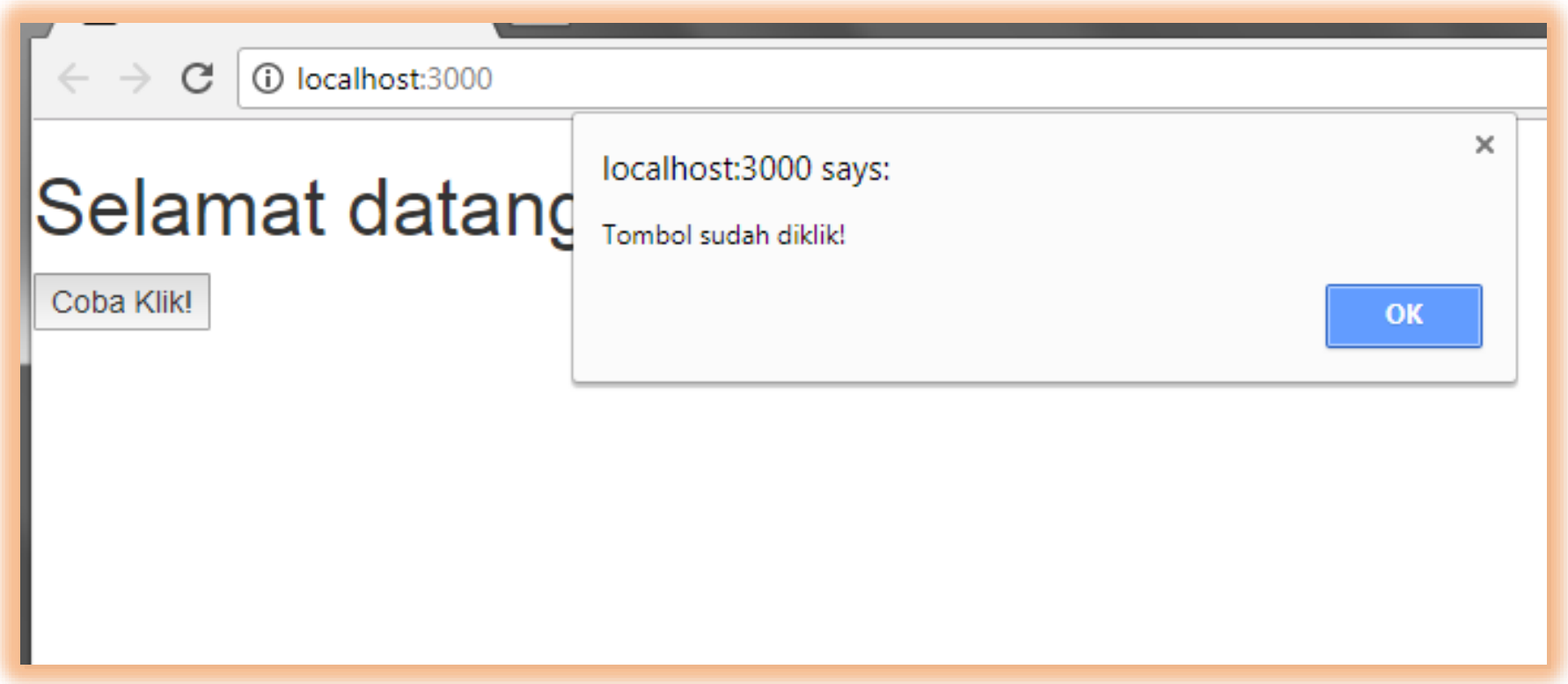
Click Event



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src/App.js

Click Event

```
import React, { Component } from 'react';
class App extends Component {
  klik(){
    alert('Tombol sudah diklik!');
  }
  render() {
    return (
      <div>
        <h1>Selamat datang!</h1>
        <button onClick={this.klik}>
          Coba Klik!
        </button>
      </div>
    );
  }
}
export default App;
```

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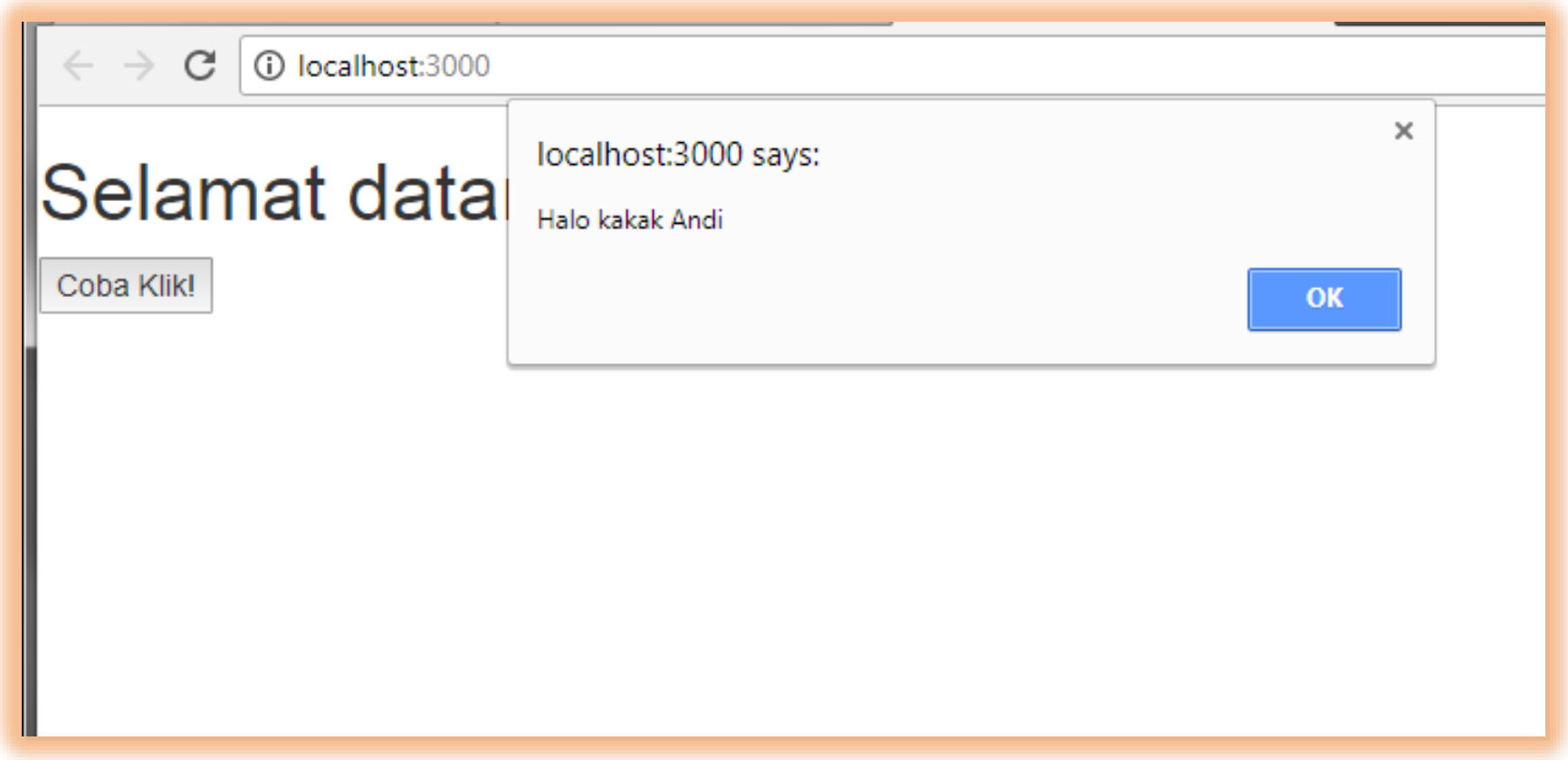
Click Event *with param*



