

— 第二届 —

# 前端开发者年度大会

FEDAY





# React tips

while building  
facebook-scale application







# ShihChi Huang





# Container Component



Container Component

Flux ReduceStore

Container Component

Flux ReduceStore

Functional \*



what

is Container Component





**FooContainer**

**FooContainer**

**Foo**

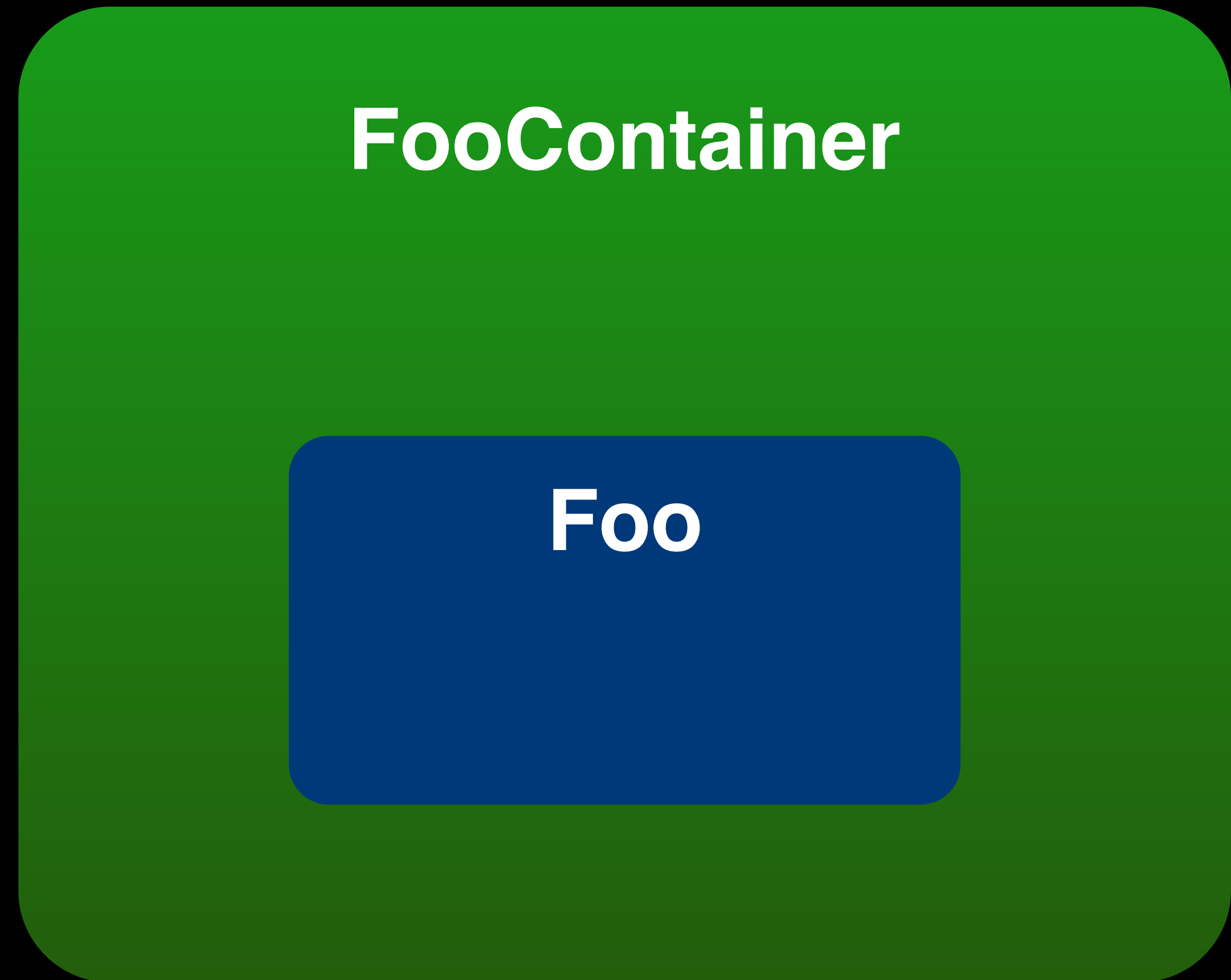


**FooContainer**

**Foo**

handle data  
loading / error

render





how

to create

Container Component

```
class FooContainer extends Component {  
  constructor(props) {  
    super(props);  
    this.state = { data: [] };  
  }  
  render() {  
    return (  
      <Foo {...this.state} />  
    );  
  }  
}
```



```
class FooContainer extends Component {  
  static getStores() {  
    return [FooStore];  
  }  
  static calculateState() {  
    return { data: FooStore.getData() };  
  }  
  render() {  
    return (  
      <Foo {...this.state} />  
    );  
  }  
}
```

why

Container Component





# Container Component

# Container Component

- manage data/state



# Container Component

- manage data/state
- UI logic

# Container Component

- manage data/state
- UI logic
- reusable

# Container Component

- manage data/state
- UI logic
- reusable
- needed tests



# UI Component

- manage data/state
- UI logic
- reusable
- needed tests



```
class TodoApp extends Component {
  constructor(props) {
    super(props);
    this.state = { todos: [] };
  }
  componentDidMount() {
    fetch('/todos.json').then(todos => {
      this.setState({ todos });
    });
  }
  render() {
    const todos = this.state.todos
      .map(todo => <Todo {...todo} />);
    return <ul>{todos}</ul>;
  }
}
```

```
class TodoApp extends Component {
  constructor(props) {
    super(props);
    this.state = { todos: [] };
  }
  componentDidMount() {
    fetch('/todos.json').then(todos => {
      this.setState({ todos });
    });
  }
  render() {
    const todos = this.state.todos
      .map(todo => <Todo {...todo} />);
    return <ul>{todos}</ul>;
  }
}
```



