springboot+shiro+redis项目整合

介绍:

Apache Shiro是一个强大且易用的Java安全框架,执行身份验证、授权、密码学和会话管理。使用Shiro的易于理解的API,您可以快速、轻松地获得任何应用程序,从最小的移动应用程序到最 大的网络和企业应用程序。(摘自百度百科)

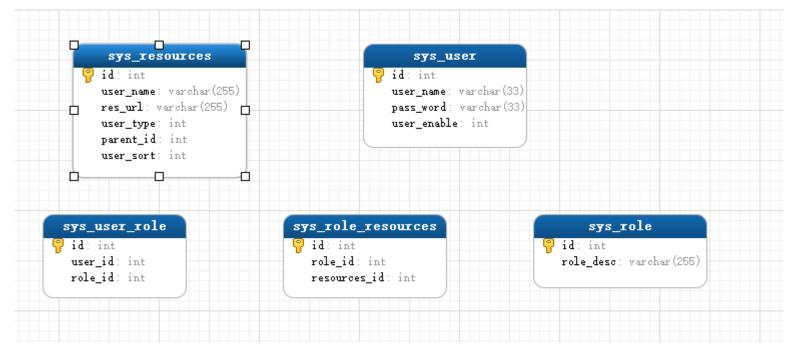
本文使用springboot+mybatisplus+shiro实现数据库动态的管理用户、角色、权限管理,在本文的最后我会提供源码的下载地址,想看到效果的小伙伴可以直接下载运行就ok了

因为shiro的功能比较多,本章只介绍如下几个功能

- 1. 当用户没有登陆时只能访问登陆界面
- 2. 当用户登陆成功后,只能访问该用户下仅有的权限
- 3.一个用户不能两个人同时在线

一、数据库设计

本文的数据库表为5个分别是: 用户表、角色表、权限表、用户角色中间表、角色权限中间表,表的结构和数据项目中会提供(sql和redis工具下方的下载地址中都会有)



```
二、引入依赖
<?xml version="1.0" encoding="UTF-8"?>
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.chaoqi</groupId>
   <artifactId>springboot_mybatisplus</artifactId>
    <version>0.0.1-SNAPSHOT
   <packaging>jar</packaging>
   <name>springboot_mybatisplus
    <description>Demo project for Spring Boot</description>
    <parent>
       <groupId>org.springframework.boot</groupId>
       <artifactId>spring-boot-starter-parent</artifactId>
       <version>2.0.0.RELEASE
       <relativePath/>
    </parent>
    properties>
       project.build.sourceEncoding>UTF-8/project.build.sourceEncoding>
       <java.version>1.8</java.version>
    </properties>
    <dependencies>
       <dependency>
          <groupId>org.springframework.boot
          <artifactId>spring-boot-starter-jdbc</artifactId>
       </dependency>
       <dependency>
          <groupId>org.springframework.boot</groupId>
          <artifactId>spring-boot-starter-web</artifactId>
       </dependency>
       <dependency>
          <groupId>org.mybatis.spring.boot</groupId>
          <artifactId>mybatis-spring-boot-starter</artifactId>
          <version>1.3.2
       </dependency>
       <dependency>
          <groupId>mysql</groupId>
          <artifactId>mysql-connector-java</artifactId>
          <scope>runtime</scope>
```

```
</dependency>
   <dependency>
       <groupId>org.springframework.boot</groupId>
       <artifactId>spring-boot-starter-test</artifactId>
       <scope>test</scope>
   </dependency>
   <!-- reids -->
   <dependency>
       <groupId>org.springframework.boot</groupId>
       <artifactId>spring-boot-starter-data-redis</artifactId>
   </dependency>
   <!--添加jsp依赖 -->
   <dependency>
       <groupId>org.springframework.boot</groupId>
       <artifactId>spring-boot-starter-tomcat</artifactId>
   </dependency>
   <dependency>
       <groupId>org.apache.tomcat.embed
       <artifactId>tomcat-embed-jasper</artifactId>
   </dependency>
   <!-- SpringBoot - MyBatis 逆向工程 -->
   <dependency>
       <groupId>org.mybatis.generator
       <artifactId>mybatis-generator-core</artifactId>
       <version>1.3.2
   </dependency>
   <!-- MyBatis 通用 Mapper -->
   <dependency>
       <groupId>tk.mybatis
       <artifactId>mapper-spring-boot-starter</artifactId>
       <version>1.1.4
   </dependency>
   <!-- shiro -->
   <dependency>
       <groupId>org.apache.shiro</groupId>
       <artifactId>shiro-spring</artifactId>
       <version>1.4.0
   </dependency>
   <dependency>
       <groupId>org.apache.shiro
       <artifactId>shiro-ehcache</artifactId>
       <version>1.4.0
   </dependency>
   <!-- shiro+redis缓存插件 -->
   <dependency>
       <groupId>org.crazycake
       <artifactId>shiro-redis</artifactId>
       <version>2.4.2.1-RELEASE
   </dependency>
   <!-- fastjson阿里巴巴jSON处理器 -->
   <dependency>
       <groupId>com.alibaba
       <artifactId>fastjson</artifactId>
       <version>1.2.13
   </dependency>
   <!--<dependency>-->
   <!--<groupId>org.springframework.boot</groupId>-->
   <!--<artifactId>spring-boot-starter-security</artifactId>-->
   <!--</dependency>-->
   <!--工具类-->
   <dependency>
       <groupId>org.apache.commons
       <artifactId>commons-lang3</artifactId>
       <version>3.7</version>
   </dependency>
</dependencies>
<build>
   <plugins>
       <plugin>
           <groupId>org.springframework.boot
           <artifactId>spring-boot-maven-plugin</artifactId>
       </plugin>
       <plugin>
           <groupId>org.mybatis.generator
           <artifactId>mybatis-generator-maven-plugin</artifactId>
           <version>1.3.2
           <configuration>
              <configurationFile>src/main/resources/generatorConfig.xml</configurationFile>
```

```
<verbose>true</verbose>
                  <overwrite>true</overwrite>
               </configuration>
               <executions>
                  <execution>
                      <id>Generate MyBatis Artifacts</id>
                      <goals>
                          <goal>generate</goal>
                      </goals>
                  </execution>
               </executions>
               <dependencies>
                  <dependency>
                      <groupId>org.mybatis.generator
                      <artifactId>mybatis-generator-core</artifactId>
                      <version>1.3.2
                  </dependency>
                  <dependency>
                      <groupId>tk.mybatis
                      <artifactId>mapper</artifactId>
                      <version>3.5.0
                  </dependency>
               </dependencies>
           </plugin>
       </plugins>
   </build>
</project>
```

