React 项目-后台管理系统

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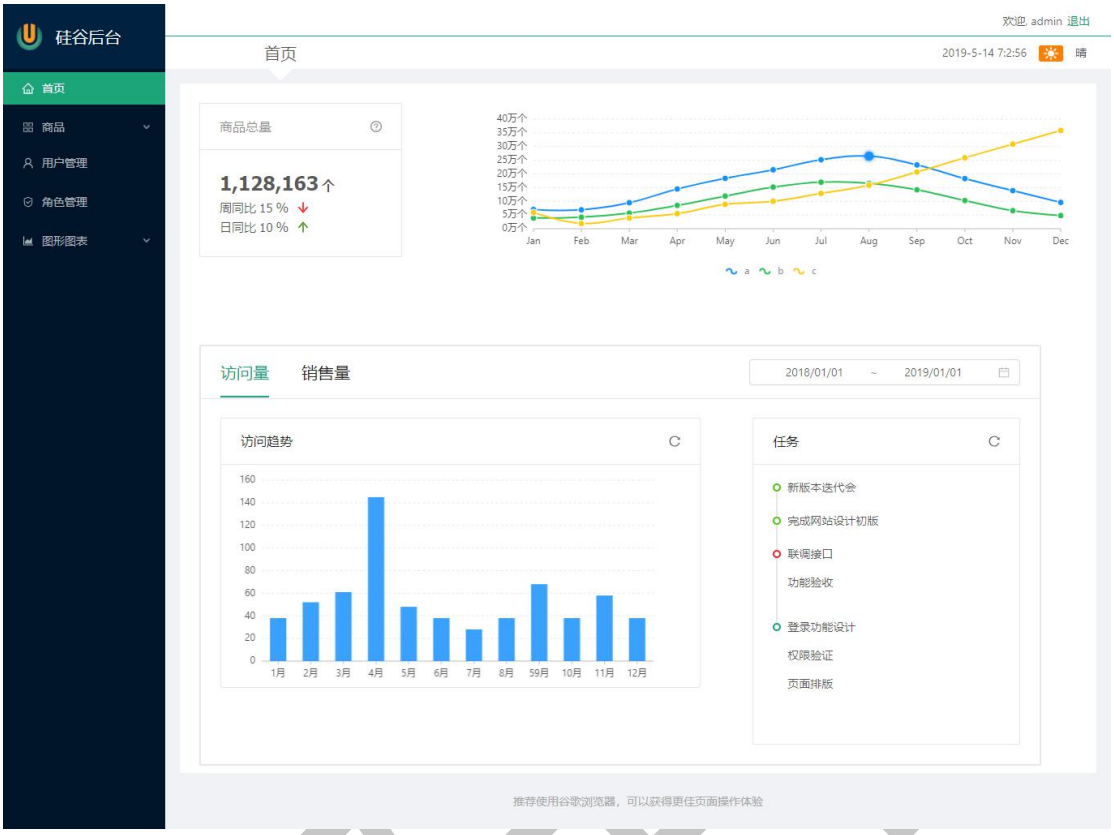
第 1 章：准备

1.1. 项目描述

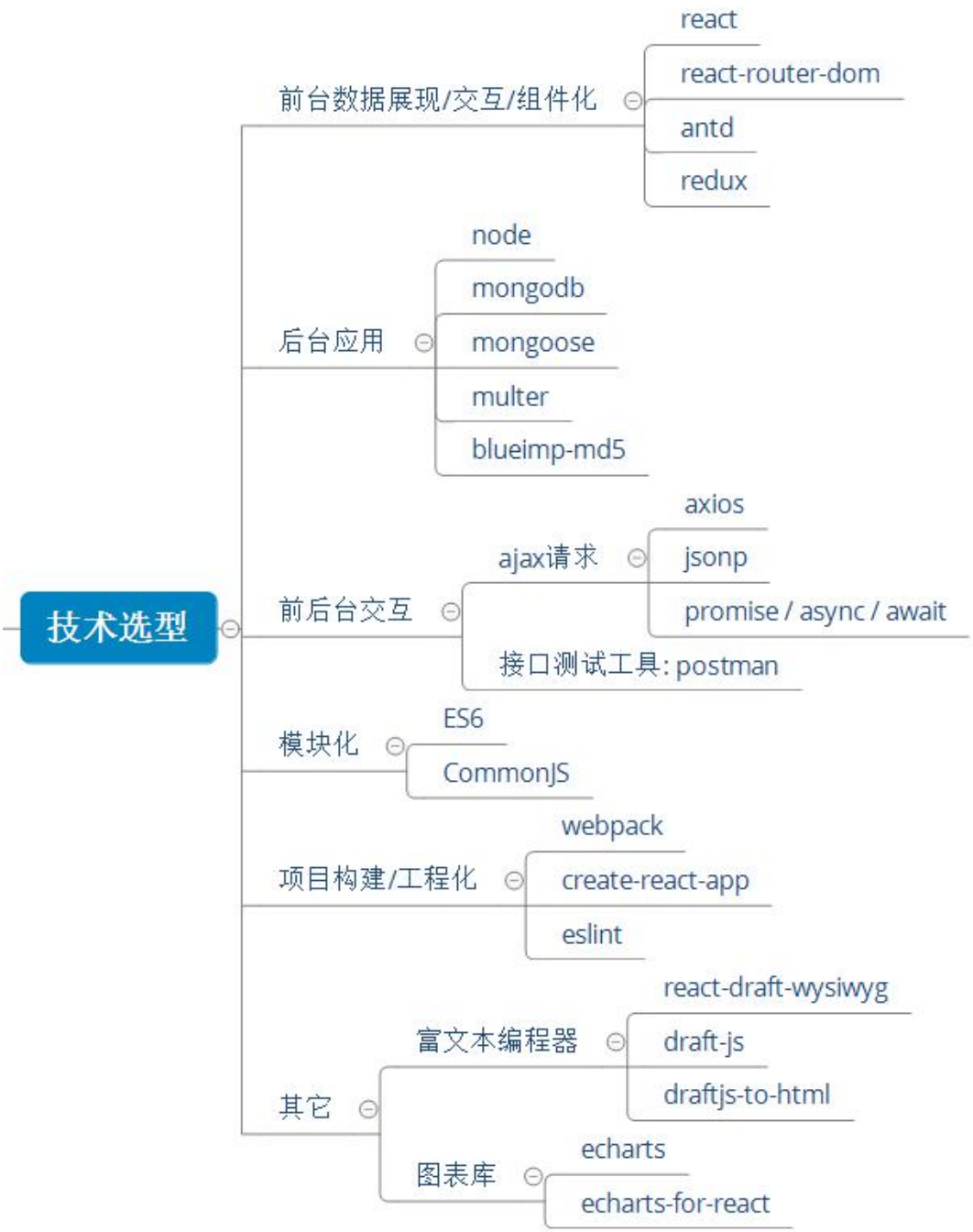
1) 此项目为一个前后台分离的后台管理的 SPA，包括前端 PC 应用和后端应用
2) 包括用户管理 / 商品分类管理 / 商品管理 / 权限管理等功能模块
3) 前端：使用 React 全家桶 + Antd + Axios + ES6 + Webpack 等技术
4) 后端：使用 Node + Express + Mongodb 等技术
5) 采用模块化、组件化、工程化的模式开发

1.2. 项目功能界面



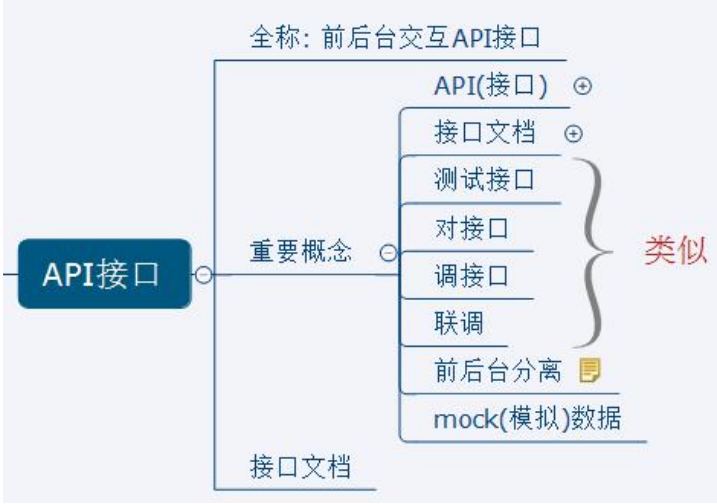
其它的界面功能运行 final 版应用查看

1.3. 技术选型



1.4. 前端路由

1.5. API/接口



1.6. 你能从此项目中学到什么?

1.6.1. 流程及开发方法

1) 熟悉一个项目的**开发流程**
2) 学会**模块化、组件化、工程化**的开发模式
3) 掌握使用 **create-react-app** 脚手架初始化 react 项目开发
4) 学会使用 **node+express+mongoose+mongodb** 搭建后台应用

1.6.2. React 插件或第三方库

react boilerplate react脚手架

1) 掌握使用 **react-router-dom** 开发单页应用
2) 学会使用 **redux+react-redux+redux-thunk** 管理应用组件状态
3) 掌握使用 **axios/jsonp** 与后端进行数据交互
4) 掌握使用 **antd** 组件库构建界面
5) 学会使用 **echarts/bizcharts** 实现数据可视化展现
6) 学会使用 **react-draft-wysiwyg** 实现富文本编辑器

1.7. npm/yarn 常用命令

yarn 命令文档: https://yarnpkg.com/zh-Hans/docs/cli/
npm 命令文档: https://docs.npmjs.com/cli-documentation/

```
## 设置淘宝镜像
        npm config set registry https://registry.npm.taobao.org
        yarn config set registry https://registry.npm.taobao.org

## 初始化项目:
        yarn init -y
        npm init -y

## 下载项目的所有声明的依赖:
        yarn
        npm install
```

```
## 下载指定的运行时依赖包:
        yarn add webpack@3.2.1
        npm install webpack@3.2.1 -S

## 下载指定的开发时依赖:
        yarn add webpack@3.2.1 -D
        npm install webpack@3.2.1 -D

## 全局下载指定包:
        yarn global add webpack
        npm install webpack -g

## 删除依赖包:
        yarn remove webpack
        npm remove webpack -S
        yarn global remove webpack
        npm remove webpack -g

## 运行项目中配置的 script:
        yarn run xxx
        npm run xxx

## 查看某个包的信息:
        yarn info xxx
        npm info xxx
```

1.8. git 常用基本命令

Git 在线参考手册: http://gitref.justjavac.com/

```
* git config --global user.name "username"  //配置用户名
* git config --global user.email "xx@gmail.com" //配置邮箱
* git init  //初始化生成一个本地仓库
* git add .   //添加到暂存区
* git commit -m "message"  //提交到本地仓库
* git remote add origin url  //关联到远程仓库
* git push origin master  //推送本地 master 分支到远程 master 分支
* git checkout -b dev  //创建一个开发分支并切换到新分支
* git push ogigin dev  //推送本地 dev 分支到远程 dev 分支
* git pull origin dev  //从远程 dev 分支拉取到本地 dev 分支
* git clone url  //将远程仓库克隆下载到本地
```

```
* git checkout -b dev origin/dev // 克隆仓库后切换到 dev 分支
```

第 2 章：应用开发详解

2.1. 开启项目开发

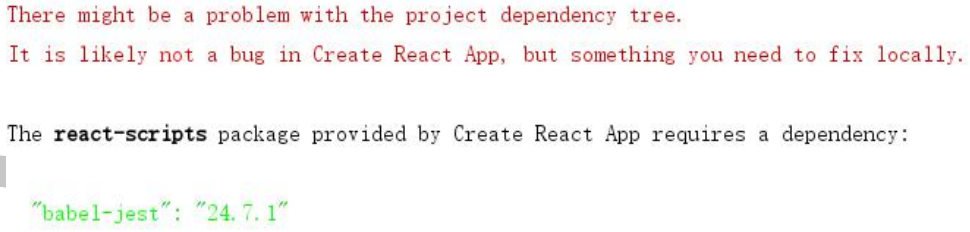
2.1.1. 使用 create-react-app(脚手架)搭建项目

1) create-react-app 是 react 官方提供的用于搭建基于 react+webpack+es6 项目的脚手架

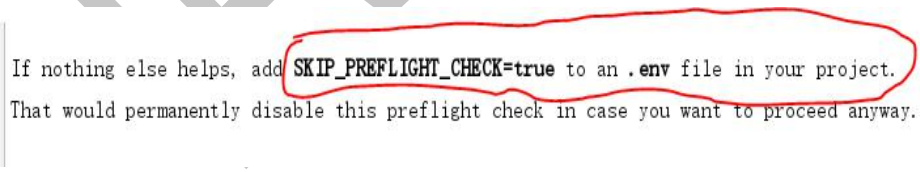
2) 操作:

```
npm install -g create-react-app : 全局下载工具
create-react-app react-admin :下载模板项目
cd react-admin
npm start
访问: localhost:3000
```

3) 部分同学可能会出现包版本差异的导致异常的问题



解决: 添加.env 配置文件忽略版本差异



SKIP_PREFLIGHT_CHECK=true

2.1.2. 编码测试与打包发布项目

1) 编码测试

```
npm start
访问: http://localhost:3000
```

编码，自动编译打包刷新(live-reload)，查看效果

2) 打包发布

```
npm run build
npm install -g serve
serve build
```

访问：http://localhost:5000

2.2. 功能需求分析

演示项目功能，对功能模块进行分析说明

2.3. 项目源码基本目录设计

2.3.1. 基本结构

2.3.2. App.js

```
import React, {Component} from 'react'
/*
应用根组件
 */
class App extends Component {
  render() {
```

```
    return (
      <div>App</div>
    )
  }
}

export default App
```

2.3.3. index.js

```
import React from 'react'
import ReactDOM from 'react-dom'

import App from './App'

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

2.4. 引入 antd

参考文档:
https://ant.design/docs/react/use-with-create-react-app-cn

2.4.1. 下载组件库包

```
yarn add antd
```

2.4.3. 实现组件的按需打包

1) 下载依赖模块

```
yarn add react-app-rewired customize-cra babel-plugin-import
```

2) 定义加载配置的 js 模块: config-overrides.js

```
const {override, fixBabelImports} = require('customize-cra');
```

```
module.exports = override(
  fixBabelImports('import', {
    libraryName: 'antd',
    libraryDirectory: 'es',
    style: 'css',
  }),
);
```

➢ 修改配置: package.json

```
"scripts": {
  "start": "react-app-rewired start",
  "build": "react-app-rewired build",
  "test": "react-app-rewired test",
  "eject": "react-scripts eject"
},
```

2.4.4. 在应用中使用 antd 组件

```
import React, {Component} from 'react'
import {Button, message} from 'antd'
/*
应用根组件
 */
class App extends Component {

  handleClick = () => {
    message.success('成功啦...');
  }

  render() {
    return (
      <Button type='primary' onClick={this.handleClick}>学习</Button>
    )
  }
}

export default App
```

2.4.6. 自定义 antd 主题

需求:

使 antd 的默认基本颜色从 Blue 变为 Green

下载工具包:

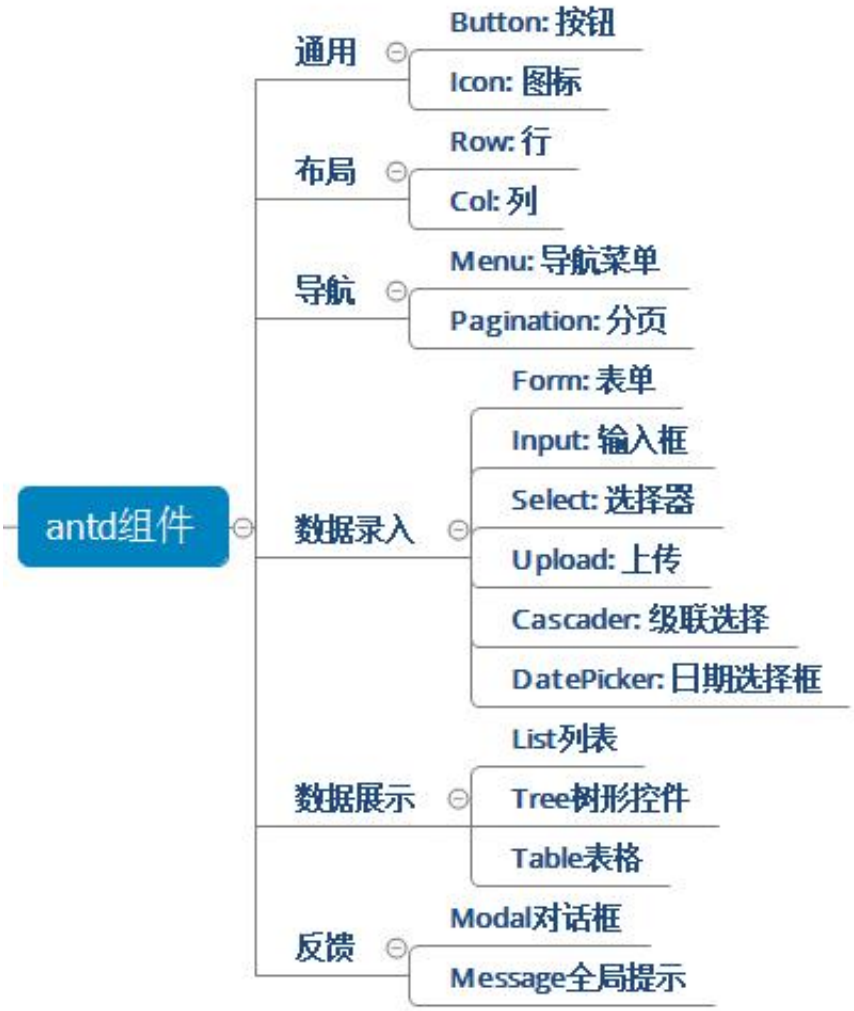
```
yarn add less less-loader
```

修改 config-overrides.js

