

# >\_ API分析与设计 答辩

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>\_ 架构

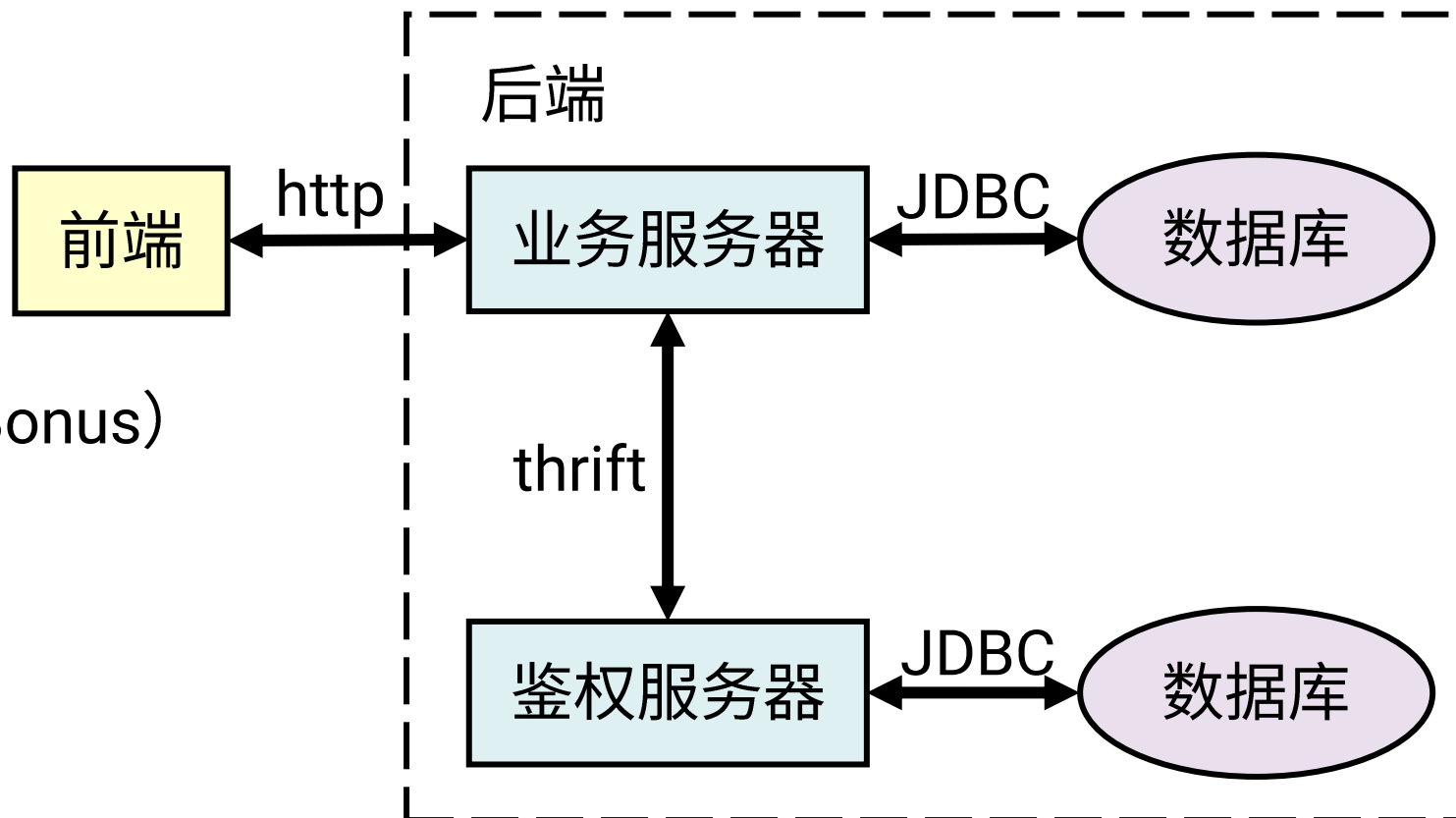
# 0x00

# Chapter 0x00

## 架构

- 前端：Vue
- 后端：Java SpringBoot
- 数据库：MySQL
- "分布式"：业务 + 鉴权 (Bonus)

- 前端<->后端：http
- 后端<->后端：thrift



# Chapter 0x00

## 架构：API设计

- 严格遵守 RESTful API

### 2.1 用户API

- 2.1.1 用户注册 POST -> /api/v1/users
- 2.1.2 用户登入 POST -> /api/v1/sessions
- 2.1.3 查询所有用户 GET -> /api/v1/users
- 2.1.4 查询单个用户 GET -> /api/v1/users/{uuid}