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src/App.js

Click Event *with param*

```
import React, { Component } from 'react';
class App extends Component {
  klik(siapa){
    alert('Halo kakak '+siapa);
  }
  render() {
    return (
      <div>
        <h1>Selamat datang!</h1>
        <button onClick={()=>{this.klik('Andi');}}>
          Coba Klik!
        </button>
      </div>
    );
  }
}
export default App;
```

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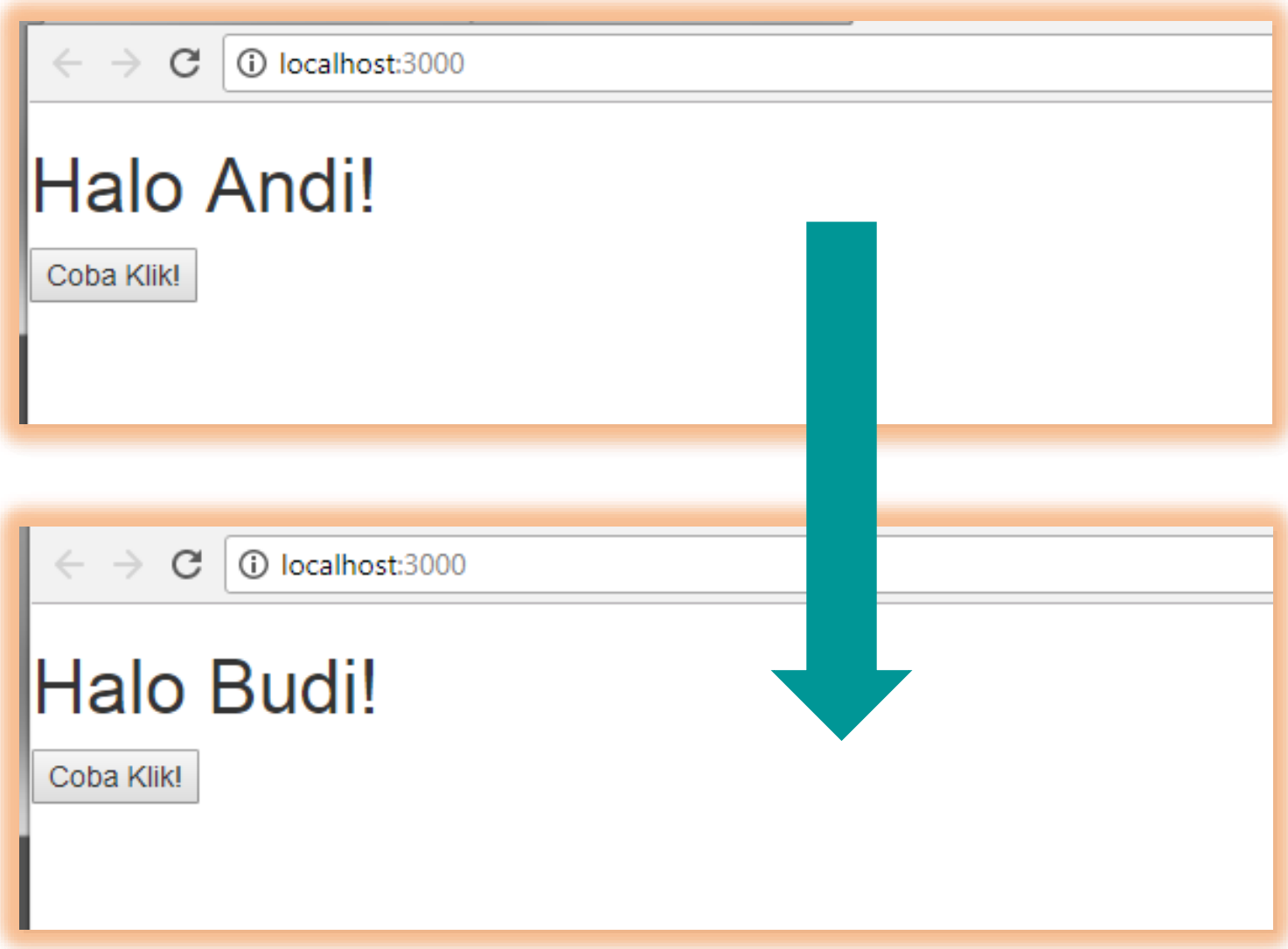
Click Event

