SpringBoot2.7.18升级至3.2.x后的Knife4j的系列问题

一、问题描述

项目采用SpringBoot开发，原来是SpringBoot2.7.18+knife4j-spring-boot-starter(3.0.3)，使用非常完美。不过由于升级JDK至21之后（原先JDK为8或者15），需要同步升级SpringBoot，所以索性升级了下knife4j，经过数天数月的调测，还是有些不太完美的地方，寻找了官方文档和所能搜寻到的CSDN等别人写的示例文档后，仍有部分问题。汇总如下，如作者有空，还请帮忙看下，不胜感谢！

二、项目配置

> 以下问题均在此配置下测试获得，配置包括pom引入的依赖、yml中knife4j配置以及配置类

1、`pom.xml`相关配置

> 升级后配置，以下问题均在此版本中描述，SpringBoot3.2.4+knife4j-openapi3-jakarta-spring-boot-starter(4.5.0)

```
<parent>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-parent</artifactId>
    <version>3.2.4</version><!-- 2.7.18↑ -->
    <relativePath/>
</parent>
<dependencies>
    <dependency>
        <groupId>com.github.xiaoymin</groupId>
        <artifactId>knife4j-openapi3-jakarta-spring-boot-starter</artifactId>
        <version>4.5.0</version>
    </dependency>
</dependencies>
```

2、`application.yml`中相关配置

```
# springdoc-openapi项目配置
springdoc:
  # get请求多参数时不需要添加额外的@ParameterObject和@Parameter注解
  default-flat-param-object: true
  # 启用swaggerUI
  swagger-ui:
    #自定义swagger前端请求路径，输入http：127.0.0.1:8080/swagger-ui.html会自动重定向到swagger
页面
    path: /swagger-ui.html
    enabled: true
```

```
    tags-sorter: alpha # 标签的排序方式 alpha:按照子母顺序排序（@ApiSupport注解排序不生效，因此需要设置）
    #operations-sorter: alpha # 接口的排序方式 alpha:按照子母顺序排序（@ApiOperationSupport注解排序生效，因此这里不作设置）
  # 启用文档，默认开启
  api-docs:
    path: /v3/api-docs    #swagger后端请求地址
    enabled: true
#knife4j相关配置 可以不用改
knife4j:
  enable: true    #开启knife4j，无需添加@EnableKnife4j注解
  setting:
    language: ZH_CN   # 中文:ZH_CN 英文:EN
#    enable-swagger-models: true
#    enable-dynamic-parameter: false
    footer-custom-content: "<strong>Copyright © 2024 Keyidea. All Rights Reversed</strong>"
    enable-footer-custom: true
    enable-footer: true
    enable-document-manage: true
```

3、Knife4j配置类

```
package cn.keyidea.common.config;

import io.swagger.v3.oas.models.OpenAPI;
import io.swagger.v3.oas.models.info.Contact;
import io.swagger.v3.oas.models.info.Info;
import io.swagger.v3.oas.models.info.License;
import org.springdoc.core.models.GroupedOpenApi;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;

/**
 * Knife4jConfig
 * 注意：分组名称使用英文或数字，在4.0.0~4.5.0的Knife4j版本中使用中文分组会出现页面访问异常
 * <p>
 * Springboot 3.0 集成 Knife4j 4.0版本，排序无效 · Issue #I6FB9I · 萧明/knife4j - Gitee.com
 * https://gitee.com/xiaoym/knife4j/issues/I6FB9I
 * 参见 {@link com.github.xiaoymin.knife4j.spring.extension.Knife4jJakartaOperationCustomizer}
 *
 * @author qyd
 * @date 2024-04-13
 */
@Configuration
public class Knife4jConfig {

    @Bean
    public GroupedOpenApi api1() {
        // 创建了一个api接口的分组
        return GroupedOpenApi.builder()
                // 分组名称，使用英文，中文访问异常
                .group("01-sys-api")
                // .group("01-系统接口")
                // 接口请求路径规则
```

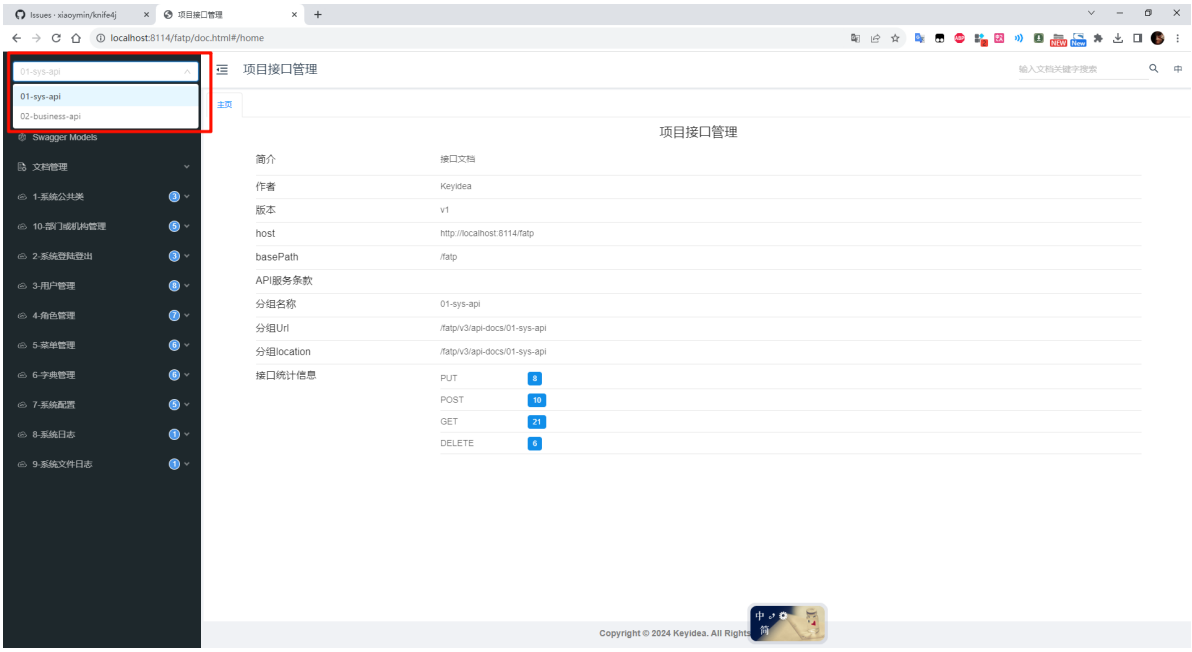
```
                .pathsToMatch("/sys/**")
                .build();
    }

    @Bean
    public GroupedOpenApi api2() {
        return GroupedOpenApi.builder()
                .group("02-business-api")
                .packagesToScan("cn.keyidea.business")
                .build();
    }

    @Bean
    public OpenAPI openAPI() {
        return new OpenAPI()
                .info(new Info()
                        .title("项目接口管理")
                        .description("接口文档")
                        .version("v1")
                        .contact(new Contact().name("Keyidea").email("support@qq.cn"))
                        .license(new License().name("Apache
2.0").url("http://springdoc.org"))
                );
    }
}
```

三、问题汇总

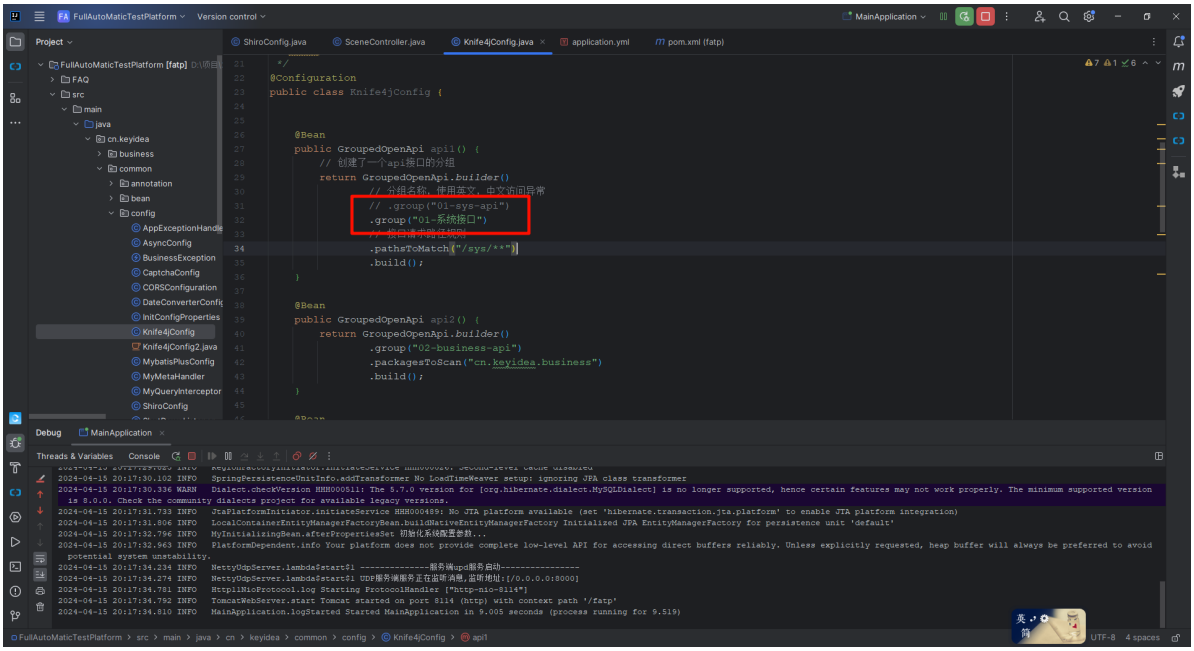
> 影响指数：0/5完全不影响，5/5完全受影响

1、分组名称不支持中文名称[影响指数:4/5]