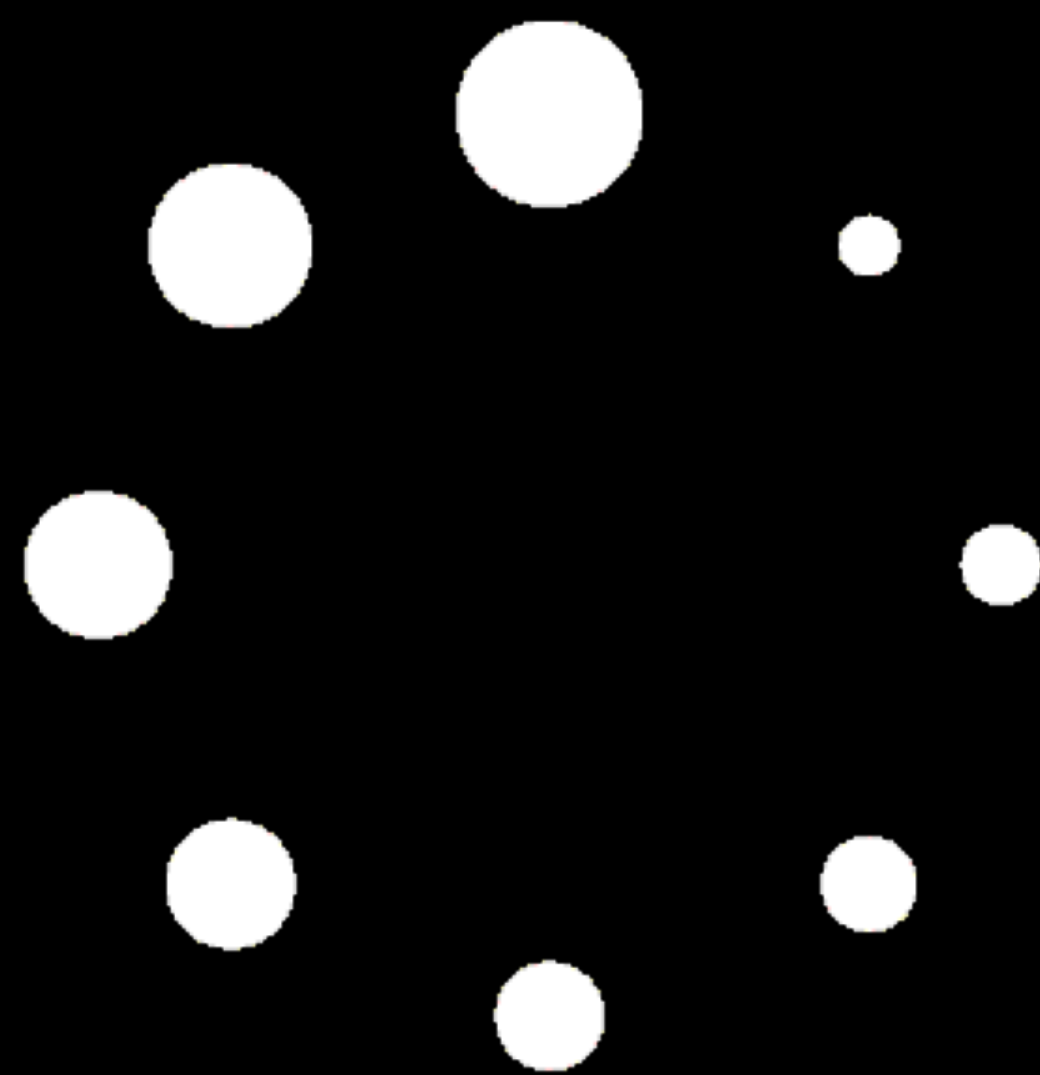


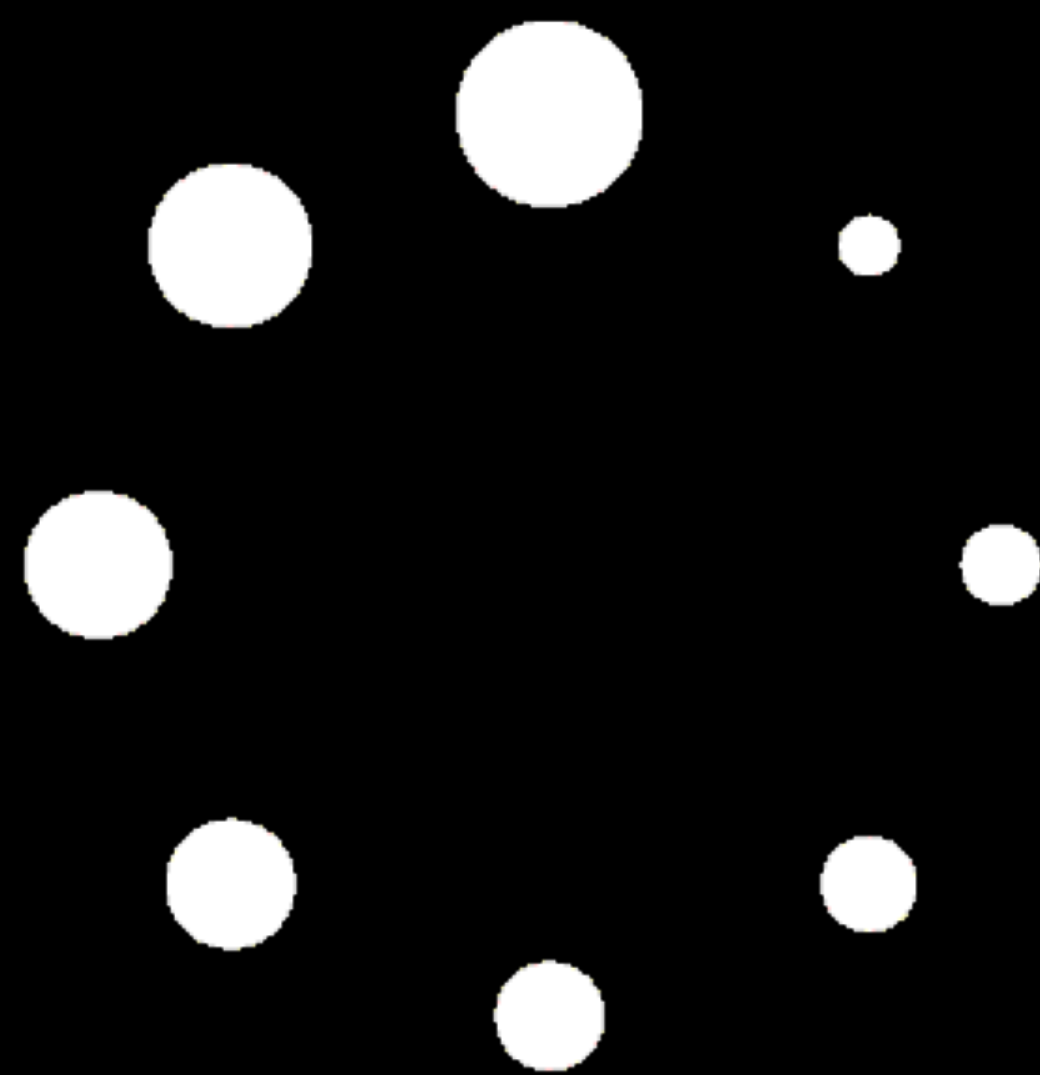
```
class TodoApp extends Component {
  componentDidMount() {
    fetch('/todos.json').then(
      () => {
        // ...
      }
    );
  }
}
```

```
class TodoApp extends Component {
  componentDidMount() {
    fetch('/todos.json').then(
      todos => {
        this.setState({
          error: null,
          todos
        });
      },
    );
  }
}
```

```
class TodoApp extends Component {
  componentDidMount() {
    fetch('/todos.json').then(
      todos => {
        this.setState({
          error: null,
          todos
        });
      },
      error => {
        this.setState({ error });
      }
    );
  }
}
```









```
class TodoApp extends Component {  
  componentDidMount() {
```

```
}
```

```
class TodoApp extends Component {  
  componentDidMount() {  
    this.setState({ isLoading: false });  
  }  
}
```



```
class TodoApp extends Component {
  componentDidMount() {
    this.setState({ isLoading: false });
    fetch('/todos.json').then(
      todos => {
        this.setState({
          error: null,
          todos,
          isLoading: true,
        });
      },
      error => {
        this.setState({ error });
      }
    );
  }
}
```



