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SPRING MVC

Lession 9

Why Spring MVC

常见的3层架构

分层能让代码更容易维护和扩展

控制层

处理http请求

服务层

业务逻辑处理

数据访问层

数据访问存储

实现教学平台

bootstrap ＋ jQuery + spring boot

Step1: 表设计

使用客户端MySQLWorkbench建表

LdHomeWork(作业表)

Column	Type	Default Value	Nullable	Character Set	Collation	Privileges	Extra
id	int(10) unsigned		NO			select,insert,update,references	auto
userId	int(11)		YES			select,insert,update,references	
classId	int(11)		YES			select,insert,update,references	
lessionId	int(11)		YES			select,insert,update,references	
homeworkFilePath	varchar(200)		YES	utf8	utf8_general_ci	select,insert,update,references	
homeworkFileName	varchar(45)		YES	utf8	utf8_general_ci	select,insert,update,references	
createDate	datetime		YES			select,insert,update,references	
correctFlag	int(11)	0	NO			select,insert,update,references	
starCount	int(11)	0	NO			select,insert,update,references	
negativeCount	int(11)	0	NO			select,insert,update,references	
BestFlag	tinyint(4)	0	YES			select,insert,update,references	

LdHomeWorkFB(评论表)

Column	Type	Default Value	Nullable	Character Set	Collation	Privileges
id	int(11)		NO			select,insert,update,references
myid	int(11)		YES			select,insert,update,references
userId	int(11)		YES			select,insert,update,references
homeworkId	int(11)		YES			select,insert,update,references
LevelFlag	char(1)		YES	utf8	utf8_general_ci	select,insert,update,references
mark	varchar(200)		YES	utf8	utf8_general_ci	select,insert,update,references

Step2: 编写作业增删改查Mapping

Mybatis generator生产的不符合要求，手动改了SQL语句

```java
@Insert({
    "insert into LdHomeWork (userId, ",
    "classId, lessionId, homeworkFilePath, homeworkFileName, ",
    "createDate, correctFlag,starCount, negativeCount, BestFlag)",
    "values (#{userid,jdbcType=INTEGER}, ",
    "#{classid,jdbcType=INTEGER}, #{lessionid,jdbcType=INTEGER}, ",
    "#{homeworkfilepath,jdbcType=VARCHAR}, #{homeworkfilename,jdbcType=VARCHAR}, ",
    "#{createdate,jdbcType=TIMESTAMP}, #{correctflag,jdbcType=INTEGER}, ",
    "#{starcount,jdbcType=INTEGER}, #{negativecount,jdbcType=INTEGER}, ",
    "#{bestflag,jdbcType=TINYINT})"
})
int insert(LdHomeWork record);
@Update({
    "update LdHomeWork set starcount = #{starcount,jdbcType=INTEGER},",
    "negativecount = #{negativecount,jdbcType=INTEGER}",
    "where id = #{id,jdbcType=INTEGER}"
})
int update(LdHomeWork record);
@Select({
    "select * from LdHomeWork where id=#{id,jdbcType=INTEGER}"
})
LdHomeWork get(Integer id);
@Select({
    "select * from LdHomeWork where classid=#{classid,jdbcType=INTEGER}"
})
List<LdHomeWork> selectByClassId(Integer classid);

@Delete({
    "delete from LdHomeWork where userid=#{userid,jdbcType=INTEGER} and classid=#{classid,jdbcType=INTEGER
})
void delete(@Param("userid") Integer userid, @Param("classid") Integer classid, @Param("lessionid") Intege
```