### 2.2 视频API

- 2.2.1 添加视频 POST -> /api/v1/videos
- 2.2.2 查询所有视频 GET -> /api/v1/videos
- 2.2.3 查询单个视频 GET -> /api/v1/videos/{uuid}
- 2.2.4 删除单个视频 DELETE -> /api/v1/videos/{uuid}
- 2.2.5 获取我的视频 GET -> /api/v1/playable\_videos/{uuid}
- 2.2.6 给视频点一个赞 POST -> /api/v1/videos/{uuid}/likes
- 2.2.7 查询视频点赞数 GET -> /api/v1/videos/{uuid}/likes
- 2.2.8 获取推荐视频 GET -> /api/v1/videos/recommendations



>\_ 功能

# 0x01

# Chapter 0x01

## 功能：前端

- 单页面
- 简陋但高效
  - 开发高效
  - 测试高效
  - 使用高效
- 视频播放

### 主菜单

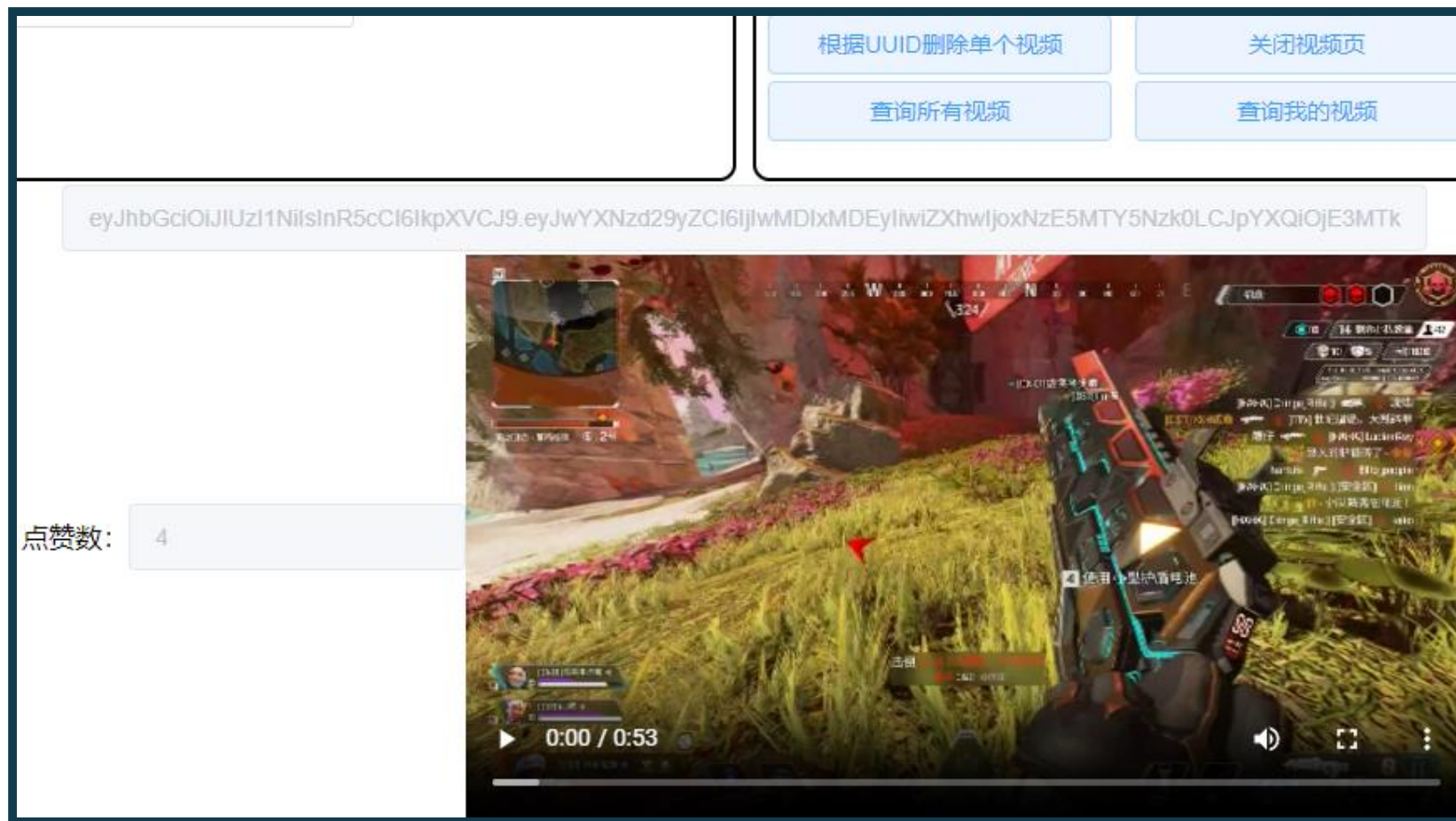
#### 用户面板

#### 视频面板

# Chapter 0x01

## 功能： 前端

- 单页面
- 简陋但高效
  - 开发高效
  - 测试高效
  - 使用高效
- 视频播放