timeout/retry

timeout/retry  
batch

timeout/retry

batch

filter by \*



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(ノ 𐄂益𐄂)ノ ≡ 上上



```
class TodoContainer extends Component {
  componentDidMount() {
    this.setState({ isLoading: true });
    fetch('/todos.json').then(
      todos => {
        this.setState({
          error: null,
          todos,
          isLoading: false
        });
      },
      error => this.setState({ error })
    );
  }
  render() {

  }
}
```

```
class TodoContainer extends Component {
  componentDidMount() {
    this.setState({ isLoading: true });
    fetch('/todos.json').then(
      todos => {
        this.setState({
          error: null,
          todos,
          isLoading: false
        });
      },
      error => this.setState({ error })
    );
  }
  render() {
    return <Todo {...this.state} />;
  }
}
```





```
class Todo extends Component {  
    render() {
```

```
class Todo extends Component {  
  render() {  
    const { error, isLoading, todos }  
      = this.props;  
  
  }  
}
```

```
class Todo extends Component {  
  render() {  
    const { error, isLoading, todos }  
      = this.props;  
    if (error) { return <ErrorPage />; }  
  
  }  
}
```

```
class Todo extends Component {  
  render() {  
    const { error, isLoading, todos }  
      = this.props;  
    if (error) { return <ErrorPage />; }  
    if (isLoading) { return <Spinner />; }  
  
  }  
}
```

```
class Todo extends Component {  
  render() {  
    const { error, isLoading, todos }  
      = this.props;  
    if (error) { return <ErrorPage />; }  
    if (isLoading) { return <Spinner />; }  
    if (!todos.length) {  
      return <EmptyResult />;  
    }  
  }  
}
```

```
class Todo extends Component {
  render() {
    const { error, isLoading, todos }
      = this.props;
    if (error) { return <ErrorPage />; }
    if (isLoading) { return <Spinner />; }
    if (!todos.length) {
      return <EmptyResult />;
    }
    const lists = todos.map(todo => {
      return <TodoItem {...todo} />;
    });
    return <ul>{lists}</ul>;
  }
}
```