update State #1



src/App.js

Click Event

update State #1

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Andi'};
  }
  klik(siapa){
    this.setState({user:siapa});
  }
  render() {
    return (
      <div>
        <h1>Halo {this.state.user}!</h1>
        <button onClick={()=>{this.klik('Budi');}}>
          Coba Klik!
        </button>
      </div>
    );
  }
}
export default App;
```

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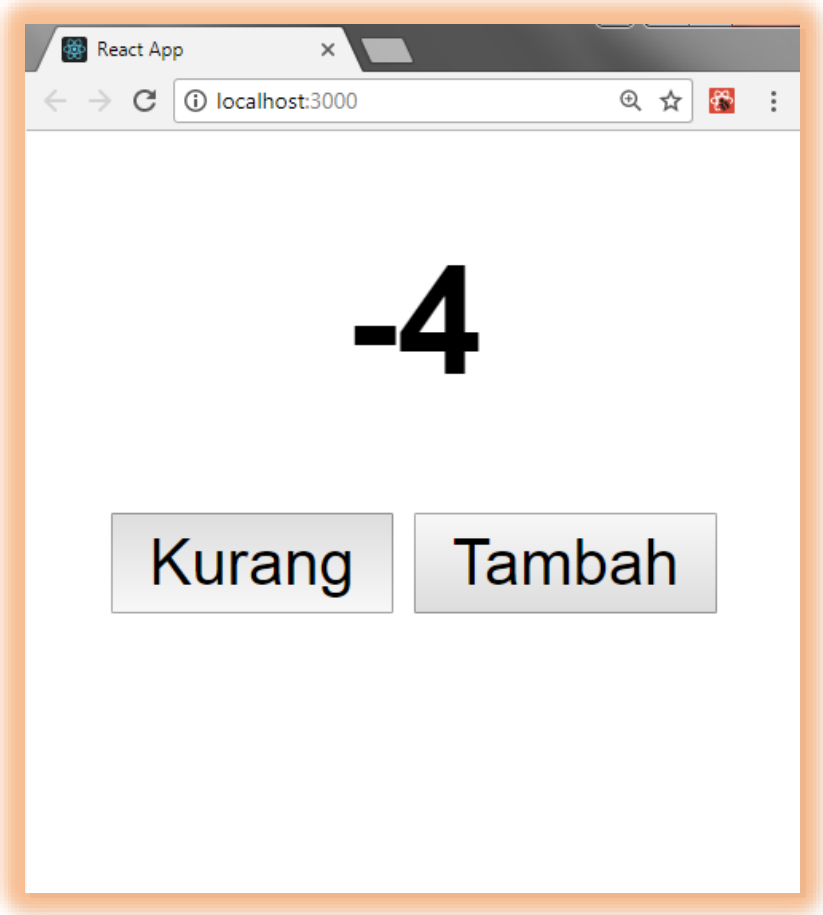
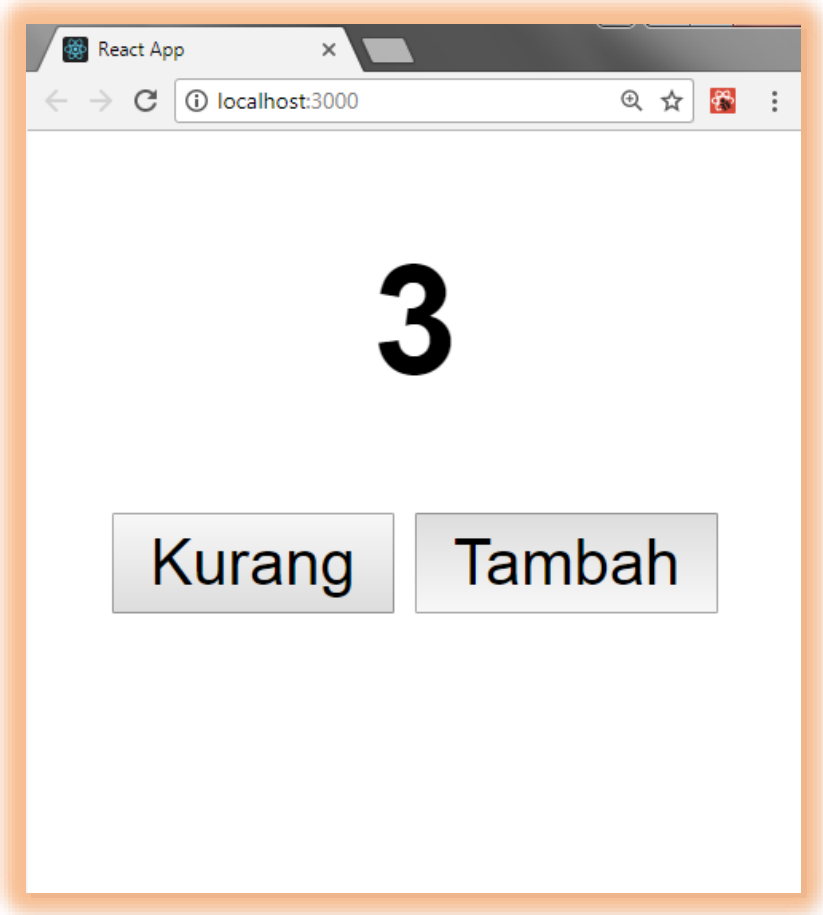
Click Event

update State #2





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src/App.js

Click Event

update State #2

Part 1

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

class App extends Component {
  state = { count: 0 }

  tambah = () => {
    this.setState({
      count: this.state.count + 1
    });
  }

  kurang = () => {
    this.setState({
      count: this.state.count - 1
    });
  }
```

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src/App.js

Click Event

update State #2

Part 2

```
render(){
  return (
    <div>
    <center>
    <h1>{this.state.count}</h1>
    <div>
    <button onClick = {this.kurang}>Kurang</button>
    <span> </span>
    <button onClick = {this.tambah}>Tambah</button>
    </div>
    </center>
    </div>
  );
}
}

export default App;
```