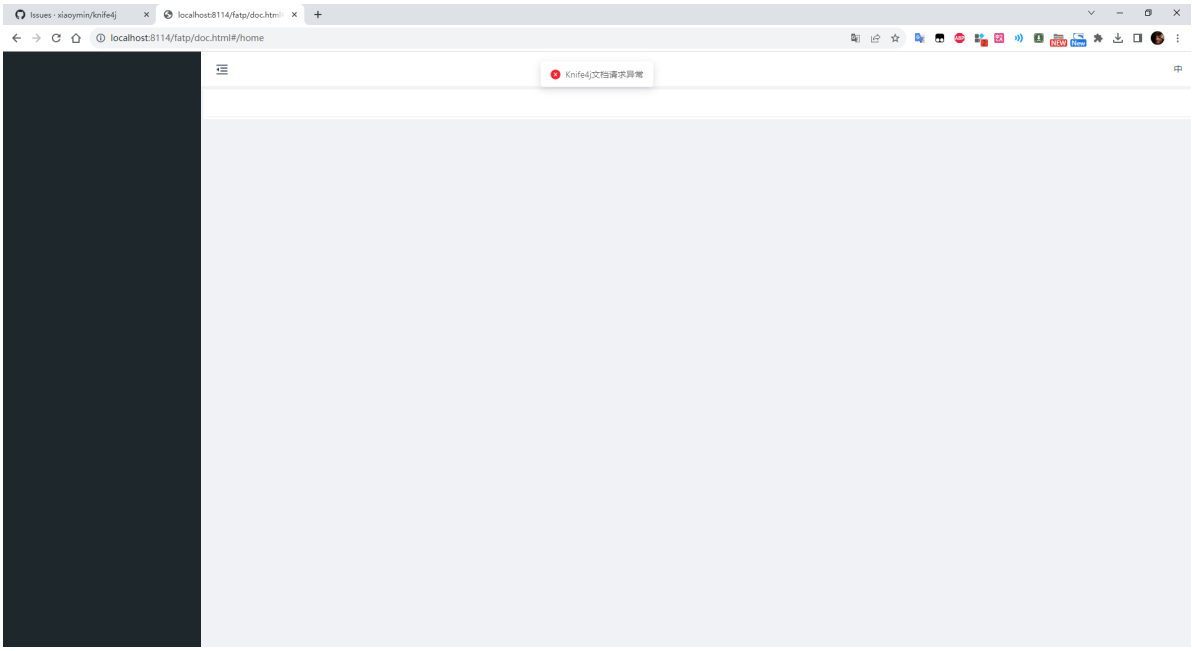
使用英文分组名，访问正常



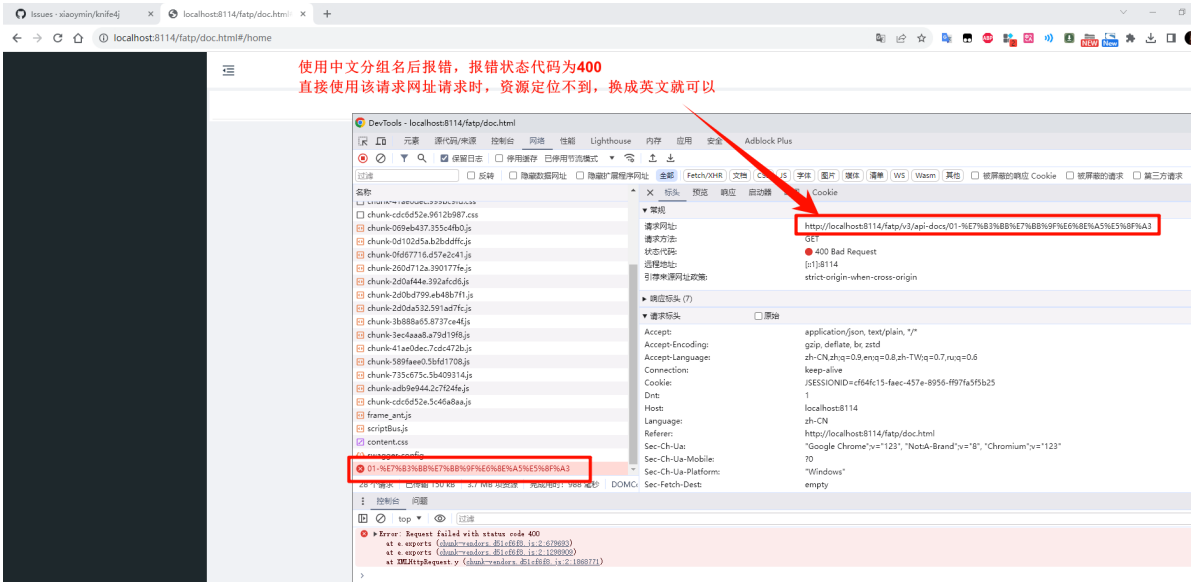
使用中文分组名后访问异常



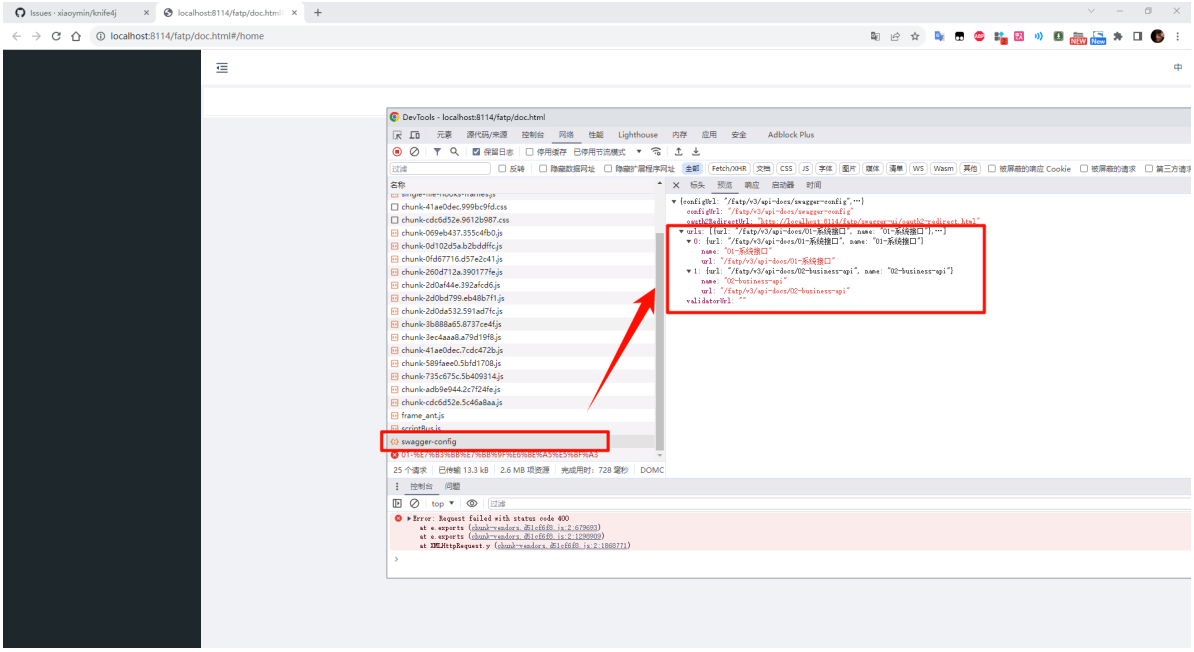
异常界面



异常详情

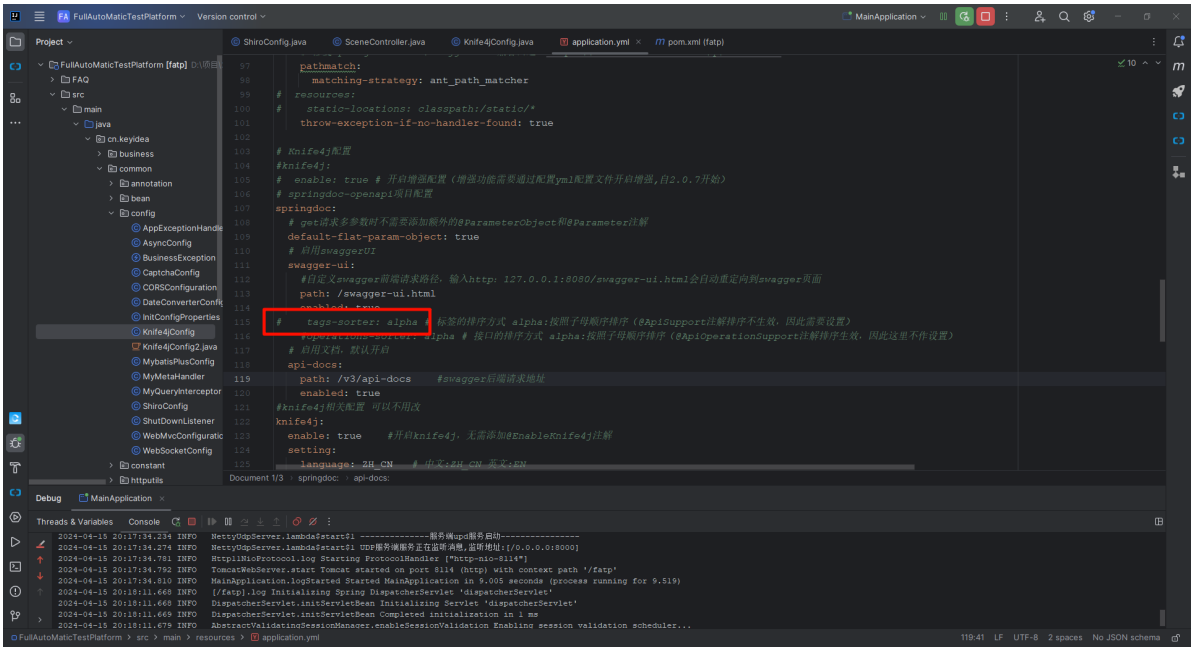


请求异常时swagger-config请求信息详情

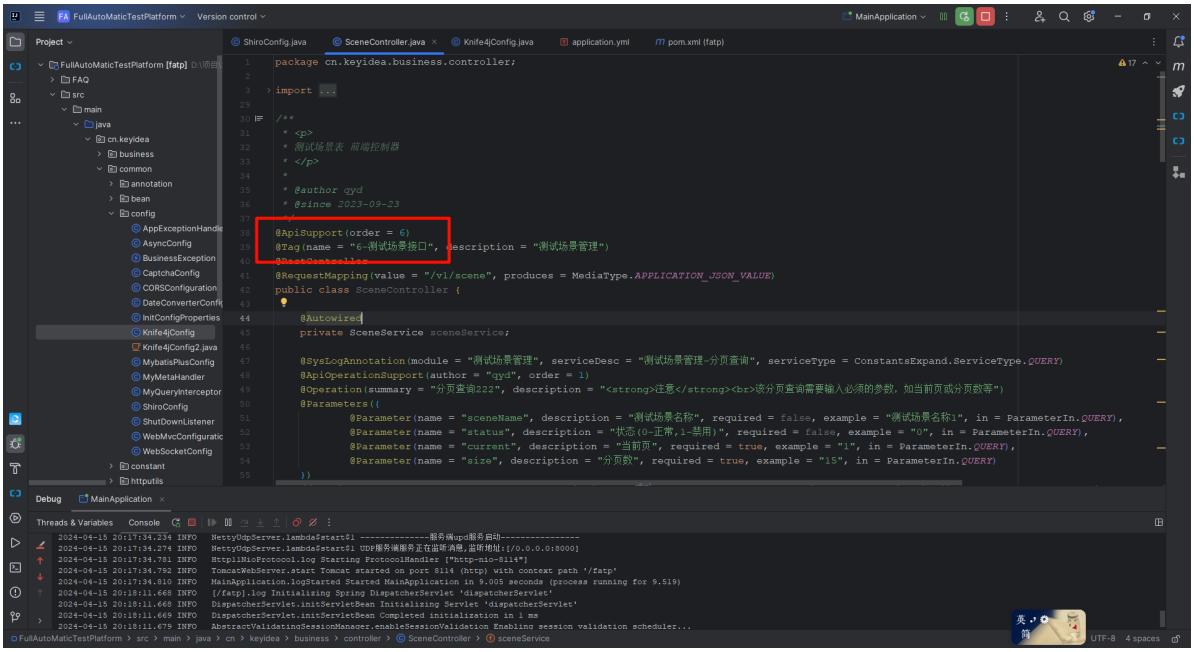


2、使用@Tag中order字段对控制器排序不生效[影响指数:5/5]