```
const {override, fixBabelImports, addLessLoader} = require('customize-cra');

module.exports = override(
  fixBabelImports('import', {
    libraryName: 'antd',
    libraryDirectory: 'es',
    style: true,
  }),
  addLessLoader({
    javascriptEnabled: true,
    modifyVars: {'@primary-color': '#1DA57A'},
  }),
);
```

2.4.7. 应用中使用的组件

2.4.8. 项目中用到的 antd 组件



2.5. 引入路由

2.5.1. 下载路由包: react-router-dom

```
yarn add react-router-dom
```

2.5.2. 前台应用路由

2.5.3. 路由组件: pages/login/login.jsx

```
/*
用户登陆的路由组件
 */
import React, {Component} from 'react'

export default class Login extends Component {
  render () {
    return (
      <div>login</div>
    )
  }
}
```

2.5.4. 后台管理主路由组件: pages/admin/admin.jsx

```
/*
后台管理主路由组件
 */
import React, {Component} from 'react'

export default class Admin extends Component {
  render() {
    return (
      <div>Admin</div>
    )
  }
}
```

2.5.5. 映射路由: App.js

```
import React, {Component} from 'react'
import {BrowserRouter, Switch, Route} from 'react-router-dom'

import Login from './pages/login/login'
import Admin from './pages/admin/admin'

/*
应用根组件
 */
class App extends Component {

  render() {
    return (
      <BrowserRouter>
        <Switch>
          <Route path='/login' component={Login}/>
          <Route path='/' component={Admin}/>
        </Switch>
      </BrowserRouter>
    )
  }
}
```

```
export default App
```

2.6. Login 组件(不与后台交互)

2.6.1. 静态组件

1. 图片资源

   assets/images/logo.png

   assets/images/bg.jpg

2. public/css/reset.css

```
html,
body,
p,
ol,
ul,
li,
dl,
dt,
dd,
blockquote,
figure,
fieldset,
```

```
legend,
textarea,
pre,
iframe,
hr,
h1,
h2,
h3,
h4,
h5,
h6 {
  margin: 0;
  padding: 0;
}

h1,
h2,
h3,
h4,
h5,
h6 {
  font-size: 100%;
  font-weight: normal;
}

ul {
  list-style: none;
}

button,
input,
select,
textarea {
  margin: 0;
}

html {
  box-sizing: border-box;
}

*, *:before, *:after {
  box-sizing: inherit;
```

```
}

img,
embed,
iframe,
object,
video {
  height: auto;
  max-width: 100%;
}

audio {
  max-width: 100%;
}

iframe {
  border: 0;
}

table {
  border-collapse: collapse;
  border-spacing: 0;
}

td,
th {
  padding: 0;
  text-align: left;
}

html, body {
  height: 100%;
}

#root {
  width: 100%;
  height: 100%;
}
```

注意：必须在 index.html 中引入

3. login/login.less

```
.login {
  width: 100%;
  height: 100%;
  background-image: url('./images/bg.jpg');
  background-size: 100% 100%;

  .login-header {
    display: flex;
    align-items: center;
    height: 80px;
    background-color: rgba(21, 20, 13, 0.5);
    img {
      width: 40px;
      height: 40px;
      margin-left: 50px;
    }
    h1 {
      font-size: 30px;
      color: white;
      margin: 0 0 0 15px;
    }
  }

  .login-content {
    margin: 50px auto;
    width: 400px;
    height: 300px;
    background-color: #fff;
    padding: 20px 40px;
    h3 {
      font-size: 30px;
      font-weight: bold;
      text-align: center;
      margin-bottom: 20px;
    }
    .login-form {
      .login-form-button {
        width: 100%;
      }
    }
  }
}
```

4. login/login.jsx

```
import React, {Component} from 'react'
import {
  Form,
  Input,
  Icon,
  Button,
} from 'antd'
import logo from './images/logo.png'
import './login.less'

const Item = Form.Item

/*
登陆路由组件
 */
class Login extends Component {

  render() {

    return (
      <div className='login'>
        <header className='login-header'>
          <img src={logo} alt="logo"/>
          <h1>React 项目: 后台管理系统</h1>
        </header>

        <section className='login-content'>
          <h3>用户登陆</h3>
          <Form onSubmit={this.login} className="login-form">
            <Item>
              <Input prefix={<Icon type="user" style={{color: 'rgba(0,0,0,.25)'}}/>}
                     placeholder="用户名"/>
            </Item>
            <Item>
              <Input prefix={<Icon type="lock" style={{color: 'rgba(0,0,0,.25)'}}/>}
                     type="password" placeholder="密码"/>
            </Item>
```

```
            <Item>
              <Button type="primary" htmlType="submit" className="login-form-button">
                登录
              </Button>
            </Item>
          </Form>
        </section>
      </div>
    )
  }
}

export default Login
```

2.6.2. 前台表单验证与数据收集

用户名/密码的合法性要求:

```
/*
用户名/密码的的合法性要求
  1). 必须输入
  2). 必须大于等于 4 位
  3). 必须小于等于 12 位
  4). 必须是英文、数字或下划线组成
 */
import React, {Component} from 'react'
import {
  Form,
  Input,
  Icon,
  Button,
} from 'antd'
import logo from './images/logo.png'
import './login.less'

const Item = Form.Item

/*
登陆路由组件
```

```
 */
class Login extends Component {

  /*
  登陆
   */
  login = (e) => {
    // 阻止事件默认行为(不提交表单)
    e.preventDefault()

    // 进行表单所有控件的校验
    this.props.form.validateFields(async (err, values) => {
      if (!err) {
        // 校验成功
        const {username, password} = values
        console.log('提交登陆请求', username, password)
      } else {
        // 校验失败
        console.log(err)
      }
    })
  }

  /**
   * 自定义表单的校验规则
   */
  validator = (rule, value, callback) => {
    // console.log(rule, value)
    const length = value && value.length
    const pwdReg = /^[a-zA-Z0-9_]+$/
    if (!value) {
      // callback 如果不传参代表校验成功，如果传参代表校验失败，并且会提示错误
      callback('必须输入密码')
    } else if (length < 4) {
      callback('密码必须大于 4 位')
    } else if (length > 12) {
      callback('密码必须小于 12 位')
    } else if (!pwdReg.test(value)) {
      callback('密码必须是英文、数组或下划线组成')
    } else {
      callback() // 必须调用 callback
    }
```

```
  }

  render() {

    const {getFieldDecorator} = this.props.form
    return (
      <div className='login'>
        <header className='login-header'>
          <img src={logo} alt="logo"/>
          <h1>React 项目: 后台管理系统</h1>
        </header>

        <section className='login-content'>
          <h3>用户登陆</h3>
          <Form onSubmit={this.login} className="login-form">
            <Item>
              {
                /*
                getFieldDecorator 是一个高阶函数(返回值是一个函数)
                getFieldDecorator(标识名称, 配置对象)(组件标签) 返回新的标签
                经过 getFieldDecorator 包装的表单控件会自动添加 value 和 onChange, 数据同步
将被 form 接管
                 */
                getFieldDecorator('username', {
                  // 根据内置验证规则进行声明式验证
                  rules: [
                    {required: true, whitespace: true, message: '必须输入用户名'},
                    {min: 4, message: '用户名必须大于 4 位'},
                    {max: 12, message: '用户名必须小于 12 位'},
                    {pattern: /^[a-zA-Z0-9_]+$/, message: '用户名必须是英文、数组或下划线
组成'}
                  ]
                })(
                  <Input prefix={<Icon type="user" style={{color:
'rgba(0,0,0,.25)'}}/>} placeholder="用户名"/>
                )
              }
            </Item>
            <Item>
              {
                getFieldDecorator('password', {
                  rules: [
```

```
                    // 自定义表单校验规则
                    {validator: this.validator}
                  ]
                })(
                  <Input prefix={<Icon type="lock" style={{color:
'rgba(0,0,0,.25)'}}/>} type="password"
                         placeholder="密码"/>
                )
              }
            </Item>
            <Item>
              <Button type="primary" htmlType="submit" className="login-form-button">
                登录
              </Button>
            </Item>
          </Form>
        </section>
      </div>
    )
  }
}

/*
用户名/密码的的合法性要求
  1). 必须输入
  2). 必须大于4位
  3). 必须小于12位
  4). 必须是英文、数组或下划线组成
 */

export default Form.create()(Login)
```

2.7. 运行 server 端项目

2.7.1. 说明

1) 咱们的项目是一个前后台分离的项目：前台应用与后台应用

2) 后台应用负责处理前台应用提交的请求，并给前台应用返回 json 数据

3) 前台应用负责展现数据，与用户交互，与后台应用交互

2.7.2. 运行后台应用

1) 确保启动 mongodb 服务

2) 启动服务器应用: npm start

2.7.3. API 接口文档

目录：

1). 登陆

2). 添加用户

3). 更新用户

4). 获取所有用户列表

5). 删除用户

6). 获取一级或某个二级分类列表

7). 添加分类

8). 更新品类名称

9). 根据分类 ID 获取分类

10). 获取商品分页列表

11). 根据 ID/Name 搜索产品分页列表

12). 添加商品

13). 更新商品

14). 对商品进行上架/下架处理

15). 上传图片

16). 删除图片

17). 添加角色

18). 获取角色列表

19). 更新角色(给角色设置权限)

20). 获取天气信息(jsonp)

2.14.4. 使用 postman 工具测试接口

1) postman 是用来测试 API 接口的工具

2) postman 可以看作活接口文档

2.8. 前后台交互 ajax

2.15.1. 下载依赖包

```
yarn add axios
```

2.15.2. 封装 ajax 请求模块

1) api/ajax.js

```
/*
能发送 ajax 请求的函数模块
  包装 axios
  函数的返回值是 promise 对象
  axios.get()/post()返回的就是 promise 对象
  返回自己创建的 promise 对象:
      统一处理请求异常
      异步返回结果数据, 而不是包含结果数据的 response
 */
import axios from 'axios'
import {message} from 'antd'

export default function ajax(url, data = {}, method = 'GET') {

  return new Promise(function (resolve, reject) {
    let promise
    // 执行异步 ajax 请求
    if (method === 'GET') {
      promise = axios.get(url, {params: data}) // params 配置指定的是 query 参数
    } else {
      promise = axios.post(url, data)
```

```
    }
    promise.then(response => {
      // 如果成功了，调用resolve(response.data)
      resolve(response.data)
    }).catch(error => {  // 对所有ajax请求出错做统一处理，外层就不用再处理错误了
      // 如果失败了，提示请求后台出错
      message.error('请求错误: ' + error.message)
    })
  })
}
```

2) api/index.js

```
/*
包含n个接口请求函数的模块
每个函数返回promise
 */
import ajax from './ajax'

// 登陆
export const reqLogin = (username, password) => ajax('/login', {username, password},
'POST')
```

2.15.3. 配置代理

package.json

```
"proxy": "http://localhost:5000"
```

2.15.4. 请求测试: login.jsx

```
// 请求后台登陆
login = async (username, password) => {
  console.log('发送登陆的ajax请求', username, password)
  const result = await reqLogin(username, password)
  console.log('login()', result)
}
```

2.9. Login 组件(完成登陆功能)

2.9.1. 下载依赖

```
yarn add store
```

2.9.2. utils/memoryUtils.js

```
/*
用来在内存中缓存数据的工具对象
 */
export default {
  user: {} // 内存中保存登陆的 user 信息对象
}
```

2.9.3. login/login.jsx

```
import React, {Component} from 'react'
import {
  Form,
  Icon,
  Input,
  Button,
  message
} from 'antd'
import './login.less'
import logo from './images/logo.png'
import memoryUtils from '../../utils/memoryUtils'
import {reqLogin} from '../../api'

const Item = Form.Item // 不能写在 import 之前



/*
```

```
登陆的路由组件
 */
class Login extends Component {

  handleSubmit = (event) => {

    // 阻止事件的默认行为
    event.preventDefault()

    // 对所有表单字段进行检验
    this.props.form.validateFields(async (err, values) => {
      // 检验成功
      if (!err) {
        // console.log('提交登陆的ajax 请求', values)
        const {username, password} = values
        const result = await reqLogin(username, password)
        // console.log('login()', result)
        if(result.status === 0) {
          // 提示登录成功
          message.success('登录成功', 2)
          // 保存用户登录信息
          memoryUtils.user = result.data
          // 跳转到主页面
          this.props.history.replace('/')
        } else {
          // 登录失败, 提示错误
          message.error(result.msg)
        }
      } else {
        console.log('检验失败!')
      }
    });

    // 得到form 对象
    // const form = this.props.form
    // // 获取表单项的输入数据
    // const values = form.getFieldsValue()
    // console.log('handleSubmit()', values)
  }

  /*
  对密码进行自定义验证
```

```
*/
/*
 用户名/密码的的合法性要求
   1). 必须输入
   2). 必须大于等于 4 位
   3). 必须小于等于 12 位
   4). 必须是英文、数字或下划线组成
  */
validatePwd = (rule, value, callback) => {
  console.log('validatePwd()', rule, value)
  if(!value) {
    callback('密码必须输入')
  } else if (value.length<4) {
    callback('密码长度不能小于 4 位')
  } else if (value.length>12) {
    callback('密码长度不能大于 12 位')
  } else if (!/^[a-zA-Z0-9_]+$/.test(value)) {
    callback('密码必须是英文、数字或下划线组成')
  } else {
    callback() // 验证通过
  }
  // callback('xxxx') // 验证失败, 并指定提示的文本
}

render () {

  // 得到具强大功能的 form 对象
  const form = this.props.form
  const { getFieldDecorator } = form;

  return (
    <div className="login">
      <header className="login-header">
        <img src={logo} alt="logo"/>
        <h1>React 项目: 后台管理系统</h1>
      </header>
      <section className="login-content">
        <h2>用户登陆</h2>
        <Form onSubmit={this.handleSubmit} className="login-form">
          <Item>
            {
              /*
```

```
              用户名/密码的的合法性要求
                1). 必须输入
                2). 必须大于等于 4 位
                3). 必须小于等于 12 位
                4). 必须是英文、数字或下划线组成
               */
              }
              {
                getFieldDecorator('username', { // 配置对象: 属性名是特定的一些名称
                  // 声明式验证: 直接使用别人定义好的验证规则进行验证
                  rules: [
                    { required: true, whitespace: true, message: '用户名必须输入' },
                    { min: 4, message: '用户名至少 4 位' },
                    { max: 12, message: '用户名最多 12 位' },
                    { pattern: /^[a-zA-Z0-9_]+$/, message: '用户名必须是英文、数字或下划
线组成' },
                  ],
                  initialValue: 'admin' //指定初始值
                })(
                  <Input
                    prefix={<Icon type="user" style={{ color: 'rgba(0,0,0,.25)' }} />}
                    placeholder="用户名"
                  />
                )
              }
            </Item>
            <Form.Item>
              {
                getFieldDecorator('password', {
                  rules: [
                    {
                      validator: this.validatePwd
                    }
                  ]
                })(
                  <Input
                    prefix={<Icon type="lock" style={{ color: 'rgba(0,0,0,.25)' }} />}
                    type="password"
                    placeholder="密码"
                  />
                )
              }
```

```
            </Form.Item>
            <Form.Item>
              <Button type="primary" htmlType="submit" className="login-form-button">
                登陆
              </Button>
            </Form.Item>
          </Form>
        </section>
      </div>
    )
  }
}

const WrapLogin = Form.create()(Login)
export default WrapLogin
```

2.9.4. admin/admin.jsx

```
import React, {Component} from 'react'
import {Redirect} from 'react-router-dom'

import memeoryUtils from '../../utils/memoryUtils'
/*
后台管理的路由组件
 */
export default class Admin extends Component {
  render () {
    const user = memeoryUtils.user
    if(!user._id) {
      return <Redirect to='/login'/>
    }
    return (
      <div>
        <h2>后台管理</h2>
        <div>Hello {user.username}</div>
      </div>
    )
  }
}
```

2.10. 维持登陆与自动登陆

```
/*
1. 登陆后, 刷新后依然是已登陆状态 (维持登陆)
2. 登陆后, 关闭浏览器后打开浏览器访问依然是已登陆状态 (自动登陆)
3. 登陆后, 访问登陆路径自动跳转到管理界面
 */
```

2.10.1. utils/storageUtils.js