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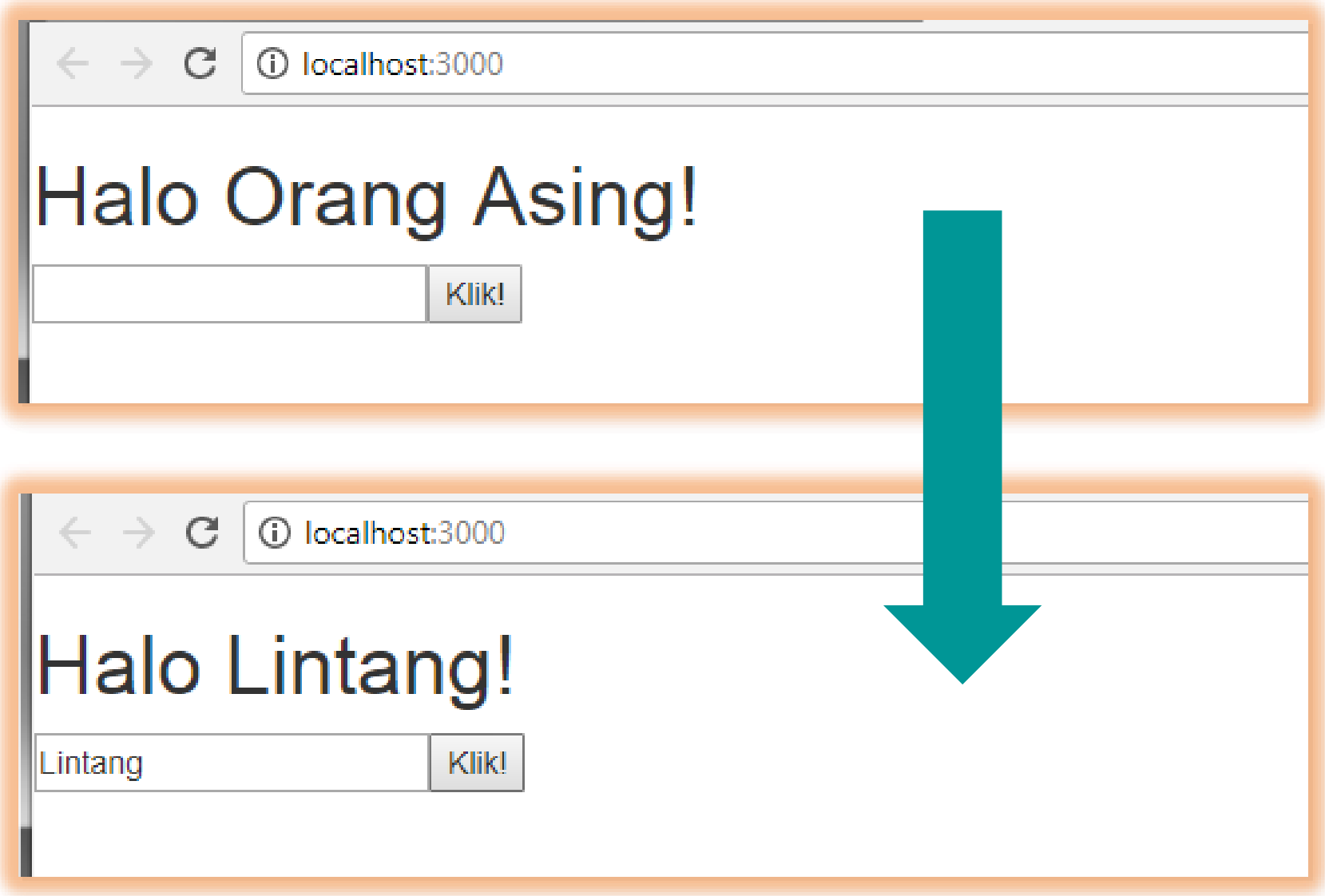
Click Event

update State from user input



Click Event

update State from user input

src/App.js

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Orang Asing'};
  }
  klik(){
    this.setState({user: this.refs.nama.value});
  }
  render() {
    return (
      <div>
        <h1>Halo {this.state.user}!</h1>
        <input ref="nama" type="text"/>
        <button onClick={()=>{this.klik();}}>Klik!</button>
      </div>
    );
  }
}
export default App;
```

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Events

- **Keyboard Events**
  onKeyDown onKeyPress onKeyUp

- **Focus Events**
  onFocus onBlur

- **Form Events**
  onChange onInput onInvalid onSubmit

- **Mouse Events**
  onClick onContextMenu onDoubleClick onDrag onDragEnd onDragEnter onDragExit onDragLeave onDragOver onDragStart onDrop onMouseDown onMouseEnter onMouseLeave onMouseMove onMouseOut onMouseOver onMouseUp

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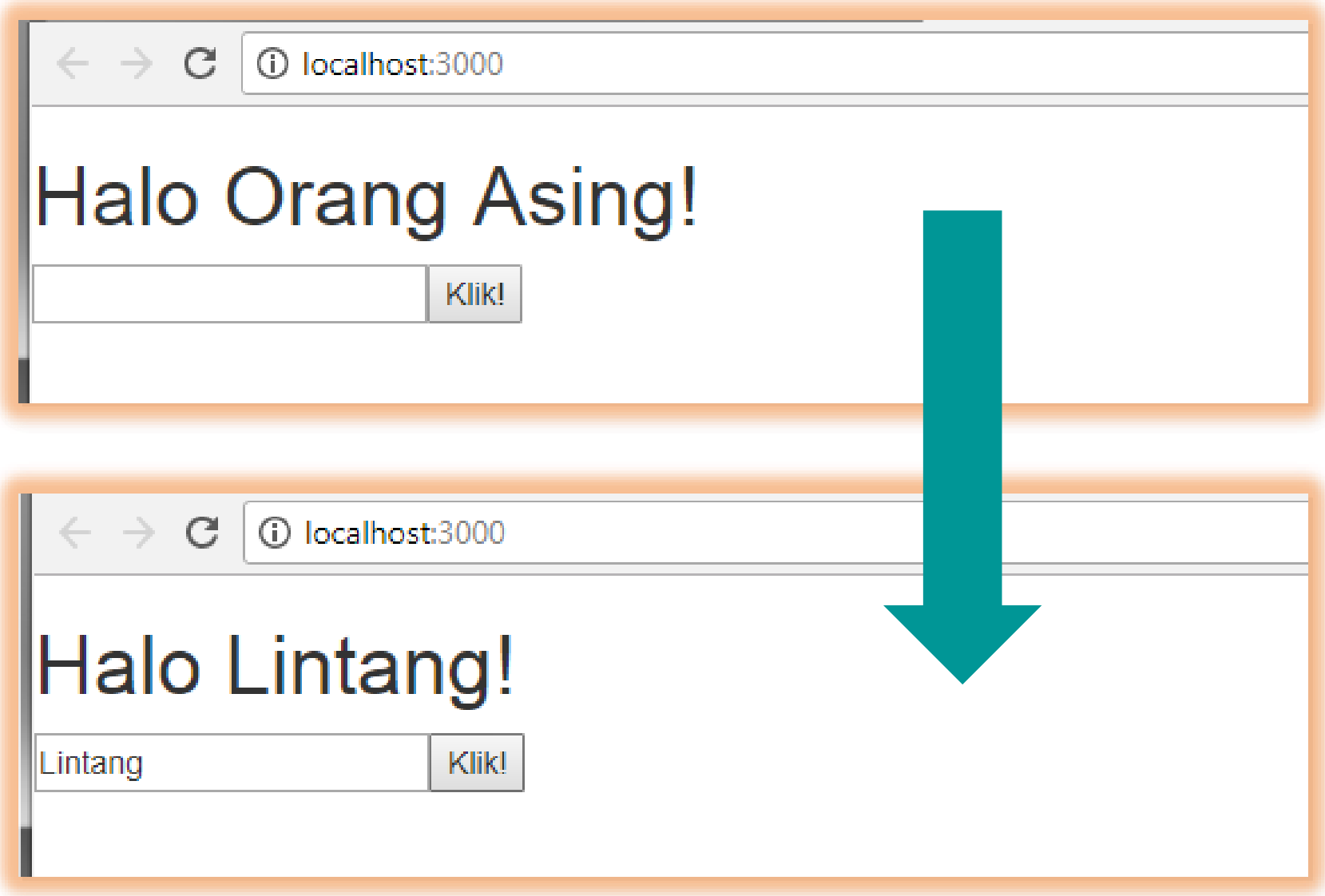
Double Click Event

update State from user input



src/App.js

Double Click

update State from user input

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Orang Asing'};
  }
  klik(){
    this.setState({user: this.refs.nama.value});
  }
  render() {
    return (
      <div>
        <h1>Halo {this.state.user}!</h1>
        <input ref="nama" type="text"/>
        <button onDoubleClick={()=>{this.klik();}}>
          Klik!
        </button>
      </div>
    );
  }
}
export default App;
```

