Workflow:

1. create project

2. homepage: [homepage] 🡪 [directory] 🡪 [menu-item]

(state in directory component)

3. hat routing: withRouter

4. ShopPage: [shop] 🡪 [collection-preview] 🡪 [collection-item]

(state in shop component)

5. Header: [header] 🡪 [sign-in-and-sign-up] + [shop]

(no state)

6. Firebase-Sign in & Sign out

[sign-in-and-sign-up] 🡪 [sign-in] + [sign-out] 🡪 [form-input] + [custom-button]

(state in App.js/Sign in)

(Form Input和custom button都只是改变了输入style，没有的话程序也完全work, App.js里有current user，仅传进了header， sign in用state来处理输入，仅用auth处理sign in with google)

--push user information into firebase: createUserProfileDocument: if user doesn’t exist create user in the database. Return the Ref

--load the user information into Current user state

--sign up component

--complete sign in

7. Redux

--create store: store.js & root-reducer.js & index.js

--**user**: user.actions.js & user.reducer.js & user.types.js 🡪 app.js & header.component.jsx

(import {connect} , {action to use} 🡪 delete corresponding state 🡪 {action} = this.props 如果是方法就是mapDispatchToProps，如果只是state就是mapStateToProps) 都可以this.props.

--**cart**: cart.actions.js & cart.reducer.js & cart.types.js 🡪 **cart-icon.component.jsx** (**cart-dropdown.component.jsx**) & header.component.jsx

Add an ADD-TO-CART button to collection-item

Add Add-Item functionality: addItem 🡪 Improvement: multiple items (cart.utils)

cart-item & use cart redux in cart-dropdown

cart.selectors: **reselect** help save some rerenders off of our components

user.selectors

8. Checkout Page: [cart-dropdown] 🡪 [cart-item]

[checkout] 🡪 [checkout-item]

9. Clear item: clearItemFromCart

Remove item: removeItem

10. Local Storage: redux-persist

11. Move Directory & Collection (shop.data.js) state into Redux

12. [collection] 🡪 [collection-item]

Improvement : [shop] 🡪 [collection-overview] 🡪 [collection-preview]

(shop 中没有state，serve as routing direction)

13. Improve: make shop data an object (turn array searching to HashMap searching)

14. Stripe

Traditionally:

HTML: display the text on web pages

CSS: control styles

JavaScript: allows to have some interactivity in a Website

Developer tools里面看到的就是DOM，JavaScript modify the DOM, remove or update elements



Different Browsers

jQuery: allow developers to easily interact with DOM (document object model) across browsers

has a unified easy API

Massive web applications

Backbone.js: library helps to organize JavaScript files, as JavaScript files getting bigger and bigger

Single Page Application: load application code once instead of making new request

(focus more on JavaScript) use JavaScript to display new things

(interact with the application without communicating with the server anymore)

Angular: allow developers to build large applications by forming these containers that well wrapped your project (MVM)

When it comes to massive programming application, Angular can’t handle that good

React:

**1. Don’t touch DOM, I’ll do it**

Traditionally, libraries do imperative, directly change individual parts of your app🡪 hard to see relationships between events and all these edge cases (the change instruction will be released one by one)

React use declarative paradigm, where developers only need to tell React how the page should look like, then React itself will take care of the DOM updates

**2. Building websites like Lego blocks**

Reusable components between projects, small components

**3. Unidirectional data flow**

React components === function, state === function parameters. 🡪 these will create a virtual DOM (JavaScript version of DOM) like showing in the react developer tools, which contains the component, which is not actual in HTML language, while the real DOM is in HTML language.

Easy to debug code

**4. UI, the rest is up to u- only a UI library**

Angular gives the developers all the tools necessary to build an application

While React is only a UI library, but with this key concept, we can build the application across platform with different robot??? like React Native, React DOM.

Before Really do a React Application, what should we decide??

1. Components

2. State and where it lives

3. what changes when state changes

Create React App

Helps developers to get started with building react projects very quickly

Reason to use: React is actually written in a version of JavaScript that is further along than the version of JavaScript that our browsers understand, convert the react code we write into older version of JavaScript and HTML that our browser is able to understand. (web pack and Babel)

Create React App helps us spin up a project that already has all configuration done for us

Babel: make sure our JavaScript will work on all the browsers with any version

Webpack: is a module bundler, allows us writing a modular code.

Buddle everything up together and optimize it for production.

The build folder is what we will use to actually deploy our application.

Division f

Class components: get access to state

State: a JavaScript object with properties that we can access at any point inside of our class

Super(): calls the method on the component class, give access to this.state, import the extend class method to current class

{} : is introduced by JSX which indicates anything between those curly braces is a JavaScript Code

setState(): allows us to change state

onClick: on every single HTML element, get called whenever this element get clicked, and the render method gets called again since the state changed

Life Cycle Methods: Methods that get called at different stages of when this component gets rendered.

Component Did Mount: json format is a format that JavaScript understand and can use

Props.children: is the thing that between the component brackets

onChange: is a character in input, the input changes fire the onChange with whatever function we pass to it//// get target.value gives us the value user type in in the input box!!

Never run setState in render it will cause mistakes, because every time we set state we will cause rerendering. -------- 注：发现其实是可行的

Arrow function automatically bind this in arrow function to the place where this arrow function was defined in the first place

Event handler里面，如果有（）,相当于这个function被call了

Browser can only read CSS, and create-react-app will convert Sass to CSS

看state是不是要在upper level是看这个component会不会受到其他component的影响，如果在upper level，就说明如果一个child component改变了，当前的child component也需要改变，看有没有这个必要，如果没有这个必要就不必lifting state

Query is something ask database for a collection

FIREBASE:

QueryReference: firestore.doc(‘/users/:userId) this will return a document reference for us either to **get** data from the reference or **save** data to that reference

DocumentReference vs CollectionReference:

**documentRef**: CRUD methods (create, retrieve, update, delete) 🡺 documentRef.set(), get(), update(), delete()

(we can add documents to collections using the collectionRef.add() )

Get the **snapshotObject** from the referenceObject using .get():

documentRef 🡪 documentSnapshot

collectionRef 🡪 querySnapshot

**documentSnapshot** allows us check if a document exists, using **.exists()**, we can use **.data()** to get the actual properties on the object (return a JSON object of the document)

REDUX

Redux allow none of the components hold state, all state are saved in a big store

Pros:

1. Good for managing large state

2. useful for sharing data between components

3. Predictable state management using the 3 principles:

-Single source of truth

-State is read only

-Changes using pure functions

Redux可以直接把一个component需要的相应state传递到相应的component里

Reselector:

make sure that cart dropdown component is not getting rerendered whenever the state changes that unrelated to the cart items

managed to help save some rerenders off of our components

Session Storage vs Local Storage

Session Storage: the storage persist when the tab exits, even when we refresh the page, but we will lose all the information once we close the tab.

Local Storage: the information get persist even when we close the browser or tab.