```
import store from 'store'

const USER_KEY = 'user_key'
/*
包含 n 个操作 local storage 的工具函数的模块
 */
export default {
  saveUser(user) {
    // localStroage 只能保存 string, 如果传递是对象, 会自动调用对象的 toString()并保存
    //localStorage.setItem(USER_KEY, JSON.stringify(user)) // 保存的必须是对象的 json 串
    store.set(USER_KEY, user) // 内部会自动转换成 json 再保存
  },

  getUser() { // 如果存在, 需要返回的是对象, 如果没有值, 返回{}
    // return JSON.parse(localStorage.getItem(USER_KEY) || '{}') // [object, Object]
    return store.get(USER_KEY) || {}
  },

  removeUser() {
    // localStorage.removeItem(USER_KEY)
    store.remove(USER_KEY)
  }
}
```

2.10.2. login/login.jsx

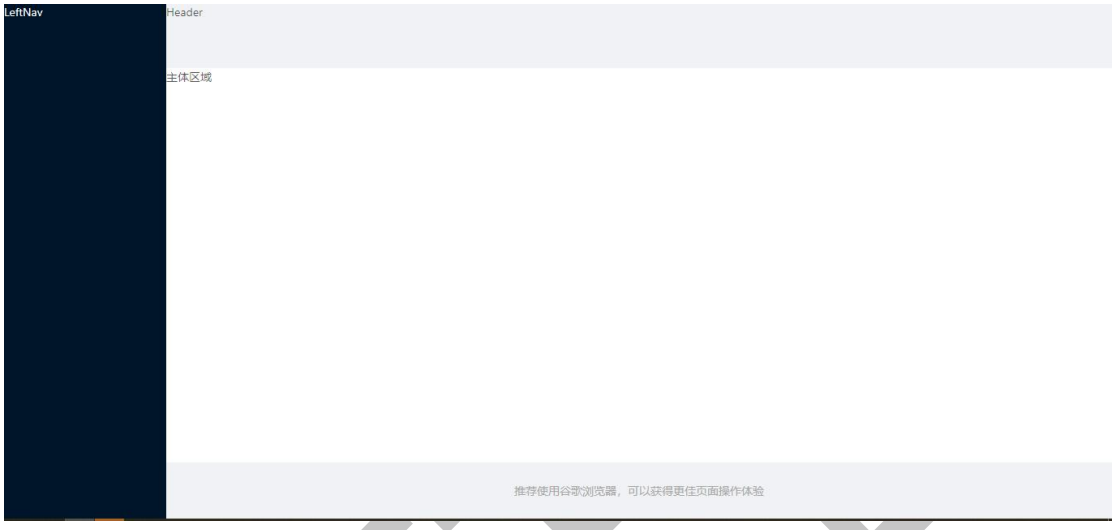
```
// 判断登录是否成功
if (result.status === 0) {
  // 登录成功
  // 提示登录成功，保存用户登录信息，跳转到主页面
  message.success('登录成功');
  // 保存用户数据
  const user = result.data
  storageUtils.saveUser(user)
  memoryUtils.user = user
  // 跳转到后台管理路由(已经登录成功，不需要回退了)
  this.props.history.replace('/')
}

render() {
  // 如果用户已经登陆，自动跳转到 admin
  if (memoryUtils.user && memoryUtils.user._id) {
    return <Redirect to='/'/>
  }
}
```

2.10.3. src/index.js

```
import storageUtils from './utils/storageUtils'
import memoryUtils from './utils/memoryUtils'

// 如果 local 中保存了 user，将 user 保存到内存中
const user = storageUtils.getUser()
if(user && user._id) {
  memoryUtils.user = user
}
```

2.11. Admin 组件(搭建整体结构)

2.11.1. 整体组件组成



2.11.2. LeftNav 组件

1) components/left-nav/index.less

```
.left-nav {
  color: white;
}
```

2) components/left-nav/index.jsx

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

import './index.less'

/*
左侧导航组件
 */
export default class LeftNav extends Component {

  render() {
    return (
      <div className="left-nav">
        LeftNav
      </div>
```

```
    )
  }
}
```

2.11.3. Header 组件

1) components/header/index.less

```
.header {
  height: 80px;
}
```

2) components/header/index.jsx

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

import './index.less'

/*
头部组件
 */
export default class Header extends Component {

  render() {
    return (
      <div className='header'>
        Header
      </div>
    )
  }
}
```

2.11.4. Admin 组件

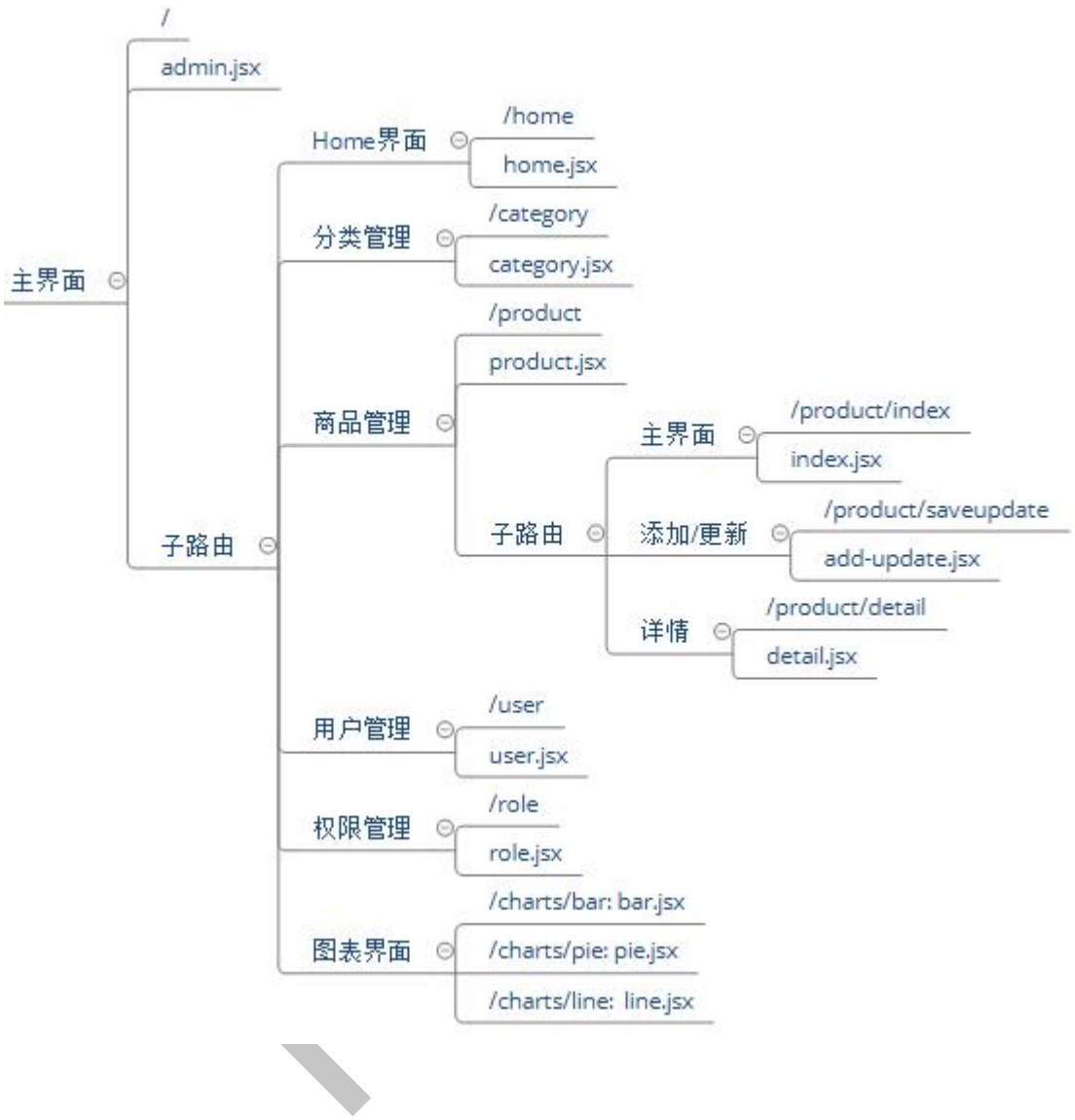
1) pages/admin/admin.jsx

```
import React, {Component} from 'react'
import {Redirect} from 'react-router-dom'
import { Layout } from 'antd'
```

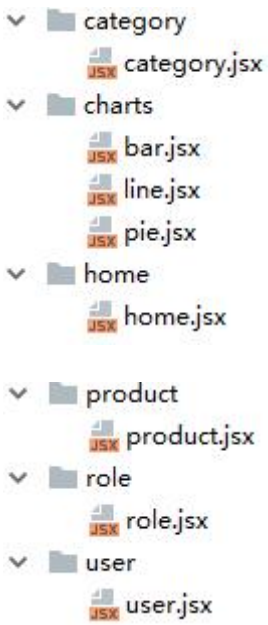
```
import memeoryUtils from '../../utils/memoryUtils'
import Header from '../../components/header'
import LeftNav from '../../components/left-nav'


const { Footer, Sider, Content } = Layout
/*
后台管理的路由组件
 */
export default class Admin extends Component {
  render () {
    const user = memeoryUtils.user
    if(!user._id) {
      return <Redirect to='/login'/>
    }
    return (
      <Layout style={{height: '100%'}}>
        <Sider>
          <LeftNav/>
        </Sider>
        <Layout>
          <Header>Header</Header>
          <Content style={{backgroundColor: 'white'}}>Content</Content>
          <Footer style={{textAlign: 'center', color: '#aaaaaa'}}>推荐使用谷歌浏览器，
可以获得更佳页面操作体验</Footer>
        </Layout>
      </Layout>
    )
  }
}
```

2.12. Admin 的子路由

2.12.1. 组成



2.12.2. 定义各个子路由组件



2.12.3. 注册路由: admin.jsx

```
import React, {Component} from 'react'
import {Redirect, Route, Switch} from 'react-router-dom'
import {Layout} from 'antd'

import memeoryUtils from '../../utils/memoryUtils'
import Header from '../../components/header'
import LeftNav from '../../components/left-nav'
import Home from '../home/home'
import Category from '../category/category'
import Product from '../product/product'
import Role from '../role/role'
import User from '../user/user'
import Bar from '../charts/bar'
import Line from '../charts/line'
import Pie from '../charts/pie'



const {Footer, Sider, Content} = Layout
/*
```

```
后台管理的路由组件
 */
export default class Admin extends Component {
  render() {
    const user = memeoryUtils.user
    if (!user._id) {
      return <Redirect to='/login'/>
    }
    return (
      <Layout style={{height: '100%'}}>
        <Sider>
          <LeftNav/>
        </Sider>
        <Layout>
          <Header>Header</Header>
          <Content style={{backgroundColor: 'white'}}>
            <Switch>
              <Route path='/home' component={Home}/>
              <Route path='/category' component={Category}/>
              <Route path='/product' component={Product}/>
              <Route path='/role' component={Role}/>
              <Route path='/user' component={User}/>
              <Route path='/charts/bar' component={Bar}/>
              <Route path='/charts/line' component={Line}/>
              <Route path='/charts/pie' component={Pie}/>
              <Redirect to='/home' />
            </Switch>
          </Content>
          <Footer style={{textAlign: 'center', color: '#aaaaaa'}}>推荐使用谷歌浏览器，
可以获得更佳页面操作体验</Footer>
        </Layout>
      </Layout>
    )
  }
}
```

2.13. LeftNav 组件

2.13.1. 导航菜单配置: config/menuConfig.js

```
const menuList = [
  {
    title: '首页', // 菜单标题名称
    key: '/home', // 对应的path
    icon: 'home', // 图标名称
  },
  {
    title: '商品',
    key: '/products',
    icon: 'appstore',
    children: [ // 子菜单列表
      {
        title: '品类管理',
        key: '/category',
        icon: 'bars'
      },
      {
        title: '商品管理',
        key: '/product',
        icon: 'tool'
      },
    ]
  },

  {
    title: '用户管理',
    key: '/user',
    icon: 'user'
  },
  {
    title: '角色管理',
    key: '/role',
    icon: 'safety',
  },

  {
```

```
    title: '图形图表',
    key: '/charts',
    icon: 'area-chart',
    children: [
      {
        title: '柱形图',
        key: '/charts/bar',
        icon: 'bar-chart'
      },
      {
        title: '折线图',
        key: '/charts/line',
        icon: 'line-chart'
      },
      {
        title: '饼图',
        key: '/charts/pie',
        icon: 'pie-chart'
      },
    ]
  },
]

export default menuList
```

2.13.2. left-nav/index.less

```
.left-nav {
  .logo-link {
    display: flex;
    align-items: center;
    height: 80px;
    background-color: #002140;
    img {
      width: 40px;
      height: 40px;
      margin: 0 15px 0 15px;
    }
    h1 {
      margin-bottom: 0;
```

```
      color: white;
      font-size: 20px;
    }
  }
}
```

2.13.3. 导航菜单组件: left-nav/index.jsx

```
import React, {Component} from 'react'
import {Link, withRouter} from 'react-router-dom'
import {Menu, Icon} from 'antd'

import menuConfig from '../../config/menuConfig'
import logo from '../../assets/images/logo.png'
import './index.less'

const SubMenu = Menu.SubMenu

/*
左侧导航组件
 */
class LeftNav extends Component {

  /*
  根据指定菜单数据列表产生<Menu>的子节点数组
  使用 reduce() + 递归
  */
  getMenuNodes = (menuList) => {

    // 得到当前请求的path
    const path = this.props.location.pathname

    return menuList.reduce((pre, item) => {
      if (!item.children) {
        pre.push((
          <Menu.Item key={item.key}>
            <Link to={item.key}>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </Link>
          </Menu.Item>
```

```
        ))
      } else {
        pre.push((
          <SubMenu
            key={item.key}
            title={
              <span>
                <Icon type={item.icon}/>
                <span>{item.title}</span>
              </span>
            }
          >
            {this.getMenuNodes(item.children)}
          </SubMenu>
        ))

        // 如果当前请求路由与当前菜单的某个子菜单的key匹配，将菜单的key保存为openKey
        if(item.children.find(cItem => path.indexOf(cItem.key)===0)) {
          this.openKey = item.key
        }
      }
      return pre
    }, [])
  }

  /*
  根据指定菜单数据列表产生<Menu>的子节点数组
  使用 map() + 递归
  */
  getMenuNodes2 = (menuList) => {

    // 得到当前请求的path
    const path = this.props.location.pathname

    return menuList.map(item => {
      if(!item.children) {
        return (
          <Menu.Item key={item.key}>
            <Link to={item.key}>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </Link>
```

```
          </Menu.Item>
        )
      } else {
        // 如果当前请求路由与当前菜单的某个子菜单的key匹配，将菜单的key保存为openKey
        if(item.children.find(cItem => path.indexOf(cItem.key)===0)) {
          this.openKey = item.key
        }
        return (
          <SubMenu
            key={item.key}
            title={
              <span>
                <Icon type={item.icon}/>
                <span>{item.title}</span>
              </span>
            }
          >
            {this.getMenuNodes(item.children)}
          </SubMenu>
        )
      }
    })
  }

  /*
  在第一次render()之前执行一次
  一般可以在此同步为第一次render()准备数据
   */
  componentWillMount() {
    // this.menuNodes = this.getMenuNodes(menuConfig)
    this.menuNodes = this.getMenuNodes2(menuConfig)
  }

  render() {
    // 得到当前请求路径，作为选中菜单项的key
    const selectKey = this.props.location.pathname
    const openKey = this.openKey

    return (
      <div className="left-nav">
        <Link to='/home' className='logo-link'>
          <img src={logo} alt="logo"/>
```

```
          <h1>硅谷后台</h1>
        </Link>

        <Menu
          mode="inline"
          theme="dark"
          selectedKeys={[selectKey]}
          defaultOpenKeys={[openKey]}
        >
          {
            this.menuNodes
          }
        </Menu>
      </div>
    )
  }
}
/*
withRouter: 高阶组件: 包装非路由组件返回一个包装后的新组件, 新组件会向被包装组件传递
history/location/match 属性
 */
export default withRouter(LeftNav)
/*
2 个问题:
  1). 自动选中对应的菜单项
  2). 有可能需要自动菜单项
 */
```

2.14. Header 组件

2.14.1. 下载依赖

```
yarn add jsonp
```

2.14.2. api/index.js

百度地图天气预报在线接口:
http://api.map.baidu.com/telematics/v3/weather?location=xxx&output=json&ak=3p49MVra6urFRGOT9s8UBWr2

```
import jsonp from 'jsonp'

/*
通过 jsonp 请求获取天气信息
 */
export function reqWeather(city) {
  const url =
`http://api.map.baidu.com/telematics/v3/weather?location=${city}&output=json&ak=3p49MVra6urFRGOT9s8UBWr2`
  return new Promise((resolve, reject) => {
    jsonp(url, {
      param: 'callback'
    }, (error, response) => {
      if (!error && response.status == 'success') {
        const {dayPictureUrl, weather} = response.results[0].weather_data[0]
        resolve({dayPictureUrl, weather})
      } else {
        alert('获取天气信息失败')
      }
    })
  })
}
```

2.14.3. header/index.less

```
.header {
  height: 80px;
  background-color: #fff;
  .header-top {
    height: 40px;
    line-height: 40px;
    text-align: right;
    padding-right: 20px;
    border-bottom: 1px solid #1DA57A;
```

```
  }

  .header-bottom {
    display: flex;
    align-items: center;
    height: 40px;
    .header-bottom-left {
      position: relative;
      width: 25%;
      font-size: 20px;
      text-align: center;
      &::after {
        content: '';
        position: absolute;
        top: 30px;
        right: 50%;
        transform: translateX(50%);
        border-top: 20px solid white;
        border-right: 20px solid transparent;
        border-bottom: 20px solid transparent;
        border-left: 20px solid transparent;
      }
    }
    .header-bottom-right {
      width: 75%;
      text-align: right;
      margin-right: 30px;
      img {
        width: 30px;
        height: 20px;
        margin: 0 15px;
      }
    }
  }
}
```

2.14.4. utils/dateUtils.js

```
/*
```

```
包含 n 个日期时间处理的工具函数模块
*/

/*
  格式化日期
*/
export function formateDate(time) {
  if (!time) return ''
  let date = new Date(time)
  return date.getFullYear() + '-' + (date.getMonth() + 1) + '-' + date.getDate()
    + ' ' + date.getHours() + ':' + date.getMinutes() + ':' + date.getSeconds()
}
```

2.14.5. 抽取通用组件: link-button

1). index.jsx

```
import React from 'react'
import './index.less'

/*
通用的看起来像链接的 button 组件
 */
export default function LinkButton (props) {
  return <button {...props} className='link-button'></button>
}
```

2). index.less

```
.link-button {
  border: none;
  outline: none;
  background-color: transparent;
  color: #1DA57A;
  cursor: pointer;
}
```

2.14.6. header/header.jsx

```
import React, {Component} from 'react'
import {Modal} from 'antd'
import {withRouter} from 'react-router-dom'

import LinkButton from '../link-button'
import menuList from '../../config/menuConfig'
import {reqWeather} from '../../api'
import {formateDate} from '../../utils/dateUtils'
import memoryUtils from '../../utils/memoryUtils'
import storageUtils from '../../utils/storageUtils'
import './index.less'

