Redux

# What is Redux?

* A 3rd party library to manage **Global State**
* It’s a standalone library, but easy to integrate with React apps using react-redux library
* All **Global State** will be stored into one **globally accessible store,** and to update it using **actions**
* Redux is a combination of the **Context API and the useReducer** hook
  + The state is stored globally and updated with actions (useReducer)
  + As soon as the global state is updated, all consuming comonentens are re-rendered (Context Api)
* Redux has ‘two versions’
  + Classic Redux
  + Modern Redux Toolkit

# When to use Redux?

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* Redux is PERFECT to manage
  + UI Global State (State that is not part of a outside server)

# How Redux Works (Redux Cycle)?

* Almost the same as the useReducer.
* We Dispatch an action
* **We dispatch the action to the STATE STORE**
  + The single source of truth of the global state
  + Contains one or multiple reducers
  + Why multiple reducers?
    - We should create 1 reducer / application feature
      * Cart
      * Login
      * Products
* **Instead of writing the action by hand, we create FUNCTION to do this automatically**
  + Like this, we can keep all actions in one place

# Redux 1st Practice – banking\_app

* We create the store.jsx
  + Create the initialState
  + Define the reducer function
    - We pass the INITIALSTATE as the default state
  + Use Switch for actions
    - We define the actions in the following format
      * ‘domain / action’ 🡺 ‘account/deposit’
  + Create the Redux Store
    - We use Actual Redux Feature (install redux)
    - Const store = createStore(reducer)
  + We can now dispatch actions on the store
    - Store.Dispatch({type: action type, payload: action payload})

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* Import the whole ‘/store.jsx’ file (to run the code inside this file)
* Using store.getState()
  + We get the current state

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* Requesting a Loan

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## Redux Action Creators (function to create actions)

* Not actually part of Redux, but it’s a **convention**
* Functions that do the same thing as a dispatch, but it’s a function with params

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* Using the Action Creators

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## We can create as many initialStates and Reducers as needed inside the same store file (GLOBAL SOURCE OF TRUTH FOR ALL STATE)

* After creating the reducer
* WE need to **COMBINE ALL REDUCERS into the same STORE**
  + We use the ‘combineReducers’ function from Redux
  + rootReducer = combineReducers({
    - account:accountReducer,
    - customer: customerReducer
    - })
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The output of getState will be the reducers combined

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# Professional Redux File Structure

* Back in the early days
  + there was 1 reducers folder 🡺 1 file per reducer
  + 1 actions creators folder 🡺 1 file per action creator
* **Now,** we organize the application into **Features**
  + Feature 1 🡺 Account
    - This will contain **everything** that is **related to the ACCOUNT**
  + Feature 2 🡺 Customer
    - This will contain everything that is related to the CustomerA screenshot of a computer

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* For Redux, we create **slices**
  + **accountSlice**
    - a ‘slice’ from the store that contains the account logic
    - we export default the reducer
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  + - we name export the action creators
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**OR**

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* + **customerSlice**
    - a ‘slice’ where all logic for customer is stored
    - we export default the reducer
    - we name export the action creators
* We **COMBINE everything** in the main store.jsx file
  + Import the reducers
  + Combine them
  + Create the unique store
  + Export the Store

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* Import the store and whatever action creators we need into the File

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# Connecting our app with the Redux Store

* We need to use the ‘react-redux’ package
  + Npm I react-redux
* Import the Provider from the react-redux library
  + 
* Wrap the application ( component ) with that Provider and provide the store through a prop
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* All COMPONENTS will be able to read from the store and to dispatch actions
* To read data from the Redux store, we use the **useSelector** hook
  + useSelector((store)=>store.customer)
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  + In this way, whenever the **store changes, the subscription to the store will make the component re-render**

### Dispatch Actions to the Store from within React Components

* We need to use the **useDispatch()**  hook provided by react-redux
  + Const dispatch = useDispatch();
* To dispatch an action, we also use the **action creators**
  + Dispatch(addNewCustomer(‘name’,nationalId)