**FLUX STORE**



**REMEMBER?**

[memegenerator.net](http://memegenerator.net)



## Store

```
switch (type) {  
  case 'ADD_TODO':  
    _todos.push(todo);  
    break;  
  case 'DELETE_TODO':  
    _todos.splice(0, index);  
    break;  
}
```

onAddTodo  
onRemoveTodo

## Store

```
switch (type) {  
  case 'ADD_TODO':  
    _todos.push(todo);  
    break;  
  case 'DELETE_TODO':  
    _todos.splice(0, index);  
    break;  
}
```

onAddTodo  
onRemoveTodo

emitChange  
emitChange

## Store

```
switch (type) {  
  case 'ADD_TODO':  
    _todos.push(todo);  
    break;  
  case 'DELETE_TODO':  
    _todos.splice(0, index);  
    break;  
}
```



```
import {EventEmitter} from 'events';  
const TodoStore = Object.assign(  
  {}, EventEmitter.prototype  
);
```



```
import {EventEmitter} from 'events';
const TodoStore = Object.assign(
  {}, EventEmitter.prototype
);
TodoStore.dispatchToken =
  MyDispatcher.register(action => {

    }
  });
```

```
import {EventEmitter} from 'events';
const TodoStore = Object.assign(
  {}, EventEmitter.prototype
);
TodoStore.dispatchToken =
  MyDispatcher.register(action => {
    switch (action.type) {
      case 'ADD_TODO':
        this._todos.push(action.todo);
        TodoStore.emitChange();
        break;

    }
  });
```

```
import {EventEmitter} from 'events';
const TodoStore = Object.assign(
  {}, EventEmitter.prototype
);
TodoStore.dispatchToken =
  MyDispatcher.register(action => {
    switch (action.type) {
      case 'ADD_TODO':
        this._todos.push(action.todo);
        TodoStore.emitChange();
        break;
      case 'DELETE_TODO':
        this._todos.splice(0, action.index);
        TodoStore.emitChange();
        break;
    }
  });
```



## ▲ Redux: Atomic Flux with Hot Reloading ([github.com](#))

186 points by monort 238 days ago | [past](#) | [web](#) | [44 comments](#)

▲ staltz 238 days ago

Redux is a major improvement over Flux libraries because it removes a lot of boilerplate while not removing functionality (in fact, enabling more features). In Flux libraries, it's common for an entity to take inputs and simply produce outputs. That's not the use case for a class. It's the use case for a function, and that's why Redux removes boilerplate.

However, I think it's time we stop calling everything Flux. Just because an architecture is unidirectional doesn't mean it's Flux. Facebook described it clearly as an architecture structured with: Dispatcher, Stores, Actions, Action Creators, and Components (sometimes even with the distinction of View and Controller View). Redux is Flux-inspired, but has significant differences. Maybe we should call it just Flux-inspired architecture. The distinction is important because there are other unidirectional data flow architectures such as in Elm (<https://github.com/evancz/...>) and Cycle.js (<http://cycle.js.org>). We might be creating confusion when mentioning "Flux" and meaning different things.





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Redux is a major improvement over Flux libraries because it removes a lot of boilerplate while not removing functionality (in fact, enabling more features). In Flux libraries, it's common for an entity to take inputs and simply produce outputs. That's not the use case for a class. It's the use case for a function, and that's why Redux removes boilerplate.