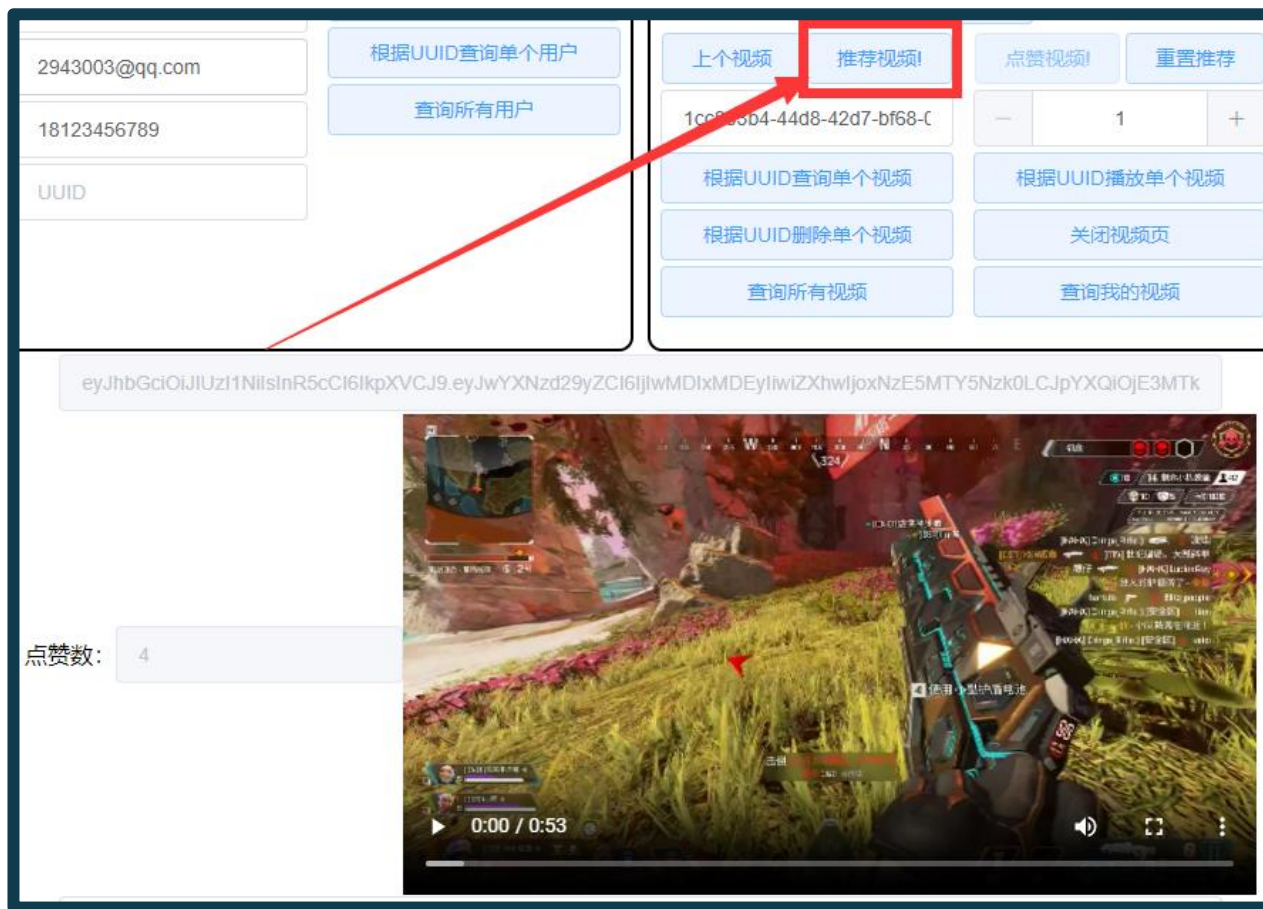




# Chapter 0x01

## 功能：推荐视频

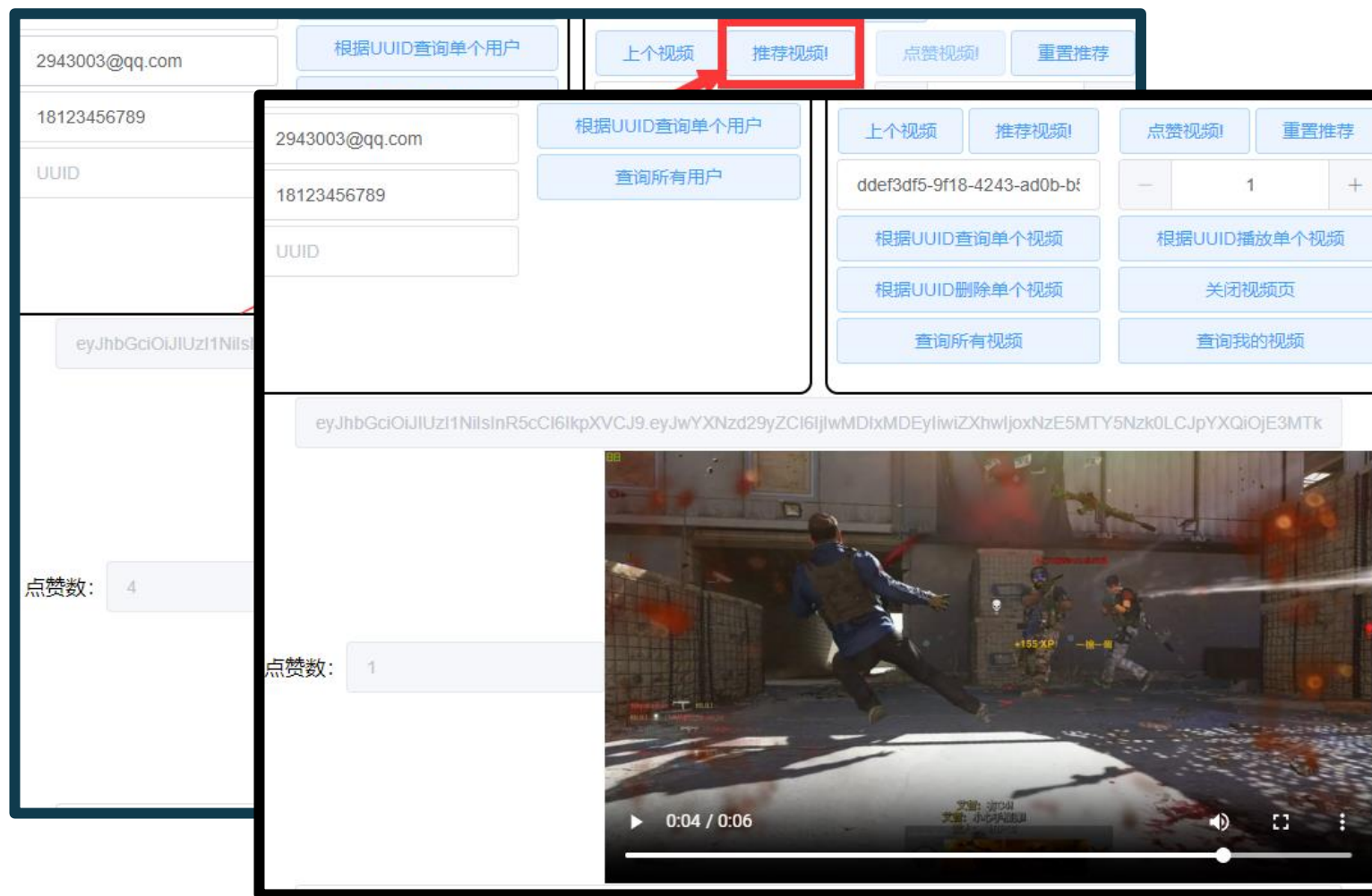
- 按点赞数推荐
- 不会推荐重复视频
- 上一个视频
- 下一个视频
- 点赞功能



# Chapter 0x01

## 功能：推荐视频

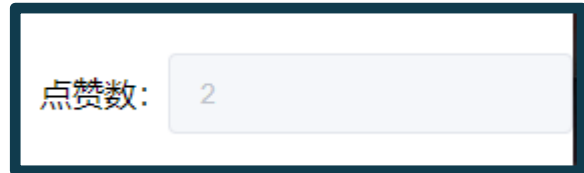
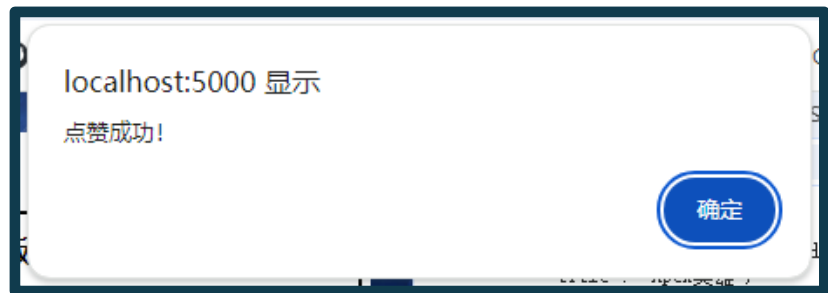
- 按点赞数推荐
- 不会推荐重复视频
- 上一个视频
- 下一个视频
- 点赞功能