Step2: 编写作业评论Mapping

```java
@Insert({
    "insert into LdHomeWorkFB (myid, ",
    "userId, homeworkId, ",
    "LevelFlag, mark)",
    "values (#{myid,jdbcType=INTEGER}, ",
    "#{userid,jdbcType=INTEGER}, #{homeworkid,jdbcType=INTEGER}, ",
    "#{levelflag,jdbcType=CHAR}, #{mark,jdbcType=VARCHAR})"
})
int insert(LdHomeWorkFB record);

/**
 * This method was generated by MyBatis Generator.
 * This method corresponds to the database table LdHomeWorkFB
 *
 * @mbg.generated
 */
@Select({
    "select * from LdHomeWorkFB where homeworkid = #{homeworkid,jdbcType=INTEGER}"
})
@Results({
    @Result(column="id", property="id", jdbcType=JdbcType.INTEGER),
    @Result(column="myid", property="myid", jdbcType=JdbcType.INTEGER),
    @Result(column="userId", property="userid", jdbcType=JdbcType.INTEGER),
    @Result(column="homeworkId", property="homeworkid", jdbcType=JdbcType.INTEGER),
    @Result(column="LevelFlag", property="levelflag", jdbcType=JdbcType.CHAR),
    @Result(column="mark", property="mark", jdbcType=JdbcType.VARCHAR)
})
List<LdHomeWorkFB> selectAll(Integer homeworkid);
```

Step2: 编写Service代码，注入两个Mapper

```java
19  @Component
20  public class LdHomeWorkService {
21      @Autowired
22      private LdHomeWorkMapper ldHomeWorkMapper;
23
24      @Autowired
25      private LdHomeWorkFBMapper ldHomeWorkFBMapper;
26
27      // 上传作业
28      public void upload(LdHomeWork hw){
29          ldHomeWorkMapper.insert(hw);
30      }
31      // 更新作业
32      public void update(LdHomeWork hw){
33          ldHomeWorkMapper.update(hw);
34      }
35      // 保存作业
36      public void saveUploadedFile(MultipartFile file) throws IOException{
37          byte[] bytes = file.getBytes();
38          Path path = Paths.get("/Users/xqy/projects/homework/java/season03/hw09/target/cl
39          Files.write(path, bytes);
40      }
41      // 删除某个作业
42      public void deleteHomework(Integer userid,Integer classid,Integer lessionid){
43          ldHomeWorkMapper.delete(userid,classid,lessionid);
44      }
45      // 获取一个作业
46      public LdHomeWork getHomework(Integer id){
47          return ldHomeWorkMapper.get(id);
48      }
49      // 某个班级所有作业
50      public List<LdHomeWork> getHomeWorksOfClass(Integer classid){
51          return ldHomeWorkMapper.selectByClassId(classid);

        // 查看某一作业所有评论
        public List<LdHomeWorkFB> getAllFeedBacks(Integer hwid){
            return ldHomeWorkFBMapper.selectAll(hwid);
        }

        // 提交作业互评
        public void feedback(LdHomeWorkFB hwfb){
            ldHomeWorkFBMapper.insert(hwfb);
        }

        // 更改评价
        public void updateFeedBack(LdHomeWorkFB fb) {
            ldHomeWorkFBMapper.update(fb);
        }
    }
```

Step2: 编写作业增删改查Controller

```java
35      // 上传作业---新增
36⊖     @RequestMapping(value = "upload",
37          method = RequestMethod.POST)
38      public ResponseEntity upload(LdHomeWork hw) {
39          logger.info("upload homework " + hw);
40          if(hw.getUserid() == null){
41              return new ResponseEntity(700,null,"用户参数错误");
42          }
43          if(null == hw.getClassid()){
44              return new ResponseEntity(700,null,"班级参数错误");
45          }
46          if(null == hw.getLessionid()){
47              return new ResponseEntity(700,null,"课程参数错误");
48          }
49          if(StringUtils.isEmpty(hw.getHomeworkfilename())){
50              return new ResponseEntity(700,null,"作业名称参数错误");
51          }
52          MultipartFile file = hw.getFile();
53          if(file==null){
54              return new ResponseEntity(700,null,"作业文件参数错误");
55          }
56          // <=15MB
57          if(file.getSize()>1048576*5){
58              return new ResponseEntity(701,null,"文件超出大小限制");
59          }
60          hw.setHomeworkfilepath("/files/"+file.getOriginalFilename());
61
62          try {
63              ldHomeWorkService.deleteHomework(hw.getUserid(), hw.getClassid(), hw.getLessionid());
64              ldHomeWorkService.upload(hw);
65              ldHomeWorkService.saveUploadedFile(hw.getFile());
66              return new ResponseEntity(HttpStatus.OK.value(),null,"upload success");
67      } catch (Exception e) {
```