However, I think it's time we stop calling everything Flux. Just because an architecture is unidirectional doesn't mean it's Flux. Facebook described it clearly as an architecture structured with: Dispatcher, Stores, Actions, Action Creators, and Components (sometimes even with the distinction of View and Controller View). Redux is Flux-inspired, but has significant differences. Maybe we should call it just Flux-inspired architecture. The distinction is important because there are other unidirectional data flow architectures such as in Elm (<https://github.com/evancz/...>) and Cycle.js (<http://cycle.js.org>). We might be creating confusion when mentioning "Flux" and meaning different things.



function

function ~~class~~



unnecessary  
intermediate-state

```
import {EventEmitter} from 'events';
const TodoStore = Object.assign(
  {}, EventEmitter.prototype
);
TodoStore.dispatchToken =
  MyDispatcher.register(action => {
    switch (action.type) {
      case 'ADD_TODO':
        this._todos.push(action.todo);
        TodoStore.emitChange();
        break;
      case 'DELETE_TODO':
        this._todos.splice(0, action.index);
        TodoStore.emitChange();
        break;
    }
  });
```



# ReduceStore

what

is ReduceStore



## ReduceStore

```
switch (type) {  
  case 'ADD_TODO':  
    return state.merge({  
      todos: state.todos.push(todo)  
    });  
  case 'DELETE_TODO':  
    return state.merge({  
      todos: state.todos.splice(0, index)  
    });  
}
```

onAddTodo  
onRemoveTodo

## ReduceStore

```
switch (type) {  
  case 'ADD_TODO':  
    return state.merge({  
      todos: state.todos.push(todo)  
    });  
  case 'DELETE_TODO':  
    return state.merge({  
      todos: state.todos.splice(0, index)  
    });  
}
```



onAddTodo  
onRemoveTodo

new state

## ReduceStore

```
switch (type) {  
  case 'ADD_TODO':  
    return state.merge({  
      todos: state.todos.push(todo)  
    });  
  case 'DELETE_TODO':  
    return state.merge({  
      todos: state.todos.splice(0, index)  
    });  
}
```

how

to use ReduceStore





```
import {ReduceStore} from 'flux/utils';
class TodoReduceStore extends ReduceStore {
  reduce(state, action) {
    switch (action.type) {
      case 'ADD_TODO':
        return state.merge({
          isLoading: false,
          todos: state.todos.push(action.todo)
        });
    }
  }
}
```

```
import {ReduceStore} from 'flux/utils';
class TodoReduceStore extends ReduceStore {
  reduce(state, action) {
    switch (action.type) {
      case 'ADD_TODO':
        return state.merge({
          isLoading: false,
          todos: state.todos.push(action.todo)
        });
      case 'DELETE_TODO':
        return state.merge({
          todos: state.todos.delete(action.index)
        });
    }
  }
}
```

```
import {ReduceStore} from 'flux/utils';
class TodoReduceStore extends ReduceStore {
  reduce(state, action) {
    switch (action.type) {
      case 'ADD_TODO':
        return state.merge({
          isLoading: false,
          todos: state.todos.push(action.todo)
        });
      case 'DELETE_TODO':
        return state.merge({
          todos: state.todos.delete(action.index)
        });
      default:
        return state;
    }
  }
}
```

```
import {Container} from 'flux/utils';
class TodoContainer extends Component {
  static getStores() {
    return [TodoReduceStore];
  }
  static calculateState() {
    return TodoReduceStore.getState();
  }
  render() {
    return <Todo {...this.state} />;
  }
}

export default Container.create(TodoContainer);
```



why

ReduceStore



- ease for Flux migration

- ease for Flux migration
- Functional style







Functional \*









`_renderXXX` as  
sub-component



```
class Todo extends Component {  
  _renderItem(todo) {  
    return <li>{todo.title}</li>  
  }  
  render() {  
    const items = this.props.todos  
      .map(this._renderItem);  
    return <ul>{items}</ul>;  
  }  
}
```

