

The Redux Pattern



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Redux

Redux is a predictable state container for JavaScript apps



Redux Principles

1. Single source of truth called the store
2. State is read only and only changed by dispatching actions
3. Changes are made using pure functions called reducers



Module Overview



3 principles of Redux

Store

Actions

Reducers

Advantages of Redux



The Store Is the Single Source of Truth

Store (State)

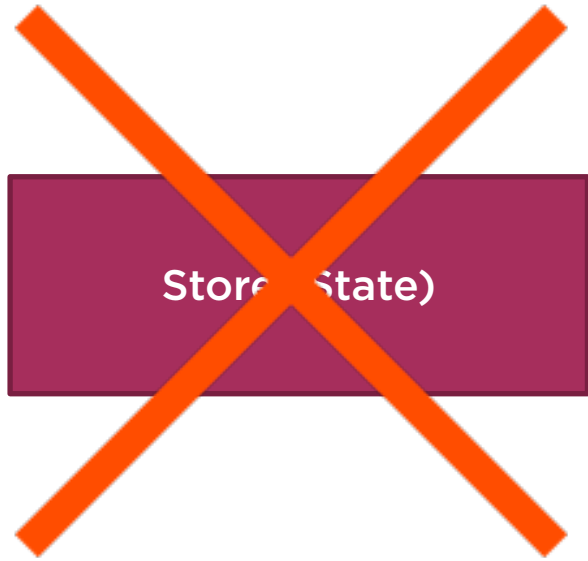
```
{  
  showProductCode: true,  
  currentProductId: 5,  
  products: [  
    {  
      id: 1,  
      productName: 'Leaf Rake',  
      productCode: 'GDN-0011',  
      description: 'Leaf rake with wooden handle',  
      starRating: 3.2  
    },  
  ],  
}
```



Do you have to put every
piece of state in the store?



What Should Not Go in the Store?



Unshared state

Angular form state

Non serializable state

Dispatch an Action to Change State

Actions

Login action after a login form submission

Toggle side menu action after a button click

Retrieve data action when initializing a component

Start global spinner action when saving data



Dispatch an Action to Change State

Actions

```
{  
  type: 'LOGIN',  
  user: {username: 'Duncan', password: 'secret'}  
}
```



Use Reducers to Change State

Reducer

Set a userDetails property on login

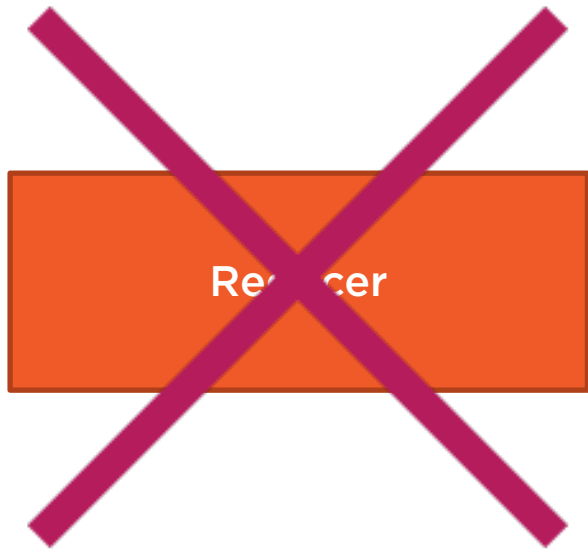
Toggle a sideMenuVisible property to true on button click

Set successfully retrieved data on component initialization

Set a globalSpinnerVisible property to true while saving data



Actions with Side Effects



Manage side effects with the NgRx Effects library



Reducers Are Pure Functions

Reducer

```
export const userReducer = createReducer (  
  initialState,  
  on(UserActions.loadUser, (state, action) => {  
    return {  
      ...state,  
      user: action.user  
    };  
  })  
);
```



What is a pure function?



Pure and Impure Functions

Pure
Function

```
function sum(a, b) {  
  const result = a + b;  
  return result;  
}
```

Impure
Function

```
let c = 1;  
  
function sum(a, b) {  
  result = a + b + c;  
  return result;  
}
```



Advantages of the Redux Pattern

Store (State)

Centralized immutable state

Performance

Testability

Tooling

Component communication



Redux is not great for making simple things quickly. It's great for making really hard things simple.

Jani Evakallio



Checklist: Redux Principles







Single source of truth called the store

State is read-only and changed by dispatching actions

Changes are made using pure functions called reducers