# Chapter 0x01

## 功能：推荐视频

- 按点赞数推荐
- 不会推荐重复视频
- 上一个视频
- 下一个视频
- 点赞功能



# Chapter 0x01

## 功能：我的视频

- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）



# Chapter 0x01

## 功能：我的视频

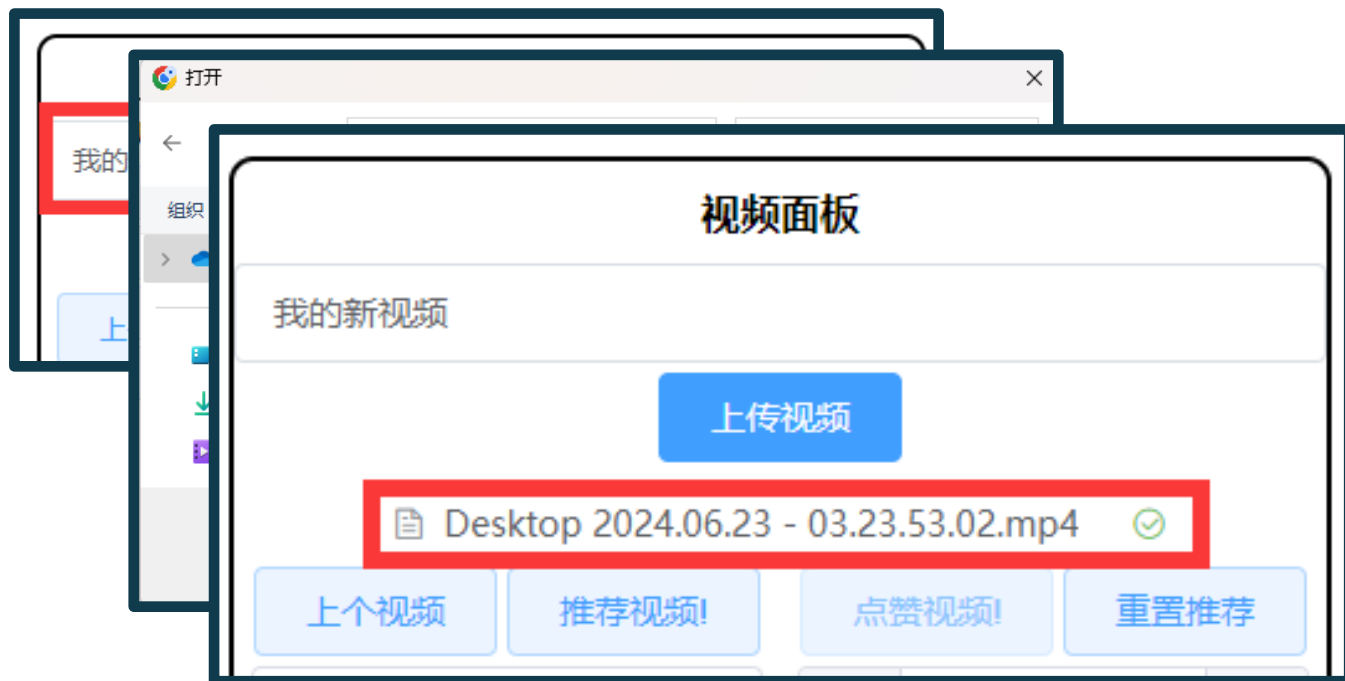
- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）



# Chapter 0x01

## 功能：我的视频

- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）



## 功能： 我的视频

- [illegible]