Stateless Component



```
function TodoItem(props) {  
  return <li>{props.title}</li>  
}
```

```
class Todo extends Component {  
  render() {  
    return (  
      <ul>  
        {this.props.todos.map(TodoItem) }  
      </ul>  
    );  
  }  
}
```

why `_render` is  
anti-pattern





```
class FooBar extends Component {  
  _renderFoo() {  
    return <p>foo-{this.props.name}</p>  
  }  
  _renderBar() {  
    return <p>bar-{this.props.name}</p>  
  }  
  
}
```

```
class FooBar extends Component {  
  _renderFoo() {  
    return <p>foo-{this.props.name}</p>  
  }  
  _renderBar() {  
    return <p>bar-{this.props.name}</p>  
  }  
  render() {  
    return this.props.isFoo  
      ? this._renderFoo()  
      : this._renderBar()  
  }  
}
```



preserved state

preserved state

difficult to bail out



```
function Foo(props) {  
  return <p>foo-{props.name}</p>  
}  
function Bar(props) {  
  return <p>bar-{props.name}</p>  
}
```

```
function Foo(props) {  
  return <p>foo-{props.name}</p>  
}  
function Bar(props) {  
  return <p>bar-{props.name}</p>  
}  
class FooBar extends Component {  
  render() {  
    return this.props.isFoo  
      ? <Foo name={this.props.name} />  
      : <Bar name={this.props.name} />  
  }  
}
```



# todo

| *add a todo*



hello



world



hello





```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    var className = classNames({
      'is-completed': isCompleted
    })
    return (
      <li className={className}>

        </li>
      );
    }
  }
}
```

```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    var className = classNames({
      'is-completed': isCompleted
    })
    return (
      <li className={className}>
        <input
          className="toggle"
          type="checkbox"
          checked={isCompleted}
          onChange={this._onChange}
        />

        </li>
      );
    }
  }
}
```

```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    var className = classNames({
      'is-completed': isCompleted
    })
    return (
      <li className={className}>
        <input
          className="toggle"
          type="checkbox"
          checked={isCompleted}
          onChange={this._onChange}
        />
        <label>{content}</label>

      </li>
    );
  }
}
```

```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    var className = classNames({
      'is-completed': isCompleted
    })
    return (
      <li className={className}>
        <input
          className="toggle"
          type="checkbox"
          checked={isCompleted}
          onChange={this._onChange}
        />
        <label>{content}</label>
        <button
          className="delete-todo"
          onClick={this._onDelete}
        />
      </li>
    );
  }
}
```





```
function TodoInput(props) {  
  return (  
    <input  
      className="toggle"  
      type="checkbox"  
      checked={props.checked}  
      onChange={props.onChange}  
    />  
  );  
}
```

```
function TodoInput(props) {  
  return (  
    <input  
      className="toggle"  
      type="checkbox"  
      checked={props.checked}  
      onChange={props.onChange}  
    />  
  );  
}  
function TodoContent(props) {  
  return (  
    <label>{props.content}</label>  
  );  
}
```

```
function TodoInput(props) {
  return (
    <input
      className="toggle"
      type="checkbox"
      checked={props.checked}
      onChange={props.onChange}
    />
  );
}

function TodoContent(props) {
  return (
    <label>{props.content}</label>
  );
}

function TodoDeleteButton(props) {
  return (
    <button
      className="delete-todo"
      onClick={props.onDelete}
    />
  );
}
```

```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    var className = classNames({
      'is-completed': isCompleted
    })
    return (
      <li className={className}>
        <TodoInput
          checked={isCompleted}
          onChange={this._onChange}
        />
        <TodoContent content={content} />
        <DeleteButton onDelete={this._onDelete} />
      </li>
    );
  }
}
```

Decorator/HOC

```
function BaseTodoItem(props) {  
  return {  
    render() {  
      return (  
        <label>{props.content}</label>  
      );  
    }  
  };  
}
```

```
function MakeCompletable(Child) {
  class Completable extends Component {
    render() {
      const {checked, onChange, ...childProps} = this.props;
      return (
        <div>
          <input
            className="toggle"
            type="checkbox"
            checked={checked}
            onChange={onChange}
          />
          <Child {...childProps} />
        </div>
      );
    }
  }
  return Completable;
}
```

```
function MakeDeletable(Child) {
  class Deletable extends Component {
    render() {
      const {onDelete, ...otherProps} = this.props;
      return (
        <div>
          <Child {...otherProps} />
          <button
            className="delete-todo"
            onClick={onDelete}
          />
        </div>
      );
    }
  }
  return Deletable;
}
```



```
const CompletableItem = MakeCompletable(BaseTodoItem);
const DeletableItem = MakeDeletable(CompletableItem);
```

```
class TodoItem extends Component {
  render() {
    const { isCompleted, content } = this.props;
    const className = classNames({
      'is-completed': isCompleted
    });
    return (
      <li className={className}>
        <DeletableItem
          checked={isCompleted}
          content={content}
          onChange={this._onChange}
          onDelete={this._onDelete}
        />
      </li>
    );
  }
}
```