/*
头部组件
 */
class Header extends Component {

  state = {
    sysTime: formateDate(Date.now()),
    dayPictureUrl: '', // 天气图片的url
    weather: ''
  }

  /*
  发异步ajax 获取天气数据并更新状态
   */
  getWeather = async () => {
    const {dayPictureUrl, weather} = await reqWeather('北京')
    this.setState({
      dayPictureUrl,
      weather
    })
  }

  /*
  启动循环定时器, 每隔1s 更新一次sysTime
   */
  getSysTime = () => {
    this.intervalId = setInterval(() => {
```

```
    this.setState({
      sysTime: formateDate(Date.now())
    })
  }, 1000)
}

/*
退出登陆
 */
logout = () => {
  Modal.confirm({
    content: '确定退出吗?',
    onOk: () => {
      console.log('OK')
      // 移除保存的user
      storageUtils.removeUser()
      memoryUtils.user = {}
      // 跳转到login
      this.props.history.replace('/login')
    },
    onCancel() {
      console.log('Cancel')
    },
  })
}

/*
根据请求的path 得到对应的标题
 */
getTitle = (path) => {
  let title
  menuList.forEach(menu => {
    if(menu.key===path) {
      title = menu.title
    } else if (menu.children) {
      menu.children.forEach(item => {
        if(path.indexOf(item.key)===0) {
          title = item.title
        }
      })
    }
  })
```

```
    return title
  }

  componentDidMount () {
    this.getSysTime()
    this.getWeather()
  }

  componentWillUnmount () {
    // 清除定时器
    clearInterval(this.intervalId)
  }

  render() {
    const {sysTime, dayPictureUrl, weather} = this.state

    // 得到当前用户
    const user = memoryUtils.user

    // 得到当前请求的路径
    const path  = this.props.location.pathname
    // 得到对应的标题
    const title = this.getTitle(path)

    return (
      <div className="header">
        <div className="header-top">
          <span>欢迎, {user.username}</span>
          <LinkButton onClick={this.logout}>退出</LinkButton>
        </div>
        <div className="header-bottom">
          <div className="header-bottom-left">{title}</div>
          <div className="header-bottom-right">
            <span>{sysTime}</span>
            <img src={dayPictureUrl} alt="weather"/>
            <span>{weather}</span>
          </div>
        </div>
      </div>
    )
  }
```

```
}

export default withRouter(Header)
```

2.14.7. pages/admin/admin.jsx

```
<Content style={{backgroundColor: 'white', margin: '20px 20px 0'}}>
```

2.15. Home 界面

2.15.1. home.less

```
.home{
  width: 100%;
  height: 100%;
  display: flex;
  align-items: center;
  justify-content: center;
  font-size: 30px;
}
```

2.15.1. home.jsx

```
import React from 'react'
import './home.less'

/*
Home 路由组件
 */
export default function Home(props) {
  return (
    <div className="home">
      欢迎使用硅谷后台管理系统
    </div>
  )
```

```
}
```

2.16. 分类管理

2.16.1. api/index.js

```
// 获取一级或某个二级分类列表
export const reqCategorys = (parentId) => ajax('/manage/category/list', {parentId})

// 添加分类
export const reqAddCategory = (parentId, categoryName) => ajax('/manage/category/add',
{
  parentId,
  categoryName
}, 'POST')

// 更新品类名称
export const reqUpdateCategory = ({categoryId, categoryName}) =>
ajax('/manage/category/update', {
  categoryId,
  categoryName
}, 'POST')
```

2.16.2. category.jsx

```
import React, {Component} from 'react'
import {
  Card,
  Table,
  Button,
  Icon,
  message,
  Modal
} from 'antd'

import UpdateForm from './update-form'
```

```
import AddForm from './add-form'
import LinkButton from '../../components/link-button'
import {reqCategorys, reqAddCategory, reqUpdateCategory} from "../../api";

/*
分类管理路由组件
 */
export default class Category extends Component {

  state = {
    categorys: [], // 一级分类列表
    subCategorys: [], // 二级分类列表
    parentId: '0', // 父分类的 ID
    parentName: '', // 父分类的名称
    loading: false, // 标识是否正在加载中
    showStatus: 0, // 是否显示对话框 0: 都不显示, 1: 显示添加, 2: 显示更新
  }

  /*
  根据 parentId 异步获取分类列表显示
   */
  getCategorys = async (parentId) => {

    // 更新 loading 状态: 加载中
    this.setState({
      loading: true
    })
    // 优先使用指定的 parentId, 如果没有指定使用状态中的 parentId
    parentId = parentId || this.state.parentId
    // 异步获取分类列表
    const result = await reqCategorys(parentId)  // {status: 0, data: []}
    // 更新 loading 状态: 加载完成
    this.setState({
      loading: false
    })
    if (result.status === 0) {
      const categorys = result.data
      if (parentId === '0') {
        // 更新一级分类列表
        this.setState({
          categorys
        })
```

```
    } else {
      // 更新二级分类列表
      this.setState({
        subCategorys: categorys
      })
    }

  } else {
    // 获取列表失败
    message.error('获取列表失败')
  }
}

/*
显示指定分类的子分类列表
 */
showSubCates = (category) => {
  // console.log('set 之前', this.state.parentId) // 0
  // 更新状态: state 中的数据是异步更新(不会立即更新 state 中的数据)
  this.setState({
    parentId: category._id,
    parentName: category.name
  }, () => { // 在状态更新之后执行, 在回调函数中能得到最新的状态数据
    this.getCategorys()
  })
  // console.log('set 之后', this.state.parentId) // xxx
}

/*
显示一级列表
 */
showCategorys = () => {
  this.setState({
    parentId: '0',
    parentName: '',
    subCategorys: [],
    showStatus: 0,
  })
}

/*
显示添加的对话框
```

```
 */
showAdd = () => {
  this.setState({
    showStatus: 1
  })
}

/*
显示修改的对话框
 */
showUpdate = (category) => {
  // 保存 category
  this.category = category
  // 更新状态
  this.setState({
    showStatus: 2
  })
}

/*
添加分类
 */
addCategory = async () => {
  // 得到数据
  const {parentId, categoryName} = this.form.getFieldsValue()
  // 关闭对话框
  this.setState({
    showStatus: 0
  })
  // 重置表单
  this.form.resetFields()

  // 异步请求添加分类
  const result = await reqAddCategory(categoryName, parentId)
  if (result.status === 0) {
    /*
    添加一级分类
    在当前分类列表下添加
     */
    if( parentId===this.state.parentId) {
      this.getCategorys()
    } else if (parentId === '0') {
```

```
        this.getCategorys(parentId)
      }
    }
  }

  /*
  更新分类
   */
  updateCategory = async () => {
    // 得到数据
    const categoryId = this.category._id
    const {categoryName} = this.form.getFieldsValue()

    // 关闭对话框
    this.setState({
      showStatus: 0
    })

    // 重置表单
    this.form.resetFields()

    // 异步请求更新分类
    const result = await reqUpdateCategory({categoryId, categoryName})
    if (result.status === 0) {
      // 重新获取列表
      this.getCategorys()
    }
  }

  componentWillMount() {
    this.columns = [
      {
        title: '分类名称',
        dataIndex: 'name',
      },
      {
        title: '操作',
        width: 300,
        render: (category) => (
          <span>
            <LinkButton onClick={() => this.showUpdate(category)}>修改分类
</LinkButton>   
```

```
          {this.state.parentId === '0' ?
            <LinkButton onClick={() => this.showSubCates(category)}>查看子分类</LinkButton> : null}
        </span>
      )
    }];
}

componentDidMount() {
  this.getCategorys()
}

render() {

  // 从状态中取数据
  const {categorys, subCategorys, parentId, parentName, loading, showStatus} = this.state
  // 从组件对象中数据
  const category = this.category || {}
  // Card 的左侧标题
  const title = parentId === '0' ? '一级分类列表' : (
    <span>
      <LinkButton onClick={this.showCategorys}>一级分类列表</LinkButton>   
      <Icon type='arrow-right'/>  
      <span>{parentName}</span>
    </span>
  )
  // Card 的右侧 button
  const extra = (
    <Button type='primary' onClick={this.showAdd}>
      <Icon type='plus'/> 添加
    </Button>
  )

  return (
    <Card title={title} extra={extra}>
      <Table
        bordered
        rowKey='_id'
        dataSource={parentId === '0' ? categorys : subCategorys}
        columns={this.columns}
        loading={loading}
        pagination={{pageSize: 5, showQuickJumper: true, showSizeChanger: true}}
      />
```

```
        <Modal
          title="添加分类"
          visible={showStatus === 1}
          onOk={this.addCategory}
          onCancel={() => this.setState({showStatus: 0})}
        >
          <AddForm
            categorys={categorys}
            parentId={parentId}
            setForm={form => this.form = form}
          />
        </Modal>

        <Modal
          title="修改分类"
          visible={showStatus === 2}
          onOk={this.updateCategory}
          onCancel={() => {
            this.setState({showStatus: 0})
            this.form.resetFields()
          }}
        >
          <UpdateForm
            categoryName={category.name}
            setForm={form => this.form = form}
          />
        </Modal>
      </Card>
    )
  }
}
```

2.16.3. add-form.jsx

```
import React, {Component} from 'react'
import {Form, Select, Input} from 'antd'
import PropTypes from 'prop-types'
```

```
const Item = Form.Item
const Option = Select.Option

/*
添加分类的 Form 组件
 */
class AddForm extends Component {

  static propTypes = {
    categorys: PropTypes.array.isRequired,
    parentId: PropTypes.string.isRequired,
    setForm: PropTypes.func.isRequired,
  }

  componentWillMount() {
    this.props.setForm(this.props.form)
  }

  render() {

    const {getFieldDecorator} = this.props.form
    const {categorys, parentId} = this.props
    return (
      <Form>
        <Item label='所属分类'>
          {
            getFieldDecorator('parentId', {
              initialValue: parentId
            })(
              <Select>
                <Option key='0' value='0'>一级分类</Option>
                {
                  categorys.map(c => <Option key={c._id}
value={c._id}>{c.name}</Option>)
                }
              </Select>
            )
          }
        </Item>

        <Item label='分类名称'>
```

```
          {
            getFieldDecorator('categoryName', {
              initialValue: ''
            })(
              <Input placeholder='请输入分类名称'/>
            )
          }
        </Item>
      </Form>
    )
  }
}

export default AddForm = Form.create()(AddForm)
```

2.16.4. update-form.jsx

```
import React, {Component} from 'react'
import {Form, Input} from 'antd'
import PropTypes from 'prop-types'

const Item = Form.Item

/*
更新分类的 Form 组件
 */
class UpdateForm extends Component {

  static propTypes = {
    categoryName: PropTypes.string,
    setForm: PropTypes.func.isRequired,
  }

  componentWillMount() {
    this.props.setForm(this.props.form)
  }

  render() {
```

```
    const {getFieldDecorator} = this.props.form
    const {categoryName} = this.props

    return (
      <Form>
        <Item>
          {
            getFieldDecorator('categoryName', {
              initialValue: categoryName
            })(
              <Input placeholder='请输入分类名称'/>
            )
          }
        </Item>
      </Form>
    )
  }
}

export default UpdateForm = Form.create()(UpdateForm)
```

2.17. 商品管理

2.17.1. 下载依赖

```
yarn add react-draft-wysiwyg draftjs-to-html
```

2.17.2. api/index.js

```
// 根据分类 ID 获取分类
export const reqCategory = (categoryId) => ajax('/manage/category/info', {categoryId})

// 获取商品分页列表
export const reqProducts = (pageNum, pageSize) => ajax('/manage/product/list', {pageNum,
pageSize})

// 根据 ID/Name 搜索产品分页列表
```

```
export const reqSearchProducts = ({pageNum, pageSize, searchType, searchName}) =>
ajax('/manage/product/search', {
  pageNum,
  pageSize,
  [searchType]: searchName,
})

// 添加/更新商品
export const reqAddOrUpdateProduct = (product) => ajax('/manage/product/' +
(product._id ? 'update' : 'add'), product, 'post')

// 对商品进行上架/下架处理
export const reqUpdateProductStatus = (productId, status) =>
ajax('/manage/product/updateStatus', {
  productId,
  status
}, 'POST')

// 删除图片
export const reqDeleteImg = (name) => ajax('/manage/img/delete', {name}, 'post')
```

2.17.3. product/product.jsx

```
import React, {Component} from 'react'
import {Switch, Route, Redirect} from 'react-router-dom'

import ProductHome from './home'
import ProductAddUpdate from './add-update'
import ProductDetail from './detail'

import './product.less'

/*
管理的商品管理路由组件
 */
export default class Product extends Component {
  render() {
    return (
      <Switch>
        <Route path='/product' exact component={ProductHome}/>
```

```
        <Route path='/product/addupdate' component={ProductAddUpdate}/>
        <Route path='/product/detail' component={ProductDetail}/>
        <Redirect to='/product'/>
      </Switch>
    )
  }
}
```

2.17.4. product/home.jsx

```
import React, {Component} from 'react'
import {
  Card,
  Select,
  Input,
  Button,
  Icon,
  Table,
  message
} from 'antd'

import LinkButton from '../../components/link-button'
import {reqProducts, reqSearchProducts, reqUpdateProductStatus} from '../../api'
import {PAGE_SIZE} from '../../utils/constants'

const Option = Select.Option

/*
商品管理的主界面路由
 */
export default class ProductHome extends Component {

  state = {
    total: 0, // 商品的总数量
    products: [], // 当前页列表数据
    searchType: 'productName', // 搜索类型  productName / productDesc
    searchName: '', // 搜索关键字
  }
```

```
/*
更新指定产品的状态
 */
updateProductStatus = async (productId, status) => {
  const result = await reqUpdateProductStatus(productId, status)
  if (result.status === 0) {
    message.success('更新状态成功!')
    this.getProducts(this.pageNum || 1)
  }
}

/*
初始化生成 Tabe 所有列的数组
 */
initColumns = () => {
  this.columns = [
    {
      title: '商品名称',
      dataIndex: 'name'
    },
    {
      title: '商品描述',
      dataIndex: 'desc'
    },
    {
      title: '价格',
      dataIndex: 'price',
      render: (price) => <span>¥{price}</span>
    },
    {
      title: '状态',
      width: 100,
      dataIndex: 'status',
      render: (status, product) => {  // 1: 在售, 2: 已下架
        let btnText = '下架'
        let statusText = '在售'

        if (status === 2) {
          btnText = '上架'
          statusText = '已下架'
        }
```

```
          status = status === 1 ? 2 : 1

          return (
            <span>
              <Button type='primary' onClick={() =>
this.updateProductStatus(product._id, status)}>{btnText}</Button>
              <span>{statusText}</span>
            </span>
          )
        }
      },
      {
        title: '操作',
        width: 100,
        render: (product) => (
          <span>
            <LinkButton onClick={() => this.props.history.push('/product/detail',
product)}>详情</LinkButton>
               
            <LinkButton onClick={() => this.props.history.push('/product/addupdate',
product)}>修改</LinkButton>
          </span>
        )
      },

    ]
  }

  /*
  异步获取指定页的数据
   */
  getProducts = async (pageNum) => {
    this.pageNum = pageNum
    const {searchType, searchName} = this.state
    let result
    if (searchName) { // 搜索分页
      result = await reqSearchProducts({pageNum, pageSize: PAGE_SIZE, searchType,
searchName})
    } else { // 一般分页
      result = await reqProducts(pageNum, PAGE_SIZE)
    }
    console.log('getProducts()', result)
```

```
    if (result.status === 0) {
      const {total, list} = result.data
      this.setState({
        total,
        products: list
      })
    }
  }

  componentWillMount() {
    this.initColumns()
  }

  componentDidMount() {
    this.getProducts(1)
  }

  render() {

    const {products, total, searchType} = this.state

    const title = (
      <span>
        <Select value={searchType} onChange={value => this.setState({searchType:
value})}>
          <Option key='productName' value='productName'>按名称搜索</Option>
          <Option key='productDesc' value='productDesc'>按描述搜索</Option>
        </Select>
        <Input style={{width: 150, marginLeft: 10, marginRight: 10}} placeholder='
关键字'
               onChange={(e) => this.setState({searchName: e.target.value})}/>
        <Button type='primary' onClick={() => this.getProducts(1)}>搜索</Button>
      </span>
    )

    const extra = (
      <Button type='primary' style={{float: 'right'}} onClick={() =>
this.props.history.push('/product/addupdate')}>
        <Icon type='plus'/>
        添加商品
      </Button>
    )
```

```
    return (
      <div>
        <Card title={title} extra={extra}>
          <Table
            bordered
            rowKey='_id'

            columns={this.columns}
            dataSource={products}
            pagination={{
              defaultPageSize: PAGE_SIZE,
              total,
              showQuickJumper: true,
              onChange: this.getProducts
            }}
          />
        </Card>
      </div>
    )
  }
}
```

2.17.5. product/detail.jsx

```
import React, {Component} from 'react'
import {List, Icon, Card} from 'antd'

import {reqCategory} from '../../api'
import {BASE_IMG_PATH} from '../../utils/constants'
import LinkButton from "../../components/link-button";

/*
商品详情组件
 */
export default class ProductDetail extends Component {

  state = {
    cName1: '',  // 一级分类名称
```

```
    cName2: '' // 二级分类名称
  }

  /*
  异步获取当前产品对应的分类名称
   */
  getCategoryName = async () => {
    const {categoryId, pCategoryId} = this.props.location.state
    if (pCategoryId === '0') {
      // 获取一级分类名称
      const result = await reqCategory(categoryId)
      const cName1 = result.data.name
      this.setState({cName1})
    } else {
      // 获取一级分类名称
      /*const result1 = await reqCategory(pCategoryId)
      const cName1 = result1.data.name
      // 获取二级分类名称
      const result2 = await reqCategory(categoryId)
      const cName2 = result2.data.name
      this.setState({cName1, cName2})*/