# Chapter 0x01

## 功能：我的视频

- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）

上个视频	推荐视频!	点赞视频!	重置推荐	
7d949408-efc5-4246-8461-5		-	2	+
根据UUID查询单个视频		根据UUID播放单个视频		
根据UUID删除单个视频		关闭视频页		
查询所有视频		查询我的视频		

eyJhbGciOiJIUzI1NiIsInR5cCI6
2024/6/23 03:30:20 删除成功



# Chapter 0x01

## 功能：我的视频

- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）

The screenshot shows a web interface for video management. At the top, there are four buttons: '上个视频' (Previous Video), '推荐视频!' (Recommend Video!), '点赞视频!' (Like Video!), and '重置推荐' (Reset Recommendation). Below these is a red box containing the video ID '7d949408-efc5-4246-8461-5'. To the right of this box is a pagination control with a minus sign, the number '2', and a plus sign. Below the pagination control are three buttons: 'ID播放单个视频' (Play Single Video by ID), '关闭视频页' (Close Video Page), and '查询我的视频' (Query My Videos). In the center, there is a large form with a '查询所有用户' (Query All Users) button. To the left of this button are two input fields, one containing '8123456789' and the other 'UID'. To the right of the '查询所有用户' button is a red box containing the video ID '7d949408-efc5-4246-8461-5'. Below this red box are two buttons: '根据UUID查询单个视频' (Query Single Video by UUID) and '根据UUID删除单个视频' (Delete Single Video by UUID). Below these two buttons is a '查询所有视频' (Query All Videos) button. At the bottom of the form, there is a red box containing the timestamp '2024/6/23 03:30:40' and the error message 'Error: 视频不存在' (Error: Video does not exist).

# Chapter 0x01

## 功能：我的视频

- 发布视频
- 查看我的视频（分页）
- 删除我的视频（权限）
  - 无权限用户

用户面板

user2

20021012

注册

登入

18123456789

UUID

查询所有用户

1cc883b4-44d8-42d7-bf68-c

根据UUID查询单个视频

根据UUID删除单个视频

查询所有视频

eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJwYXNzd29yZCI6IjIwMDI1MDIyMDEyIiwiaWF0IjoxNjE5MDEyMDEyLCJ1aW4iOiJ1aW4iLCJ0eXAiOiJKV1QiLCJkaXI6ImVudCJ9.eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJwYXNzd29yZCI6IjIwMDI1MDIyMDEyIiwiaWF0IjoxNjE5MDEyMDEyLCJ1aW4iOiJ1aW4iLCJ0eXAiOiJKV1QiLCJkaXI6ImVudCJ9

2024/6/23 03:37:03

Error: Forbidden

```
✖ ▶ DELETE http://localhost:8080/api/v1/videos/1cc883b4-44d8-42d7-bf68-03707ed0c151 403 (Forbidden)
✖ ▶ DELETE http://localhost:8080/api/v1/videos/1cc883b4-44d8-42d7-bf68-03707ed0c151 403 (Forbidden)
✖ ▶ DELETE http://localhost:8080/api/v1/videos/1cc883b4-44d8-42d7-bf68-03707ed0c151 403 (Forbidden)
```

# Chapter 0x01

## 功能：用户管理

- 用户登录
- 用户注册
- 用户注销

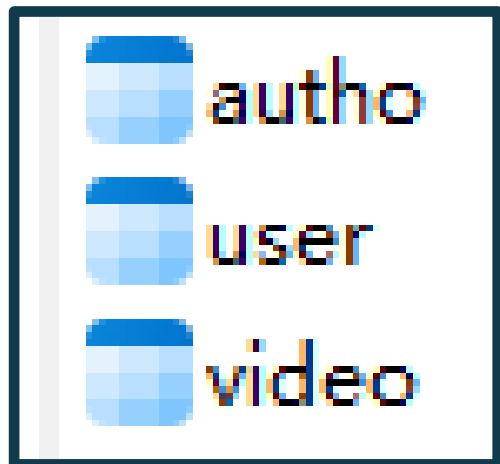
### 用户面板

user2	注册
20021012	登入
2943003@qq.com	根据UUID查询单个用户
18123456789	查询所有用户
UUID	

# Chapter 0x01

## 功能：数据库设计

- 数据库：MySQL



uuid	password
▶ 19d78067-bd0b-4b41-8740-ae394db9489f	663e33644c3166a0a75b
45e4da4f-18e0-4ea3-8be4-3a073214eaa6	250908eebc14df5c2f93d
50809122-581d-49cb-8187-164dc1be8356	663e33644c3166a0a75b
929c329e-eef4-4312-84d9-54193d52b3e2	663e33644c3166a0a75b
9c015f59-4ab1-49cd-a69d-6e070ca798c4	663e33644c3166a0a75b

uuid	username	password	email	telephone
▶ 19d78067-bd0b-4b41-8740-ae394db9489f	user1	***	2943003@qq.com	18123456789
45e4da4f-18e0-4ea3-8be4-3a073214eaa6	user_different	***	different@gmail.com	11451419198
50809122-581d-49cb-8187-164dc1be8356	user2	***	2943003@qq.com	18123456789
929c329e-eef4-4312-84d9-54193d52b3e2	user	***	2943003@qq.com	18123456789
9c015f59-4ab1-49cd-a69d-6e070ca798c4	admin	***	2943003@qq.com	18123456789

