

# Design Report

Assignment 2

<https://github.com/xiehao123/javaee-second-work.git>



得分点	实现状态	实现报告
Basic requirement	完成	1-2 章节
Rate Limiting	完成	4 章节
API pagination	完成	5 章节
Online API document	完成	5 章节
Oauth2	完成	3 章节
Cache	完成	5.3 章节
Hateos	完成	5.4 章节

# 1 项目数据库设计

## 1.1 实体关系图

项目现阶段，主要包含以下三个数据库表，实体之间的关系如下图所示：

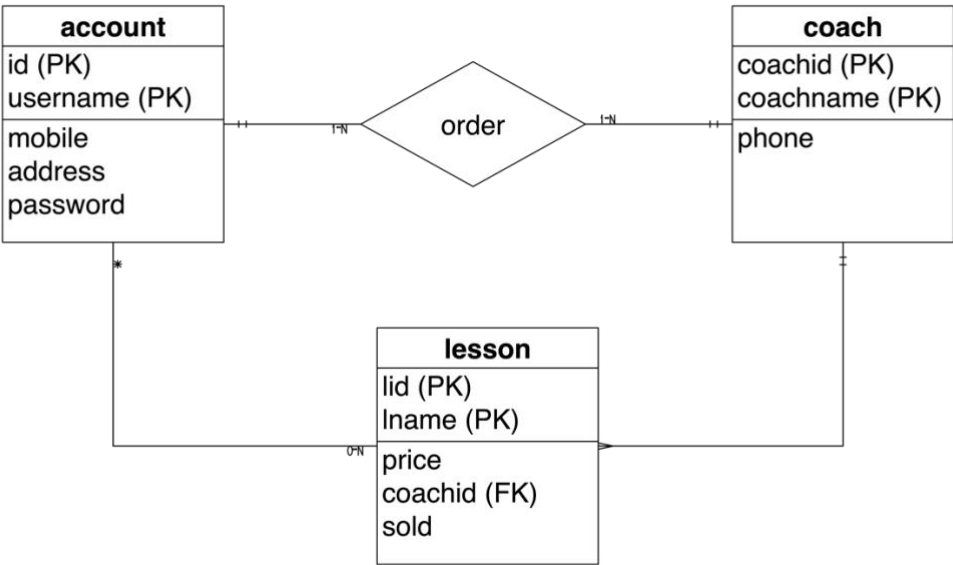


图1 实体关系图

一个用户可以上多个课程，每个教练也可以同时教授多个课程。而一个用户也选择多个教练学习，而两者之间是通过用户购买课程生成订单进行的。

## 1.2 数据库表格设计

### 1. account 表

Id	username	mobile	address	Password
integer	string	integer	string	sting

### 2. coach 表

id	coachname	phone
integer	string	integer

### 3. lesson 表

Lid	lname	price	coachid	sold
integer	string	double	intger	integer

2 部分 RESTFUL API

JAVA EE RESTFUL ONLINE DOCUMENT

JAVA EE 课堂作业在线文档

account-controller : Account Controller		Show/Hide	List Operations	Expand Operations
DELETE	/v1/account	删除用户（通过用户名）		
PUT	/v1/account	添加一个用户		
GET	/v1/collection/accounts	获取用户列表		
POST	/v1/login	登录		
coach-controller : Coach Controller		Show/Hide	List Operations	Expand Operations
DELETE	/v1/coach	删除一个教练		
PUT	/v1/coach	添加一个教练		
GET	/v1/collection/coaches	获取教练列表		

[ BASE URL: / , API VERSION: 1.0 ]

## 2.1 Restful API 获取所有用户列表

Method: GET

2.1.1 Request URL: /v1/collection/accounts

Demo:

Swagger UI interface showing the GET endpoint `/v1/collection/accounts`. The interface includes a response class example, parameters for `pageNum` and `pageSize`, and a table of response messages.

**Response Class (Status 200)**  
OK

**Model Example Value**

```
{
  "address": "string",
  "mobile": "string",
  "name": "string"
},
{
  "navigateFirstPage": 0,
  "navigateLastPage": 0,
  "navigatePages": 0,
  "navigatepageNums": [
    0
  ]
}
```

**Response Content Type** `*/*`

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
pageNum	1	pageNum	query	integer
pageSize	5	pageSize	query	integer

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
401	Unauthorized		
403	Forbidden		
404	Not Found		

[Try it out!](#) [Hide Response](#)

Swagger UI interface showing the curl command, request URL, request headers, and response body for the GET endpoint `/v1/collection/accounts`.