      /*
      一次发多个请求，等所有请求都返回后一起处理，如果有一个请求出错了，整个都会失败
      Promise.all([promise1, promise2]) 返回值一个 promise 对象，异步成功返回的是
[result1, result2]
       */
      const results = await Promise.all([reqCategory(pCategoryId),
reqCategory(categoryId)])
      const result1 = results[0]
      const result2 = results[1]
      const cName1 = result1.data.name
      const cName2 = result2.data.name
      this.setState({cName1, cName2})
    }
  }

  componentDidMount() {
    this.getCategoryName()
  }

  render() {
```

```
const {name, desc, price, imgs, detail} = this.props.location.state
const {cName1, cName2} = this.state
const title = (
  <span>
    <LinkButton onClick={() => this.props.history.goBack()}>
      <Icon type="arrow-left" style={{fontSize: 20}}/>
    </LinkButton>
      商品详情
  </span>
)
const imgStyle = {width: 150, height: 150, marginRight: 10, border: '1px solid black'}

return (
  <Card className='product-detail' title={title}>
    <List>
      <List.Item>
        <span className='left'>商品名称:</span>
        <span>{name}</span>
      </List.Item>
      <List.Item>
        <span className='left'>商品描述:</span>
        <span>{desc}</span>
      </List.Item>
      <List.Item>
        <span className='left'>商品价格:</span>
        <span>{price + '元'}</span>
      </List.Item>
      <List.Item>
        <span className='left'>所属分类:</span>
        <span>{cName1 + (cName2 ? ' --> ' + cName2 : '')}</span>
      </List.Item>
      <List.Item>
        <span className='left'>商品图片:</span>
        <span>
          {
            imgs.map(img => (
              <img src={BASE_IMG_PATH + img} alt="img" key={img} style={imgStyle}/>
            ))
          }
        </span>
      </List.Item>
```

```
          <List.Item>
            <span className='left'>商品详情:</span>
            <div dangerouslySetInnerHTML={{__html: detail}}></div>
          </List.Item>
        </List>
      </Card>
    )
  }
}
```

2.17.6. product/add-update.jsx

```
import React, {Component} from 'react'
import {
  Card,
  Icon,
  Form,
  Input,
  Cascader,
  Button,
  message
} from 'antd'

import LinkButton from '../../components/link-button'
import PicturesWall from './pictures-wall'
import RichTextEditor from './rich-text-editor'
import {reqCategorys, reqAddOrUpdateProduct} from '../../api'

const {Item} = Form
const {TextArea} = Input

/*
商品添加/更新的路由组件
 */
class ProductAddUpdate extends Component {

  state = {
    options: [], // 用来显示级联列表的数组
  }

  constructor(props) {
    super(props);
    this.pw = React.createRef();
    this.editor = React.createRef();
  }

  /*
  选择某个分类项时的回调
  加载对应的二级分类显示
   */
  loadData = async (selectedOptions) => {
    // console.log('loadDate()', selectedOptions)
    const targetOption = selectedOptions[selectedOptions.length - 1]
    targetOption.loading = true // 显示 loading
```

```
    // 异步请求获取对应的二级分类列表
    const subCategorys = await this.getCategorys(targetOption.value) // await 的作用: 保证完成执行完保存的分类数组才进入后面的语句
    targetOption.loading = false // 隐藏 loading
    if(subCategorys && subCategorys.length>0) { // 有子分类
      // 生成一个二级的 options
      const cOptions = subCategorys.map(c => ({
        value: c._id,
        label: c.name,
        isLeaf: true,
      }))

      // 添加为对应的 option 的 children(子 options)
      targetOption.children = cOptions
    } else { // 没有子分类
      targetOption.isLeaf = true
    }

    // 更新 options 状态
    this.setState({
      options: [...this.state.options],
    });

  }

  /*
  获取指定分类 id 的子分类列表
  如果 parentId 为 0 时获取一级列表
   */
  getCategorys = async (parentId) => {
    const result = await reqCategorys(parentId)
    if(result.status===0) {
      const categorys = result.data
      if(parentId==='0') {
        // 根据一级分类数组初始化生成 options 数组
        this.initOptions(categorys)
      } else { // 当前得到是二级分类列表
        // 返回二级分类列表(作为 async 函数的 promise 对象的成功的 value 值)
        return categorys
      }
    }
```

```
  }

  /*
  生成级联的一级列表
   */
  initOptions = async (categorys) => {
    // 根据一级分类数组生成 option 的数组
    const options = categorys.map(c => ({
      value: c._id,
      label: c.name,
      isLeaf: false,
    }))

    // 如果当前是更新, 且商品是一个二级分类的商品
    const {product, isUpdate} = this
    if(isUpdate && product.pCategoryId!=='0') {

      // 异步获取 product.pCategoryId 的二级分类列表
      const subCategorys = await this.getCategorys(product.pCategoryId)
      if (subCategorys && subCategorys.length>0) {
        // 生成二级的 option 数组
        const cOptions = subCategorys.map(c => ({
          value: c._id,
          label: c.name,
          isLeaf: true,
        }))

        // 找到对应的 option
        const targetOption = options.find(option => option.value===product.pCategoryId)

        // 将 cOptions 添加为对应的一级 option 的 children
        targetOption.children = cOptions
      }
    }

    // 更新状态
    this.setState({
      options
    })
  }

  /*
```

```
  对商品价格进行自定义验证
   */
  validatePrice = (rule, value, callback) => {
    value = value * 1
    if(value>0) {
      callback()
    } else {
      callback('价格必须是大于 0 的数值')
    }
  }

  // 添加/更新
  submit = () => {
    this.props.form.validateFields(async (err, values) => {
      if (!err) {
        // 收集产品相关信息
        const {name, desc, price, categoryIds} = values
        // 在父组件中得到子组件对象, 调用子组件对象的方法
        const imgs = this.pw.current.getImgs()
        const detail = this.editor.current.getDetail()

        let pCategoryId = ''
        let categoryId = ''
        if(categoryIds.length===1) { // 选择的是一级分类
          pCategoryId = '0'
          categoryId = categoryIds[0]
        } else { // 选择的是二级分类
          pCategoryId = categoryIds[0]
          categoryId = categoryIds[1]
        }
        // 封装成对象
        const product = {name, desc, price, pCategoryId, categoryId, detail, imgs}
        // 如果是更新, 指定 product 的_id 属性值
        if(this.isUpdate) {
          product._id = this.product._id
        }
        // 请求保存
        const result = await reqAddOrUpdateProduct(product)
        if(result.status===0) {
          message.success('保存商品成功')
          this.props.history.goBack()
        } else {
```

```
        message.success('保存商品失败')
      }
    }
  })
}

componentDidMount () {
  // 异步获取一级分类列表
  this.getCategorys('0')
}

componentWillMount () {
  // 取出跳转传入的数据
  const product = this.props.location.state
  this.product = product || {}
  this.isUpdate = !!product   // !!xxx 将一个数据强制转换成布尔类型
}

render() {

  const {product, isUpdate} = this
  const {pCategoryId, categoryId} = product
  const {options} = this.state
  const {getFieldDecorator} = this.props.form

  // 准备用于级联列表显示的数组
  const categoryIds = []
  if(isUpdate) {
    if(pCategoryId==='0') {
      categoryIds.push(categoryId)
    } else {
      categoryIds.push(pCategoryId)
      categoryIds.push(categoryId)
    }
  }


  const title = (
    <span>
      <LinkButton onClick={() => this.props.history.goBack()}>
        <Icon type='arrow-left' style={{fontSize: 20}}/>
      </LinkButton>
```

```
      {isUpdate ? '修改商品' : '添加商品'}
    </span>
  )

  // 指定form的item布局的对象
  const formItemLayout = {
    labelCol: { span: 2 },
    wrapperCol: { span: 8 }
  }

  return (
    <Card title={title}>
      <Form>
        <Item label="商品名称" {...formItemLayout}>
          {
            getFieldDecorator('name', {
              initialValue: product.name,
              rules: [
                {required: true, message: '商品名称必须输入'}
              ]
            })(
              <Input placeholer='请输入商品名称'/>
            )
          }
        </Item>
        <Item label="商品描述" {...formItemLayout}>
          {
            getFieldDecorator('desc', {
              initialValue: product.desc,
              rules: [
                {required: true, message: '商品描述必须输入'}
              ]
            })(
              <TextArea placeholder="请输入商品描述" autosize />
            )
          }
        </Item>
        <Item label="商品价格" {...formItemLayout}>
          {
            getFieldDecorator('price', {
              initialValue: product.price,
              rules: [
```

```
                {required: true, message: '商品价格必须输入'},
                {validator: this.validatePrice}
              ]
            })(
              <Input type='number' placeholer='请输入商品价格' addonAfter='元'/>
            )
          }
        </Item>
        <Item label="商品分类" {...formItemLayout}>
          {
            getFieldDecorator('categoryIds', {
              initialValue: categoryIds,
              rules: [
                {required: true, message: '商品分类必须输入'}
              ]
            })(
              <Cascader
                options={options}
                loadData={this.loadData}
              />
            )
          }
        </Item>
        <Item label="商品图片" {...formItemLayout}>
          <PicturesWall ref={this.pw} imgs={product.imgs}/>
        </Item>
        <Item
          label="商品详情"
          labelCol={{ span: 2 }}
          wrapperCol={{ span: 20 }}>
          <RichTextEditor ref={this.editor} detail={product.detail}/>
        </Item>
        <Button type='primary' onClick={this.submit}>提交</Button>
      </Form>
    </Card>
  )
 }
}

export default Form.create()(ProductAddUpdate)
```

2.17.7. product/pictures-wall.jsx

```
import React from 'react'
import PropTypes from 'prop-types'
import {Upload, Icon, Modal, message} from 'antd'

import {BASE_IMG_PATH, UPLOAD_IMG_NAME} from '../../utils/constants'
import {reqDeleteImg} from '../../api'

/*
管理商品图片的组件(上传/删除图片)
 */
export default class PicturesWall extends React.Component {

  static propTypes = {
    imgs: PropTypes.array
  }

  constructor (props) {
    super(props)
    let fileList = []
    // 如果传入了imgs, 生成一个对应的fileList
    const imgs = this.props.imgs
    if (imgs && imgs.length > 0) {
      fileList = imgs.map((img, index) => ({
        uid: -index,
        name: img,
        status: 'done', // loading: 上传中, done: 上传完成, remove: 删除
        url: BASE_IMG_PATH + img,
      }))
    }
    //初始化状态
    this.state = {
      previewVisible: false, // 是否显示大图预览
      previewImage: '', // 大图的url
      fileList: fileList // 所有需要显示的图片信息对象的数组
    }
  }
```

```
/*
得到当前已上传的图片文件名的数组
 */
getImgs = () => this.state.fileList.map(file => file.name)

/*
关闭大图预览
 */
handleCancel = () => this.setState({previewVisible: false})

/*
预览大图
 */
handlePreview = (file) => {
  this.setState({
    previewImage: file.url || file.thumbUrl, // 需要显示的大图的 url
    previewVisible: true,
  })
}

/*
file: 当前操作文件信息对象
fileList: 所有文件信息对象的数组
 */
handleChange = async ({file, fileList}) => {
  console.log('handleChange()', file, fileList)
  // 如果上传图片完成
  if (file.status === 'done') {
    const result = file.response
    if (result.status === 0) {
      message.success('上传成功了')
      const {name, url} = result.data
      file = fileList[fileList.length - 1]
      file.name = name
      file.url = url
    } else {
      message.error('上传失败了')
    }
  } else if (file.status === 'removed') { // 删除图片
    const result = await reqDeleteImg(file.name)
    if(result.status===0) {
      message.success('删除图片成功')
```

```
      } else {
        message.error('删除图片失败')
      }
    }

    // 更新fileList状态
    this.setState({fileList})
  }

  render() {
    const {previewVisible, previewImage, fileList} = this.state

    const uploadButton = (
      <div>
        <Icon type="plus"/>
        <div>上传图片</div>
      </div>
    )

    return (
      <div>
        <Upload
          action="/manage/img/upload"
          accept="image/*"
          name= {UPLOAD_IMG_NAME}
          listType="picture-card"
          fileList={fileList}
          onPreview={this.handlePreview}
          onChange={this.handleChange}
        >
          {uploadButton}
        </Upload>

        <Modal visible={previewVisible} footer={null} onCancel={this.handleCancel}>
          <img alt="example" style={{width: '100%'}} src={previewImage}/>
        </Modal>
      </div>
    )
  }
}
```

2.17.8. product/rich-text-editor.jsx

```
import React, {Component} from 'react'
import PropTypes from 'prop-types'
import {Editor} from 'react-draft-wysiwyg'
import {EditorState, convertToRaw, ContentState} from 'draft-js'
import draftToHtml from 'draftjs-to-html'
import htmlToDraft from 'html-to-draftjs'
import 'react-draft-wysiwyg/dist/react-draft-wysiwyg.css'

/*
用来指定商品详情信息的富文本编程器组件
 */
export default class RichTextEditor extends Component {

  static propTypes = {
    detail: PropTypes.string
  }

  constructor (props) {
    super(props)
    // 根据传入的html 文本初始显示
    const detail = this.props.detail
    let editorState
    if(detail) { // 如果传入才需要做处理
      const blocksFromHtml = htmlToDraft(detail)
      const { contentBlocks, entityMap } = blocksFromHtml
      const contentState = ContentState.createFromBlockArray(contentBlocks, entityMap)
      editorState = EditorState.createWithContent(contentState)
    } else {
      editorState = EditorState.createEmpty()
    }
    // 初始化状态
    this.state = {
      editorState
    }
  }

  /*
  当输入改变时立即保存状态数据
   */
```

```
  onEditorStateChange = (editorState) => {
    this.setState({
      editorState,
    })
  }

  /*
  得到输入的富文本数据
   */
  getDetail = () => {
    return draftToHtml(convertToRaw(this.state.editorState.getCurrentContent()))
  }

  render() {
    const {editorState} = this.state

    return (
      <Editor
        editorState={editorState}
        editorStyle={{height: 250, border: '1px solid #000', padding: '0 30px'}}
        onEditorStateChange={this.onEditorStateChange}
      />
    )
  }
}
```

2.17.9. product/product.less

```
.product-detail {
  .left {
    margin-right: 10px;
    font-size: 18px;
    font-weight: bold;
  }
}
```

2.17.10. utils/constants.js

```
/*
包含 n 个应用中的常量字符串模块
 */
export const PAGE_SIZE = 5 // 每页显示条目数
export const BASE_IMG_PATH = 'http://localhost:5000/upload/'  // 上传的图片的基础地址
export const UPLOAD_IMG_NAME = 'image' // 上传图片的参数名
```

2.18. 角色管理

2.18.1. api/index.js:

```
// 添加角色
export const reqAddRole = (roleName) => ajax('/manage/role/add', {roleName}, 'POST')

// 获取角色列表
export const reqRoles = () => ajax('/manage/role/list')

// 更新角色(给角色设置权限)
export const reqUpdateRole = (role) => ajax('/manage/role/update', role, 'POST')
```

2.18.2. add-form.jsx

```
import React, {PureComponent} from 'react'
import PropTypes from 'prop-types'
import {
  Form,
  Input,
} from 'antd'

/*
用来添加角色的 form 组件
 */
```

```
class AddForm extends PureComponent {

  static propTypes = {
    setForm: PropTypes.func.isRequired
  }

  componentWillMount() {
    this.props.setForm(this.props.form)
  }

  render() {
    const {getFieldDecorator} = this.props.form
    const formItemLayout = {
      labelCol: {span: 5},
      wrapperCol: {span: 16}
    }

    return (
      <Form>
        <Form.Item label="角色名称" {...formItemLayout}>
          {
            getFieldDecorator('roleName', {
              initialValue: ''
            })(
              <Input type="text" placeholder="请输入角色名称"/>
            )
          }
        </Form.Item>
      </Form>
    )
  }
}

export default AddForm = Form.create()(AddForm)
```

2.18.3. auth-form.jsx

```
import React, {PureComponent} from 'react'
import PropTypes from 'prop-types'
import {
```

```
  Form,
  Input,
  Tree
} from 'antd'
import menuList from '../../config/menuConfig'

const Item = Form.Item

const { TreeNode } = Tree;

/*
添加分类的form 组件
 */
export default class AuthForm extends PureComponent {

  static propTypes = {
    role: PropTypes.object
  }

  constructor (props) {
    super(props)

    // 根据传入角色的menus 生成初始状态
    const {menus} = this.props.role
    this.state = {
      checkedKeys: menus
    }
  }

  /*
  为父组件提交获取最新menus 数据的方法
   */
  getMenus = () => this.state.checkedKeys


  getTreeNodes = (menuList) => {
    return menuList.reduce((pre, item) => {
      pre.push(
        <TreeNode title={item.title} key={item.key}>
          {item.children ? this.getTreeNodes(item.children) : null}
        </TreeNode>
      )
```

```
    return pre
  }, [])
}

// 选中某个node 时的回调
onCheck = checkedKeys => {
  console.log('onCheck', checkedKeys);
  this.setState({ checkedKeys });
};


componentWillMount () {
  this.treeNodes = this.getTreeNodes(menuList)
}

// 根据新传入的role 来更新 checkedKeys 状态
/*
当组件接收到新的属性时自动调用
 */
componentWillReceiveProps (nextProps) {
  console.log('componentWillReceiveProps()', nextProps)
  const menus = nextProps.role.menus
  this.setState({
    checkedKeys: menus
  })
  // this.state.checkedKeys = menus
}

render() {
  console.log('AuthForm render()')
  const {role} = this.props
  const {checkedKeys} = this.state
  // 指定Item 布局的配置对象
  const formItemLayout = {
    labelCol: { span: 4 },  // 左侧Label 的宽度
    wrapperCol: { span: 15 }, // 右侧包裹的宽度
  }

  return (
    <div>
      <Item label='角色名称' {...formItemLayout}>
        <Input value={role.name} disabled/>
```