uuid	title	filepath	likes	userUuid
▶ 1cc883b4-44d8-42d7-bf68-	Apex英雄	aed002232df21407772d	5	929c329e-eef4-4312-84d
4ee742f6-d588-410b-98b5-	COD	39eb34e158fdc401f2bfb	0	929c329e-eef4-4312-84d
ddef3df5-9f18-4243-ad0b-l	COD-一个重复视频	39eb34e158fdc401f2bfb	3	929c329e-eef4-4312-84d
ec236c3f-7069-439f-beb7-t	后室	104c54db20480e20eb93	1	929c329e-eef4-4312-84d

# Chapter 0x01

## 功能：视频存储设计

- Redis
- MySQL

# Chapter 0x01

## 功能：视频存储设计

- ~~Redis~~
- ~~MySQL~~
- 文件系统

# Chapter 0x01

## 功能：视频存储设计

- Redis
- MySQL
- 文件系统
- Bonus：通过文件 Hash 值实现去重

uuid	title	filepath	lib
1cc883b4-44d8-42d7-bf68-4ee742f6-d588-410b-98b5-ddef3df5-9f18-4243-ad0b-1ec236c3f-7069-439f-beb7-1	Apex英雄	aed002232df21407772d	
4ee742f6-d588-410b-98b5-ddef3df5-9f18-4243-ad0b-1ec236c3f-7069-439f-beb7-1	COD	39eb34e158fdc401f2bfb	
ddef3df5-9f18-4243-ad0b-1ec236c3f-7069-439f-beb7-1	COD-一个重复视频	39eb34e158fdc401f2bfb	
ec236c3f-7069-439f-beb7-1	后室	104c54db20480e20eb93	

名称	日期	类型	大小	时长
.placeholder	2024/6/9 23:47	PLACEHOLDER ...	0 KB	
39eb34e158fdc401f2...	2020/9/13 23:10	MP4 Video File (...)	16,217 KB	00:00:06
104c54db20480e20e...	2024/2/14 0:07	MP4 Video File (...)	21,366 KB	00:00:24
aed002232df214077...	2023/11/9 1:42	MP4 Video File (...)	128,343 KB	00:00:53

# Chapter 0x01

## 功能：日志、集成监控能力

- AOP + Logback：记录了每个请求的 具体信息 + 耗时信息

```
Aspect - Entering method: "getAllVideos" from IP: "0:0:0:0:0:0:1" with arguments: "[1]"
Aspect - Exiting method: "getAllVideos" with result: "{\"headers\":{},\"body\":{\"code\":200,\"data\":{\"uuid\":\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"title\":\"Apex英雄\",\"filepath\":
Aspect - Entering method: "getVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"1cc883b4-44d8-42d7-bf68-03707ed0c151\"]"
Aspect - Exiting method: "getVideo" with result: "{\"headers\":{},\"body\":{\"code\":200,\"data\":{\"uuid\":\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"title\":\"Apex英雄\",\"filepath\":\"aed6
gAspect - Entering method: "deleteVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJwYXNz
gAspect - Exiting method: "deleteVideo" with result: "{\"headers\":{},\"body\":{\"code\":403,\"message\":\"Forbidden\",\"statusCode\":\"FORBIDDEN\",\"statusCodeValue\":403}\" in 2 ms
Aspect - Entering method: "deleteVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJwYXNz
Aspect - Exiting method: "deleteVideo" with result: "{\"headers\":{},\"body\":{\"code\":403,\"message\":\"Forbidden\",\"statusCode\":\"FORBIDDEN\",\"statusCodeValue\":403}\" in 2 ms
Aspect - Entering method: "deleteVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJwYXNz
Aspect - Exiting method: "deleteVideo" with result: "{\"headers\":{},\"body\":{\"code\":403,\"message\":\"Forbidden\",\"statusCode\":\"FORBIDDEN\",\"statusCodeValue\":403}\" in 3 ms
Aspect - Entering method: "getVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"1cc883b4-44d8-42d7-bf68-03707ed0c151\"]"
Aspect - Exiting method: "getVideo" with result: "{\"headers\":{},\"body\":{\"code\":200,\"data\":{\"uuid\":\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"title\":\"Apex英雄\",\"filepath\":\"aed6
Aspect - Entering method: "register" from IP: "0:0:0:0:0:0:1" with arguments: "[{\"username\":\"user_different_passwd\",\"password\":\"***\",\"email\":\"different@gmail.com\",\"telep
Aspect - Exiting method: "register" with result: "{\"headers\":{},\"body\":{\"code\":200,\"message\":\"注册成功\",\"statusCode\":\"OK\",\"statusCodeValue\":200}\" in 11 ms
gAspect - Entering method: "getAllVideos" from IP: "0:0:0:0:0:0:1" with arguments: "[1]"
gAspect - Exiting method: "getAllVideos" with result: "{\"headers\":{},\"body\":{\"code\":200,\"data\":{\"uuid\":\"1cc883b4-44d8-42d7-bf68-03707ed0c151\",\"title\":\"Apex英雄\",\"filepath\"
Aspect - Entering method: "getAllVideos" from IP: "0:0:0:0:0:0:1" with arguments: "[1]"
```