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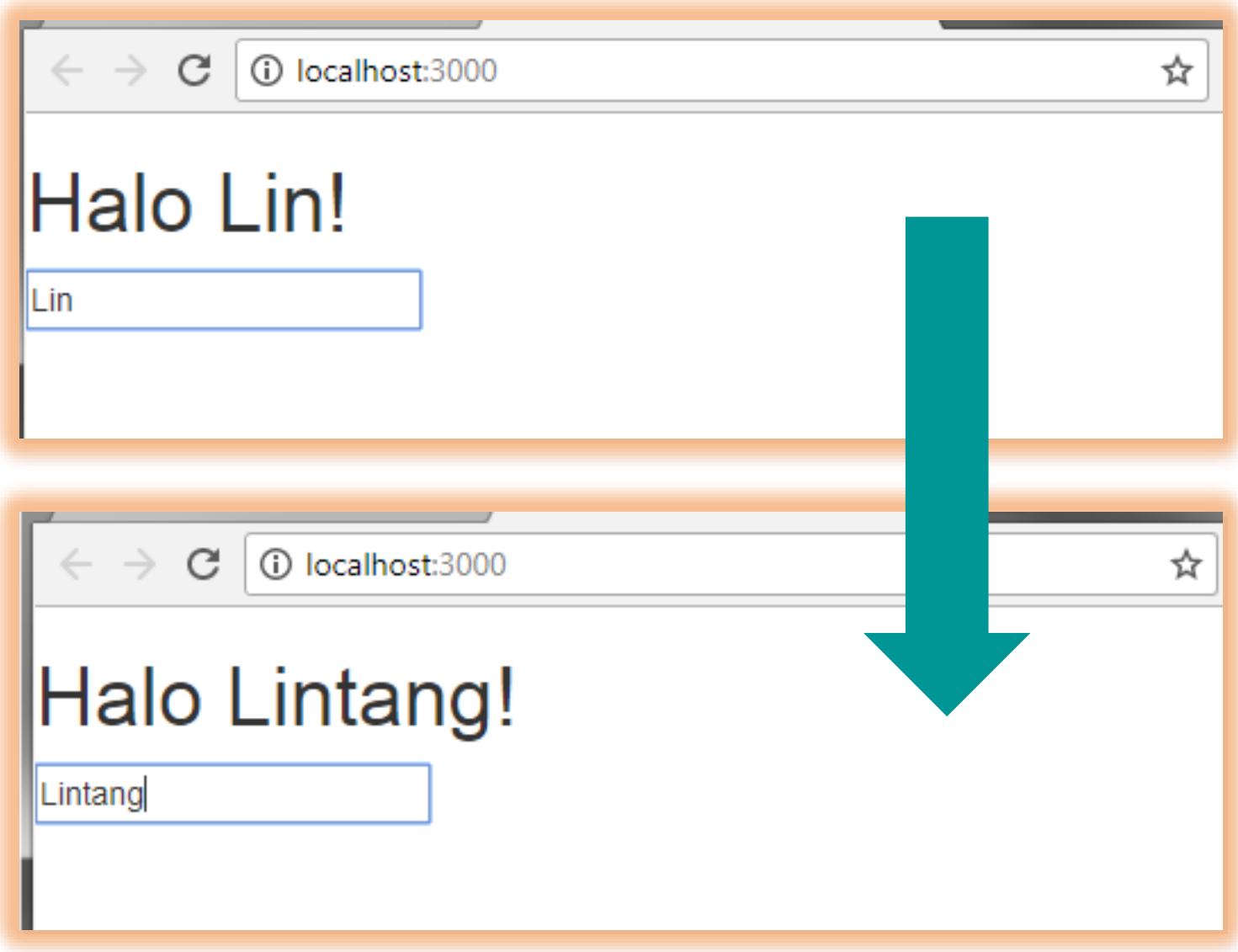
onInput Event

update State from user input



onInput Event

update State from user input

src/App.js

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Orang Asing'};
  }
  klik(){
    this.setState({user: this.refs.nama.value});
  }
  render() {
    return (
      <div>
        <h1>Halo {this.state.user}!</h1>
        <input ref="nama" type="text"
         onInput={()=>{this.klik();}}/>
      </div>
    );
  }
}
export default App;
```

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Life-cycle Methods

#1 Mounting

- componentWillMount(){}

Invoked once on both client and server, immediately before the initial rendering occurs.

- componentDidMount(){}

Invoked once only on client, immediately after the initial rendering occurs.

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Life-cycle Methods

Mounting

src/App.js

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Orang Asing'};
  }
  componentWillMount(){
    this.setState({user:'Yayan'});
    console.log('Ini Will Mount '+this.state.user);
  }
  componentDidMount(){
    console.log('Ini Did Mount '+this.state.user);
  }
  render() {
    return (
      <div><h1>Halo {this.state.user}!</h1></div>
    );
  }
}
export default App;
```