**Curl**

```
curl -X GET --header 'Accept: application/hal+json' 'http://localhost:8080/v1/collection/accounts?pageNum=1&pageSize=5'
```

**Request URL**

```
http://localhost:8080/v1/collection/accounts?pageNum=1&pageSize=5
```

**Request Headers**

```
{
  "Accept": "*/*"
}
```

**Response Body**

```
{
  "pageInfo": {
    "total": 0,
    "list": [],
    "pageNum": 1,
    "pageSize": 0,
    "size": 0,
    "startRow": 0,
    "endRow": 0,
    "pages": 0,
    "prePage": 0,
    "nextPage": 0,
    "isFirstPage": true,
    "isLastPage": true,
    "hasPreviousPage": false,
    "hasNextPage": false,
    "navigatePages": 8,
    "navigatepageNums": [],
    "navigateFirstPage": 0,

```

## 2.2 Restful API 添加一个用户

Method: POST

Request URL:

http://localhost:8080/v1/account?name=xiaoming&password=123456&mobile=12345678901&address=address

Params:

name

password

Demo:

Swagger UI

localhost:8080/swagger-ui.html#/account-controller/add\_accountUsingPUT

PUT /v1/account 添加一个用户

Response Class (Status 200)  
OK

Model Example Value

```
{
  "links": [
    {
      "deprecation": "string",
      "href": "string",
      "hreflang": "string",
      "media": "string",
      "rel": "string",
      "templated": true,
      "title": "string",
      "type": "string"
    }
  ]
}
```

Response Content Type \*/\*

Parameters

Parameter	Value	Description	Parameter Type	Data Type
name	xiaoming	name	query	string
password	123456	password	query	string
mobile	12345678901	mobile	query	string
address	address	address	query	string

Response Messages

HTTP Status Code	Reason	Response Model	Headers
201	Created		
401	Unauthorized		

Swagger UI

localhost:8080/swagger-ui.html#/account-controller/add\_accountUsingPUT

Try it out! Hide Response

Curl

```
curl -X PUT --header 'Content-Type: application/json' --header 'Accept: application/hal+json' 'http://localhost:8080/v1/account?name=xiaoming&password=123456&mobile=12345678901&address=address'
```

Request URL

http://localhost:8080/v1/account?name=xiaoming&password=123456&mobile=12345678901&address=address

Request Headers

```
{
  "Accept": "*/*"
}
```

Response Body

```
{
  "msg": "Success",
  "_links": {
    "self": {
      "href": "http://localhost:8080/v1/account?name=xiaoming&password=123456&mobile=12345678901&address=address"
    }
  }
}
```

Response Code

200

Response Headers

```
{
  "x-ratelimit-remaining-rate-limit-application_api_0_0_0_0_0_0_0_1": "999",
  "x-ratelimit-reset-rate-limit-application_api_0_0_0_0_0_0_0_1": "60000",
  "date": "Fri, 14 Jun 2019 05:01:44 GMT",
  "x-ratelimit-limit-rate-limit-application_api_0_0_0_0_0_0_0_1": "1000"
}
```

## 2.3 Restful API 通过用户名删除一个用户

Method: POST

Request URL:

http://localhost:8080/v1/account?name=xiaoming

Params:

name

Demo:

Swagger UI

DELETE /v1/account 删除用户 (通过用户名)

Response Class (Status 200)  
OK

Model Example Value

```
{
  "hreflang": "string",
  "media": "string",
  "rel": "string",
  "templated": true,
  "title": "string",
  "type": "string"
},
{
  "msg": "string"
}
```

Response Content Type

Parameters

Parameter	Value	Description	Parameter Type	Data Type
name	xiaoming	name	query	string

Response Messages

HTTP Status Code	Reason	Response Model	Headers
204	No Content		
401	Unauthorized		
403	Forbidden		

Try it out! Hide Response

Curl

```
curl -X DELETE --header 'Accept: application/hal+json' 'http://localhost:8080/v1/account?name=xiaoming'
```

Try it out! Hide Response

Curl

```
curl -X DELETE --header 'Accept: application/hal+json' 'http://localhost:8080/v1/account?name=xiaoming'
```