三、编辑application.yml

```
server:
 port: 8080
spring:
 mvc:
   view:
     prefix: /WEB-INF/jsp/
     suffix: .jsp
 datasource:
   url: jdbc:mysql://localhost:3306/shiro?characterEncoding=UTF-8&useUnicode=true&useSSL=false
   username: root
   password: 123456
   driver-class-name: com.mysql.jdbc.Driver
  redis:
   host: localhost
   port: 6379
   jedis:
     pool:
       max-idle: 8
       min-idle: 0
       max-active: 8
       max-wait: -1
   timeout: 0
mybatis:
 mapper-locations: classpath:mapper/*.xml
 type-aliases-package: com.chaoqi.springboot mybatisplus.domain
```

四、创建ShiroConfig配置

```
package com.chaoqi.springboot_shiro_redis.config;

import com.chaoqi.springboot_shiro_redis.secutity.KickoutSessionControlFilter;
import com.chaoqi.springboot_shiro_redis.secutity.MyShiroRealm;
import org.apache.shiro.mgt.SecurityManager;
import org.apache.shiro.spring.LifecycleBeanPostProcessor;
import org.apache.shiro.spring.security.interceptor.AuthorizationAttributeSourceAdvisor;
import org.apache.shiro.spring.web.ShiroFilterFactoryBean;
import org.apache.shiro.web.mgt.DefaultWebSecurityManager;
import org.apache.shiro.web.session.mgt.DefaultWebSessionManager;
import org.crazycake.shiro.RedisCacheManager;
import org.crazycake.shiro.RedisSessionDAO;
import org.crazycake.shiro.RedisSessionDAO;
import org.springframework.aop.framework.autoproxy.DefaultAdvisorAutoProxyCreator;
import org.springframework.context.annotation.Bean;
```

```
import org.springframework.context.annotation.Configuration;
import javax.servlet.Filter;
import java.util.LinkedHashMap;
import java.util.Map;
@Configuration
public class ShiroConfig {
   @Bean
   public ShiroFilterFactoryBean shiroFilter(SecurityManager securityManager) {
       ShiroFilterFactoryBean shiroFilterFactoryBean = new ShiroFilterFactoryBean();
       shiroFilterFactoryBean.setSecurityManager(securityManager);
       // 没有登陆的用户只能访问登陆页面
       shiroFilterFactoryBean.setLoginUrl("/auth/login");
       // 登录成功后要跳转的链接
       shiroFilterFactoryBean.setSuccessUrl("/auth/index");
       // 未授权界面; ----这个配置了没卵用,具体原因想深入了解的可以自行百度
       //shiroFilterFactoryBean.setUnauthorizedUrl("/auth/403");
       //自定义拦截器
       Map<String, Filter> filtersMap = new LinkedHashMap<String, Filter>();
       //限制同一帐号同时在线的个数。
       filtersMap.put("kickout", kickoutSessionControlFilter());
       shiroFilterFactoryBean.setFilters(filtersMap);
       // 权限控制map.
       Map<String, String> filterChainDefinitionMap = new LinkedHashMap<String, String>();
       filterChainDefinitionMap.put("/css/**", "anon");
       filterChainDefinitionMap.put("/js/**", "anon");
       filterChainDefinitionMap.put("/img/**", "anon");
       filterChainDefinitionMap.put("/auth/login", "anon");
       filterChainDefinitionMap.put("/auth/logout", "logout");
       filterChainDefinitionMap.put("/auth/kickout", "anon");
       filterChainDefinitionMap.put("/**", "authc,kickout");
       shiroFilterFactoryBean.setFilterChainDefinitionMap(filterChainDefinitionMap);
       return shiroFilterFactoryBean;
   public SecurityManager securityManager() {
       DefaultWebSecurityManager securityManager = new DefaultWebSecurityManager();
       // 设置realm.
       securityManager.setRealm(myShiroRealm());