返回一个实体

```java
  J LdHomeworkFeedB    J LdHomeWork.java ⊠   J LdHomewor

58
59      */
60      private String homeworkfilename;
61
62      private MultipartFile file;
63
64⊖     /**
65       *
```

接收二进制文件

还没做统一异常处理，暂时这么判断

先删除原有的，再上传文件，保存基本信息到数据库

Step2: 编写作业增删改查Controller

```java
// 更新作业
@RequestMapping(value = "upload",
        method = RequestMethod.PUT,
        consumes = MediaType.APPLICATION_JSON_VALUE)
    public ResponseEntity update(@RequestBody LdHomeWork hw) {
        logger.info("upload homework " + hw);
        try {
            ldHomeWorkService.update(hw);
            return new ResponseEntity(HttpStatus.OK.value(),null,"update success");
        } catch (Exception e) {
            return new ResponseEntity(HttpStatus.SERVICE_UNAVAILABLE.value(),null,""+e.getMessage());
        }
}
// 获取某一个作业
@RequestMapping(value="get",
    method=RequestMethod.GET)
public ResponseEntity getHomework(Integer id){
    try {
        LdHomeWork hw = ldHomeWorkService.getHomework(id);
        return new ResponseEntity(HttpStatus.OK.value(),hw,"success");
    } catch (Exception e) {
        return new ResponseEntity(HttpStatus.SERVICE_UNAVAILABLE.value(),null,""+e.getMessage());
    }
}
// 获取某一班级所有作业
@RequestMapping(value="list/{classid}",
        method=RequestMethod.GET)
public ResponseEntity getHomeworkOfClass(@PathVariable Integer classid){
        try {
            List<LdHomeWork> hws = ldHomeWorkService.getHomeWorksOfClass(classid);
            return new ResponseEntity(HttpStatus.OK.value(),hws,"success");
        } catch (Exception e) {
            return new ResponseEntity(HttpStatus.SERVICE_UNAVAILABLE.value(),null,""+e.getMessage());
```

Step2: 编写作业评价Controller

这里使用appcation/json方式没成功，貌似佐祺都汇总各种使用方法了

先获取一个作业，在原来基础上累加点赞数，更新到作业表，再插入一条评论到评论表；多表关联更新的，应该还可以优化...

```java
@RequestMapping(value = "feedback", method = RequestMethod.POST)
@ResponseBody
public ResponseEntity feedback(Integer id,Integer myid,Integer userid, Integer homeworkid,
        String levelflag, Integer starcount,Integer negativecount, String mark){
    logger.info("feedback homework " + homeworkid+" "+id);
    try {
        LdHomeWork old = ldHomeWorkService.getHomework(id);
        LdHomeWork hw = new LdHomeWork();
        hw.setId(homeworkid);
        hw.setStarcount(starcount+old.getStarcount());
        hw.setNegativecount(negativecount+old.getNegativecount());
        ldHomeWorkService.update(hw);

        LdHomeWorkFB hwfb = new LdHomeWorkFB();
        hwfb.setUserid(userid);
        hwfb.setMyid(myid);
        hwfb.setHomeworkid(homeworkid);
        hwfb.setLevelflag(levelflag);
        hwfb.setMark(mark);
        ldHomeWorkService.feedback(hwfb);
        return new ResponseEntity(HttpStatus.OK.value(),null,"feedback success");
    } catch (Exception e) {
        return new ResponseEntity(HttpStatus.SERVICE_UNAVAILABLE.value(),null,"error");
    }
}
// 某一作业所有评价
@RequestMapping(value="list/{id}",
    method = RequestMethod.GET)
public ResponseEntity getList(@PathVariable Integer id){
    List<LdHomeWorkFB> hws = ldHomeWorkService.getAllFeedBacks(id);
    return new ResponseEntity(HttpStatus.OK.value(),hws,"success");
}
```