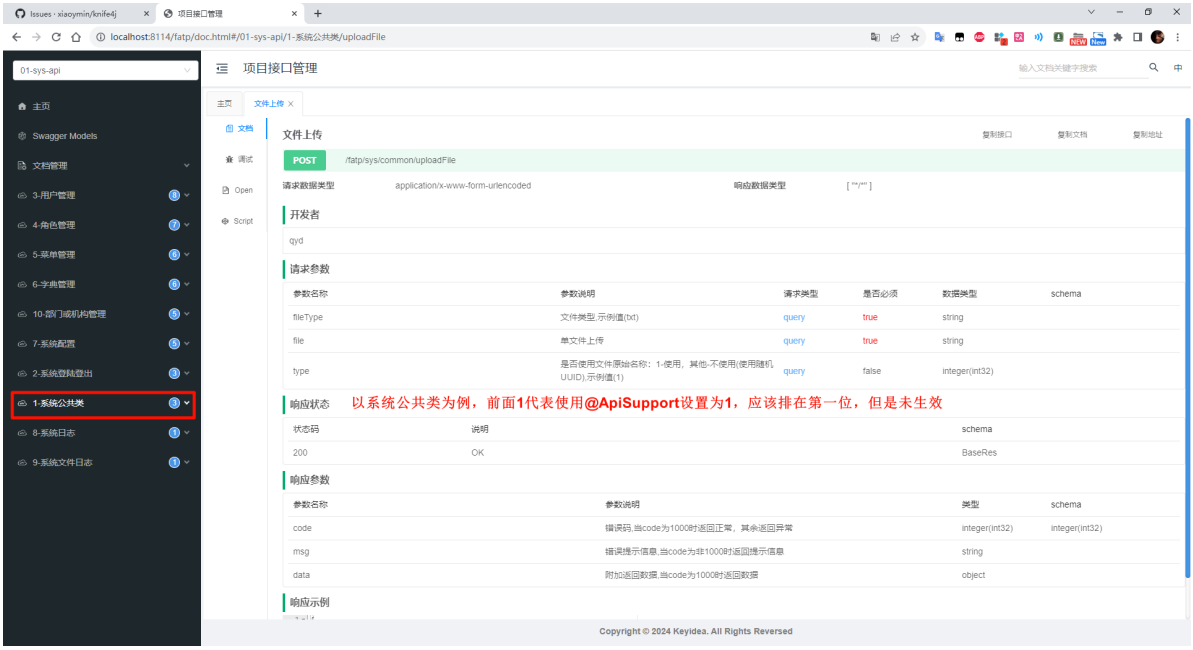
将yml中tags-sorted排序注释



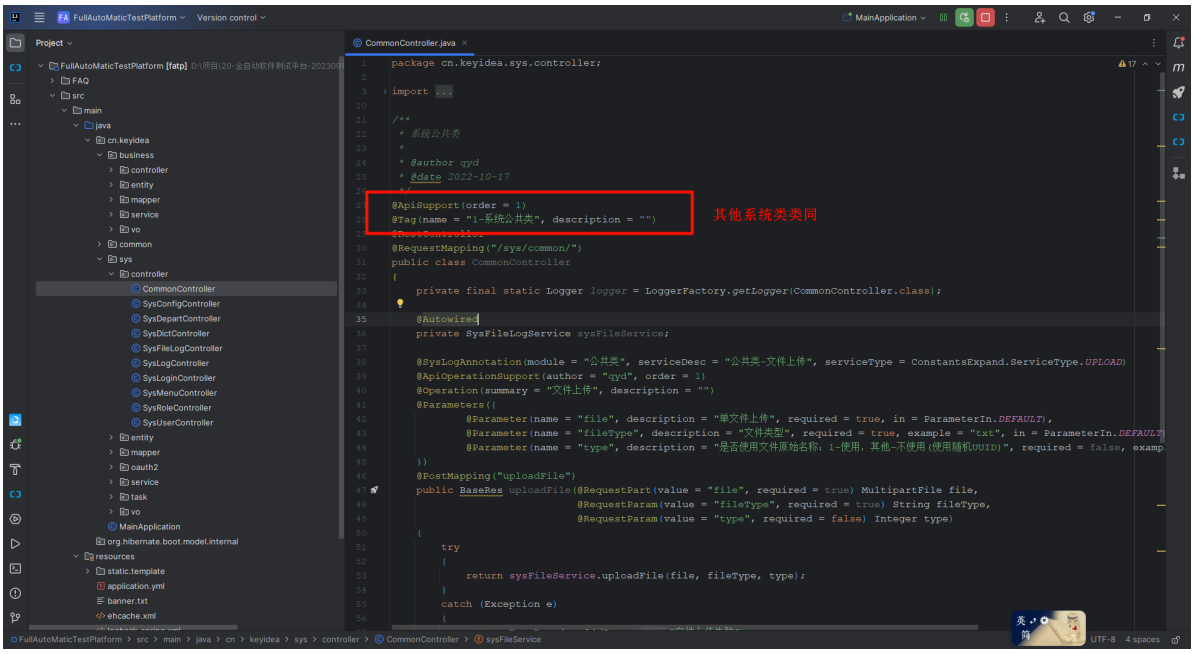
开启@ApiSupport中order排序



接口中显示系统接口排序错乱



代码中设置



> 说明：使用@ApiSupport对控制器排序未生效，但是使用@ApiOperationSupport中的order对单个接口设置的值生效，很奇怪。

3、无法定义全局错误码信息[影响指数:5/5]

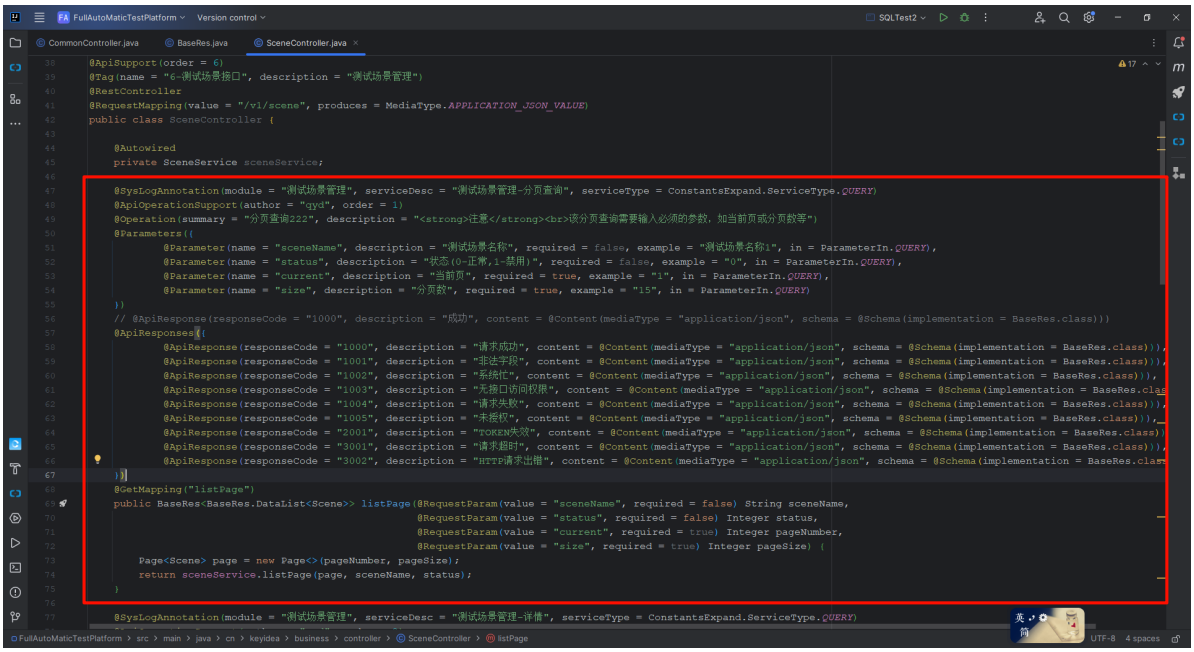
目前有两种方式在接口中显示错误码，一种是使用@ApiResponse注解，另一种是@ApiResponses注解，但是这两种注解都均需要在每个接口上进行添加，很是麻烦，以前的knife4j3.0.3的版本中可以如下配置

```
@Order(2)
    @Bean
    public Docket createRestApi2() {
        // 添加全局响应状态码
        List<Response> responseMessageList = new ArrayList<>();

        // 根据 StatusCode 获取自定义响应码
        Arrays.stream(StatusCode.values())
```

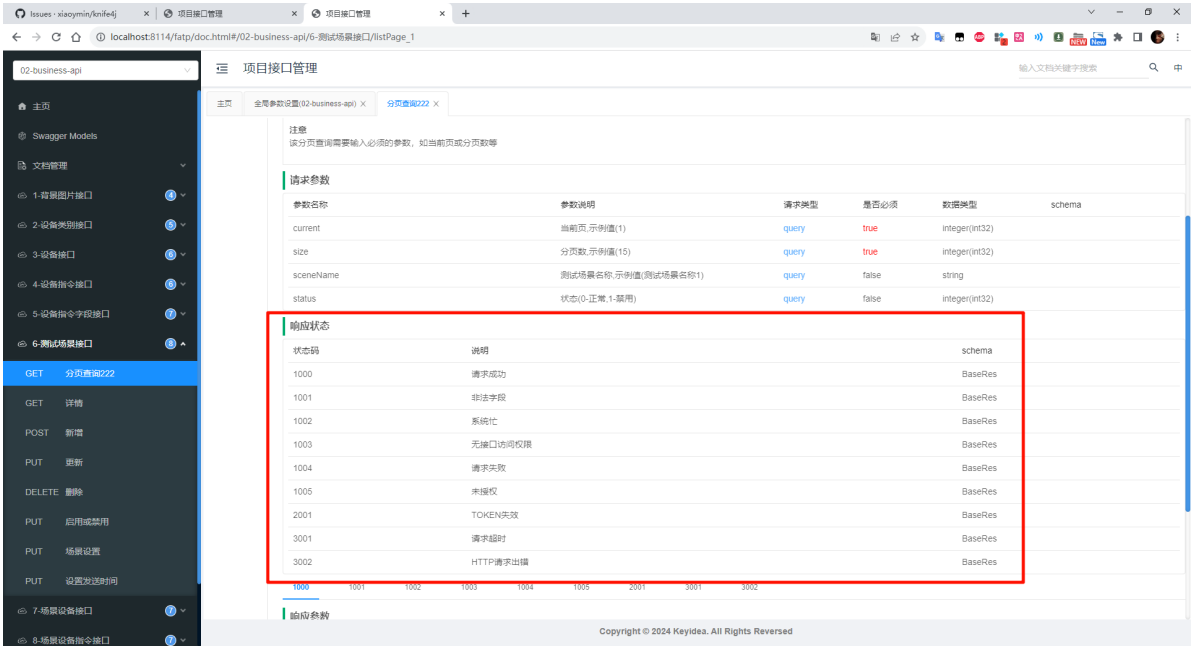
```
                .forEach(errorEnums -> responseMessageList.add(new ResponseBuilder()
                        .code(errorEnums.getCode())
                        .description(errorEnums.getMsg())
                        .build()));

        Docket build = new Docket(DocumentationType.SWAGGER_2)
                // 添加全局响应状态码，可根据不同系统定义不同的响应码信息
                .globalResponses(HttpMethod.GET, responseMessageList)
                .globalResponses(HttpMethod.PUT, responseMessageList)
                .globalResponses(HttpMethod.POST, responseMessageList)
                .globalResponses(HttpMethod.DELETE, responseMessageList)
                .apiInfo(apiInfo())
                .groupName("业务接口文档")
                .select()
                .apis(RequestHandlerSelectors.basePackage("cn.keyidea.business"))
                .build();
        return build;
    }
```

在Docket中添加一个globalResponses配置即可，但是新的knife4j好像没法这样添加。

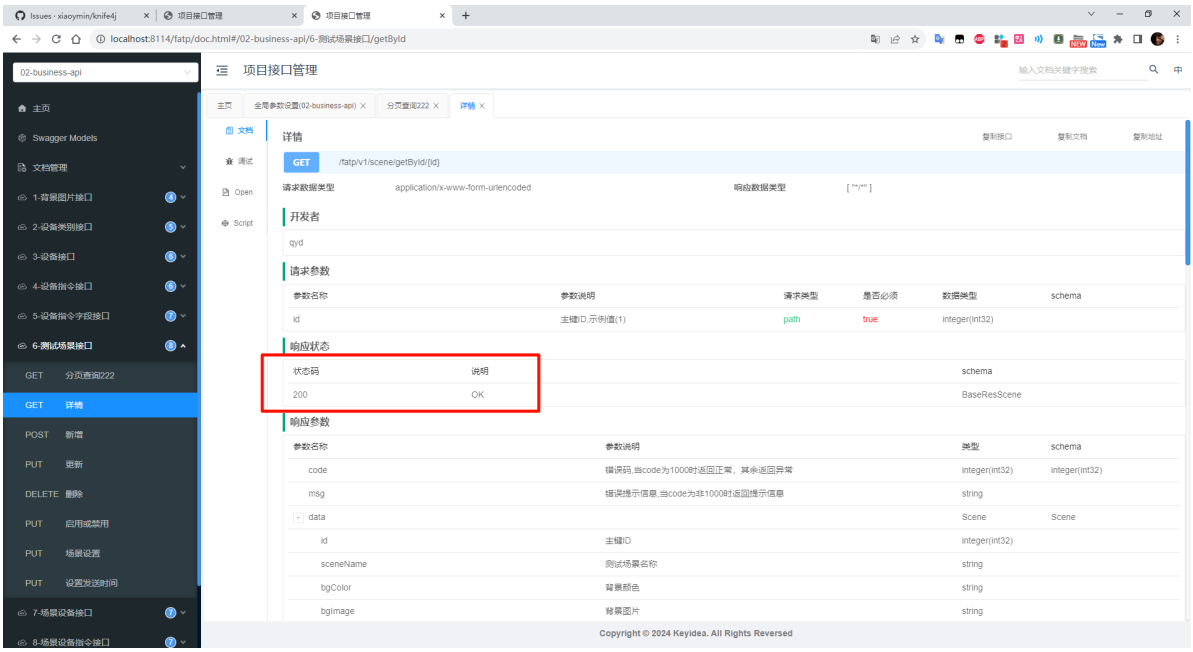
目前的解决办法是可以在每个接口上写@ApiResponse或@ApiResponses注解，如下：