# Chapter 0x01

## 功能：日志、集成监控能力

- AOP + Logback：记录了每个请求的 具体信息 + 耗时信息
- 本地文件备份
- 按照时间/大小 输出至不同文件

```
2024-06-23 03:16:27 [http-nio-8080-exec-4] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3df
2024-06-23 03:16:27 [http-nio-8080-exec-8] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getLikes" with result: "{\"headers\":{\"code\":\"200\",\"data\":1,\"messag
功\"},\"statusCode\":\"OK\",\"statusCodeValue\":200}" in 1 ms
2024-06-23 03:16:27 [http-nio-8080-exec-4] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 1 ms
2024-06-23 03:16:27 [http-nio-8080-exec-5] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3df
2024-06-23 03:16:27 [http-nio-8080-exec-5] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 1 ms
2024-06-23 03:16:27 [http-nio-8080-exec-6] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3df
2024-06-23 03:16:27 [http-nio-8080-exec-6] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 1 ms
2024-06-23 03:16:27 [http-nio-8080-exec-10] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3d
2024-06-23 03:16:27 [http-nio-8080-exec-10] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 2 ms
2024-06-23 03:16:27 [http-nio-8080-exec-7] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3df
2024-06-23 03:16:27 [http-nio-8080-exec-7] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 1 ms
2024-06-23 03:16:27 [http-nio-8080-exec-1] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Entering method: "getPlayableVideo" from IP: "0:0:0:0:0:0:1" with arguments: "[\"ddef3df
2024-06-23 03:16:27 [http-nio-8080-exec-1] INFO com.yxhxianyu.tiktok.logging.LoggingAspect - Exiting method: "getPlayableVideo" with result: "[Cannot serialize result]" in 1 ms
```

# Chapter 0x01

## 功能：安全校验

- 将Token置入Header的Authorization字段
- 对所有需要检验账号的接口都加了权限校验
  - 只有admin和创建者可以删除对应视频
  - 只有admin可以查询所有账户信息
  - 查看视频不需要权限

# Chapter 0x01

## 功能：安全校验

- 将Token置入Header的Authorization字段
- 对所有需要检验账号的接口都加了权限校验
- 业务服务器不储存密码，鉴权服务器储存密码
- 密码通过哈希+盐值进行单向加密
- 基于JWT，使用SHA-256加密，Token自动过期

# Chapter 0x01

## Bonus

- “分布式”：业务服务器 + 鉴权服务器
- RPC：使用 thrift 在后端之间实现远程过程调用
- 哈希去重：储存视频时，通过比较文件哈希值，避免储存多个相同视频
- 规范性：严格遵守 RESTful API
- 可迭代性：引入API版本号

# Chapter 0x01

## Bonus

- 安全性：根据 5A原则 进行自查
  - 身份认证：日志包含IP与鉴权信息、用户管理
  - 授权：非admin用户无法查看其他用户信息，无法删除他人视频.....
  - 访问控制：基于UUID与特殊用户进行访问控制
  - 可审计性：完善的日志（输入/输出/耗时）
  - 资产保护：密码不明文传输、不明文存储、密码和业务服务器隔离

# Chapter 0x02

## 团队分工

- 俞贤皓（组长）
  - 前后端框架搭建
  - 基础功能实现 + 哈希去重
  - 项目管理 + 文档 + PPT
- 邓人嘉（33%）
  - 我的视频管理模块
  - 日志模块
  - 安全性保证：Token，鉴权
- 付家齐（33%）
  - “分布式”系统
    - 鉴权服务器搭建
  - RPC：Thrift
- 谷雅丰（17%）
  - 文档 + 辅助
- 杨临悠（17%）
  - 文档 + 辅助

# Chapter 0x02

## 视频演示

注：因为视频文件过大，所以将视频文件存储在同目录下（./docs），PPT中不再存储冗余内容。



>\_ Thanks for Your Attention!  
# :>