       // 自定义缓存实现 使用redis
       securityManager.setCacheManager(cacheManager());
       // 自定义session管理 使用redis
       securityManager.setSessionManager(sessionManager());
       return securityManager;
    * 身份认证realm; (这个需要自己写,账号密码校验;权限等)
    * @return
    */
   @Bean
   public MyShiroRealm myShiroRealm() {
       MyShiroRealm myShiroRealm = new MyShiroRealm();
       return myShiroRealm;
   }
    * cacheManager 缓存 redis实现
    * 使用的是shiro-redis开源插件
    * @return
    */
   public RedisCacheManager cacheManager() {
       RedisCacheManager redisCacheManager = new RedisCacheManager();
       redisCacheManager.setRedisManager(redisManager());
       return redisCacheManager;
   }
    * 配置shiro redisManager
     * 使用的是shiro-redis开源插件
    * @return
    */
   public RedisManager redisManager() {
       RedisManager redisManager = new RedisManager();
       redisManager.setHost("localhost");
       redisManager.setPort(6379);
```

```
redisManager.setExpire(1800);// 配置缓存过期时间
    redisManager.setTimeout(0);
    // redisManager.setPassword(password);
    return redisManager;
}
 * Session Manager
 * 使用的是shiro-redis开源插件
public DefaultWebSessionManager sessionManager() {
    DefaultWebSessionManager sessionManager = new DefaultWebSessionManager();
    sessionManager.setSessionDAO(redisSessionDAO());
    return sessionManager;
}
 * RedisSessionDAO shiro sessionDao层的实现 通过redis
 * 使用的是shiro-redis开源插件
 */
@Bean
public RedisSessionDAO redisSessionDAO() {
   RedisSessionDAO redisSessionDAO = new RedisSessionDAO();
    redisSessionDAO.setRedisManager(redisManager());
    return redisSessionDAO;
}
 * 限制同一账号登录同时登录人数控制
 * @return
@Bean
public KickoutSessionControlFilter kickoutSessionControlFilter() {
    KickoutSessionControlFilter kickoutSessionControlFilter = new KickoutSessionControlFilter();
    kickoutSessionControlFilter.setCacheManager(cacheManager());
    kickoutSessionControlFilter.setSessionManager(sessionManager());
    kickoutSessionControlFilter.setKickoutAfter(false);
    kickoutSessionControlFilter.setMaxSession(1);
    kickoutSessionControlFilter.setKickoutUrl("/auth/kickout");
    return kickoutSessionControlFilter;
}
 * 授权所用配置
 * @return
 */
public DefaultAdvisorAutoProxyCreator getDefaultAdvisorAutoProxyCreator() {
    {\tt DefaultAdvisorAutoProxyCreator \ defaultAdvisorAutoProxyCreator = \underline{new} \ DefaultAdvisorAutoProxyCreator();}
    defaultAdvisorAutoProxyCreator.setProxyTargetClass(true);
    return defaultAdvisorAutoProxyCreator;
}
 * 使授权注解起作用不如不想配置可以在pom文件中加入
 * <dependency>
 *<groupId>org.springframework.boot</groupId>
 *<artifactId>spring-boot-starter-aop</artifactId>
 *</dependency>
 * @param securityManager
   ereturn
 */
@Bean
public AuthorizationAttributeSourceAdvisor authorizationAttributeSourceAdvisor(SecurityManager securityManager) {
    AuthorizationAttributeSourceAdvisor authorizationAttributeSourceAdvisor = new AuthorizationAttributeSourceAdvisor();
    authorizationAttributeSourceAdvisor.setSecurityManager(securityManager);
    return authorizationAttributeSourceAdvisor;
}
 * Shiro生命周期处理器
 */
@Bean
public LifecycleBeanPostProcessor getLifecycleBeanPostProcessor() {
    return new LifecycleBeanPostProcessor();
```