Step3: 先测试下功能

← → C ⓘ localhost:8080/ldhomework/list

{"responseCode":200,"responseMsg":"success","body":[{"id":3,"userid":2,"classid":2,"lessionid":3,"homeworkfilepath":"/files/ASM4使用指南.pdf","homeworkfilename":"sdfsdf","file":null,"createdate":null,"correctflag":0,"starcount":3,"negativecount":1,"bestflag":0},{"id":4,"userid":3,"classid":2,"lessionid":3,"homeworkfilepath":"/files/ASM4使用指南.pdf","homeworkfilename":"sdfsdf","file":null,"createdate":null,"correctflag":0,"starcount":0,"negativecount":0,"bestflag":0},{"id":5,"userid":1,"classid":2,"lessionid":2,"homeworkfilepath":"/files/j-ts1-pdf.pdf","homeworkfilename":"sdfsdf","file":null,"createdate":null,"correctflag":0,"starcount":1,"negativecount":0,"bestflag":0},{"id":6,"userid":1,"classid":1,"lessionid":2,"homeworkfilepath":"/files/I5-UsingASMFramework.pdf","homeworkfilename":"sfsaf","file":null,"createdate":null,"correctflag":0,"starcount":0,"negativecount":0,"bestf{"id":7,"userid":3,"classid":1,"lessionid":1,"homeworkfilepath":"/files/eoc.pdf","homeworkfilename":"sdfsdf","file":null,"createdate":arcount":0,"negativecount":0,"bestflag":0},{"id":8,"userid":1,"classid":3,"lessionid":3,"homeworkfilepath":"/files/9783319068886-c2.pdf","homeworkfilename":"sdfsdfsdf","file":null,"createdate":null,"correctflag":0,"starcount":0,"negativecount":0,"bestflag":0},{"id":9,"userid":2,"classid":1,"lessionid":2,"homeworkfilepath":"/files/9783319068886-c2.pdf","homeworkfilename":"sdfsadf","file":null,"createdate":null,"correctflag":0,"starcount":0,"negativecount":0,"bestflag":0}]}

一开始怎么会有数据？？？ 那是我用在web界面添加成功的。。。

← → C ⓘ localhost:8080/ldhomework/list/3

{"responseCode":200,"responseMsg":"success","body":[{"id":8,"userid":1,"classid":3,"lessionid":3,"homeworkfilepath":"/files/9783319068c2.pdf","homeworkfilename":"sdfsdfsdf","file":null,"createdate":null,"correctflag":0,"starcount":0,"negativecount":0,"bestflag":0}]}

这条作业有两个评论

← → C ⓘ localhost:8080/ldhomeworkfb/list/3

{"responseCode":200,"responseMsg":"success","body":[{"id":1,"myid":2,"userid":2,"homeworkid":3,"levelflag":"B","mark":"fsdfdsfd"},{"id":3,"myid":2,"userid":2,"homeworkid":3,"levelflag":"A","mark":"hellohellohello"}]}