```
        </Item>

        <Tree
          checkable
          defaultExpandAll={true}
          checkedKeys={checkedKeys}
          onCheck={this.onCheck}
        >
          <TreeNode title="平台权限" key="all">
            {this.treeNodes}
          </TreeNode>
        </Tree>
      </div>
    )
  }
}
```

2.18.4. role.jsx

```
import React, {PureComponent} from 'react'
import {
  Card,
  Button,
  Table,
  Modal,
  message
} from 'antd'
import {PAGE_SIZE} from "../../utils/constants"
import {reqRoles, reqAddRole, reqUpdateRole} from '../../api'
import AddForm from './add-form'
import AuthForm from './auth-form'
import memoryUtils from "../../utils/memoryUtils"
import {formateDate} from '../../utils/dateUtils'

/*
角色路由
 */
```

```
export default class Role extends PureComponent {

  state = {
    roles: [], // 所有角色的列表
    role: {}, // 选中的role
    isShowAdd: false, // 是否显示添加界面
    isShowAuth: false, // 是否显示设置权限界面
  }

  constructor (props) {
    super(props)

    this.auth = React.createRef()
  }

  initColumn = () => {
    this.columns = [
      {
        title: '角色名称',
        dataIndex: 'name'
      },
      {
        title: '创建时间',
        dataIndex: 'create_time',
        render: (create_time) => formateDate(create_time)
      },
      {
        title: '授权时间',
        dataIndex: 'auth_time',
        render: formateDate
      },
      {
        title: '授权人',
        dataIndex: 'auth_name'
      },
    ]
  }

  getRoles = async () => {
    const result = await reqRoles()
    if (result.status===0) {
      const roles = result.data
```

```
      this.setState({
        roles
      })
    }
  }


onRow = (role) => {
  return {
    onClick: event => { // 点击行
      console.log('row onClick()', role)
      // alert('点击行')
      this.setState({
        role
      })
    },
  }
}

/*
添加角色
 */
addRole = () => {
  // 进行表单验证, 只能通过了才向下处理
  this.form.validateFields(async (error, values) => {
    if (!error) {

      // 隐藏确认框
      this.setState({
        isShowAdd: false
      })

      // 收集输入数据
      const {roleName} = values
      this.form.resetFields()

      // 请求添加
      const result = await reqAddRole(roleName)
      // 根据结果提示/更新列表显示
      if (result.status===0) {
        message.success('添加角色成功')
        // this.getRoles()
```

```
        // 新产生的角色
        const role = result.data
        // 更新 roles 状态
        /*const roles = this.state.roles
        roles.push(role)
        this.setState({
          roles
        })*/

        // 更新 roles 状态: 基于原本状态数据更新
        this.setState(state => ({
          roles: [...state.roles, role]
        }))

      } else {
        message.success('添加角色失败')
      }

    }
  })


}

/*
更新角色
 */
updateRole = async () => {

  // 隐藏确认框
  this.setState({
    isShowAuth: false
  })

  const role = this.state.role
  // 得到最新的 menus
  const menus = this.auth.current.getMenus()
  role.menus = menus
  role.auth_time = Date.now()
  role.auth_name = memoryUtils.user.username

  // 请求更新
```

```
    const result = await reqUpdateRole(role)
    if (result.status===0) {
      message.success('设置角色权限成功')
      // this.getRoles()
      this.setState({
        roles: [...this.state.roles]
      })
    }
  }

  componentWillMount () {
    this.initColumn()
  }

  componentDidMount () {
    this.getRoles()
  }

  render() {
    console.log('Role render()')
    const {roles, role, isShowAdd, isShowAuth} = this.state

    const title = (
      <span>
        <Button type='primary' onClick={() => this.setState({isShowAdd: true})}>创建角色</Button>   
        <Button type='primary' disabled={!role._id} onClick={() => this.setState({isShowAuth: true})}>设置角色权限</Button>
      </span>
    )

    return (
      <Card title={title}>
        <Table
          bordered
          rowKey='_id'
          dataSource={roles}
          columns={this.columns}
          pagination={{defaultPageSize: PAGE_SIZE}}
          rowSelection={{type: 'radio', selectedRowKeys: [role._id]}}
          onRow={this.onRow}
        />
```

```
        <Modal
          title="添加角色"
          visible={isShowAdd}
          onOk={this.addRole}
          onCancel={() => {
            this.setState({isShowAdd: false})
            this.form.resetFields()
          }}
        >
          <AddForm
            setForm={(form) => this.form = form}
          />
        </Modal>

        <Modal
          title="设置角色权限"
          visible={isShowAuth}
          onOk={this.updateRole}
          onCancel={() => {
            this.setState({isShowAuth: false})
          }}
        >
          <AuthForm ref={this.auth} role={role}/>
        </Modal>
      </Card>
    )
  }
}
```

2.19. 用户管理

2.19.1. api/index.js

```
// 添加/更新用户
export const reqAddOrUpdateUser = (user) => ajax('/manage/user/'+(user._id ? 'update' :
'add'), user, 'POST')
```

```
// 获取用户列表
export const reqUsers = () => ajax('/manage/user/list')

// 删除用户
export const reqDeleteUser = (userId) => ajax('/manage/user/delete', {userId}, 'POST')
```

2.19.2. user-form.jsx

```
import React, {Component} from 'react'
import PropTypes from 'prop-types'
import {
  Form,
  Input,
  Select,
} from 'antd'

const FormItem = Form.Item
const Option = Select.Option

/*
用来添加或更新的 form 组件
 */
class UserForm extends Component {

  static propTypes = {
    setForm: PropTypes.func.isRequired,
    user: PropTypes.object,
    roles: PropTypes.array
  }

  componentWillMount() {
    this.props.setForm(this.props.form)
  }

  render() {
    const {getFieldDecorator} = this.props.form
    const formItemLayout = {
      labelCol: {span: 4},
      wrapperCol: {span: 16}
```

```
  }

  const {user, roles} = this.props
  return (
    <Form {...formItemLayout}>
      <FormItem label="用户名">
        {
          getFieldDecorator('username', {
            initialValue: user.username
          })(
            <Input type="text" placeholder="请输入用户名"/>
          )
        }
      </FormItem>

      {
        !user._id ?
          (
            <FormItem label="密码">
              {
                getFieldDecorator('password', {
                  initialValue: ''
                })(
                  <Input type="password" placeholder="请输入密码"/>
                )
              }
            </FormItem>
          ) : null
      }



      <FormItem label="手机号">
        {
          getFieldDecorator('phone', {
            initialValue: user.phone
          })(
            <Input type="phone" placeholder="请输入手机号"/>
          )
        }
      </FormItem>
```

```
        <FormItem label="邮箱">
          {
            getFieldDecorator('email', {
              initialValue: user.email
            })(
              <Input type="email" placeholder="请输入邮箱"/>
            )
          }
        </FormItem>

        <FormItem label="角色">
          {
            getFieldDecorator('role_id', {
              initialValue: user.role_id
            })(
              <Select style={{width: 200}} placeholder='请选择角色'>
                {
                  roles.map(role => <Option key={role._id}
value={role._id}>{role.name}</Option>)
                }
              </Select>
            )
          }
        </FormItem>
      </Form>
    )
  }
}

export default Form.create()(UserForm)
```

2.19.3. user.jsx

```
import React, {Component} from 'react'
import {
  Card,
  Button,
  Table,
  Modal,
```

```
} from 'antd'

import LinkButton from '../../components/link-button'
import UserForm from './user-form'
import {
  reqUsers,
  reqAddOrUpdateUser,
  reqDeleteUser
} from '../../api'
import {formateDate} from '../../utils/dateUtils'
import {PAGE_SIZE} from "../../utils/constants";

/*
后台管理的用户管理路由组件
 */
export default class User extends Component {

  state = {
    isShow: false, // 是否显示对话框
    users: [], // 所有用户的列表
    roles: [], // 所有角色的列表
  }

  /*
  初始化 Table 的字段列表
   */
  initColumns = () => {
    this.columns = [
      {
        title: '用户名',
        dataIndex: 'username'
      },
      {
        title: '邮箱',
        dataIndex: 'email'
      },
      {
        title: '电话',
        dataIndex: 'phone'
      },
      {
        title: '注册时间',
```

```
      dataIndex: 'create_time',
      render: formateDate
    },
    {
      title: '所属角色',
      dataIndex: 'role_id',
      render: value => this.roleNames[value]
    },
    {
      title: '操作',
      render: (user) => (
        <span>
          <LinkButton onClick={() => this.showUpdate(user)}>修改</LinkButton>
            
          <LinkButton onClick={() => this.clickDelete(user)}>删除</LinkButton>
        </span>
      )
    },
  ]
}

/*
根据角色的数组生成一个包含所有角色名的对象容器
 */
initRoleNames = (roles) => {
  this.roleNames = roles.reduce((pre, role) => {
    pre[role._id] = role.name
    return pre
  }, {})
}

/*
响应点击删除用户
 */
clickDelete = (user) => {
  Modal.confirm({
    content: `确定删除${user.username}吗?`,
    onOk: async () => {
      const result = await reqDeleteUser(user._id)
      if (result.status === 0) {
        this.getUsers()
      }
```

```
    }
  })
}

/*
显示修改用户的界面
 */
showUpdate = (user) => {
  // 保存user
  this.user = user
  this.setState({
    isShow: true
  })
}

/*
异步获取所有用户列表
 */
getUsers = async () => {
  const result = await reqUsers()
  if (result.status === 0) {
    const {users, roles} = result.data
    // 初始化生成一个包含所有角色名的对象容器 {_id1: name1, _id2: nam2}
    this.initRoleNames(roles)
    this.setState({
      users,
      roles
    })
  }
}


/*
显示添加用户的界面
 */
showAddUser = () => {
  this.user = null
  this.setState({
    isShow: true
  })
}
```

```
/*
添加/更新用户
 */
AddOrUpdateUser = async () => {
  // 获取表单数据
  const user = this.form.getFieldsValue()
  this.form.resetFields()
  if (this.user) {
    user._id = this.user._id
  }
  this.setState({
    isShow: false
  })

  const result = await reqAddOrUpdateUser(user)
  if (result.status === 0) {
    this.getUsers()
  }

}

componentWillMount() {
  this.initColumns()
}

componentDidMount() {
  this.getUsers()
}

render() {

  const {users, roles, isShow} = this.state
  const user = this.user || {}

  const title = <Button type="primary" onClick={this.showAddUser}>创建用户</Button>

  return (
    <div>
      <Card title={title}>
        <Table
          columns={this.columns}
          rowKey='_id'
```

```
            dataSource={users}
            bordered
            pagination={{defaultPageSize: PAGE_SIZE, showQuickJumper: true}}
          />
          <Modal
            title={user._id ? '修改用户' : '添加用户'}
            visible={isShow}
            onCancel={() => this.setState({isShow: false})}
            onOk={this.AddOrUpdateUser}
          >
            <UserForm
              setForm={(form) => this.form = form}
              user={user}
              roles={roles}
            />
          </Modal>
        </Card>
      </div>
    )
  }
}
```

2.19.4. 导航权限控制

1) left-nav.jsx

```
/*
判断当前用户是否有看到当前 item 对应菜单项的权限
 */
hasAuth = (item) => {
  const key = item.key
  const menuSet = this.menuSet
  /*
  1. 如果菜单项标识为公开
  2. 如果当前用户是 admin
  3. 如果菜单项的 key 在用户的 menus 中
```

```
   */
  if(item.isPublic || memoryUtils.user.username==='admin' || menuSet.has(key)) {
    return true
    // 4. 如果有子节点, 需要判断有没有一个child的key在menus中
  } else if(item.children){
    return !!item.children.find(child => menuSet.has(child.key))
  }
}

/*
返回包含n个<Item>和<SubMenu>的数组
*/
getMenuNodes = (list) => {

  // 得到当前请求的path
  const path = this.props.location.pathname

  return list.reduce((pre, item) => {
    if (this.hasAuth(item)) {
      if (!item.children) {
        pre.push((
          <Menu.Item key={item.key}>
            <Link to={item.key}>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </Link>
          </Menu.Item>
        ))
      } else {
        pre.push((
          <SubMenu key={item.key} title={<span><Icon
type={item.icon}/><span>{item.title}</span></span>}>
            {
              this.getMenuNodes(item.children)
            }
          </SubMenu>
        ))

        if(item.children.find(cItem => path.indexOf(cItem.key)===0)) {
          this.openKey = item.key
        }
      }
```

```
    }
    return pre
  }, [])
}

componentWillMount () {
  this.menuSet = new Set(memoryUtils.user.role.menus || [])
  this.menuNodes = this.getMenuNodes(menuList)
}
```

2) config/menuConfig.js

```
{
  title: '首页', // 菜单标题名称
  key: '/home', // 对应的path
  icon: 'home', // 图标名称
  isPublic: true, // 开放的
}
```

2.20. 使用 redux 管理状态

2.20.1. 下载依赖

```
yarn add redux react-redux redux-thunk redux-devtools-extension
```

2.20.2. redux/store.js

```
/*
redux 最核心的管理对象: store
 */
import {createStore, applyMiddleware} from 'redux'
import thunk from 'redux-thunk'
import {composeWithDevTools} from 'redux-devtools-extension'

import reducer from './reducer'

// 向外暴露 store 对象
```

```
export default createStore(reducer, composeWithDevTools(applyMiddleware(thunk))) // 创建 store 对象内部会第一次调用 reducer()得到初始状态值
```

2.20.3. redux/reducer.js

```
/*
reducer 函数模块: 根据当前 state 和指定 action 返回一个新的 state
 */
import {combineReducers} from 'redux'

import {
  SET_HEAD_TITLE,
  RECEIVE_USER,
  SHOW_ERROR_MSG,
  RESET_USER
} from './action-types'
import storageUtils from "../utils/storageUtils";

/*
管理 headTitle 状态数据的 reducer
 */
const initHeadTitle = '首页'

function headTitle(state = initHeadTitle, action) {
  console.log('headTitle()', state, action)
  switch (action.type) {
    case SET_HEAD_TITLE:
      return action.data
    default:
      return state
  }
}

/*
管理 user 状态数据的 reducer
 */
const initUser = storageUtils.getUser()
```

```
function user(state = initUser, action) {
  console.log('user()', state, action)
  switch (action.type) {
    case RECEIVE_USER:
      return action.user
    case SHOW_ERROR_MSG:
      return {...state, errorMsg: action.errorMsg}
    case RESET_USER:
      return {}
    default:
      return state
  }
}

/*
向外暴露合并后产生的总 reducer 函数
总的 state 的结构:
  {
    headerTitle: '',
    user: {}
  }
 */
export default combineReducers({
  headTitle,
  user,
})
```

2.20.4. redux/actions.js

```
/*
包含 n 个用来创建 action 的工厂函数(action creator)
 */
import {
  SET_HEAD_TITLE,
  RECEIVE_USER,
  SHOW_ERROR_MSG,
```

```
  RESET_USER
} from './action-types'

import {reqLogin} from '../api'
import storageUtils from "../utils/storageUtils";

/*
设置头部标题的同步action
 */
export const setHeadTitle = (headTitle) => ({type: SET_HEAD_TITLE, data: headTitle})

/*
接收用户的同步action
 */
export const receiveUser = (user) => ({type: RECEIVE_USER, user})

/*
显示错误信息的同步action
 */
export const showErrorMsg = (errorMsg) => ({type: SHOW_ERROR_MSG, errorMsg})

/*
退出登陆的同步action
 */
export const logout = () => {
  storageUtils.removeUser()
  return {type: RESET_USER}
}

/*
登陆的异步action
 */
export const login = (username, password) => {
  return async dispatch => {
    const result = await reqLogin(username, password)
    if (result.status === 0) {
      const user = result.data
      storageUtils.saveUser(user)
      dispatch(receiveUser(user))
    } else {
      const msg = result.msg
      dispatch(showErrorMsg(msg))
```

```
    }
  }
}
```

2.20.5. redux/action-types.js

```
/*
包含 n 个 action type 常量名称的模块
 */

export const SET_HEAD_TITLE = 'set_head_title' // 设置头部标题

export const RECEIVE_USER = 'receive_user' // 接收新的用户
export const SHOW_ERROR_MSG = 'show_error_msg' // 显示错误提示信息
export const RESET_USER = 'reset_user' // 重置用户
```

2.20.6. index.js

```
/*
入口 js
 */
import React from 'react'
import ReactDOM from 'react-dom'
import {Provider} from 'react-redux'

import store from './redux/store'
import App from './App'

ReactDOM.render((
  <Provider store={store}>
    <App />
```

```
  </Provider>
), document.getElementById('root'))
```

2.20.7. components/left-nav/left-nav.js

```
import React, {Component} from 'react'
import PropTypes from 'prop-types'
import {Link, withRouter} from 'react-router-dom'
import {Menu, Icon} from 'antd'
import {connect} from 'react-redux'

import {setHeadTitle} from '../../redux/actions'
import logo from '../../assets/images/logo.png'
import menuList from '../../config/menuConfig'
import './index.less'

const SubMenu = Menu.SubMenu;

/*
左侧导航的组件
 */
class LeftNav extends Component {

  /*
  判断当前登陆用户对 item 是否有权限
   */
  hasAuth = (item) => {
    const {key, isPublic} = item

    const menus = this.props.user.role.menus
    const username = this.props.user.username
    /*
    1. 如果当前用户是 admin
    2. 如果当前 item 是公开的
    3. 当前用户有此 item 的权限: key 有没有 menus 中
     */
    if (username === 'admin' || isPublic || menus.indexOf(key) !== -1) {
      return true
```