五、自定义Realm

```
package com.chaoqi.springboot_shiro_redis.secutity;
import com.chaoqi.springboot_shiro_redis.service.SysRoleService;
import com.chaoqi.springboot_shiro_redis.service.UserService;
import com.chaoqi.springboot_shiro_redis.dao.domain.SysUser;
import org.apache.shiro.authc.*;
import org.apache.shiro.authz.AuthorizationInfo;
import org.apache.shiro.authz.SimpleAuthorizationInfo;
import org.apache.shiro.realm.AuthorizingRealm;
import org.apache.shiro.subject.PrincipalCollection;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import java.util.*;
public class MyShiroRealm extends AuthorizingRealm {
   private static org.slf4j.Logger logger = LoggerFactory.getLogger(MyShiroRealm.class);
   //如果项目中用到了事物,@Autowired注解会使事物失效,可以自己用get方法获取值
   @Autowired
   private SysRoleService roleService;
   @Autowired
   private UserService userService;
    * 认证信息.(身份验证): Authentication 是用来验证用户身份
   @Override
   protected AuthenticationInfo doGetAuthenticationInfo (AuthenticationToken authcToken) throws AuthenticationException {
       UsernamePasswordToken token = (UsernamePasswordToken) authcToken;
       String name = token.getUsername();
       String password = String.valueOf(token.getPassword());
       SysUser user = new SysUser();
       user.setUserName(name);
       user.setPassWord(password);
       // 从数据库获取对应用户名密码的用户
       SysUser userList = userService.getUser(user);
       if (userList != null) {
          // 用户为禁用状态
          if (userList.getUserEnable() != 1) {
              throw new DisabledAccountException();
          logger.info("-----");
           {\tt SimpleAuthenticationInfo~authenticationInfo~=~new~SimpleAuthenticationInfo()}
                  userList, //用户
                  userList.getPassWord(), //密码
                  getName() //realm name
          );
           return authenticationInfo;
       throw new UnknownAccountException();
   }
    * 授权
   @Override
   protected AuthorizationInfo doGetAuthorizationInfo(PrincipalCollection principals) {
       logger.info("------ 执行 Shiro 权限获取 -----");
       Object principal = principals.getPrimaryPrincipal();
       {\tt SimpleAuthorizationInfo \ authorizationInfo = {\tt new} \ {\tt SimpleAuthorizationInfo();} \\
       if (principal instanceof SysUser) {
          SysUser userLogin = (SysUser) principal;
           Set<String> roles = roleService.findRoleNameByUserId(userLogin.getId());
          authorizationInfo.addRoles(roles);
          Set<String> permissions = userService.findPermissionsByUserId(userLogin.getId());
           authorizationInfo.addStringPermissions(permissions);
       logger.info("---- 获取到以下权限 ----");
       logger.info(authorizationInfo.getStringPermissions().toString());
       logger.info("-----");
       return authorizationInfo;
   }
```