Request URL

```
http://localhost:8080/v1/account?name=xiaoming
```

Request Headers

```
{
  "Accept": "*/*"
}
```

Response Body

```
{
  "msg": "Success",
  "_links": {
    "self": {
      "href": "http://localhost:8080/v1/account?name=xiaoming"
    }
  }
}
```

Response Code

```
200
```

Response Headers

```
{
  "x-ratelimit-remaining-rate-limit-application_api_0_0_0_0_0_0_0_1": "999",
  "x-ratelimit-reset-rate-limit-application_api_0_0_0_0_0_0_0_1": "60000",
  "date": "Fri, 14 Jun 2019 05:04:41 GMT",
  "x-ratelimit-limit-rate-limit-application_api_0_0_0_0_0_0_0_1": "1000",
  "transfer-encoding": "chunked"
}
```

## 2.4 Restful API 添加一个教练

Method: POST

Request URL:

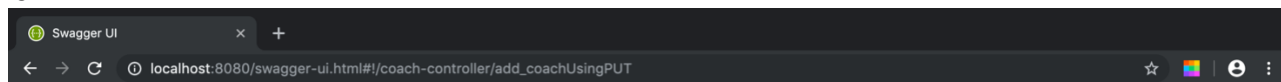
http://localhost:8080/v1/coach?name=coach\_2&phone=12312341234

Params:

name

phone

Demo:



PUT /v1/coach 添加一个教练

Response Class (Status 200)  
OK

Model Example Value

```
{
  "hreflang": "string",
  "media": "string",
  "rel": "string",
  "templated": true,
  "title": "string",
  "type": "string"
},
{
  "msg": "string"
}
```

Response Content Type: \*/\*

Parameters

Parameter	Value	Description	Parameter Type	Data Type
name	coach_2	name	query	string
phone	12312341234	phone	query	string

Response Messages

HTTP Status Code	Reason	Response Model	Headers
201	Created		
401	Unauthorized		
403	Forbidden		
404	Not Found		

Try it out! Hide Response

Curl

```
curl -X PUT --header 'Content-Type: application/json' --header 'Accept: application/hal+json' 'http://localhost:8080/v1
```

Request URL

```
http://localhost:8080/v1/coach?name=coach_2&phone=12312341234
```

Request Headers

```
{
  "Accept": "*/*"
}
```

Response Body

```
{
  "msg": "Success",
  "_links": {
    "self": {
      "href": "http://localhost:8080/v1/coach?name=coach_2&phone=12312341234"
    }
  }
}
```

Response Code

```
200
```

Response Headers

```
{
  "x-ratelimit-remaining-rate-limit-application_api_0_0_0_0_0_0_1": "999",
  "x-ratelimit-reset-rate-limit-application_api_0_0_0_0_0_0_1": "60000",
  "date": "Fri, 14 Jun 2019 05:06:19 GMT",
  "x-ratelimit-limit-rate-limit-application_api_0_0_0_0_0_0_1": "1000",
}
```



## 2.5 Restful API 获取所有教练列表

Method: GET

Request URL:

http://localhost:8080/v1/collection/coaches?pageNum=1&pageSize=2

Params:

name

phone

Demo:

Swagger UI interface showing the GET /v1/collection/coaches endpoint. The response class is Status 200 OK. The example value is a JSON object with a 'links' array. The parameters section shows pageNum=1 and pageSize=2. The response messages section shows HTTP status codes 401, 403, and 404.

```
{
  "links": [
    {
      "deprecation": "string",
      "href": "string",
      "hreflang": "string",
      "media": "string",
      "rel": "string",
      "templated": true,
      "title": "string",
      "type": "string"
    }
  ]
}
```

Parameter	Value	Description	Parameter Type	Data Type
pageNum	1	pageNum	query	integer
pageSize	2	pageSize	query	integer

HTTP Status Code	Reason	Response Model	Headers
401	Unauthorized		
403	Forbidden		
404	Not Found		

Swagger UI interface showing the Request URL, Request Headers, Response Body, and Response Code for the GET /v1/collection/coaches endpoint. The request URL is http://localhost:8080/v1/collection/coaches?pageNum=1&pageSize=2. The request headers show 'Accept: \*/\*'. The response body is a JSON object with 'pageInfo' and 'list' fields. The response code is 200.

```
http://localhost:8080/v1/collection/coaches?pageNum=1&pageSize=2
```

```
{
  "Accept": "*/*"
}
```

```
{
  "pageInfo": {
    "total": 2,
    "list": [
      {
        "name": "coach_1",
        "phone": "11111111111"
      },
      {
        "name": "coach_2",
        "phone": "12312341234"
      }
    ]
  },
  "pageNum": 1,
  "pageSize": 2,
  "size": 2,
  "startRow": 0,
  "endRow": 1,
  "pages": 1,
  "prePage": 0,
  "nextPage": 2
}
```