这条作业没有评论

← → C ⓘ localhost:8080/ldhomeworkfb/list/2
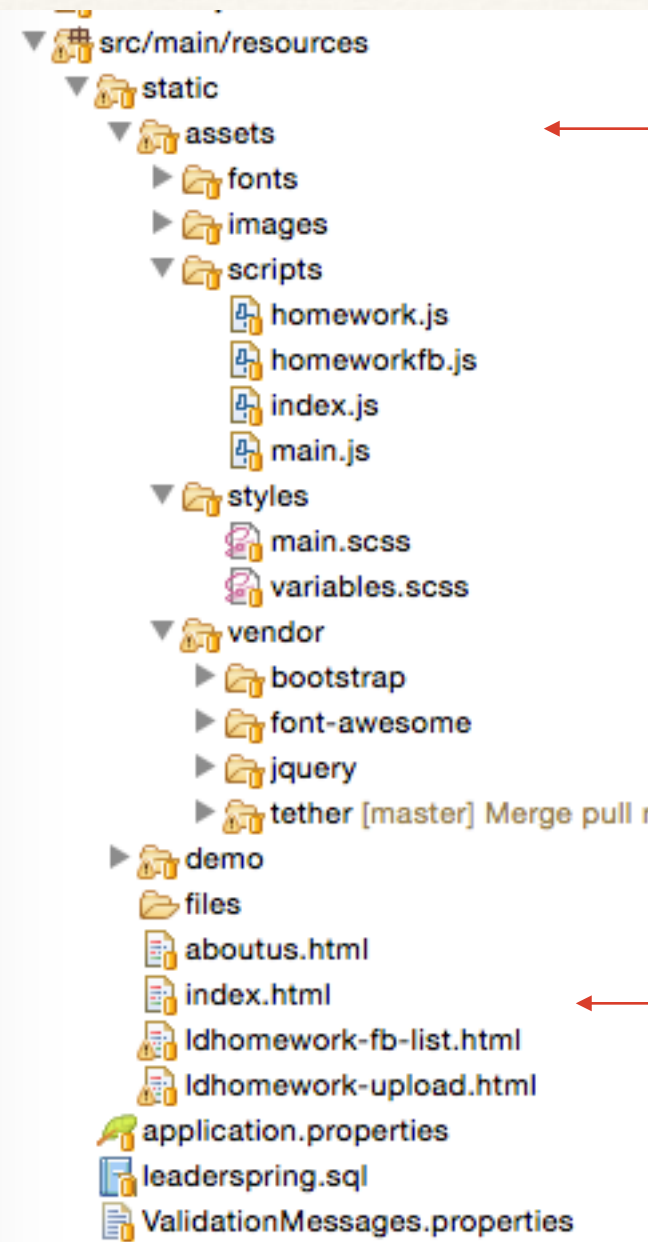
{"responseCode":200,"responseMsg":"success","body":[]}

Step3: 开始前端编码

准备工作?

- 基础编程能力&html\css\javascript

- 定制bootstrap

- 如何使用bootstrap

- 使用bootstrap&jQuery进行表格增删改查功能

- jQuery.ajax提交Multipart表单

- 关于排版与配色

规划目录结构

src/main/resources
  static
    assets ◀────────── 静态资源统一放assets，包含脚本、样式、图片、图标字体
      fonts
      images
      scripts
        homework.js
        homeworkfb.js
        index.js
        main.js
      styles
        main.scss
        variables.scss
      vendor
        bootstrap
        font-awesome
        jquery
        tether [master] Merge pull r
    demo
    files
    aboutus.html
    index.html ◀────────── 页面放根目录或根据层级分文件夹
    ldhomework-fb-list.html
    ldhomework-upload.html
  application.properties
  leaderspring.sql
  ValidationMessages.properties

如何使用BOOTSTRAP

先理解bootstrap的网格

bootstrap的网格是一种响应式布局，整个页面的主题分为12格，每格大小按照百分比分配。即占满一行的大小是：12；比如col-12

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4			
span 4				span 8							
span 6						span 6					
span 12											

bootstrap的屏幕分割点

根据终端屏幕的情况，分为几种大小的屏幕，减少媒体查询的编写量

```
// Extra small devices (portrait phones, less than 576px)
// No media query since this is the default in Bootstrap

// Small devices (landscape phones, 576px and up)
@media (min-width: 576px) { ... }

// Medium devices (tablets, 768px and up)
@media (min-width: 768px) { ... }

// Large devices (desktops, 992px and up)
@media (min-width: 992px) { ... }

// Extra large devices (large desktops, 1200px and up)
@media (min-width: 1200px) { ... }
```

```
@include media-breakpoint-up(xs) { ... }
@include media-breakpoint-up(sm) { ... }
@include media-breakpoint-up(md) { ... }
@include media-breakpoint-up(lg) { ... }
@include media-breakpoint-up(xl) { ... }

// Example usage:
@include media-breakpoint-up(sm) {
  .some-class {
    display: block;
  }
}
```