六、限制并发人数登陆

```
package com.chaoqi.springboot_shiro_redis.secutity;
import com.alibaba.fastjson.JSON;
import com.chaoqi.springboot_shiro_redis.dao.domain.SysUser;
import org.apache.shiro.cache.Cache;
import org.apache.shiro.cache.CacheManager;
import org.apache.shiro.session.Session;
import org.apache.shiro.session.mgt.DefaultSessionKey;
import org.apache.shiro.session.mgt.SessionManager;
import org.apache.shiro.subject.Subject;
import org.apache.shiro.web.filter.AccessControlFilter;
import org.apache.shiro.web.util.WebUtils;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;
import javax.servlet.http.HttpServletRequest;
import java.io.IOException;
import java.io.PrintWriter;
import java.io.Serializable;
import java.util.Deque;
import java.util.HashMap;
import java.util.LinkedList;
import java.util.Map;
public class KickoutSessionControlFilter extends AccessControlFilter {
   private String kickoutUrl; //踢出后到的地址
   private boolean kickoutAfter = false; //踢出之前登录的/之后登录的用户 默认踢出之前登录的用户
   private int maxSession = 1; //同一个帐号最大会话数 默认1
   private SessionManager sessionManager;
   private Cache<String, Deque<Serializable>> cache;
   public void setKickoutUrl(String kickoutUrl) {
       this.kickoutUrl = kickoutUrl;
   public void setKickoutAfter(boolean kickoutAfter) {
       this.kickoutAfter = kickoutAfter;
   public void setMaxSession(int maxSession) {
       this.maxSession = maxSession;
   public void setSessionManager(SessionManager sessionManager) {
       this.sessionManager = sessionManager;
   //设置Cache的key的前缀
   public void setCacheManager(CacheManager cacheManager) {
       this.cache = cacheManager.getCache("shiro_redis_cache");
   protected boolean isAccessAllowed(ServletRequest request, ServletResponse response, Object mappedValue) throws Exception {
       return false;
   @Override
   protected boolean onAccessDenied(ServletRequest request, ServletResponse response) throws Exception {
       Subject subject = getSubject(request, response);
       if(!subject.isAuthenticated() && !subject.isRemembered()) {
           //如果没有登录,直接进行之后的流程
           return true;
       Session session = subject.getSession();
       SysUser user = (SysUser) subject.getPrincipal();
       String username = user.getUserName();
       Serializable sessionId = session.getId();
       //读取缓存 没有就存入
       Deque<Serializable> deque = cache.get(username);
       //如果此用户没有session队列,也就是还没有登录过,缓存中没有
```

```
//就new一个空队列,不然deque对象为空,会报空指针
   if (deque==null) {
       deque = new LinkedList<Serializable>();
   //如果队列里没有此sessionId, 且用户没有被踢出;放入队列
   if(!deque.contains(sessionId) && session.getAttribute("kickout") == null) {
       //将sessionId存入队列
       deque.push(sessionId);
       //将用户的sessionId队列缓存
       cache.put(username, deque);
   //如果队列里的sessionId数超出最大会话数,开始踢人
   while(deque.size() > maxSession) {
       Serializable kickoutSessionId = null;
       if(kickoutAfter) { //如果踢出后者
           kickoutSessionId = deque.removeFirst();
           //踢出后再更新下缓存队列
           cache.put(username, deque);
       } else { //否则踢出前者
           kickoutSessionId = deque.removeLast();
          //踢出后再更新下缓存队列
          cache.put(username, deque);
       try {
           //获取被踢出的sessionId的session对象
           Session kickoutSession = sessionManager.getSession(new DefaultSessionKey(kickoutSessionId));
           if(kickoutSession != null) {
              //设置会话的kickout属性表示踢出了
              kickoutSession.setAttribute("kickout", true);
       } catch (Exception e) {//ignore exception
   //如果被踢出了,直接退出,重定向到踢出后的地址
   if (session.getAttribute("kickout") != null) {
       //会话被踢出了
       try {
           //退出登录
           subject.logout();
       } catch (Exception e) { //ignore
       saveRequest(request);
       Map<String, String> resultMap = new HashMap<String, String>();
       if ("XMLHttpRequest".equalsIgnoreCase(((HttpServletRequest) request).getHeader("X-Requested-With"))) {
           resultMap.put("user status", "300");
           resultMap.put("message", "您已经在其他地方登录,请重新登录!");
           //输出json串
           out(response, resultMap);
       }else{
           //重定向
          WebUtils.issueRedirect(request, response, kickoutUrl);
       return false;
   return true;
}
private void out(ServletResponse hresponse, Map<String, String> resultMap)
       throws IOException {
   try {
       hresponse.setCharacterEncoding("UTF-8");
       PrintWriter out = hresponse.getWriter();
       out.println(JSON.toJSONString(resultMap));
       out.flush();
       out.close();
   } catch (Exception e) {
       System.err.println("KickoutSessionFilter.class 输出JSON异常,可以忽略。");
}
```

```
package com.chaoqi.springboot shiro redis.exception;
import org.apache.shiro.authz.AuthorizationException;
import org.apache.shiro.authz.UnauthorizedException;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.http.HttpStatus;
import org.springframework.web.bind.annotation.ControllerAdvice;
import org.springframework.web.bind.annotation.ExceptionHandler;
import org.springframework.web.bind.annotation.ResponseStatus;
* 全局异常处理类
@ControllerAdvice
public class CtrlExceptionHandler {
   private static Logger logger = LoggerFactory.getLogger(CtrlExceptionHandler.class);
   //拦截未授权页面
   @ResponseStatus(value = HttpStatus.FORBIDDEN)
   @ExceptionHandler(UnauthorizedException.class)
   public String handleException(UnauthorizedException e) {
       logger.debug(e.getMessage());
       return "403";
   }
   @ResponseStatus(value = HttpStatus.FORBIDDEN)
   @ExceptionHandler(AuthorizationException.class)
   public String handleException2(AuthorizationException e) {
       logger.debug(e.getMessage());
       return "403";
   }
```