设置@ApiResponses注解时返回信息

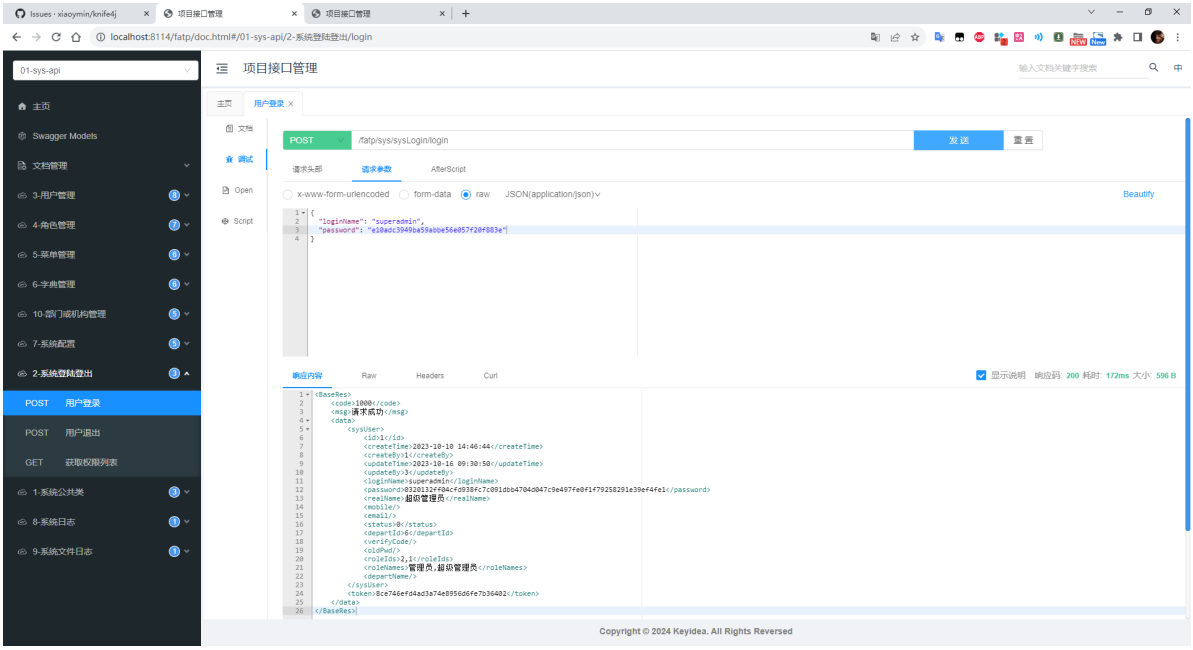


未设置@ApiResponse或@ApiResponses注解时返回信息，**而且默认返回的schema并不是接口返回的BaseRes对象**

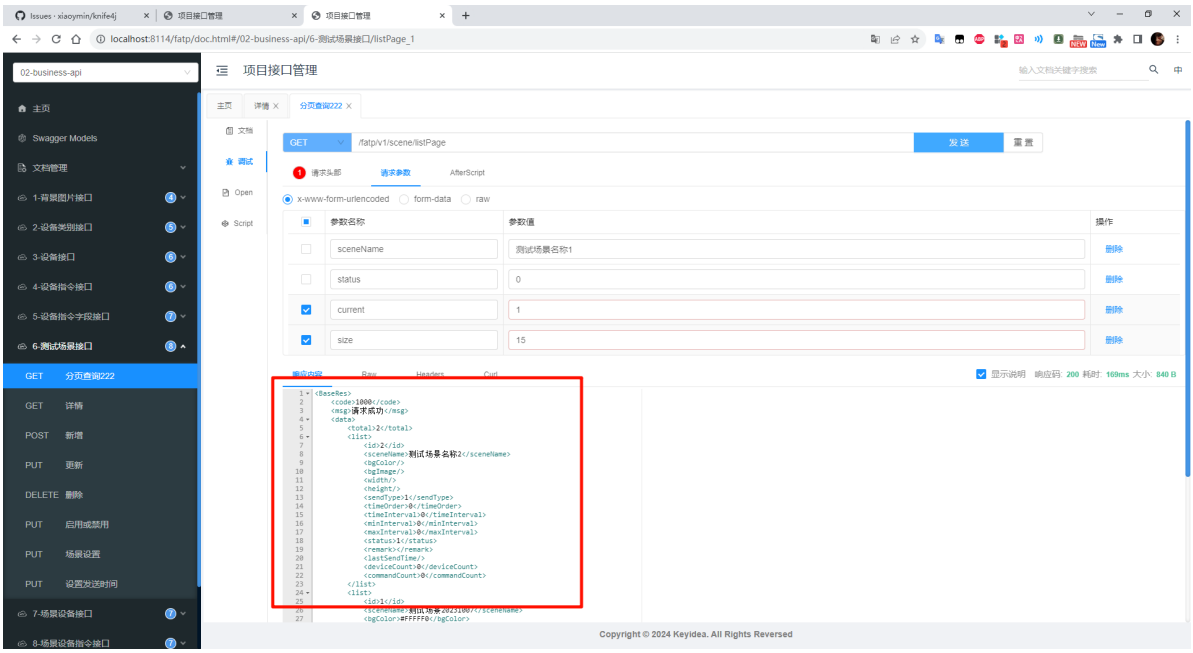


4、控制器层返回数据为xml(目前可解决,解决方式不完美)[影响指数:4/5]

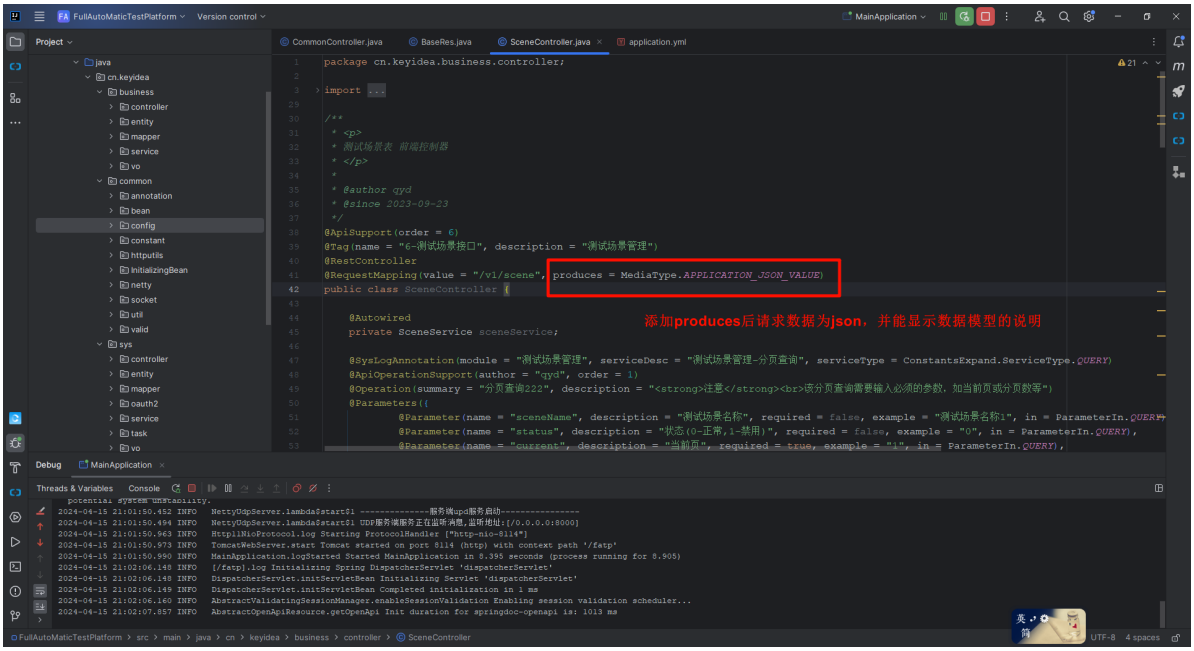
登陆成功后请求返回的数据是xml格式



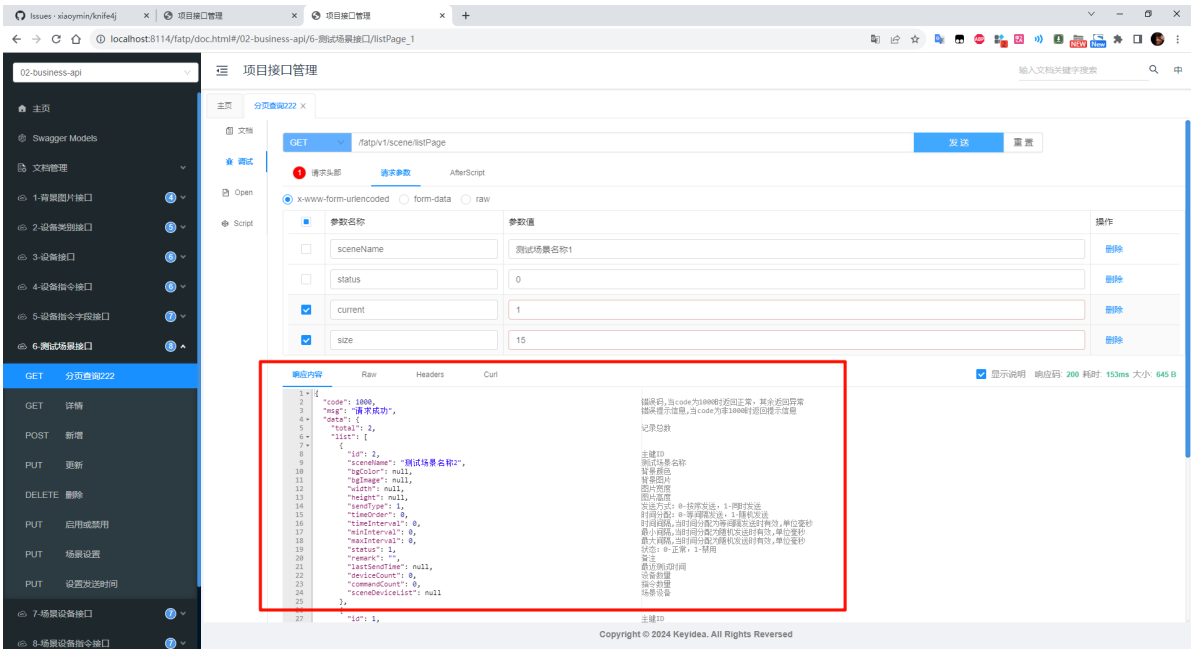
请求返回接口示例



代码中设置



@RequestMapping注解配置produces参数为json时返回正常



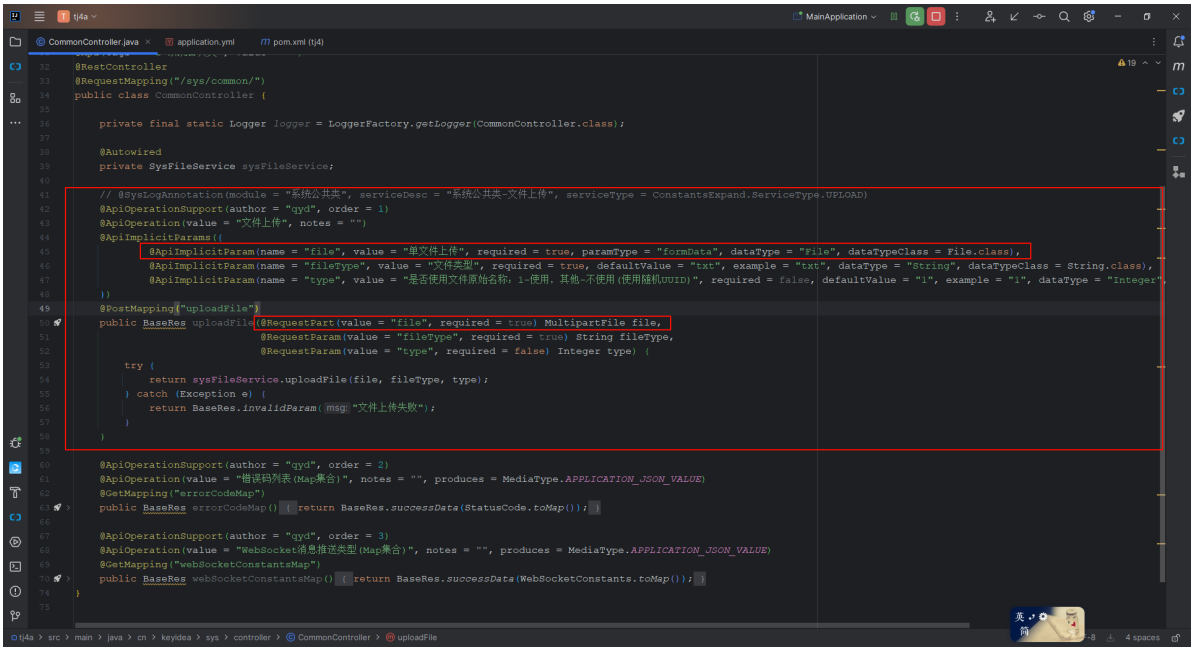
> 说明：返回前端的数据在全局中并未使用AOP做二次处理。

5、新版Knife4j文件上传如何通过注解设置接口参数[影响指数:5/5]