通常分割屏幕后，这个屏幕如何如何展示等等。。。如：这里中小屏下是显示的，其它规格的屏隐藏

排列组合使用样式

```
16⊖iv id="app" class="">
17⊖   <div class="page-top">
18⊖      <div class="container">
19⊖         <div class="row">
20⊖         <h1 class="brand col-xs-12 col-sm-12 col-lg-4 text-center text-xs-center text-sm-center text-lg-left">
21            <a href="/">LEADER.US</a>
22         </h1>
23⊖         <nav class="navbox ml-auto col-xs-12 col-sm-12 col-lg-8 text-center text-sm-center text-lg-right">
24⊖            <ul class="nav nav-fill float-lg-right">
25⊖               <li class="nav-item">
26                  <a class="nav-link active" href="/">首页 <span class="sr-only">(current)</span><em></em></a>
27               </li>
28⊖               <li class="nav-item">
29                  <a class="nav-link" href="ldhomework-fb-list.html">查看作业<em></em></a>
30               </li>
31⊖               <li
32
33               </l
34⊖               <li
35
36               </l
37
38            </ul>
39         </nav>
40         </div>
```

logo 小屏占满一行(100%宽度)，大屏占25%宽度

组合小屏居中展示效果

导航菜单 小屏占满一行(100%宽度)，大屏占75%宽度

LEADER.US

首页   查看作业   上传作业   关于我们

LEADER.US   首页 查看作业 上传作业 关于我们

定制bootstrap

bootstrap的默认样式千篇一律，我想自定义风格怎么样。。。

```scss
5  // 自定义bootstrap
6  @import "variables.scss";
7
8  // 引入bootstrap依赖
9  @import "../vendor/bootstrap/scss/bootstrap.scss";
10
11 // 引入图标字体
12 @import "../vendor/font-awesome/scss/font-awesome.scss";
13
14 // 自定义页面&字体设置
15 // -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto
16 html,body{
17     font-family:BlinkMacSystemFont,"Helvetica Neue".Helv
18     -webkit-font-smoothing: antialias
19     -webkit-tap-highlight-color: rgbo
20     font-size:$base-color;
21 }
```

引入bootstrap的scss源码，修改颜色、字体、规格等变量

使用这个插件把scss代码编译成css代码

```xml
<groupId>com.github.warmuuh</groupId>
<artifactId>libsass-maven-plugin</artifactId>
<version>0.2.8-libsass_3.4.4</version>
<executions>
    <execution>
        <phase>generate-resources</phase>
        <goals>
            <goal>compile</goal>
        </goals>
    </execution>
</executions>
<configuration>
    <inputPath>${basedir}/src/main/resources/static/assets/styles/</inputPath>
        >${basedir}/target/classes/static/assets/styles/</outputPath>
        ePath>${basedir}/src/main/resources/lib/bootstrap/scss/</includ
```

html页面这样引入css

```html
<!-- customer stylesheet -->
<link href="assets/styles/main.css" rel="stylesheet">
```