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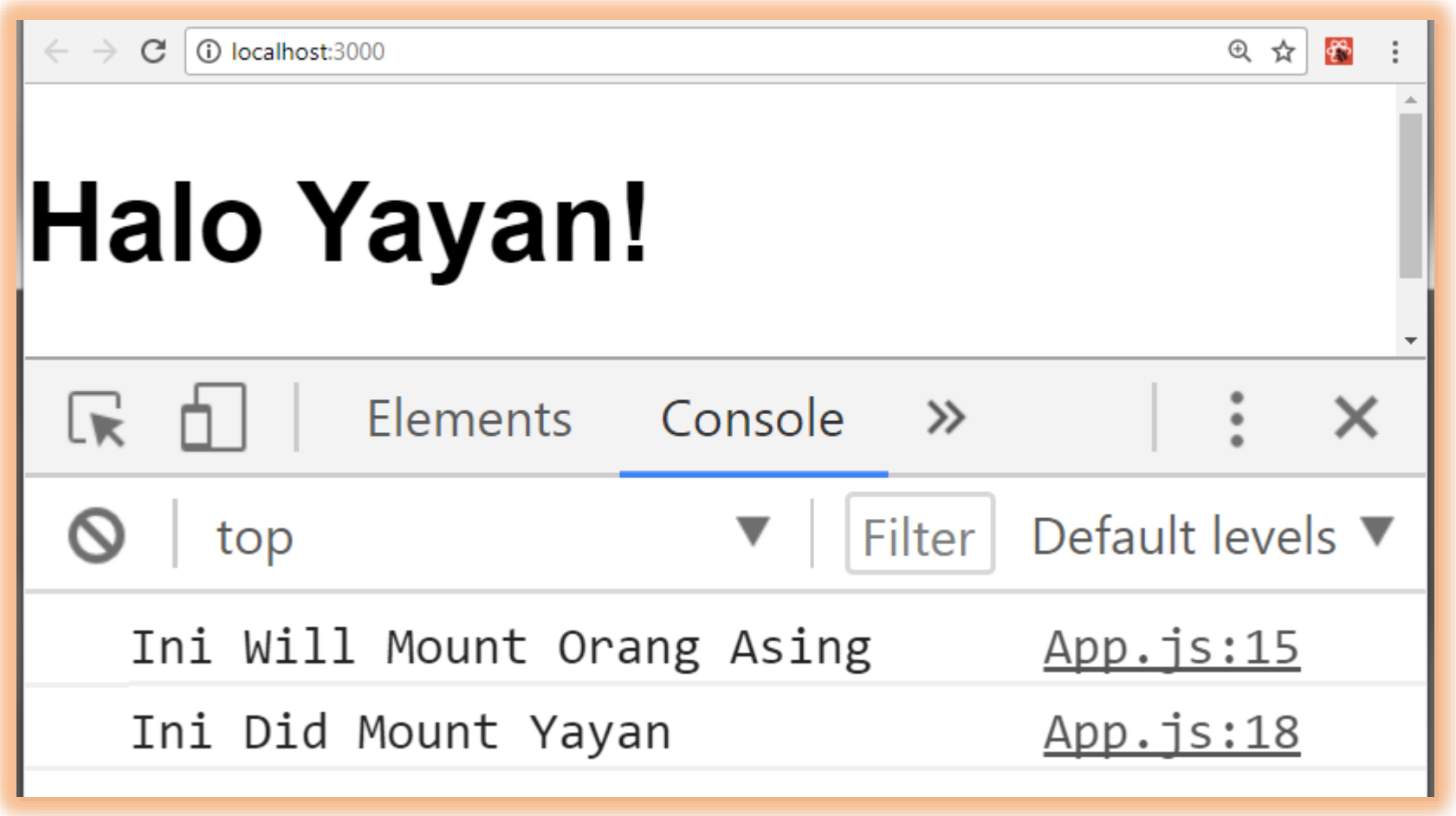
src/App.js

Life-cycle Methods

Mounting



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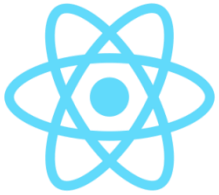

Life-cycle Methods

#2 Updating

- componentWillUpdate()

Invoked immediately before rendering when new props or state are being received. This isn't called for the initial render.

- componentDidUpdate()

Invoked immediately after the component's updates are flushed to the DOM. This isn't called for the initial render.

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Life-cycle
Updating

src/App.js

```
import React, { Component } from 'react';
class App extends Component {
  constructor(){
    super();
    this.state = {user:'Orang Asing'};
  }
  klik(){
    this.setState({user: this.refs.nama.value});
  }
  componentWillUpdate(x, y){
    console.log('Ini Will Update '+y.user);
  }
  componentDidUpdate(){
    console.log('Ini Did Update ');
  }
  render() {
    return (
 <div><h1>Halo {this.state.user}!</h1>
 <input ref="nama" type="text" onInput={()=>{this.klik();}}/>
 </div>
  );}}
export default App;
```

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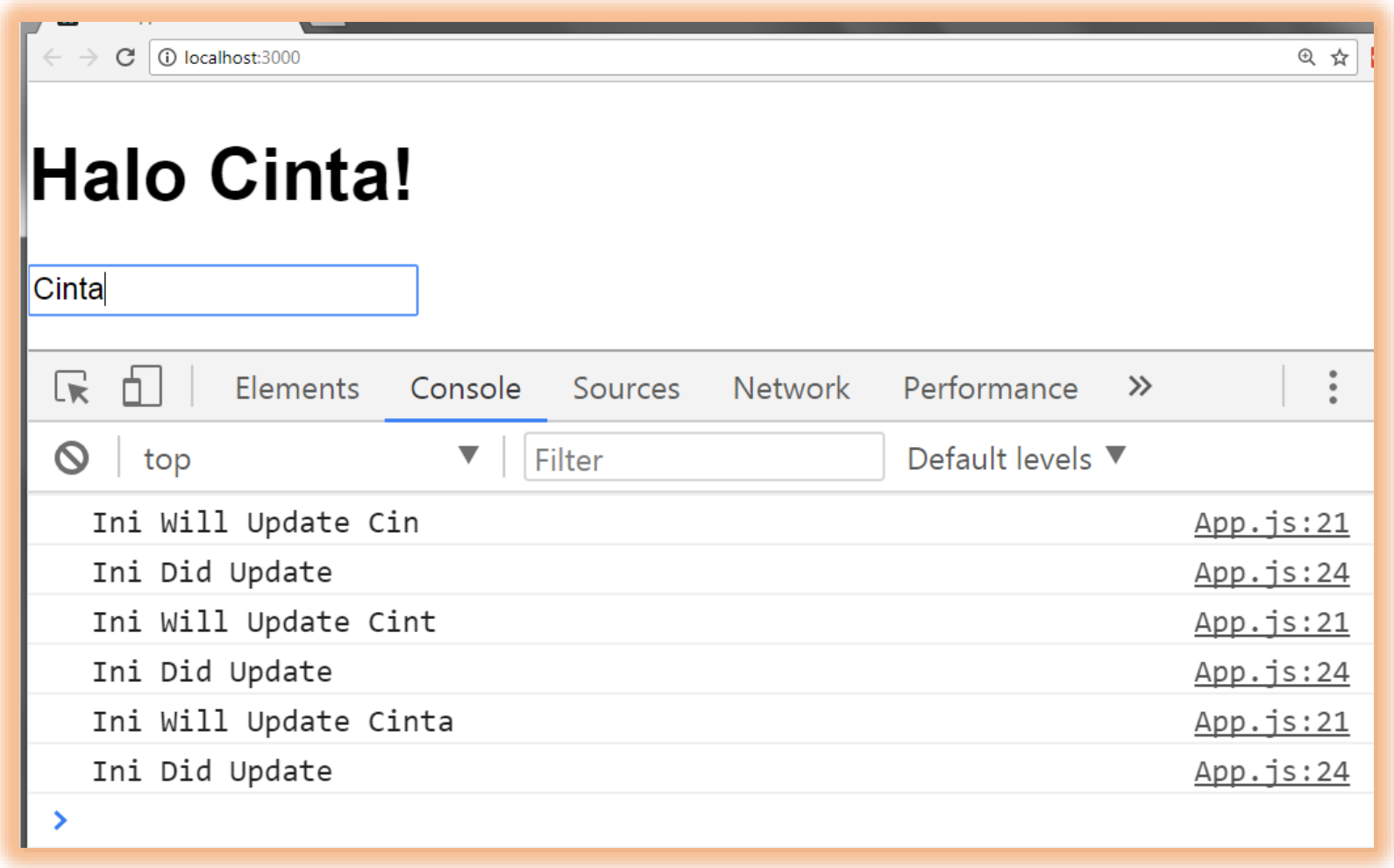
src/App.js