在进行新版Knife4j设置文件上传时的测试时，咱们先看下以前knife4j3.0.3是如何实现的

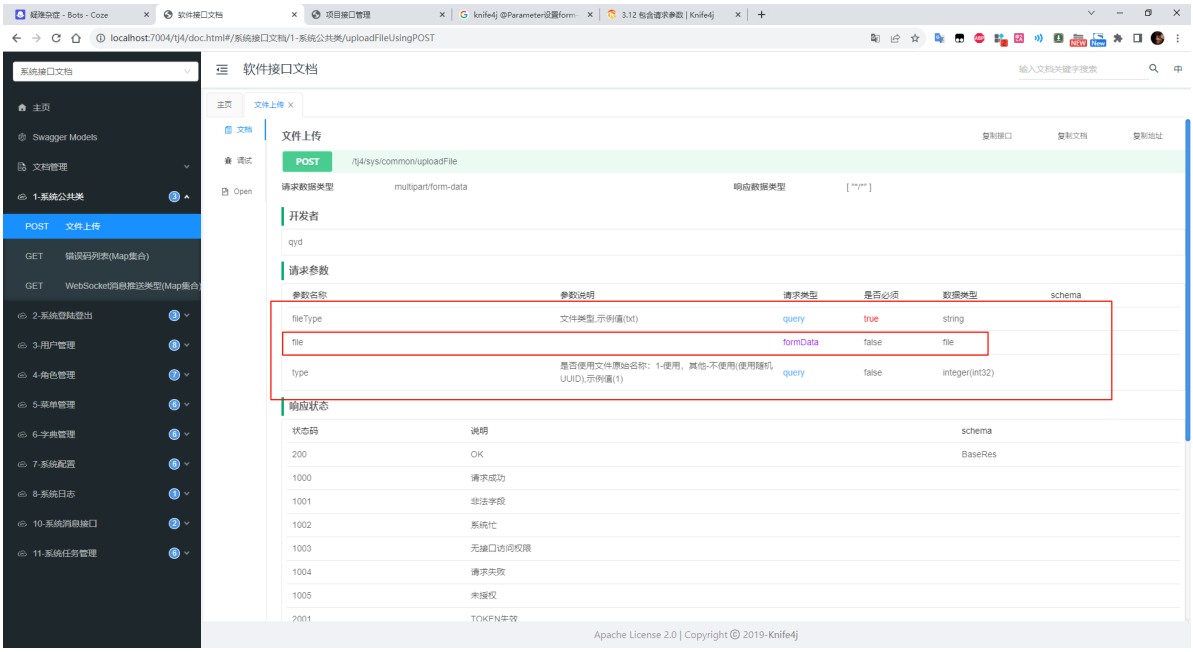
旧版Knife4j实现文档上传

knife4j3.0.3中文件上传请求时的代码设置

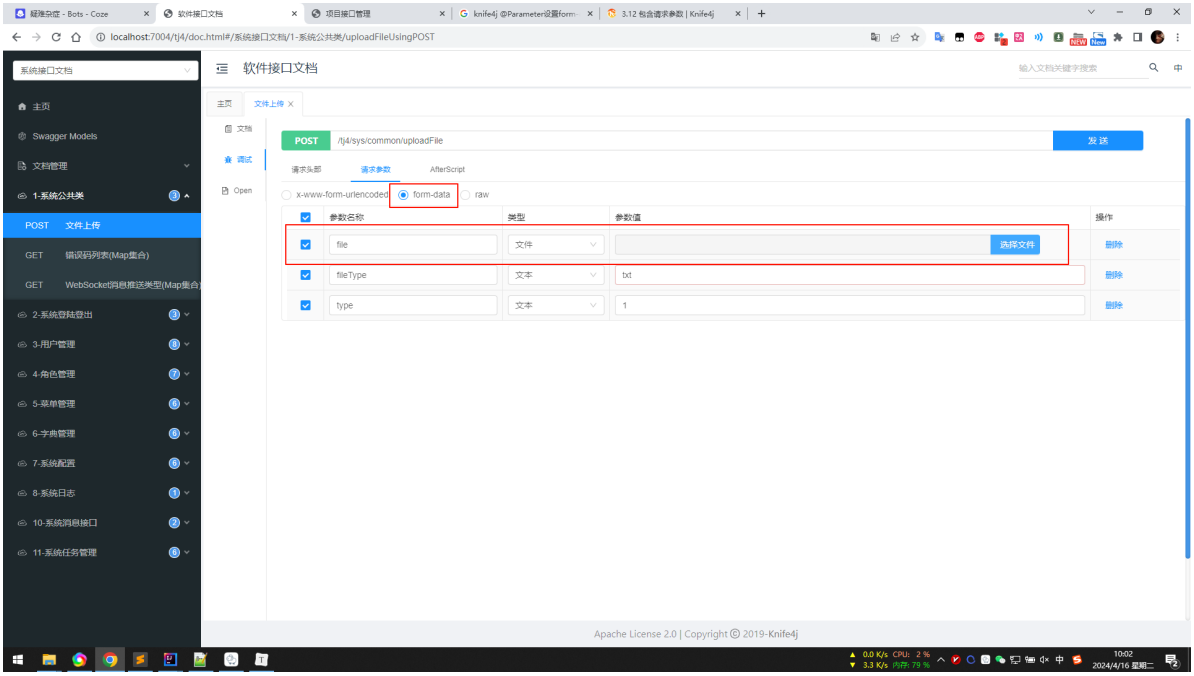


```
@RestController
@RequestMapping("/sys/common/")
public class CommonController {

    private final static Logger logger = LoggerFactory.getLogger(CommonController.class);

    @Autowired
    private SysFileService sysFileService;

    // @SysLogAnnotation(module = "系统公共类", serviceDesc = "系统公共类-文件上传", serviceType = ConstantsExpand.ServiceType.UPLOAD)
    @ApiOperationSupport(author = "qyd", order = 1)
    @ApiOperation(value = "文件上传", notes = "")
    @ApiImplicitParams({
            @ApiImplicitParam(name = "file", value = "单文件上传", required = true, paramType = "formData", dataType = "File", dataTypeClass = File.class),
            @ApiImplicitParam(name = "fileType", value = "文件类型", required = true, defaultValue = "txt", example = "txt", dataType = "String", dataTypeClass = String.class),
            @ApiImplicitParam(name = "type", value = "是否使用文件原始名称：1-使用，其他-不使用(使用随机UUID)", required = false, defaultValue = "1", example = "1", dataType = "Integer",
    })
    @PostMapping("uploadFile")
    public BaseRes uploadFile(@RequestPart(value = "file", required = true) MultipartFile file,
                              @RequestParam(value = "fileType", required = true) String fileType,
                              @RequestParam(value = "type", required = false) Integer type) {
        try {
            return sysFileService.uploadFile(file, fileType, type);
        } catch (Exception e) {
            return BaseRes.invalidParam( msg: "文件上传失败");
        }
    }

    @ApiOperationSupport(author = "qyd", order = 2)
    @ApiOperation(value = "错误码列表(Map集合)", notes = "", produces = MediaType.APPLICATION_JSON_VALUE)
    @GetMapping("errorCodeMap")
    public BaseRes errorCodeMap() { return BaseRes.successData(StatusCode.toMap()); }

    @ApiOperationSupport(author = "qyd", order = 3)
    @ApiOperation(value = "WebSocket消息推送类型(Map集合)", notes = "", produces = MediaType.APPLICATION_JSON_VALUE)
    @GetMapping("webSocketConstantsMap")
    public BaseRes webSocketConstantsMap() { return BaseRes.successData(WebSocketConstants.toMap()); }
}
```