八、最后附上logincontroller的代码,调用<u>login</u>就可以调到登陆页面

```
package com.chaoqi.springboot_shiro_redis.web;
import com.chaoqi.springboot_shiro_redis.dao.domain.SysUser;
import com.chaoqi.springboot_shiro_redis.utils.RequestUtils;
import org.apache.commons.lang3.StringUtils;
import org.apache.shiro.SecurityUtils;
import org.apache.shiro.authc.AuthenticationException;
import org.apache.shiro.authc.DisabledAccountException;
import org.apache.shiro.authc.UsernamePasswordToken;
import org.apache.shiro.subject.Subject;
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;
import javax.servlet.http.HttpServletRequest;
@Controller
@RequestMapping(value = "/auth")
public class LoginController {
    @RequestMapping(value = "/login", method = RequestMethod.POST)
   public String submitLogin(String username, String password, HttpServletRequest request) {
           UsernamePasswordToken token = new UsernamePasswordToken(username, password);
           Subject subject = SecurityUtils.getSubject();
           subject.login(token);
           SysUser user = (SysUser) subject.getPrincipal();
       } catch (DisabledAccountException e) {
           request.setAttribute("msg", "账户已被禁用");
           return "login";
       } catch (AuthenticationException e) {
           request.setAttribute("msg", "用户名或密码错误");
           return "login";
       // 执行到这里说明用户已登录成功
       return "redirect:/auth/index";
    }
   @RequestMapping(value = "/login", method = RequestMethod.GET)
```

```
public String loginPage() {
        return "login";
   }
   @RequestMapping(value = "/index", method = RequestMethod.GET)
   {\tt public} \ {\tt String} \ {\tt loginSuccessMessage} \ ({\tt HttpServletRequest} \ {\tt request}) \ \ \{
        String username = "未登录";
        SysUser currentLoginUser = RequestUtils.currentLoginUser();
        if (currentLoginUser != null && StringUtils.isNotEmpty(currentLoginUser.getUserName())) {
            username = currentLoginUser.getUserName();
        } else {
            return "redirect:/auth/login";
        request.setAttribute("username", username);
        return "index";
   }
   //被踢出后跳转的页面
   @RequestMapping(value = "/kickout", method = RequestMethod.GET)
   public String kickOut() {
        return "kickout";
```

至此shiro整合完成,源码下载地址为:https://github.com/caicahoqi/ChaoqiIsPrivateLibrary