# Composition over Inheritance

map / filter / reduce

map



```
var todos = [];  
this.props.todos.forEach(todo => {  
  todos.push({  
    title: todo.title,  
    isCompleted: todo.isCompleted,  
  });  
});  
return todos;
```

```
var todos = [];  
this.props.todos.forEach(todo => {  
  todos.push({  
    title: todo.title,  
    isCompleted: todo.isCompleted,  
  });  
});  
return todos;
```

```
return this.props.todos  
  .map(todo => {  
    const {title, isCompleted} = todo;  
    return {title, isCompleted};  
  });
```

filter





```
var todos = [];  
this.props.todos.forEach(todo => {  
  if (!todo.isCompleted) {  
    todos.push(todo);  
  }  
});  
return todos;
```

```
var todos = [];  
this.props.todos.forEach(todo => {  
  if (!todo.isCompleted) {  
    todos.push(todo);  
  }  
});  
return todos;
```

```
return this.props.todos  
  .filter(todo => !todo.isCompleted);
```

reduce



```
var todos = {};  
this.props.todos.forEach(todo => {  
  todos[todo.id] = todo;  
});  
return todos;
```

```
var todos = {};  
this.props.todos.forEach(todo => {  
  todos[todo.id] = todo;  
});  
return todos;
```

```
this.props.todos.reduce((todos, todo) => {  
  todos[todo.id] = todo;  
  return todos;  
}, {});
```





```
// find all incomplete tasks  
// where title end with `today`  
let todos = [];
```

```
// find all incomplete tasks  
// where title end with `today`  
let todos = [];  
this.props.todos.forEach(todo => {
```

```
} ) ;
```

```
// find all incomplete tasks
// where title end with `today`
let todos = [];
this.props.todos.forEach(todo => {
    if (
        !todo.isCompleted &&
        todo.title.endsWith('today')
    ) {

    }
} );
```

```
// find all incomplete tasks
// where title end with `today`
let todos = [];
this.props.todos.forEach(todo => {
  if (
    !todo.isCompleted &&
    todo.title.endsWith('today')
  ) {
    const {id, title, isCompleted} = todo;
    todos[id] = {
      title,
      isCompleted,
    };
  }
});
```

```
// find all incomplete tasks
// where title end with `today`
let todos = [];
this.props.todos.forEach(todo => {
  if (
    !todo.isCompleted &&
    todo.title.endsWith('today')
  ) {
    const {id, title, isCompleted} = todo;
    todos[id] = {
      title,
      isCompleted,
    };
  }
});
return todos;
```



```
// find all incomplete tasks  
// where title end with `today`  
return this.props.todos  
    .filter(todo => !todo.isCompleted)
```

```
// find all incomplete tasks
// where title end with `today`
return this.props.todos
    .filter(todo => !todo.isCompleted)
    .filter(todo => todo.title.endsWith('today'))
```



```
// find all incomplete tasks
// where title end with `today`
return this.props.todos
  .filter(todo => !todo.isCompleted)
  .filter(todo => todo.title.endsWith('today'))
  .reduce((todos, todo) => {
    const {id, title, isCompleted} = todo;
    todos[id] = {title, isCompleted};
    return todos;
  }, {});
```

why array

```
function process(number) {  
    console.log('[number] %s', number);  
}
```

```
const zero = [];  
zero.forEach(process);
```

```
const one = [42];  
one.forEach(process);
```

```
const multiple = [1, 2, 3, 4];  
multiple.forEach(process);
```



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<https://github.com/ReactiveX/learnrx>









<Questions />