knife4j3.0.3中文件上传请求时文档显示

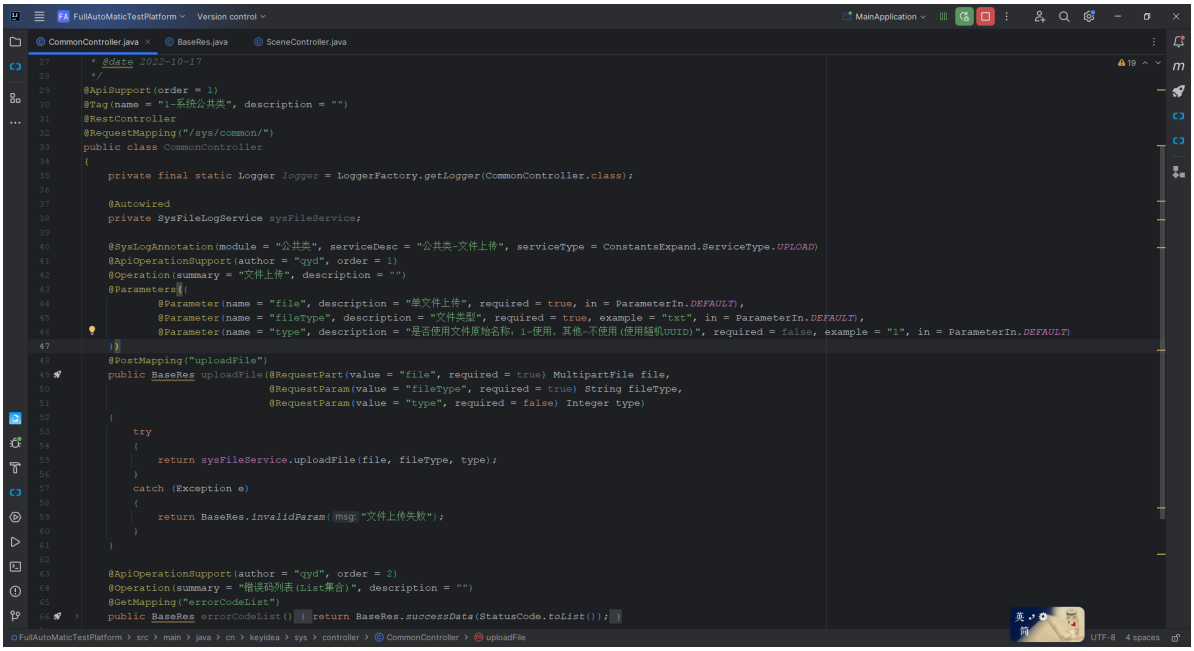


knife4j3.0.3中文件上传调试时的界面-可正常上传文件



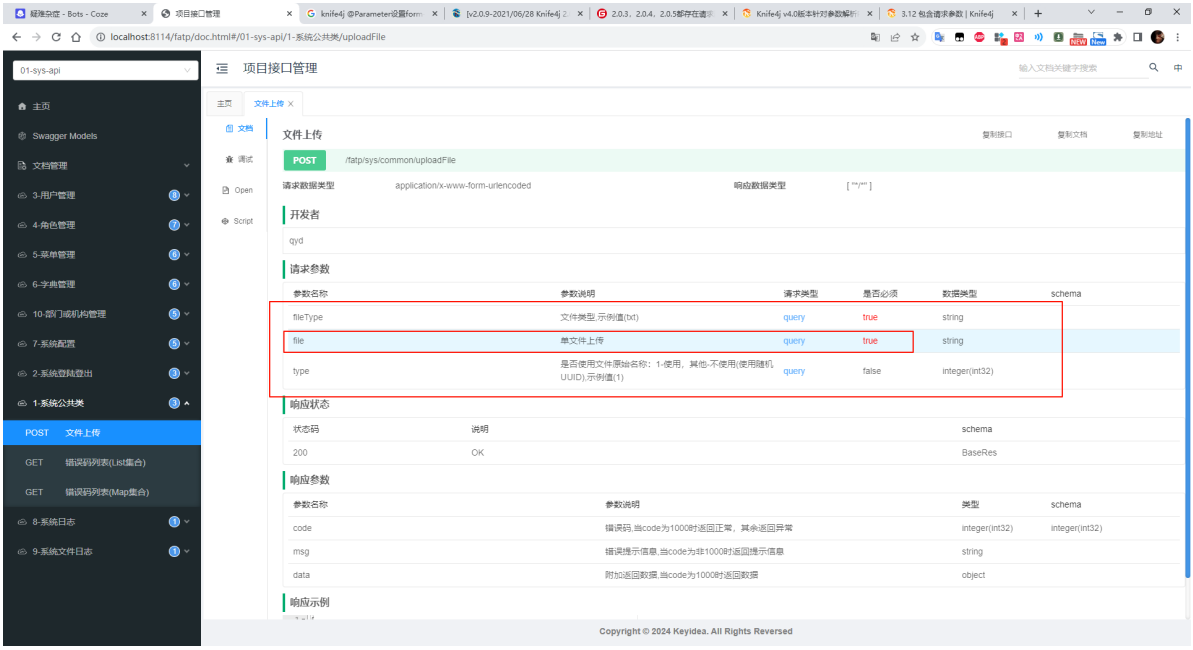
新版Knife4j目前的窘境（未实现）

knife4j4.5.0中文件上传请求时的代码设置

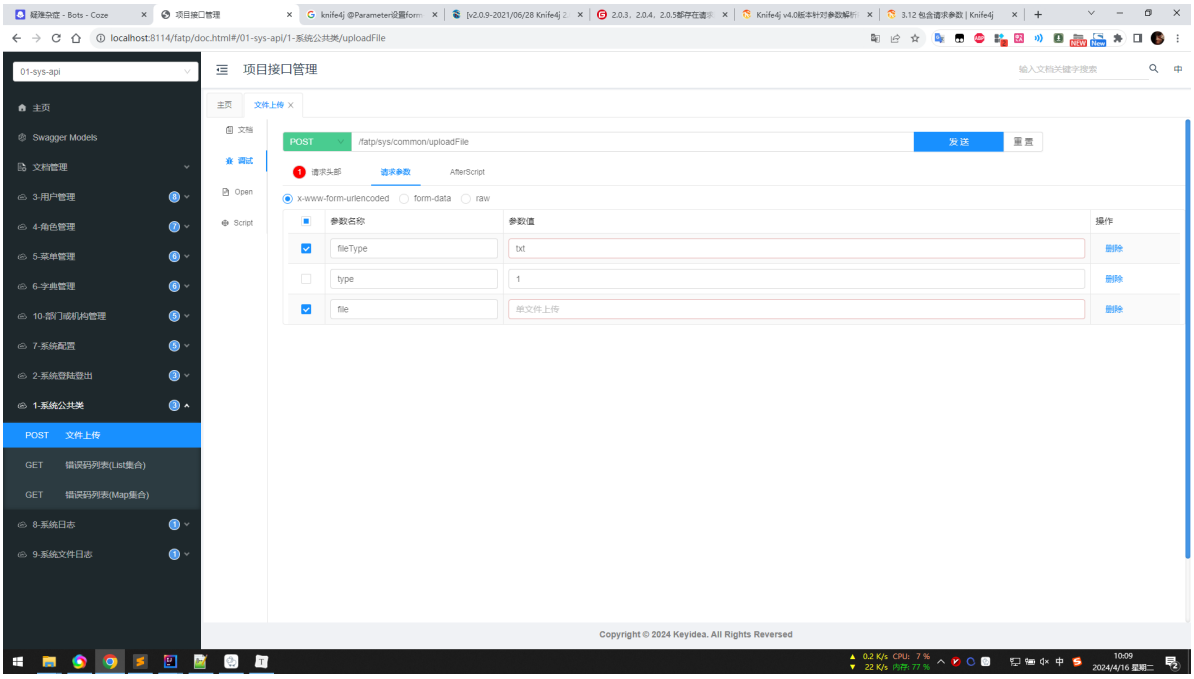


```java
/**
 * @date 2022-10-17
 */
@ApiSupport(order = 1)
@Tag(name = "1-系统公共类", description = "")
@RestController
@RequestMapping("/sys/common/")
public class CommonController
{
    private final static Logger logger = LoggerFactory.getLogger(CommonController.class);

    @Autowired
    private SysFileLogService sysFileService;

    @SysLogAnnotation(module = "公共类", serviceDesc = "公共类-文件上传", serviceType = ConstantsExpand.ServiceType.UPLOAD)
    @ApiOperationSupport(author = "qyd", order = 1)
    @Operation(summary = "文件上传", description = "")
    @Parameters({
            @Parameter(name = "file", description = "单文件上传", required = true, in = ParameterIn.DEFAULT),
            @Parameter(name = "fileType", description = "文件类型", required = true, example = "txt", in = ParameterIn.DEFAULT),
            @Parameter(name = "type", description = "是否使用文件原始名称，1-使用，其他-不使用（使用随机UUID）", required = false, example = "1", in = ParameterIn.DEFAULT)
    })
    @PostMapping("uploadFile")
    public BaseRes uploadFile(@RequestPart(value = "file", required = true) MultipartFile file,
                              @RequestParam(value = "fileType", required = true) String fileType,
                              @RequestParam(value = "type", required = false) Integer type)
    {
        try
        {
            return sysFileService.uploadFile(file, fileType, type);
        }
        catch (Exception e)
        {
            return BaseRes.invalidParam( msg: "文件上传失败");
        }
    }

    @ApiOperationSupport(author = "qyd", order = 2)
    @Operation(summary = "错误码列表(List集合)", description = "")
    @GetMapping("errorCodeList")
    public BaseRes errorCodeList() { return BaseRes.successData(StatusCode.toList()); }
```

knife4j4.5.0中文件上传请求时文档显示



knife4j4.5.0中文件上传调试时的界面-可正常上传文件



附录A：通用响应封装类代码(BaseRes.java)

```
package cn.keyidea.common.bean;

import cn.keyidea.common.constant.StatusCode;
import com.fasterxml.jackson.annotation.JsonIgnore;
import io.swagger.v3.oas.annotations.media.Schema;
import lombok.Data;
import org.apache.poi.ss.formula.functions.T;

import java.io.Serializable;

/**
 * 通用响应封装,范式返回(Swagger要求)
```

```
 *
 * @author qyd
 */
@Data
public class BaseRes<T> implements Serializable {

    /**
     * 错误码
     */
    @Schema(name = "code", description = "错误码,当code为1000时返回正常，其余返回异常",
required = true, example = "1000")
    public Integer code;

    /**
     * 错误提示信息
     */
    @Schema(name = "msg", description = "错误提示信息,当code为非1000时返回提示信息")
    public String msg;

    /**
     * 附加返回数据
     */
    @Schema(name = "data", description = "附加返回数据,当code为1000时返回数据")
    public T data;

    public static class DataList<T> {
        /**
         * 记录总数
         */
        @Schema(name = "total", description = "记录总数")
        public Integer total;
        /**
         * 数据列表
         */
        @Schema(name = "list", description = "数据列表")
        public T list;

        public DataList(Integer total, T list) {
            this.total = total;
            this.list = list;
        }
    }

    /**
     * 给ObjectMapper用的，代码中不要调用
     */
    public BaseRes() {

    }

    /**
     * 自定义返回码和提示消息
     *
     * @param code 错误码
     * @param msg  提示文字
     */
    public BaseRes(int code, String msg) {
        this.code = code;
```

```
        this.msg = msg;
    }

    public BaseRes(int code, String msg, T data) {
        this.code = code;
        this.msg = msg;
        this.data = data;
    }

    /**
     * 返回成功，但是没有附加数据
     *
     * @return BaseRes对象
     */
    public static BaseRes success() {
        return new BaseRes(StatusCode.SUCCESS.getCodeValue(), "请求成功");
    }

    /**
     * 返回成功，带附加数据
     *
     * @param data 附加数据
     * @return BaseRes对象
     */
    public static BaseRes successData(Object data) {
        BaseRes value = new BaseRes(StatusCode.SUCCESS.getCodeValue(), "请求成功");
        value.data = data;
        return value;
    }

    /**
     * 返回参数无效响应
     *
     * @return BaseRes对象
     */
    public static BaseRes invalidParam() {
        return new BaseRes(StatusCode.INVALID_PARAM.getCodeValue(), "参数无效");
    }

    /**
     * 返回参数无效响应，自定义错误提示
     *
     * @param msg 提示文字
     * @return BaseRes对象
     */
    public static BaseRes invalidParam(String msg) {
        return new BaseRes(StatusCode.INVALID_PARAM.getCodeValue(), msg);
    }

    /**
     * 返回系统忙无效响应
     *
     * @return BaseRes对象
     */
    public static BaseRes systemBusy() {
        return new BaseRes(StatusCode.SYSTEM_BUSY.getCodeValue(), "系统忙");
    }
```

```
    /**
     * 返回master key无效响应
     *
     * @return BaseRes对象
     */
    public static BaseRes invalidMasterkey() {
        return new BaseRes(StatusCode.INVALID_MASTER_KEY.getCodeValue(), "没有接口访问权
限");
    }

    /**
     * 返回失败，附带说明
     *
     * @return BaseRes对象
     */
    public static BaseRes fail(String msg) {
        return new BaseRes(StatusCode.FAILURE.getCodeValue(), msg);
    }

    /**
     * 返回错误信息时，仍然返回数据
     *
     * @param data 数据集
     * @param msg  错误信息
     * @return BaseRes对象
     */
    public static BaseRes failData(Object data, String msg) {
        return new BaseRes(StatusCode.FAILURE.getCodeValue(), msg, data);
    }

    /**
     * 登录失效的错误
     *
     * @return BaseRes对象
     */
    public static BaseRes invalidToken() {
        return new BaseRes(StatusCode.INVALID_TOKEN.getCodeValue(), "请先登录");
    }

    /**
     * 检查响应处理是否成功
     *
     * @return 成功返回true，否则false
     */
    @JsonIgnore
    public boolean isSuccess() {

        return (this.code.equals(StatusCode.SUCCESS.getCodeValue()));
    }

    /**
     * 返回分页列表数据
     *
     * @param total 记录总数
     * @param list  列表数据
     * @return rsp
     */
    public static BaseRes list(long total, Object list) {
```

```
        DataList data = new DataList((int) total, list);

        return BaseRes.successData(data);
    }
}
```

附录B：完整`pom.xml`文件

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         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>cn.keyidea</groupId>
    <artifactId>fatp</artifactId>
    <version>1.0.0-SNAPSHOT</version>
    <packaging>jar</packaging>

    <name>FullAutoMaticTestPlatform</name>
    <description>测试平台</description>

    <!--
        spring-boot-starter-parent
        https://mvnrepository.com/artifact/org.springframework.boot/spring-boot-
starter-parent
    -->
    <parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
        <version>3.2.4</version><!-- 2.7.18↑-->
        <relativePath/>
    </parent>

    <properties>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
        <java.version>21</java.version>
        <!-- 更新log4j2版本
包:https://mvnrepository.com/artifact/org.apache.logging.log4j/log4j-api -->
        <log4j2.version>2.23.1</log4j2.version>
        <!-- 打包时跳过测试环境 -->
        <skipTests>true</skipTests>

        <!--
            mybatis-plus:https://mvnrepository.com/artifact/com.baomidou/mybatis-plus-
boot-starter
        -->
        <mybatis-plus.version>3.5.5</mybatis-plus.version>
        <mybatis-spring.version>3.0.3</mybatis-spring.version>
        <!--
            MyBatis生成器
            mybatis-plus-
generator:https://mvnrepository.com/artifact/com.baomidou/mybatis-plus-generator/
```

```
            velocity-engine-
core:https://mvnrepository.com/artifact/org.apache.velocity/velocity-engine-core
            freemarker:https://mvnrepository.com/artifact/org.freemarker/freemarker
            说明：任选velocity-engine-core或者freemarker一种
        -->
        <mybatis-plus-generator.version>3.5.5</mybatis-plus-generator.version>
        <velocity-engine-core.version>2.3</velocity-engine-core.version>
        <freemarker.version>2.3.32</freemarker.version>
        <!-- mysql:https://mvnrepository.com/artifact/mysql/mysql-connector-java -->
        <mysql.version>8.0.33</mysql.version>
        <!-- lombok:https://mvnrepository.com/artifact/org.projectlombok/lombok -->
        <lombok.version>1.18.30</lombok.version>
        <!-- junit:https://mvnrepository.com/artifact/junit/junit/ -->
        <junit.version>4.13.2</junit.version>
        <!--
            netty-all:https://mvnrepository.com/artifact/io.netty/netty-all
            mina-core:https://mvnrepository.com/artifact/org.apache.mina/mina-core
            mina-core：用于组帧
        -->
        <netty-all.version>5.0.0.Alpha1</netty-all.version>
<!--        <mina-core.version>2.1.6</mina-core.version>-->
        <mina-core.version>2.2.3</mina-core.version>
        <!-- hutool-all:https://mvnrepository.com/artifact/cn.hutool/hutool-all -->
        <hutool-all.version>5.8.26</hutool-all.version>
        <!--
jackson:https://mvnrepository.com/artifact/com.fasterxml.jackson.core/jackson-core -->
        <jackson.version>2.16.1</jackson.version>
        <!--
fastjson2:https://mvnrepository.com/artifact/com.alibaba.fastjson2/fastjson2 -->
        <fastjson2.version>2.0.47</fastjson2.version>
        <!-- spring-
websocket:https://mvnrepository.com/artifact/org.springframework/spring-websocket -->
        <spring-websocket.version>6.1.4</spring-websocket.version>
        <!--
            SpringBoot3.x集成knife4j
            knife4j-openapi3-jakarta-spring-boot-
starter:https://mvnrepository.com/artifact/com.github.xiaoymin/knife4j-openapi3-
jakarta-spring-boot-starter
            knife4j-aggregation-spring-boot-
starter:https://mvnrepository.com/artifact/com.github.xiaoymin/knife4j-aggregation-
spring-boot-starter
        -->
        <knife4j.version>4.5.0</knife4j.version>
        <!-- druid:https://mvnrepository.com/artifact/com.alibaba/druid/ -->
        <druid.version>1.2.21</druid.version>
        <!--
            screw螺丝钉:https://mvnrepository.com/artifact/cn.smallbun.screw/screw-core
            hikaricp:https://mvnrepository.com/artifact/com.zaxxer/HikariCP
        -->
        <screw.version>1.0.5</screw.version>
        <hikaricp.version>5.1.0</hikaricp.version>
        <!-- commons-
lang3:https://mvnrepository.com/artifact/org.apache.commons/commons-lang3 -->
        <commons-lang3.version>3.14.0</commons-lang3.version>
        <!--
            SpringBoot集成
shiro:https://mvnrepository.com/artifact/org.apache.shiro/shiro-spring
```