Bootstrap这么简单。。。
JavaScript也一定简单。。。

Bootstrap&jQuery如何进行表格增删改查

点击查询

渲染表格行

点击弹出评
论列表框

点击弹出评
论框

合理使用事件代理，不需要每
行记录绑定、解绑事件

| 选择班级... ⬍ | 搜索 | | | | | | |

学员ID	作业名称	提交时间	点赞数	差评数	优秀作业?	批改?	操作
2	sdfsdf	null	3	1	0	0	▶ 查看评论 | ⭐ 评分
3	sdfsdf	null	0	0	0	0	▶ 查看评论 | ⭐ 评分
1	sdfsdf	null	1	0	0	0	▶ 查看评论 | ⭐ 评分
1	sfsaf	null	0	0	0	0	▶ 查看评论 | ⭐ 评分
3	sdfsdf	null	0	0	0	0	▶ 查看评论 | ⭐ 评分
1	sdfsdfsdf	null	0	0	0	0	▶ 查看评论 | ⭐ 评分
2	sdfsadf	null	0	0	0	0	▶ 查看评论 | ⭐ 评分

Bootstrap&jQuery如何进行表格增删改查

```javascript
function fetchData(classId){
    $.ajax({
        url:"/ldhomework/list"+ (classId!==""?("/"+classId):""),
        method:"GET",
        success:function(res, status,jqxhr){
            console.log(res);
            if(res.responseCode && res.responseCode==200){
                lists = res.body || [];
                renderTable(lists);
```

拉取数据

渲染表格

```javascript
function renderTable(tblist){
    var tpl = '<tr><td>{{ userid }}</td>'
        + '<td><a href="{{ homeworkfilepath }}">{{ homeworkfilename }}</a></td>'
        + '<td>{{ createdate }}</td>'
        + '<td>{{ starcount }}</td>'
        + '<td>{{ negativecount }}</td>'
        + '<td>{{ bestflag }}</td>'
        + '<td>{{ correctflag }}</td>'
        + '<td key="{{ id }}"><a href="javascript:void(0);" class="btn-viewfeedba
    var htmls = [];
    for(var i=0;i<tblist.length;i++){
        htmls.push(Utils.parseTemplate(tpl,tblist[i]));
    }
    $('#hwTable').find('tbody').html(htmls.join(''));
```

```javascript
function parseTemplate(tpl,obj) {
    if (obj == null) {
        return;
    }
    return tpl.replace(/({{([\s\S]+?)}})/g, function (_, key, value) {
        var v = value.trim();
        if (Object.prototype.hasOwnProperty.call(obj, v)) {
            return obj[v];
        } else {
            return '';
        }
    });
}
```

组装数据和html模版，得到最终的html

Ajax提交Multipart表单

构造FormData数据

```javascript
var formData = new FormData();
formData.append("userid",param.userId);
formData.append("classid",param.classId);
formData.append("lessionid",param.lessionId);
formData.append("homeworkfilename",param.homeworkFileName);
formData.append("file",hwFile,hwFile.name ||'file');
//console.log('formData',formData)
$.ajax({
    url:'/ldhomework/upload',
    method:'POST',
    data:formData,
    cache : false,
    contentType : false,
    processData : false,
    success:function(res, status,jqxhr){
        console.log(res);
        if(res.responseCode && res.responseCode==200){
            $('#tipModal').find('.alert').removeClass('alert-danger').addClass('alert-success');
        }else{
            $('#tipModal').find('.alert').removeClass('alert-success').addClass('alert-danger');
        }
        $('#tipModal').find('.alert-heading').text(res.responseMsg || 'do operation');
        $('#tipModal').modal('show');
        setTimeout(function(){
            $('#tipModal').modal('hide');
        },2000);
```

注意jQuery的application/x-www-form-urlencoded，要设置成false可以支持多种格式的

jQuery的data对象会转化为字符串，这里要设置为false不转化参数

多思考多练

多观察

字体一定要精致整齐

字间距不要太挤

适当多留白

重点突出

立体感

层次感

关于排版和颜色。。。。

主次分明

简单最好

颜色不要太跳跃

想想如何让别人一眼看到你

不要过多的颜色

知道宝宝现在用什么字体不？

查看作业效果请运行github的demo代码。。。

Thank you

- xieqiaoyun