```
    } else if (item.children) { // 4. 如果当前用户有此 item 的某个子 item 的权限
      return !!item.children.find(child => menus.indexOf(child.key) !== -1)
    }

    return false
  }

  /*
  根据 menu 的数据数组生成对应的标签数组
  使用 map() + 递归调用
  */
  getMenuNodes_map = (menuList) => {
    return menuList.map(item => {
      if (!item.children) {
        return (
          <Menu.Item key={item.key}>
            <Link to={item.key}>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </Link>
          </Menu.Item>
        )
      } else {
        return (
          <SubMenu
            key={item.key}
            title={
              <span>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </span>
            }
          >
            {this.getMenuNodes(item.children)}
          </SubMenu>
        )
      }

    })
  }

  /*
```

```
根据 menu 的数据数组生成对应的标签数组
使用 reduce() + 递归调用
*/
getMenuNodes = (menuList) => {
  // 得到当前请求的路由路径
  const path = this.props.location.pathname
  // 如果当前请求的是根路径, 设置头部标题为首页
  if(path==='/') {
    this.props.setHeadTitle('首页')
  }

  return menuList.reduce((pre, item) => {

    // 如果当前用户有 item 对应的权限, 才需要显示对应的菜单项
    if (this.hasAuth(item)) {
      // 向 pre 添加<Menu.Item>
      if (!item.children) {
        // 一旦请求路径匹配上当前 item, 将 item 的 title 保存到 redux
        if(item.key===path || path.indexOf(item.key)===0) {
          this.props.setHeadTitle(item.title)
        }

        pre.push((
          <Menu.Item key={item.key}>
            <Link to={item.key} onClick={() => this.props.setHeadTitle(item.title)}>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </Link>
          </Menu.Item>
        ))
      } else {

        // 查找一个与当前请求路径匹配的子 Item
        const cItem = item.children.find(cItem => path.indexOf(cItem.key) === 0)
        // 如果存在, 说明当前 item 的子列表需要打开
        if (cItem) {
          this.openKey = item.key
        }



        // 向 pre 添加<SubMenu>
        pre.push((
```

```
            <SubMenu
              key={item.key}
              title={
                <span>
              <Icon type={item.icon}/>
              <span>{item.title}</span>
            </span>
              }
            >
              {this.getMenuNodes(item.children)}
            </SubMenu>
          ))
        }
      }

      return pre
    }, [])
  }


  /*
  在第一次 render()之前执行一次
  为第一个 render()准备数据(必须同步的)
   */
  componentWillMount() {
    this.menuNodes = this.getMenuNodes(menuList)

  }

  render() {
    // 得到当前请求的路由路径
    let path = this.props.location.pathname
    console.log('render()', path)
    if (path.indexOf('/product') === 0) { // 当前请求的是商品或其子路由界面
      path = '/product'
    }

    // 得到需要打开菜单项的 key
    const openKey = this.openKey

    return (
      <div className="left-nav">
```

```
        <Link to='/' className="left-nav-header">
          <img src={logo} alt="logo"/>
          <h1>硅谷后台</h1>
        </Link>

        <Menu
          mode="inline"
          theme="dark"
          selectedKeys={[path]}
          defaultOpenKeys={[openKey]}
        >

          {
            this.menuNodes
          }

        </Menu>
      </div>
    )
  }
}

/*
withRouter 高阶组件:
包装非路由组件, 返回一个新的组件
新的组件向非路由组件传递 3 个属性: history/location/match
 */
export default connect(
  state => ({user: state.user}),
  {setHeadTitle}
)(withRouter(LeftNav))
```

2.20.8. components/header/header.jsx

```
import React, {Component} from 'react'
import {withRouter} from 'react-router-dom'
import { Modal} from 'antd'
import {connect} from 'react-redux'
```

```
import {logout} from '../../redux/actions'
import LinkButton from '../link-button'
import {reqWeather} from '../../api'
import menuList from '../../config/menuConfig'
import {formateDate} from '../../utils/dateUtils'
import './index.less'

/*
左侧导航的组件
 */
class Header extends Component {

  state = {
    currentTime: formateDate(Date.now()), // 当前时间字符串
    dayPictureUrl: '', // 天气图片 url
    weather: '', // 天气的文本
  }

  getTime = () => {
    // 每隔 1s 获取当前时间, 并更新状态数据 currentTime
    this.intervalId = setInterval(() => {
      const currentTime = formateDate(Date.now())
      this.setState({currentTime})
    }, 1000)
  }

  getWeather = async () => {
    // 调用接口请求异步获取数据
    const {dayPictureUrl, weather} = await reqWeather('北京')
    // 更新状态
    this.setState({dayPictureUrl, weather})
  }

  getTitle = () => {
    // 得到当前请求路径
    const path = this.props.location.pathname
    let title
    menuList.forEach(item => {
      if (item.key===path) { // 如果当前 item 对象的 key 与 path 一样,item 的 title 就是需要
显示的 title
        title = item.title
```

```
    } else if (item.children) {
      // 在所有子item 中查找匹配的
      const cItem = item.children.find(cItem => path.indexOf(cItem.key)===0)
      // 如果有值才说明有匹配的
      if(cItem) {
        // 取出它的title
        title = cItem.title
      }
    }
  })
  return title
}

/*
退出登陆
 */
logout = () => {
  // 显示确认框
  Modal.confirm({
    content: '确定退出吗?',
    onOk: () => {
      this.props.logout()
    }
  })
}

/*
第一次render()之后执行一次
一般在此执行异步操作: 发ajax 请求/启动定时器
 */
componentDidMount () {
  // 获取当前的时间
  this.getTime()
  // 获取当前天气
  this.getWeather()
}
/*
// 不能这么做: 不会更新显示
componentWillMount () {
  this.title = this.getTitle()
}*/
```

```
  /*
  当前组件卸载之前调用
   */
  componentWillUnmount () {
    // 清除定时器
    clearInterval(this.intervalId)
  }


  render() {

    const {currentTime, dayPictureUrl, weather} = this.state

    const username = this.props.user.username

    // 得到当前需要显示的title
    const title = this.props.headTitle
    return (
      <div className="header">
        <div className="header-top">
          <span>欢迎, {username}</span>
          <LinkButton onClick={this.logout}>退出</LinkButton>
        </div>
        <div className="header-bottom">
          <div className="header-bottom-left">{title}</div>
          <div className="header-bottom-right">
            <span>{currentTime}</span>
            <img src={dayPictureUrl} alt="weather"/>
            <span>{weather}</span>
          </div>
        </div>
      </div>
    )
  }
}

export default connect(
  state => ({
    user: state.user,
    headTitle: state.headTitle
  }),
  {logout}
```

```
)(withRouter(Header))
```

2.20.9. pages/admin/admin.jsx

```
import React, {Component} from 'react'
import {Redirect, Route, Switch} from 'react-router-dom'
import { Layout } from 'antd'
import {connect} from 'react-redux'

import LeftNav from '../../components/left-nav'
import Header from '../../components/header'
import Home from '../home/home'
import Category from '../category/category'
import Product from '../product/product'
import Role from '../role/role'
import User from '../user/user'
import Bar from '../charts/bar'
import Line from '../charts/line'
import Pie from '../charts/pie'


const { Footer, Sider, Content } = Layout

/*
后台管理的路由组件
 */
class Admin extends Component {
  render () {
    const user = this.props.user
    // 如果内存没有存储user ==> 当前没有登陆
    if(!user || !user._id) {
      // 自动跳转到登陆(在render()中)
      return <Redirect to='/login'/>
    }
    return (
      <Layout style={{minHeight: '100%'}}>
        <Sider>
          <LeftNav/>
```

```
        </Sider>
        <Layout>
          <Header>Header</Header>
          <Content style={{margin: 20, backgroundColor: '#fff'}}>
            <Switch>
              <Route path='/home' component={Home}/>
              <Route path='/category' component={Category}/>
              <Route path='/product' component={Product}/>
              <Route path='/role' component={Role}/>
              <Route path='/user' component={User}/>
              <Route path='/charts/bar' component={Bar}/>
              <Route path='/charts/line' component={Line}/>
              <Route path='/charts/pie' component={Pie}/>
              <Redirect to='/home'/>
            </Switch>
          </Content>
          <Footer style={{textAlign: 'center', color: '#cccccc'}}>推荐使用谷歌浏览器，
可以获得更佳页面操作体验</Footer>
        </Layout>
      </Layout>
    )
  }
}

export default connect(
  state => ({user: state.user})
)(Admin)
```

2.20.10. pages/login/login.jsx

```
import React, {PureComponent} from 'react'
import {Redirect} from 'react-router-dom'
import {connect} from 'react-redux'
import {
  Form,
  Icon,
  Input,
  Button,
```

```
  message
} from 'antd'
import './login.less'
import logo from '../../assets/images/logo.png'
import {login} from '../../redux/actions'

const Item = Form.Item // 不能写在 import 之前

/*
登陆的路由组件
 */
class Login extends PureComponent {

  handleSubmit = (event) => {

    // 阻止事件的默认行为
    event.preventDefault()

    // 对所有表单字段进行检验
    this.props.form.validateFields(async (err, values) => {
      // 检验成功
      if (!err) {
        // 请求登陆
        const {username, password} = values
        this.props.login(username, password)
      }
    });

    // 得到form 对象
    // const form = this.props.form
    // // 获取表单项的输入数据
    // const values = form.getFieldsValue()
    // console.log('handleSubmit()', values)
  }

  /*
  对密码进行自定义验证
  */
  /*
   用户名/密码的的合法性要求
     1). 必须输入
     2). 必须大于等于 4 位
```

```
    3). 必须小于等于12位
    4). 必须是英文、数字或下划线组成
    */
  validatePwd = (rule, value, callback) => {
    console.log('validatePwd()', rule, value)
    if (!value) {
      callback('密码必须输入')
    } else if (value.length < 4) {
      callback('密码长度不能小于4位')
    } else if (value.length > 12) {
      callback('密码长度不能大于12位')
    } else if (!/^[a-zA-Z0-9_]+$/.test(value)) {
      callback('密码必须是英文、数字或下划线组成')
    } else {
      callback() // 验证通过
    }
    // callback('xxxx') // 验证失败，并指定提示的文本
  }

  render() {

    // 如果用户已经登陆，自动跳转到管理界面
    const user = this.props.user
    if (user && user._id) {
      return <Redirect to='/home'/>
    }

    // 得到具强大功能的form对象
    const form = this.props.form
    const {getFieldDecorator} = form;

    return (
      <div className="login">
        <header className="login-header">
          <img src={logo} alt="logo"/>
          <h1>React 项目：后台管理系统</h1>
        </header>
        <section className="login-content">
          <div className={user.errorMsg ? 'error-msg show' :
'error-msg'}>{user.errorMsg}</div>
          <h2>用户登陆</h2>
          <Form onSubmit={this.handleSubmit} className="login-form">
```

```
            <Item>
              {
                /*
                用户名/密码的的合法性要求
                  1). 必须输入
                  2). 必须大于等于 4 位
                  3). 必须小于等于 12 位
                  4). 必须是英文、数字或下划线组成
                */
              }
              {
                getFieldDecorator('username', { // 配置对象: 属性名是特定的一些名称
                  // 声明式验证: 直接使用别人定义好的验证规则进行验证
                  rules: [
                    {required: true, whitespace: true, message: '用户名必须输入'},
                    {min: 4, message: '用户名至少 4 位'},
                    {max: 12, message: '用户名最多 12 位'},
                    {pattern: /^[a-zA-Z0-9_]+$/, message: '用户名必须是英文、数字或下划线
组成'},
                  ],
                  initialValue: 'admin', // 初始值
                })(
                  <Input
                    prefix={<Icon type="user" style={{color: 'rgba(0,0,0,.25)'}}/>}
                    placeholder="用户名"
                  />
                )
              }
            </Item>
            <Form.Item>
              {
                getFieldDecorator('password', {
                  rules: [
                    {
                      validator: this.validatePwd
                    }
                  ]
                })(
                  <Input
                    prefix={<Icon type="lock" style={{color: 'rgba(0,0,0,.25)'}}/>}
                    type="password"
                    placeholder="密码"
```

```
                  />
                )
              }

            </Form.Item>
            <Form.Item>
              <Button type="primary" htmlType="submit" className="login-form-button">
                登陆
              </Button>
            </Form.Item>
          </Form>
        </section>
      </div>
    )
  }
}

/*
1. 高阶函数
    1). 一类特别的函数
        a. 接受函数类型的参数
        b. 返回值是函数
    2). 常见
        a. 定时器: setTimeout()/setInterval()
        b. Promise: Promise(() => {}) then(value => {}, reason => {})
        c. 数组遍历相关的方法: forEach()/filter()/map()/reduce()/find()/findIndex()
        d. 函数对象的bind()
        e. Form.create()() / getFieldDecorator()()
    3). 高阶函数更新动态, 更加具有扩展性

2. 高阶组件
    1). 本质就是一个函数
    2). 接收一个组件(被包装组件), 返回一个新的组件(包装组件), 包装组件会向被包装组件传入特定属性
    3). 作用: 扩展组件的功能
    4). 高阶组件也是高阶函数: 接收一个组件函数, 返回是一个新的组件函数
 */
/*
包装Form组件生成一个新的组件: Form(Login)
新组件会向Form组件传递一个强大的对象属性: form
 */
const WrapLogin = Form.create()(Login)
```

```
export default connect(
  state => ({user: state.user}),
  {login}
)(WrapLogin)
```

```
.error-msg {
  visibility: hidden;
  position: absolute;
  top: 0;
  left: 0;
  text-align: center;
  height: 30px;
  width: 100%;
  background: #f60c1a;
  color: #ffffff;
  font-size: 16px;
  transform: translateY(-30px);
  transition: all .3s;
  &.show {
    visibility: visible;
    transform: translateY(0);
  }
}
```

2.20.11. pages/role/role.jsx

```
import React, {Component} from 'react'
import {
  Card,
  Button,
  Table,
  Modal,
  message
} from 'antd'
import {connect} from 'react-redux'

import {PAGE_SIZE} from "../../utils/constants"
```

```
import {reqRoles, reqAddRole, reqUpdateRole} from '../../api'
import AddForm from './add-form'
import AuthForm from './auth-form'
import {formateDate} from '../../utils/dateUtils'
import {logout} from '../../redux/actions'

/*
角色路由
 */
class Role extends Component {

  state = {
    roles: [], // 所有角色的列表
    role: {}, // 选中的role
    isShowAdd: false, // 是否显示添加界面
    isShowAuth: false, // 是否显示设置权限界面
  }

  constructor (props) {
    super(props)

    this.auth = React.createRef()
  }

  initColumn = () => {
    this.columns = [
      {
        title: '角色名称',
        dataIndex: 'name'
      },
      {
        title: '创建时间',
        dataIndex: 'create_time',
        render: (create_time) => formateDate(create_time)
      },
      {
        title: '授权时间',
        dataIndex: 'auth_time',
        render: formateDate
      },
      {
        title: '授权人',
```

```
      dataIndex: 'auth_name'
    },
  ]
}

getRoles = async () => {
  const result = await reqRoles()
  if (result.status===0) {
    const roles = result.data
    this.setState({
      roles
    })
  }
}


onRow = (role) => {
  return {
    onClick: event => { // 点击行
      console.log('row onClick()', role)
      // alert('点击行')
      this.setState({
        role
      })
    },
  }
}

/*
添加角色
 */
addRole = () => {
  // 进行表单验证, 只能通过了才向下处理
  this.form.validateFields(async (error, values) => {
    if (!error) {

      // 隐藏确认框
      this.setState({
        isShowAdd: false
      })

      // 收集输入数据
```

```
        const {roleName} = values
        this.form.resetFields()

        // 请求添加
        const result = await reqAddRole(roleName)
        // 根据结果提示/更新列表显示
        if (result.status===0) {
          message.success('添加角色成功')
          // this.getRoles()
          // 新产生的角色
          const role = result.data
          // 更新 roles 状态
          /*const roles = this.state.roles
          roles.push(role)
          this.setState({
            roles
          })*/

          // 更新 roles 状态: 基于原本状态数据更新
          this.setState(state => ({
            roles: [...state.roles, role]
          }))

        } else {
          message.success('添加角色失败')
        }

      }
    })


  }

  /*
  更新角色
   */
  updateRole = async () => {

    // 隐藏确认框
    this.setState({
      isShowAuth: false
    })
```

```
    const role = this.state.role
    // 得到最新的menus
    const menus = this.auth.current.getMenus()
    role.menus = menus
    role.auth_time = Date.now()
    role.auth_name = this.props.user.username

    // 请求更新
    const result = await reqUpdateRole(role)
    if (result.status===0) {
      // this.getRoles()
      // 如果当前更新的是自己角色的权限，强制退出
      if (role._id === this.props.user.role_id) {
        this.props.logout()
        message.success('当前用户角色权限成功')
      } else {
        message.success('设置角色权限成功')
        this.setState({
          roles: [...this.state.roles]
        })
      }

    }
  }

  componentWillMount () {
    this.initColumn()
  }

  componentDidMount () {
    this.getRoles()
  }

  render() {

    const {roles, role, isShowAdd, isShowAuth} = this.state

    const title = (
      <span>
        <Button type='primary' onClick={() => this.setState({isShowAdd: true})}>创建角
色</Button>   
```

```
        <Button type='primary' disabled={!role._id} onClick={() =>
this.setState({isShowAuth: true})}>设置角色权限</Button>
      </span>
    )

    return (
      <Card title={title}>
        <Table
          bordered
          rowKey='_id'
          dataSource={roles}
          columns={this.columns}
          pagination={{defaultPageSize: PAGE_SIZE}}
          rowSelection={{
            type: 'radio',
            selectedRowKeys: [role._id],
            onSelect: (role) => { // 选择某个radio时回调
              this.setState({
                role
              })
            }