```
            shiro-ehcache:https://mvnrepository.com/artifact/org.apache.shiro/shiro-
ehcache
        -->
        <shiro-spring.version>1.13.0</shiro-spring.version>
        <!-- SpringBoot集成验证码模块
kaptcha:https://mvnrepository.com/artifact/com.github.axet/kaptcha -->
        <kaptcha.version>0.0.9</kaptcha.version>
        <!-- SpringBoot集成定时器Quartz:https://mvnrepository.com/artifact/org.quartz-
scheduler/quartz -->
        <quartz.version>2.3.2</quartz.version>
        <!-- commons-io:https://mvnrepository.com/artifact/commons-io/commons-io -->
        <commons-io.version>2.15.1</commons-io.version>
        <!-- gson:https://mvnrepository.com/artifact/com.google.code.gson/gson -->
        <gson.version>2.10.1</gson.version>
        <!--
            SpringBoot集成easypoi
            easypoi:https://mvnrepository.com/artifact/cn.afterturn/easypoi-base
            poi:https://mvnrepository.com/artifact/org.apache.poi/poi
        -->
<!--        <easypoi.version>4.4.0</easypoi.version>-->
        <easypoi.version>4.5.0</easypoi.version>
        <poi.version>5.2.5</poi.version>

        <!--
            集成spring-cloud-starter-openfeign
            spring-cloud-
starter:https://mvnrepository.com/artifact/org.springframework.cloud/spring-cloud-
starter

 openfeign:https://mvnrepository.com/artifact/org.springframework.cloud/spring-cloud-
starter-openfeign
            spring-cloud-starter-netflix-
hystrix:https://mvnrepository.com/artifact/org.springframework.cloud/spring-cloud-
starter-netflix-hystrix

            说明：SpringBoot2.4.x或2.5.x使用3.0.4版本的feign，SpringBoot2.6.x或2.7.x使用
3.1.3版本的feign
        -->
<!--        <spring-cloud.version>3.1.4</spring-cloud.version>-->
        <spring-cloud.version>4.1.0</spring-cloud.version>
        <spring-cloud-openfeign.version>4.1.0</spring-cloud-openfeign.version>
        <hystrix.version>2.2.10.RELEASE</hystrix.version>

    </properties>


    <dependencies>
        <!--
            Web启动器
            注意：
            1)由于 spring-boot-starter-web 默认替我们引入了核心启动器 spring-boot-starter，
因此，当 Spring Boot 项目中的 pom.xml 引入了 spring-boot-starter-web 的依赖后，就无须在引入
spring-boot-starter 核心启动器的依赖了。
            2)spring-boot-starter-web 默认使用嵌入式的tomcat作为web容器对外提供HTTP服务。
        -->
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-web</artifactId>
```

```
        </dependency>
        <!-- 数据校验 -->
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-validation</artifactId>
        </dependency>
        <!-- jpa -->
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-data-jpa</artifactId>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-test</artifactId>
            <scope>test</scope>
        </dependency>

        <!--lombok-->
        <dependency>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
            <version>${lombok.version}</version>
            <scope>provided</scope>
        </dependency>

        <!-- mybatis-plus依赖 -->
        <dependency>
            <groupId>com.baomidou</groupId>
            <artifactId>mybatis-plus-boot-starter</artifactId>
            <version>${mybatis-plus.version}</version>
            <exclusions>
                <exclusion>
                    <groupId>org.mybatis</groupId>
                    <artifactId>mybatis-spring</artifactId>
                </exclusion>
            </exclusions>
        </dependency>
        <!--
            主要是由于 mybatis-plus 中 mybatis 的整合包版本不够导致的；排除 mybatis-plus 中自带的 mybatis 整合包，单独引入即可
            mybatis-spring:https://mvnrepository.com/artifact/org.mybatis/mybatis-spring
        -->
        <dependency>
            <groupId>org.mybatis</groupId>
            <artifactId>mybatis-spring</artifactId>
            <version>${mybatis-spring.version}</version>
        </dependency>

        <!--  代码生成 -->
        <dependency>
            <groupId>com.baomidou</groupId>
            <artifactId>mybatis-plus-generator</artifactId>
            <version>${mybatis-plus-generator.version}</version>
        </dependency>
        <!--  代码生成: velocity模板-->
        <dependency>
            <groupId>org.apache.velocity</groupId>
```

```
            <artifactId>velocity-engine-core</artifactId>
            <version>${velocity-engine-core.version}</version>
        </dependency>
        <!--  代码生成: freemarker模板-->
        <dependency>
            <groupId>org.freemarker</groupId>
            <artifactId>freemarker</artifactId>
            <version>${freemarker.version}</version>
        </dependency>

        <!-- mysql依赖 -->
        <dependency>
            <groupId>com.mysql</groupId>
            <artifactId>mysql-connector-j</artifactId>
            <version>${mysql.version}</version>
        </dependency>

        <!-- druid 依赖 -->
        <dependency>
            <groupId>com.alibaba</groupId>
            <artifactId>druid-spring-boot-starter</artifactId>
            <version>${druid.version}</version>
        </dependency>

        <!-- websocket 依赖 -->
        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-websocket</artifactId>
            <version>${spring-websocket.version}</version>
        </dependency>
        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-messaging</artifactId>
            <version>${spring-websocket.version}</version>
        </dependency>

        <!-- shiro 依赖 -->
        <!--<dependency>
            <groupId>org.apache.shiro</groupId>
            <artifactId>shiro-spring</artifactId>
            <version>${shiro-spring.version}</version>
            <scope>compile</scope>
        </dependency>
        <dependency>
            <groupId>org.apache.shiro</groupId>
            <artifactId>shiro-ehcache</artifactId>
            <version>${shiro-spring.version}</version>
        </dependency>-->
        <dependency>
            <groupId>org.apache.shiro</groupId>
            <artifactId>shiro-spring</artifactId>
            <classifier>jakarta</classifier>
            <version>${shiro-spring.version}</version>
            <!-- 排除仍使用了javax.servlet的依赖 -->
            <exclusions>
                <exclusion>
                    <groupId>org.apache.shiro</groupId>
                    <artifactId>shiro-core</artifactId>
```

```
            </exclusion>
            <exclusion>
                <groupId>org.apache.shiro</groupId>
                <artifactId>shiro-web</artifactId>
            </exclusion>
        </exclusions>
    </dependency>
    <dependency>
        <groupId>org.apache.shiro</groupId>
        <artifactId>shiro-ehcache</artifactId>
        <version>${shiro-spring.version}</version>
    </dependency>
    <!-- 引入适配jakarta的依赖包 -->
    <dependency>
        <groupId>org.apache.shiro</groupId>
        <artifactId>shiro-core</artifactId>
        <classifier>jakarta</classifier>
        <version>${shiro-spring.version}</version>
    </dependency>
    <dependency>
        <groupId>org.apache.shiro</groupId>
        <artifactId>shiro-web</artifactId>
        <classifier>jakarta</classifier>
        <version>${shiro-spring.version}</version>
        <exclusions>
            <exclusion>
                <groupId>org.apache.shiro</groupId>
                <artifactId>shiro-core</artifactId>
            </exclusion>
        </exclusions>
    </dependency>


    <dependency>
        <groupId>org.apache.commons</groupId>
        <artifactId>commons-lang3</artifactId>
        <version>${commons-lang3.version}</version>
    </dependency>
    <dependency>
        <groupId>org.apache.poi</groupId>
        <artifactId>poi</artifactId>
        <version>${poi.version}</version>
    </dependency>
    <dependency>
        <groupId>cn.afterturn</groupId>
        <artifactId>easypoi-base</artifactId>
        <version>${easypoi.version}</version>
    </dependency>
    <dependency>
        <groupId>com.github.axet</groupId>
        <artifactId>kaptcha</artifactId>
        <version>${kaptcha.version}</version>
    </dependency>

    <!-- commons-io -->
    <dependency>
        <groupId>commons-io</groupId>
        <artifactId>commons-io</artifactId>
```

```
            <version>${commons-io.version}</version>
            <scope>compile</scope>
        </dependency>

        <!-- gson -->
        <dependency>
            <groupId>com.google.code.gson</groupId>
            <artifactId>gson</artifactId>
            <version>${gson.version}</version>
        </dependency>

        <!-- junit -->
        <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>${junit.version}</version>
            <scope>test</scope>
        </dependency>

        <!-- netty -->
        <dependency>
            <groupId>io.netty</groupId>
            <artifactId>netty-all</artifactId>
            <version>${netty-all.version}</version>
        </dependency>
        <!-- mina-core -->
        <dependency>
            <groupId>org.apache.mina</groupId>
            <artifactId>mina-core</artifactId>
            <version>${mina-core.version}</version>
        </dependency>

        <!-- hutool工具类 -->
        <dependency>
            <groupId>cn.hutool</groupId>
            <artifactId>hutool-all</artifactId>
            <version>${hutool-all.version}</version>
        </dependency>

        <!-- https://mvnrepository.com/artifact/org.springdoc/springdoc-openapi-
starter-webmvc-ui -->
        <!--<dependency>
            <groupId>org.springdoc</groupId>
            <artifactId>springdoc-openapi-starter-webmvc-ui</artifactId>
            <version>2.5.0</version>
        </dependency>-->
        <dependency>
            <groupId>com.github.xiaoymin</groupId>
            <artifactId>knife4j-openapi3-jakarta-spring-boot-starter</artifactId>
            <version>${knife4j.version}</version>
        </dependency>

        <!--jackson-->
        <dependency>
            <groupId>com.fasterxml.jackson.core</groupId>
            <artifactId>jackson-annotations</artifactId>
            <version>${jackson.version}</version>
        </dependency>
```

```
        <dependency>
            <groupId>com.fasterxml.jackson.core</groupId>
            <artifactId>jackson-core</artifactId>
            <version>${jackson.version}</version>
        </dependency>
        <dependency>
            <groupId>com.fasterxml.jackson.core</groupId>
            <artifactId>jackson-databind</artifactId>
            <version>${jackson.version}</version>
        </dependency>
        <dependency>
            <groupId>com.fasterxml.jackson.dataformat</groupId>
            <artifactId>jackson-dataformat-xml</artifactId>
            <version>${jackson.version}</version>
        </dependency>

        <!-- fastjson2 -->
        <dependency>
            <groupId>com.alibaba.fastjson2</groupId>
            <artifactId>fastjson2</artifactId>
            <version>${fastjson2.version}</version>
        </dependency>

        <!-- quartz -->
        <dependency>
            <groupId>org.quartz-scheduler</groupId>
            <artifactId>quartz</artifactId>
            <version>${quartz.version}</version>
        </dependency>
        <dependency>
            <groupId>org.quartz-scheduler</groupId>
            <artifactId>quartz-jobs</artifactId>
            <version>${quartz.version}</version>
        </dependency>

        <!--HttpClient-->
        <dependency>
            <groupId>commons-httpclient</groupId>
            <artifactId>commons-httpclient</artifactId>
            <version>3.1</version>
        </dependency>

        <!-- 可以根据两行根数据计算卫星坐标 -->
        <dependency>
            <groupId>uk.me.g4dpz</groupId>
            <artifactId>predict4java</artifactId>
            <version>1.1.3</version>
        </dependency>

        <!-- screw核心 -->
        <dependency>
            <groupId>cn.smallbun.screw</groupId>
            <artifactId>screw-core</artifactId>
            <version>${screw.version}</version>
        </dependency>
        <!-- HikariCP -->
        <dependency>
            <groupId>com.zaxxer</groupId>
```

```
            <artifactId>HikariCP</artifactId>
            <version>${hikaricp.version}</version>
        </dependency>

        <!-- spring-cloud-starter -->
        <dependency>
            <groupId>org.springframework.cloud</groupId>
            <artifactId>spring-cloud-starter</artifactId>
            <version>${spring-cloud.version}</version>
        </dependency>
        <!-- openfeign -->
        <dependency>
            <groupId>org.springframework.cloud</groupId>
            <artifactId>spring-cloud-starter-openfeign</artifactId>
            <version>${spring-cloud-openfeign.version}</version>
        </dependency>
        <!-- spring-cloud-starter-netflix-hystrix -->
        <dependency>
            <groupId>org.springframework.cloud</groupId>
            <artifactId>spring-cloud-starter-netflix-hystrix</artifactId>
            <version>${hystrix.version}</version>
        </dependency>
        <dependency>
            <groupId>org.hibernate.common</groupId>
            <artifactId>hibernate-commons-annotations</artifactId>
            <version>6.0.6.Final</version>
        </dependency>