Life-cycle Methods

Updating



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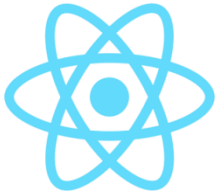

Router

- A router allows an application to navigate between different components, changing the browser URL, modifying the browser history, and keeping the UI state in sync.
- React focuses only on building user interfaces, so it doesn't have a built-in solution for routing.
- We can use ***React Router DOM***, which allows us to define routes on our web app. First, install this package on our React project directory:

```
$ npm install react-router-dom --save
```

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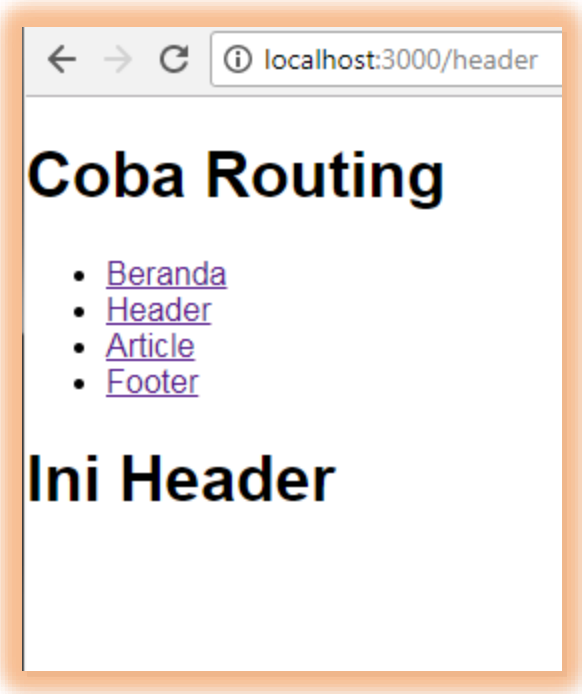
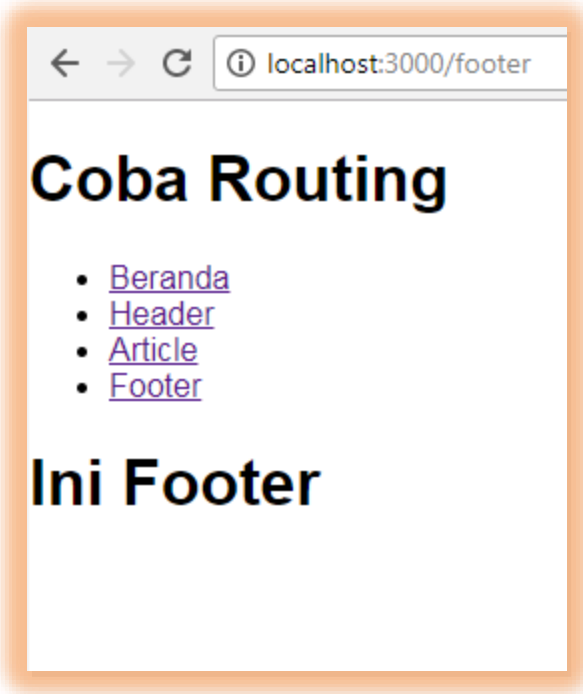
Routing