Response Code: 200

## 2.6 Restful API 通过电话删除一个教练

Method: POST

Request URL: [http://localhost:8080/v1/del\\_trainer\\_by\\_phone](http://localhost:8080/v1/del_trainer_by_phone)

Params:

phone

Demo:

The top screenshot shows the Swagger UI interface for the DELETE endpoint `/v1/coach`. The response class is `Status 200` with an `OK` status. The response content type is `*/*`. The parameters table shows a `phone` parameter with a value of `12312341234`. The response messages table shows status codes `204` (No Content), `401` (Unauthorized), and `403` (Forbidden). The curl command is `curl -X DELETE --header 'Accept: application/hal+json' 'http://localhost:8080/v1/coach?phone=12312341234'`.

The bottom screenshot shows the same endpoint with a curl command, request URL, request headers, response body, response code, and response headers.

**Curl**

```
curl -X DELETE --header 'Accept: application/hal+json' 'http://localhost:8080/v1/coach?phone=12312341234'
```

**Request URL**

```
http://localhost:8080/v1/coach?phone=12312341234
```

**Request Headers**

```
{
  "Accept": "*/*"
}
```

**Response Body**

```
{
  "msg": "Success",
  "_links": {
    "self": {
      "href": "http://localhost:8080/v1/coach?phone=12312341234"
    }
  }
}
```

**Response Code**

```
200
```

**Response Headers**

```
{
  "x-ratelimit-remaining-rate-limit-application_api_0_0_0_0_0_0_1": "999",
  "x-ratelimit-reset-rate-limit-application_api_0_0_0_0_0_0_1": "60000",
  "date": "Fri, 14 Jun 2019 05:12:54 GMT",
  "x-ratelimit-limit-rate-limit-application_api_0_0_0_0_0_0_1": "1000",
  "transfer-encoding": "chunked",
  "content-type": "application/hal+json; charset=UTF-8"
}
```

此时重新获取全部的教练列表，可以看到删除成功“12312341234”已经不见了。

Swagger UI interface showing a GET request to `localhost:8080/v1/collection/coaches?pageNum=1&pageSize=2`. The response body shows a single coach with name `"coach_1"` and phone `"1111111111"`.

**Request URL**

```
http://localhost:8080/v1/collection/coaches?pageNum=1&pageSize=2
```

**Request Headers**

```
{  "Accept": "*/*"}
```

**Response Body**

```
{  "pageInfo": {    "total": 1,    "list": [      {        "name": "coach_1",        "phone": "1111111111"      }    ]  },  "pageNum": 1,  "pageSize": 1,  "size": 1,  "startRow": 0,  "endRow": 0,  "pages": 1,  "prePage": 0,  "nextPage": 0,  "isFirstPage": true,  "isLastPage": true,  "hasPreviousPage": false,
```

**Response Code**

### 3 Oauth2

POST

http://localhost:8080/oauth/token?username=mingxuran&password=mingxuran&grant\_type=password&client\_...

Params

Send

Key	Value	Description	**
<input checked="" type="checkbox"/> username	mingxuran		
<input checked="" type="checkbox"/> password	mingxuran		
<input checked="" type="checkbox"/> grant_type	password		
<input checked="" type="checkbox"/> client_id	demoApp		
<input checked="" type="checkbox"/> client_secret	demoAppSecret		
New key	Value	Description	

Authorization

Headers

BodyPre-request ScriptTests

Key	Value	Description	***	Bulk Edit
New key	Value	Description		

Body

Cookies

Headers (11)Test Results

Status: 200 OK

Pretty

Raw

Preview

JSON

1

2

3

4

5

6

7

{

"access\_token": "92188714-4aac-49ed-9ea3-c90ff891dffb",

"token\_type": "bearer",

"refresh\_token": "0fb3d269-ee75-40b8-a1f8-729f8bb0ad96",

"expires\_in": 1199,

"scope": "all"