          }}
          onRow={this.onRow}
        />

        <Modal
          title="添加角色"
          visible={isShowAdd}
          onOk={this.addRole}
          onCancel={() => {
            this.setState({isShowAdd: false})
            this.form.resetFields()
          }}
        >
          <AddForm
            setForm={(form) => this.form = form}
          />
        </Modal>

        <Modal
          title="设置角色权限"
```

```
          visible={isShowAuth}
          onOk={this.updateRole}
          onCancel={() => {
            this.setState({isShowAuth: false})
          }}
        >
          <AuthForm ref={this.auth} role={role}/>
        </Modal>
      </Card>
    )
  }
}

export default connect(
  state => ({user: state.user}),
  {logout}
)(Role)
```

2.21. 可视化图表

2.21.1. 常用数据可视化图表库

1) echarts
   a. https://echarts.baidu.com/
   b. 百度开源，如果要在 react 项目中使用，需要下载 echarts-for-react
2) G2
   a. https://antv.alipay.com/zh-cn/g2/3.x/index.html
   b. 阿里开源
3) bizcharts
   a. https://bizcharts.net/products/bizCharts
   b. 基于 react 包装 G2 的开源库
   c. 需要额外下载 @antv/data-set
4) d3
   a. https://d3js.org.cn/
   b. 国外的免费可视化图表库

2.21.2. 下载依赖

```
yarn add echarts echarts-for-react

yarn add bizcharts @antv/data-set
```

2.21.3. bar.jsx: 柱状图

```
import React, {Component} from 'react'
import {Card, Button} from 'antd'
import ReactEcharts from 'echarts-for-react'

/*
后台管理的柱状图路由组件
 */
export default class Bar extends Component {
  state = {
    sales: [5, 20, 36, 10, 10, 20],
    inventorys: [15, 30, 46, 20, 20, 40]
  }
  getOption = () => {
    const {sales, inventorys} = this.state
    return {
      title: {
        text: 'ECharts 入门示例'
      },
      tooltip: {},
      legend: {
        data:['销量', '库存']
      },
      xAxis: {
        data: ["衬衫","羊毛衫","雪纺衫","裤子","高跟鞋","袜子"]
      },
      yAxis: {},
      series: [{
        name: '销量',
        type: 'bar',
        data:sales
```

```
      }, {
        name: '库存',
        type: 'bar',
        data: inventorys
      }]
    }
  }

  update = () => {
    const sales = this.state.sales.map(sale => sale + 1)
    const inventorys = this.state.inventorys.map(inventory => inventory -1)
    this.setState({
      sales,
      inventorys
    })
  }
  render() {
    return (
      <div>
        <Card>
          <Button type='primary' onClick={this.update}>更新</Button>
        </Card>

        <Card title='柱状图一'>
          <ReactEcharts option={this.getOption()} style={{height: 300}}/>
        </Card>

      </div>
    )
  }
}
```

2.21.4. line.jsx: 折线图

```
import React, {Component} from 'react'
import {Card, Button} from 'antd'
import ReactEcharts from 'echarts-for-react'

/*
后台管理的折线图路由组件
```

```
 */
export default class Line extends Component {
  state = {
    sales: [5, 20, 36, 10, 10, 20],
    inventorys: [15, 30, 46, 20, 20, 40]
  }
  getOption = () => {
    const {sales, inventorys} = this.state
    return {
      title: {
        text: 'ECharts 入门示例'
      },
      tooltip: {},
      legend: {
        data:['销量', '库存']
      },
      xAxis: {
        data: ["衬衫","羊毛衫","雪纺衫","裤子","高跟鞋","袜子"]
      },
      yAxis: {},
      series: [{
        name: '销量',
        type: 'line',
        data:sales
      }, {
        name: '库存',
        type: 'line',
        data: inventorys
      }]
    }
  }

  getOption2 = () => {
    return {
      xAxis: {
        type: 'category',
        boundaryGap: false,
        data: ['Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat', 'Sun']
      },
      yAxis: {
        type: 'value'
      },
```

```
      series: [{
        data: [820, 932, 901, 934, 1290, 1330, 1320],
        type: 'line',
        areaStyle: {}
      }]
    };

  }

  update = () => {
    const sales = this.state.sales.map(sale => sale + 1)
    const inventorys = this.state.inventorys.map(inventory => inventory -1)
    this.setState({
      sales,
      inventorys
    })
  }
  render() {
    return (
      <div>
        <Card>
          <Button type='primary' onClick={this.update}>更新</Button>
        </Card>

        <Card title='折线图一'>
          <ReactEcharts option={this.getOption()} style={{height: 300}}/>
        </Card>

        <Card title='折线图二'>
          <ReactEcharts option={this.getOption2()} style={{height: 300}}/>
        </Card>

      </div>
    )
  }
}
```

2.21.5. pie.jsx: 饼状图

```
import React, {Component} from 'react'
import {Card} from 'antd'
import ReactEcharts from 'echarts-for-react'

/*
后台管理的饼图路由组件
 */
export default class Pie extends Component {

  getOption = () => {
    return {
      title : {
        text: '某站点用户访问来源',
        subtext: '纯属虚构',
        x:'center'
      },
      tooltip : {
        trigger: 'item',
        formatter: "{a} <br/>{b} : {c} ({d}%)"
      },
      legend: {
        orient: 'vertical',
        left: 'left',
        data: ['直接访问','邮件营销','联盟广告','视频广告','搜索引擎']
      },
      series : [
        {
          name: '访问来源',
          type: 'pie',
          radius : '55%',
          center: ['50%', '60%'],
          data:[
            {value:335, name:'直接访问'},
            {value:310, name:'邮件营销'},
            {value:234, name:'联盟广告'},
            {value:135, name:'视频广告'},
            {value:1548, name:'搜索引擎'}
          ],
          itemStyle: {
```

```
          emphasis: {
            shadowBlur: 10,
            shadowOffsetX: 0,
            shadowColor: 'rgba(0, 0, 0, 0.5)'
          }
        }
      }
    ]
  };

}

getOption2 = () => {
  return {
    backgroundColor: '#2c343c',

    title: {
      text: 'Customized Pie',
      left: 'center',
      top: 20,
      textStyle: {
        color: '#ccc'
      }
    },

    tooltip : {
      trigger: 'item',
      formatter: "{a} <br/>{b} : {c} ({d}%)"
    },

    visualMap: {
      show: false,
      min: 80,
      max: 600,
      inRange: {
        colorLightness: [0, 1]
      }
    },
    series : [
      {
        name:'访问来源',
        type:'pie',
```

```
        radius : '55%',
        center: ['50%', '50%'],
        data:[
          {value:335, name:'直接访问'},
          {value:310, name:'邮件营销'},
          {value:274, name:'联盟广告'},
          {value:235, name:'视频广告'},
          {value:400, name:'搜索引擎'}
        ].sort(function (a, b) { return a.value - b.value; }),
        roseType: 'radius',
        label: {
          normal: {
            textStyle: {
              color: 'rgba(255, 255, 255, 0.3)'
            }
          }
        },
        labelLine: {
          normal: {
            lineStyle: {
              color: 'rgba(255, 255, 255, 0.3)'
            },
            smooth: 0.2,
            length: 10,
            length2: 20
          }
        },
        itemStyle: {
          normal: {
            color: '#c23531',
            shadowBlur: 200,
            shadowColor: 'rgba(0, 0, 0, 0.5)'
          }
        },

        animationType: 'scale',
        animationEasing: 'elasticOut',
        animationDelay: function (idx) {
          return Math.random() * 200;
        }
      }
    ]
```

```
    };
  }

  render() {
    return (
      <div>
        <Card title='饼图一'>
          <ReactEcharts option={this.getOption()} style={{height: 300}}/>
        </Card>
        <Card title='饼图二'>
          <ReactEcharts option={this.getOption2()} style={{height: 300}}/>
        </Card>
      </div>
    )
  }
}
```

2.21.6. 首页图表

1) home/line.jsx

```
import React from "react"
import {
  Chart,
  Geom,
  Axis,
  Tooltip,
  Legend,
} from "bizcharts"
import DataSet from "@antv/data-set"

export default class Line extends React.Component {
  render() {
    const data = [
      {
        month: "Jan",
        a: 7.0,
        b: 3.9,
        c: 5.9
      },
```

```
    {
      month: "Feb",
      a: 6.9,
      b: 4.2,
      c: 1.9
    },
    {
      month: "Mar",
      a: 9.5,
      b: 5.7,
      c: 3.9
    },
    {
      month: "Apr",
      a: 14.5,
      b: 8.5,
      c: 5.5
    },
    {
      month: "May",
      a: 18.4,
      b: 11.9,
      c: 8.9
    },
    {
      month: "Jun",
      a: 21.5,
      b: 15.2,
      c: 10.0
    },
    {
      month: "Jul",
      a: 25.2,
      b: 17.0,
      c: 12.9
    },
    {
      month: "Aug",
      a: 26.5,
      b: 16.6,
      c: 15.9
    },
```

```
    {
      month: "Sep",
      a: 23.3,
      b: 14.2,
      c: 20.7
    },
    {
      month: "Oct",
      a: 18.3,
      b: 10.3,
      c: 25.9
    },
    {
      month: "Nov",
      a: 13.9,
      b: 6.6,
      c: 30.9
    },
    {
      month: "Dec",
      a: 9.6,
      b: 4.8,
      c: 35.9
    }
  ]
  const ds = new DataSet()
  const dv = ds.createView().source(data)
  dv.transform({
    type: "fold",
    fields: ["a", "b", "c"],
    // 展开字段集
    key: "city",
    // key 字段
    value: "temperature" // value 字段
  })
  const cols = {
    month: {
      range: [0, 1]
    }
  }
  return (
    <div style={{float: 'right', width: 750, height: 300}}>
```

```
        <Chart height={250} data={dv} scale={cols} forceFit>
          <Legend/>
          <Axis name="month"/>
          <Axis
            name="temperature"
            label={{
              formatter: val => `${val}万个`
            }}
          />
          <Tooltip
            crosshairs={{
              type: "y"
            }}
          />
          <Geom
            type="line"
            position="month*temperature"
            size={2}
            color={"city"}
            shape={"smooth"}
          />
          <Geom
            type="point"
            position="month*temperature"
            size={4}
            shape={"circle"}
            color={"city"}
            style={{
              stroke: "#fff",
              lineWidth: 1
            }}
          />
        </Chart>
      </div>
    )
  }
}
```

2) home/bar.jsx

```
import React from "react"
import {
  Chart,
  Geom,
  Axis,
  Tooltip,
} from "bizcharts"

export default class Bar extends React.Component {
  render() {
    const data = [
      {
        year: "1 月",
        sales: 38
      },
      {
        year: "2 月",
        sales: 52
      },
      {
        year: "3 月",
        sales: 61
      },
      {
        year: "4 月",
        sales: 145
      },
      {
        year: "5 月",
        sales: 48
      },
      {
        year: "6 月",
        sales: 38
      },
      {
        year: "7 月",
        sales: 28
      },
      {
        year: "8 月",
        sales: 38
```

```
      },
      {
        year: "59 月",
        sales: 68
      },
      {
        year: "10 月",
        sales: 38
      },
      {
        year: "11 月",
        sales: 58
      },
      {
        year: "12 月",
        sales: 38
      }
    ]
    const cols = {
      sales: {
        tickInterval: 20
      }
    }
    return (
      <div style={{width: '100%', marginLeft: -30}}>
        <Chart height={338} data={data} scale={cols} forceFit>
          <Axis name="year"/>
          <Axis name="sales"/>
          <Tooltip
            crosshairs={{
              type: "y"
            }}
          />
          <Geom type="interval" position="year*sales"/>
        </Chart>
      </div>
    )
  }
}
```

3) home/home.less

```
.home {
  padding: 24px;
  background: #fff;
  min-height: 850px;
  .home-card {
    float: left;
  }
  .home-content {
    position: absolute;
    top: 420px;
    width: 76%;
    border: 1px solid #e8e8e8;
    .home-menu {
      font-size: 20px;
      span {
        cursor: pointer;
      }
      .home-menu-active {
        border-bottom: 2px solid #1DA57A;
        color: #1DA57A;
        padding: 0 0 16px 0;
      }
      .home-menu-visited {
        margin-right: 40px;
      }
    }
    .home-table-left {
      float: left;
      width: 60%;
    }
    .home-table-right {
      float: right;
      width: 330px;
    }
  }
}
```

4) Home/home.jsx

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

```
  Card,
  Statistic,
  DatePicker,
  Timeline
} from 'antd'
import moment from 'moment'

import Line from './line'
import Bar from './bar'
import './home.less'

const dateFormat = 'YYYY/MM/DD'
const {RangePicker} = DatePicker

export default class Home extends Component {

  state = {
    isVisited: true
  }

  handleChange = (isVisited) => {
    return () => this.setState({isVisited})
  }

  render() {
    const {isVisited} = this.state

    return (
      <div className='home'>
        <Card
          className="home-card"
          title="商品总量"
          extra={<Icon style={{color: 'rgba(0,0,0,.45)'}} type="question-circle"/>}
          style={{width: 250}}
          headStyle={{color: 'rgba(0,0,0,.45)'}}
        >
          <Statistic
            value={1128163}
            suffix="个"
            style={{fontWeight: 'bolder'}}
          />
          <Statistic
```

```
            value={15}
            valueStyle={{fontSize: 15}}
            prefix={'周同比'}
            suffix={<div>%<Icon style={{color: 'red', marginLeft: 10}}
type="arrow-down"/></div>}
          />
          <Statistic
            value={10}
            valueStyle={{fontSize: 15}}
            prefix={'日同比'}
            suffix={<div>%<Icon style={{color: '#3f8600', marginLeft: 10}}
type="arrow-up"/></div>}
          />
        </Card>

        <Line/>

        <Card
          className="home-content"
          title={<div className="home-menu">
            <span className={isVisited ? "home-menu-active home-menu-visited" :
'home-menu-visited'}
                  onClick={this.handleChange(true)}>访问量</span>
            <span className={isVisited ? "" : 'home-menu-active'}
onClick={this.handleChange(false)}>销售量</span>
          </div>}
          extra={<RangePicker
            defaultValue={[moment('2019/01/01', dateFormat), moment('2019/06/01',
dateFormat)]}
            format={dateFormat}
          />}
        >
          <Card
            className="home-table-left"
            title={isVisited ? '访问趋势' : '销售趋势'}
            bodyStyle={{padding: 0, height: 275}}
            extra={<Icon type="reload"/>}
          >
            <Bar/>
          </Card>

          <Card title='任务' extra={<Icon type="reload"/>}
```

```
className="home-table-right">
            <Timeline>
              <Timeline.Item color="green">新版本迭代会</Timeline.Item>
              <Timeline.Item color="green">完成网站设计初版</Timeline.Item>
              <Timeline.Item color="red">
                <p>联调接口</p>
                <p>功能验收</p>
              </Timeline.Item>
              <Timeline.Item>
                <p>登录功能设计</p>
                <p>权限验证</p>
                <p>页面排版</p>
              </Timeline.Item>
            </Timeline>
          </Card>
        </Card>
      </div>
    )
  }
}
```

2.22. 前台 404 界面

2.22.1. not-found/not-found.jsx

```
import React, {Component} from 'react'
import {Button, Row, Col} from 'antd'
import {connect} from 'react-redux'

import {setHeadTitle} from '../../redux/actions'
import './not-found.less'

/*
前台 404 页面
 */
class NotFound extends Component {
```

```
  goHome = () => {
    this.props.setHeadTitle('首页')
    this.props.history.replace('/home')
  }

  render() {
    return (

      <Row className='not-found'>
        <Col span={12} className='left'></Col>
        <Col span={12} className='right'>
          <h1>404</h1>
          <h2>抱歉，你访问的页面不存在</h2>
          <div>
            <Button type='primary' onClick={this.goHome}>
              回到首页
            </Button>
          </div>
        </Col>
      </Row>
    )
  }
}

export default connect(
  null,
  {setHeadTitle}
)(NotFound)
```

2.22.2. not-found/not-found.less

```
.not-found{
  background-color: #f0f2f5;
  height: 100%;
  .left {
    height: 100%;
    background: url('./images/404.png') no-repeat center;
  }
  .right {
    padding-left: 50px;
```

```
    margin-top: 150px;
    h1 {
      font-size: 35px;
    }
    h2 {
      margin-bottom: 20px;
      font-size: 20px;
    }
  }
}
```

2.22.3. admin/admin.jsx

```
<Redirect from='/' to='/home' exact/>
<Route path='/home' component={Home}/>
<Route path='/category' component={Category}/>
<Route path='/product' component={Product}/>
<Route path='/role' component={Role}/>
<Route path='/user' component={User}/>
<Route path='/charts/bar' component={Bar}/>
<Route path='/charts/line' component={Line}/>
<Route path='/charts/pie' component={Pie}/>
<Route component={NotFound}/>
```

2.23. 打包项目并运行

2.23.1. 打包项目

```
yarn run build
```

2.23.1. 运行打包项目

1) 与服务器端项目独立运行

问题: 存在 ajax 请求跨域问题

解决: 由服务器端工程师配置代理服务器(前端工程师不用亲自操作)

2) 合并到服务端项目一起运行

不再有 ajax 请求跨域问题

3) 使用 BrowserRouter 的问题

a. 问题: 刷新某个路由路径时, 会出现 404 的错误

b. 原因: 项目根路径后的 path 路径会被当作后台路由路径, 去请求对应的后台路由, 但没有

c. 解决: 使用自定义中间件去读取返回 index 页面展现

```
const fs = require('fs')
// 必须在路由器中间之后声明使用
app.use((req, res) => {
  fs.readFile(__dirname + '/public/index.html', (err, data)=>{
    if(err){
      console.log(err)
      res.send('后台错误')
    } else {
      res.writeHead(200, {
        'Content-Type': 'text/html; charset=utf-8',
      });
      res.end(data)
    }
  })
})
```

d. 注意: 前端路由的路径不要与后台路由路径相同(并且请求方式也相同)