    </dependencies>

    <build>
        <plugins>
            <plugin>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-maven-plugin</artifactId>
            </plugin>
        </plugins>
    </build>

</project>
```

附录C：ShiroConfig配置(`ShiroConfig.java`)

```
package cn.keyidea.common.config;

import cn.keyidea.sys.oauth2.Oauth2Filter;
import cn.keyidea.sys.oauth2.Oauth2Realm;
import jakarta.servlet.Filter;
import net.sf.ehcache.CacheManager;
import org.apache.shiro.cache.ehcache.EhCacheManager;
import org.apache.shiro.mgt.SecurityManager;
import org.apache.shiro.session.mgt.SessionManager;
import org.apache.shiro.session.mgt.eis.MemorySessionDAO;
import org.apache.shiro.spring.LifecycleBeanPostProcessor;
```

```java
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.springframework.aop.framework.autoproxy.DefaultAdvisorAutoProxyCreator;
import org.springframework.beans.factory.config.BeanDefinition;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.context.annotation.Role;

import java.util.HashMap;
import java.util.LinkedHashMap;
import java.util.Map;

/**
 * Shiro配置
 */
@Configuration
public class ShiroConfig
{

    /**
     * 加盐参数
     */
    public final static String hashAlgorithmName = "MD5";

    /**
     * 循环次数
     */
    public final static int hashIterations = 1024;

    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean("cacheManager2")
    CacheManager cacheManager()
    {
        return CacheManager.create();
    }

    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean
    public EhCacheManager ehCacheManager()
    {
        EhCacheManager em = new EhCacheManager();
        em.setCacheManager(cacheManager());
        return em;
    }

    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean("sessionManager")
    public SessionManager sessionManager()
    {
        DefaultWebSessionManager sessionManager = new DefaultWebSessionManager();
        sessionManager.setSessionValidationSchedulerEnabled(true);
        sessionManager.setSessionIdCookieEnabled(true);
        sessionManager.setSessionDAO(new MemorySessionDAO());
        return sessionManager;
    }
```

```
    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean("securityManager")
    public SecurityManager securityManager(Oauth2Realm oAuth2Realm, SessionManager
sessionManager)
    {
        DefaultWebSecurityManager securityManager = new DefaultWebSecurityManager();
        securityManager.setRealm(oAuth2Realm);
        securityManager.setCacheManager(ehCacheManager());
        securityManager.setSessionManager(sessionManager);

        return securityManager;
    }

    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean("shiroFilter")
    public ShiroFilterFactoryBean shirFilter(SecurityManager securityManager)
    {
        ShiroFilterFactoryBean shiroFilter = new ShiroFilterFactoryBean();
        shiroFilter.setSecurityManager(securityManager);

        //oauth过滤
        Map<String, Filter> filters = new HashMap<>(16);
        filters.put("oauth2", new Oauth2Filter());
        shiroFilter.setFilters(filters);

        /* 拦截器 */
        // 配置不会被拦截的链接 顺序判断
        Map<String, String> filterMap = new LinkedHashMap<>();
        filterMap.put("/sys/sysLogin/login", "anon");
        filterMap.put("/sys/sysLogin/captcha.jpg", "anon");
        filterMap.put("/websocket/**", "anon");
        // // Shiro放行swagger2(Knife4j)
        // filterMap.put("/doc.html", "anon");
        // filterMap.put("/swagger-resources/**", "anon");
        // filterMap.put("/v2/**", "anon");
        // filterMap.put("/webjars/**", "anon");

        // Shiro放行swagger3(Knife4j)
        filterMap.put("/doc.html", "anon");
        filterMap.put("/swagger-resources/**", "anon");
        filterMap.put("/v3/**", "anon");
        filterMap.put("/webjars/**", "anon");
        filterMap.put("/swagger-ui/**", "anon");

        // 后台接口列表(示例)
        // filterMap.put("/v1/**", "anon");
        filterMap.put("/v1/health", "anon");
        filterMap.put("/v1/backgroundPicture/**", "anon"); // 测试

        filterMap.put("/v1/networkInfo/**", "anon");
        filterMap.put("/v1/networkConf/**", "anon");

        // 模板资源下载目录配置
        filterMap.put("/template/**", "anon");
        filterMap.put("/markdown/**", "anon");

        filterMap.put("/**", "oauth2");
```

```
        shiroFilter.setFilterChainDefinitionMap(filterMap);

        return shiroFilter;
    }

    @Bean("lifecycleBeanPostProcessor")
    public LifecycleBeanPostProcessor lifecycleBeanPostProcessor()
    {
        return new LifecycleBeanPostProcessor();
    }

    @Bean
    public DefaultAdvisorAutoProxyCreator defaultAdvisorAutoProxyCreator()
    {
        DefaultAdvisorAutoProxyCreator proxyCreator = new
DefaultAdvisorAutoProxyCreator();
        proxyCreator.setProxyTargetClass(true);
        return proxyCreator;
    }

    /**
     * 开启shiro aop注解支持.
     * 使用代理方式;所以需要开启代码支持;
     *
     * @param securityManager
     * @return
     */
    @Role(BeanDefinition.ROLE_INFRASTRUCTURE)
    @Bean
    public AuthorizationAttributeSourceAdvisor
authorizationAttributeSourceAdvisor(SecurityManager securityManager)
    {
        AuthorizationAttributeSourceAdvisor advisor = new
AuthorizationAttributeSourceAdvisor();
        advisor.setSecurityManager(securityManager);
        return advisor;
    }

}
```

附录D：完整 `application.yml` 配置

```yaml
# Tomcat
server:
  tomcat:
    uri-encoding: UTF-8
    max-threads: 1024
    min-spare-threads: 30
    accept-count: 5000
    connection-timeout: 1000ms
  port: 8114
  servlet:
    context-path: /fatp

# MyBatis Plus
```

```yaml
mybatis-plus:
  check-config-location: true
  configuration:
    #是否开启自动驼峰命名规则（camel case）映射
    map-underscore-to-camel-case: true
    #全局地开启或关闭配置文件中的所有映射器已经配置的任何缓存
    cache-enabled: false
    call-setters-on-nulls: true
    #配置JdbcTypeForNull, oracle数据库必须配置
    jdbc-type-for-null: 'null'
    #MyBatis 自动映射时未知列或未知属性处理策略 NONE：不做任何处理 (默认值), WARNING：以日志的形式打印相关警告信息, FAILING：当作映射失败处理，并抛出异常和详细信息
    auto-mapping-unknown-column-behavior: warning
    # 打印SQL
    log-impl: org.apache.ibatis.logging.stdout.StdOutImpl
  global-config:
    banner: false
    db-config:
      #主键类型  0:"数据库ID自增", 1:"未设置主键类型",2:"用户输入ID (该类型可以通过自己注册自动填充插件进行填充)", 3:"全局唯一ID (idWorker), 4:全局唯一ID (UUID), 5:字符串全局唯一ID (idWorker的字符串表示)";
      id-type: auto
      #字段验证策略 IGNORED:"忽略判断", NOT_NULL:"非NULL判断", NOT_EMPTY:"非空判断", DEFAULT默认的,一般只用于注解里(1. 在全局里代表 NOT_NULL,2. 在注解里代表 跟随全局)
      field-strategy: NOT_NULL
      #驼峰下划线转换
      column-underline: true
      #数据库大写下划线转换
      #capital-mode: true
      #逻辑删除值
      logic-delete-value: 1
      #逻辑未删除值
      logic-not-delete-value: 0
      db-type: mysql

spring:
  # 环境 dev|local
  profiles:
    active: local
  datasource:
    druid:
      initialSize: 2
      minIdle: 2
      maxActive: 8 #业务忙可以加大
      validationQuery: select 1 from dual
      filters: stat ,wall,slf4j
      connectProperties: druid.stat.slowSqlMillis=50
      connection-init-sqls: set names utf8mb4
      # 合并多个DruidDataSource的监控数据
      useGlobalDataSourceStat: true
      stat-view-servlet:
        enabled: true #是否启用StatViewServlet默认值true
        url-pattern: /druid2/*
        reset-enable: false
        login-username: admin
        login-password: KEYM0ZcjPYk9aUCIeH21CWyYhcTK6te0
        allow: #IP
        deny:  #IP
```

```
      web-stat-filter:
        exclusions: "*.js,*.gif,*.jpg,*.png,*.css,*.ico,/druid2/*"
  main:
    allow-bean-definition-overriding: true
  # jackson时间格式化
  jackson:
    time-zone: GMT+8
    date-format: yyyy-MM-dd HH:mm:ss
  servlet:
    multipart:
      max-file-size: 100MB
      max-request-size: 100MB
      enabled: true
  #配置自动建表：update:没有表新建，有表更新操作,控制台显示建表语句
  jpa:
    hibernate:
      ddl-auto: update
    show-sql: true
    # spring.jpa.open-in-view 属性被默认启用，需要手动配置该属性，去掉这个警告
    # open-in-view 是指延时加载的一些属性数据，可以在页面展现的时候，保持session不关闭，从而保证能在页面进行延时加载
    open-in-view: false
#    properties:
#      hibernate:
#        dialect: org.hibernate.dialect.MySQL57Dialect
  # 设置静态下载资源目录
  mvc:
    # 会覆盖默认配置，需要在static-locations添加默认的内部目录和自定义目录
    static-path-pattern: /**
    # 修复SpringBoot2.6+与Swagger3.0+兼容问题：https://zhuanlan.zhihu.com/p/450064507
    pathmatch:
      matching-strategy: ant_path_matcher
#  resources:
#    static-locations: classpath:/static/*
    throw-exception-if-no-handler-found: true

# springdoc-openapi项目配置
springdoc:
  # get请求多参数时不需要添加额外的@ParameterObject和@Parameter注解
  default-flat-param-object: true
  # 启用swaggerUI
  swagger-ui:
    #自定义swagger前端请求路径，输入http：127.0.0.1:8080/swagger-ui.html会自动重定向到swagger页面
    path: /swagger-ui.html
    enabled: true
#    tags-sorter: alpha # 标签的排序方式 alpha:按照子母顺序排序（@ApiSupport注解排序不生效，因此需要设置）
    #operations-sorter: alpha # 接口的排序方式 alpha:按照子母顺序排序（@ApiOperationSupport注解排序生效，因此这里不作设置）
  # 启用文档，默认开启
  api-docs:
    path: /v3/api-docs    #swagger后端请求地址
    enabled: true
#knife4j相关配置 可以不用改
knife4j:
  enable: true    #开启knife4j，无需添加@EnableKnife4j注解
  setting:
```

```yaml
    language: ZH_CN   # 中文:ZH_CN 英文:EN
#    enable-swagger-models: true
#    enable-dynamic-parameter: false
    footer-custom-content: "<strong>Copyright © 2024 Keyidea. All Rights
Reversed</strong>"
    enable-footer-custom: true
    enable-footer: true
    enable-document-manage: true
#logging:
#  level:
#    # 日志以什么样的级别监控该接口 error | debug | info
#    cn.keyidea: debug

# ---------------------------- 配置netty 开始 ----------------------------
# 监听船端TCP请求
netty:
  tcp:
    # 需要开启时置为 true
    enable: false
    # 本程序接收TCP数据包IP；本地环境：172.16.1.230
    host: 0.0.0.0
    # 监听端口号
    port: 8090
# ---------------------------- 配置netty 结束 ----------------------------

# 全环境参数设置
keyidea:
  upload:
#    path: /home/www/fileupload # 230环境
    path: D:\ # 本地测试环境
    sysName: fatp
  default:
    password: 123456
  clear-dirty-data: false # 启动时是否清除脏数据(包括手动任务和自动任务)：false-不清理，true-清
理，默认不清理

---
spring:
  config:
    activate:
      on-profile: dev
  datasource:
    driverClassName: com.mysql.cj.jdbc.Driver
    url: jdbc:mysql://172.16.1.230:3306/fatp?
zeroDateTimeBehavior=convertToNull&autoReconnect=true&tinyInt1isBit=false&useSSL=false
&allowMultiQueries=true&useUnicode=true&characterEncoding=utf8
    username: root
    password: 123456
---
spring:
  config:
    activate:
      on-profile: local
  datasource:
    driverClassName: com.mysql.cj.jdbc.Driver
    url: jdbc:mysql://127.0.0.1:3306/fatp?
zeroDateTimeBehavior=convertToNull&autoReconnect=true&tinyInt1isBit=false&useSSL=false
&allowMultiQueries=true&useUnicode=true&characterEncoding=utf8
```

```
    username: root
    password: 123456
```

END