}

## 4 RateLimit

Framework:

spring-cloud-zuul-ratelimit

Enable Zuul Proxy

```
package cn.edu.bjtu.ming;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.cache.annotation.EnableCaching;
import org.springframework.cloud.netflix.zuul.EnableZuulProxy;




@SpringBootApplication
@EnableZuulProxy
@EnableCaching
public class Application {


    public static void main(String[] args) { SpringApplication.run(Application.class, args); }
}
```

Config Zuul in application.yml

```
zuul:
  ratelimit:
    enabled: true
    repository: redis
    default-policy-list: #optional - will apply unless specific policy exists
      - limit: 1 #optional - request number limit per refresh interval window
        refresh-interval: 60 #default value (in seconds)
        type: #optional
          - origin
    policy-list:
      api:
        - limit: 1000
          refresh-interval: 60
          type:
            - origin
  strip-prefix: true
  routes:
    api:
      path: /**
      url: forward:/
```

From the headers we can say rate was limited

localhost:8080/v1/get   

GET  localhost:8080/v1/get\_all\_trainers

Key	Value
New key	Value

Authorization Headers Body Pre-request Script Tests

Type No Auth 

Body Cookies Headers (6) Test Results

**content-type** → application/hal+json;charset=UTF-8

**date** → Wed, 15 May 2019 22:46:16 GMT

**transfer-encoding** → chunked

**x-ratelimit-limit-rate-limit-application\_api\_0\_0\_0\_0\_0\_0\_1** → 1000

**x-ratelimit-remaining-rate-limit-application\_api\_0\_0\_0\_0\_0\_0\_1** → 997

**x-ratelimit-reset-rate-limit-application\_api\_0\_0\_0\_0\_0\_0\_1** → 60000

## 5 Others

### 5.1 Swagger

#### JAVA EE RESTFUL ONLINE DOCUMENT

JAVA EE 课堂作业在线文档

##### account-controller : Account Controller

Show/Hide | List Operations | Expand Operations

DELETE	/v1/account	删除用户（通过用户名）
PUT	/v1/account	添加一个用户
GET	/v1/collection/accounts	获取用户列表
POST	/v1/login	登录

##### coach-controller : Coach Controller

Show/Hide | List Operations | Expand Operations

DELETE	/v1/coach	删除一个教练
PUT	/v1/coach	添加一个教练
GET	/v1/collection/coaches	获取教练列表

[ BASE URL: / , API VERSION: 1.0 ]

### 5.2 API pagination

Framework:

PageHelper

Demo:

```
Swagger UI
localhost:8080/v1/collection/a
localhost:8080/v1/collection/accounts?pageNum=1&pageSize=5
{
  "pageInfo": {
    "total": 0,
    "list": [ ],
    "pageNum": 1,
    "pageSize": 0,
    "size": 0,
    "startRow": 0,
    "endRow": 0,
    "pages": 0,
    "prePage": 0,
    "nextPage": 0,
    "isFirstPage": true,
    "isLastPage": true,
    "hasPreviousPage": false,
    "hasNextPage": false,
    "navigatePages": 8,
    "navigatepageNums": [ ],
    "navigateFirstPage": 0,
    "navigateLastPage": 0
  },
  "_links": {
    "self": {
      "href": "http://localhost:8080/v1/collection/accounts?pageNum=1&pageSize=5"
    }
  }
}
```

### 5.3 Cache

We enabled Cache and cache GET methods in Dao

```

package cn.edu.bjtu.ming.dao;

import cn.edu.bjtu.ming.domain.User;
import org.springframework.cache.annotation.Cacheable;
import org.springframework.data.repository.CrudRepository;

import javax.transaction.Transactional;
import java.util.List;

public interface UserRepository extends CrudRepository<User, Integer> {

    @Transactional
    @Cacheable("test")
    List<User> findByNameAndPassword(String name, String password);
}

```

## 5.4 Hateoas

GET localhost:8080/v1/get\_users

Key	Value	Description
New key	Value	Description

Authorization Headers Body Pre-request Script Tests

Type No Auth

Body Cookies Headers (6) Test Results

Pretty Raw Preview JSON

```

1 {
2   "userList": [
3     {
4       "name": "mingxuran"
5     },
6     {
7       "name": "xiehao"
8     },
9     {
10      "name": "longqiwei"
11    }
12  ],
13  "_links": {
14    "self": {
15      "href": "http://localhost:8080/v1/get_users"
16    }
17  }
18 }

```