Header.js
localhost/header

Article.js
localhost/article



Footer.js
localhost/footer

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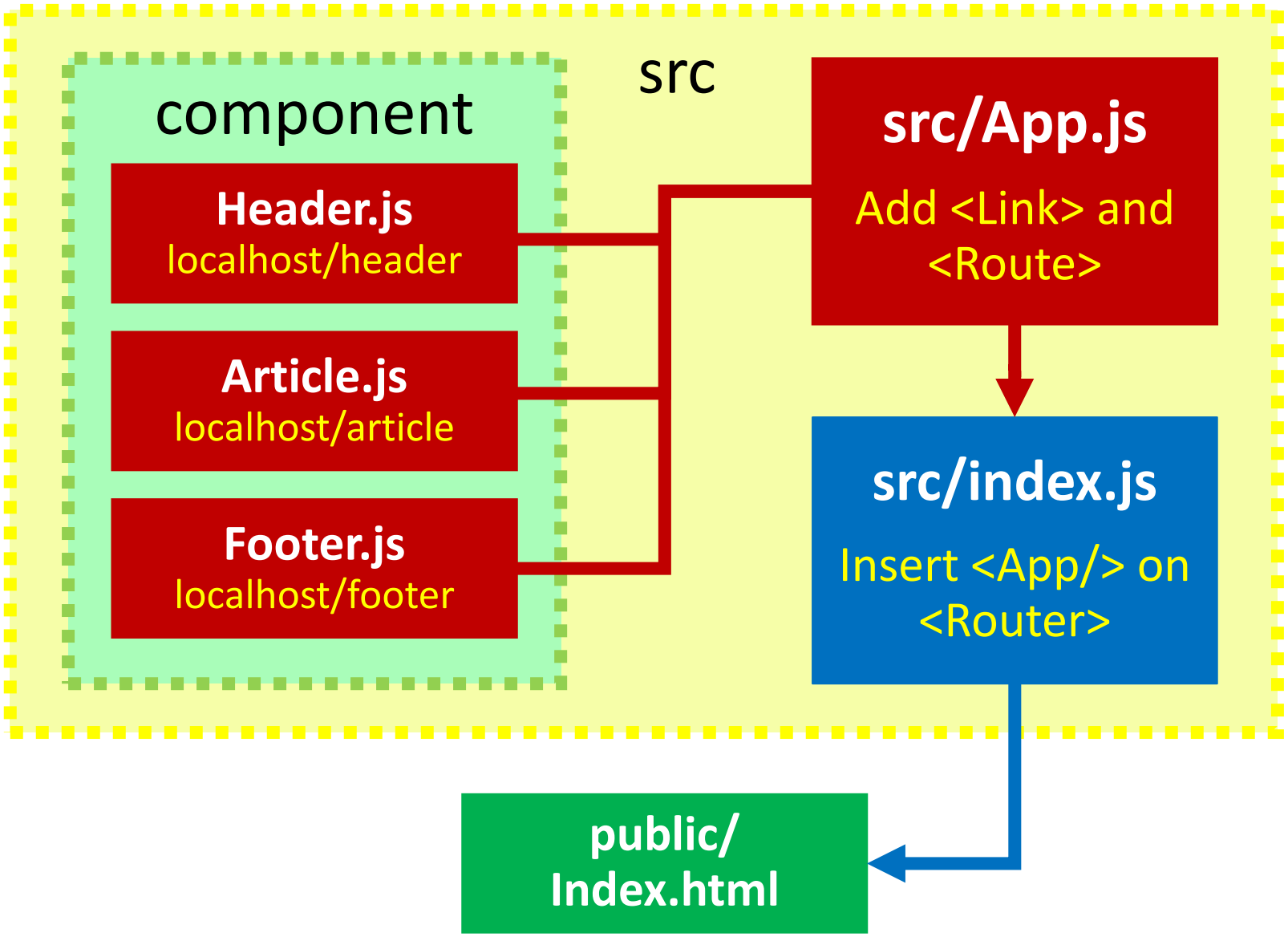

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src/component/Header.js

#1 component

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

class Header extends Component {
    render() {
        return (
            <h1>Ini Header!</h1>
        );
    }
}

export default Header;
```

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src/component/Article.js

#2 component

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

class Article extends Component {
    render() {
        return (
            <h1>Ini Article!</h1>
        );
    }
}

export default Article;
```

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src/component/Footer.js

#3 component

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

class Footer extends Component {
    render() {
        return (
            <h1>Ini Footer!</h1>
        );
    }
}

export default Footer;
```

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src/index.js

Insert Router!

```
import React from 'react';
import ReactDOM from 'react-dom';
import './index.css';
import App from './App';
import registerServiceWorker from
'./registerServiceWorker';

import { BrowserRouter } from 'react-router-dom';

ReactDOM.render(
  <BrowserRouter>
    <App />
  </BrowserRouter>,
document.getElementById('root'));

registerServiceWorker();
```

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src/App.js

Part 1 Import

```
import React, { Component } from 'react';
import { Link, Route } from 'react-router-dom';

import Header from './component/Header';
import Footer from './component/Footer';
import Article from './component/Article';
```

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src/App.js

Part 2 Insert Link

```
class App extends Component {
render() {
return (
<div>
<h1>Coba Routing</h1>
<ul>
<li><Link to="/">Beranda</Link></li>
<li><Link to="/header">Header</Link></li>
<li><Link to="/article">Article</Link></li>
<li><Link to="/footer">Footer</Link></li>
</ul>
```

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src/App.js

Part 3 Insert Route

```
<div>
<Route exact path="/" component={'Home'}/>
<Route path="/article" component={Article}/>
<Route path="/header" component={Header}/>
<Route path="/footer" component={Footer}/>
</div>
</div>
);
}
}
export default App;
```

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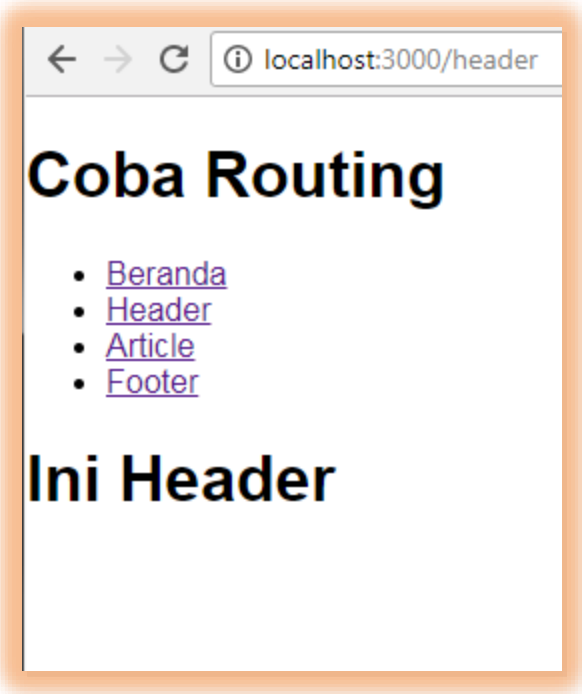
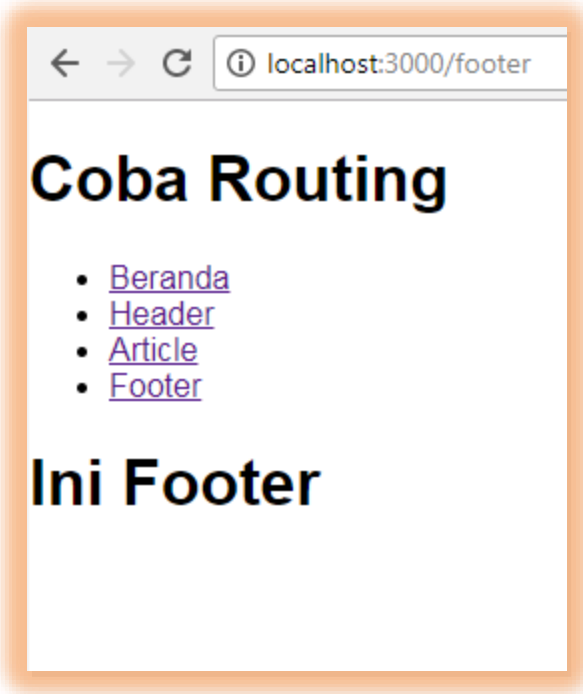
Routing



Header.js
localhost/header

Article.js
localhost/article



Footer.js
localhost/footer

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Front-End Development

React

#2 Learn Once, Write Anywhere

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