

双向校验

客户端验证：使用js进行识别判断和校验,但是这里的验证不能保存百分百的安全，
后端验证：入库前最后判断，最后一道防火墙。

settings.py中设置一个新的redis数据库保存后端生成的随机码

```
CACHES = {
    ...
    "verify_code":{
        "BACKEND": "django_redis.cache.RedisCache",
        "LOCATION": "redis://127.0.0.1:6379/3",
        "OPTIONS": {
            "CLIENT_CLASS": "django_redis.client.DefaultClient",
        }
    }
}
```

users/views.py

```
class VerifyCode(APIView):
    def post(self, request):
        """校验验证码"""
        print( request.COOKIES )
        APP_ID = "884b024377529d6ba4d2f07d227879df"
        APP_KEY = "28e7f92b7c66f718d65ede8feb26f477"
        gt = GeetestLib(APP_ID, APP_KEY)
        print(request.session.get("SESSION_ID"))
        status = request.session[gt.GT_STATUS_SESSION_KEY]
        challenge = request.data.get(gt.FN_CHALLENGE)
        validate = request.data.get(gt.FN_VALIDATE)
        seccode = request.data.get(gt.FN_SECCODE)
        user_id = request.session["user_id"]

        if status:
            result = gt.success_validate(challenge, validate, seccode, user_id)
        else:
            result = gt.failback_validate(challenge, validate, seccode)

        if result:
            # 验证通过了,生成一个随机值保存到redis中,在用户再次提交注册信息的时候,验证是否附带了唯一
            值
            verify_code = "%08d" % random.randint(0, 99999999)
            # 保存到redis中
            redis = get_redis_connection("verify_code")
            redis.setex(verify_code,60*10,1)
```

```

        result = {"status": "success", "code": verify_code } if result else
{"status": "fail", "code": -1}

return Response(result)

```

前端在post成功返回数据以后,保存code,并提交给注册页面

```

// export default {
//   name: 'Register',
//   data(){
//     return {
//       region: "+86",
//       sms_code: "",
//       password: "",
//       password2: "",
//       mobile: "",
//       validateResult: false,
//       get_sms_text: "获取验证码",
//       verify_code: '-1',
//     }
//   },
//   created(){
//     // 页面初始化的时候设置号码的地区号
//     // this.region_list = this.$nation;
//     //
//     // 显示图片验证码
//     this.$axios.get("http://127.0.0.1:8000/users/verify").then(response=>{
//       // 请求成功
//       let data = response.data;
//       // 使用initGeetest接口
//       // 参数1: 配置参数
//       // 参数2: 回调, 回调的第一个参数验证码对象, 之后可以使用它做appendTo之类的事件
//       console.log(response.data);
//       data = JSON.parse(data);
//       initGeetest({
//         gt: data.gt,
//         challenge: data.challenge,
//         width: "350px",
//         product: "embed", // 产品形式, 包括: float, embed, popup. 注意只对PC版验证码
//         // 有效
//         offline: !data.success // 表示用户后台检测极验服务器是否宕机, 一般不需要关注
//         // 更多配置参数请参见: http://www.geetest.com/install/sections/idx-
//         client-sdk.html#config
//       }, this.handlerPopup);
//     }).catch(error=>{
//       console.log(error)
//     })
//   },
//   methods:{
//     send_sms(){
//       let reg = /1[1-9]{2}\d{8}/;

```

```

//      if( !reg.test(this.mobile) ){
//          return false;
//      }
//
//      // 如果get_sms_text 不是文本,而是数字,则表示当前手机号码还在60秒的发送短信间隔内
//      if(this.get_sms_text != "获取验证码"){
//          return false;
//      }
//
//      // 发送短信
//      let _this = this;
//      this.$axios.get("http://127.0.0.1:8000/users/sms?
mobile="+this.mobile).then(response=>{
//          console.log(response);
//          // 显示发送短信以后的文本倒计时
//          let time = 60;
//          let timer = setInterval(()=>{
//              --time;
//              if(time <=1){
//                  // 如果倒计时为0,则关闭当前定时器
//                  _this.get_sms_text = "获取验证码";
//                  clearInterval(timer);
//              }else{
//                  _this.get_sms_text = time;
//              }
//          },1000)
//      }).catch(error=>{
//          console.log(error);
//      })
//
//  },
//  registerHander(){
//      // 注册信息提交
//      // 提交数据前判断用户是否通过了验证码校验
//      if(!this.validateResult){
//          alert("验证码验证有误");
//          return false;
//      }
//
//      this.$axios.post("http://127.0.0.1:8000/users/user",{
//          "mobile":this.mobile,
//          "password":this.password,
//          "password2":this.password2,
//          "sms_code":this.sms_code,
//          "verify_code":this.verify_code,
//      },{
//          responseType:"json",
//      }).
//      then(response=>{
//          // 请求成功, 保存登陆状态
//          localStorage.removeItem("token");
//          let data = response.data;
//          sessionStorage.token = data.token;

```

```

//      sessionStorage.id = data.id;
//      sessionStorage.username = data.mobile;
//      // 注册成功以后默认表示已经登录了,跳转用户中心的页面
//      // this.$router.push("/user");
//      alert("注册成功!");
//    }).catch(error=>{
//      alert("注册失败!");
//      // error 就是一个对象,里面会保存在错误响应时的http状态码以及后端抛出的错误信息
//    })
//  },
//  handlerPopup(captchaObj){
//    // 验证码成功的回调
//    let _this = this;
//    captchaObj.onSuccess(function () {
//      var validate = captchaObj.getValidate();
//      _this.$axios.post("http://127.0.0.1:8000/users/verify",{
//        geetest_challenge: validate.geetest_challenge,
//        geetest_validate: validate.geetest_validate,
//        geetest_seccode: validate.geetest_seccode
//      },{
//        responseType:"json",
//      }).then(response=>{
//        // 请求成功
//        console.log(response.data);
//        if(response.data.status == "success") {
//          _this.validateResult = true; // 获取验证结果
//          _this.verify_code = response.data.code;
//          console.log(_this.verify_code)
//        }
//      }).catch(error=>{
//        // 请求失败
//        console.log(error)
//      })
//    });
//    // 将验证码加到id为captcha的元素里
//    captchaObj.appendTo("#geetest");
//  }
// },
//
// };

```

后端注册用户视图调用序列化器,需要验证当前验证码.

```

# from rest_framework import serializers
# from .models import User
# import re
# from django_redis import get_redis_connection
#
# class UserModelSerializer(serializers.ModelSerializer):
#     """用户信息序列化器"""
#     sms_code = serializers.CharField(label='手机验证码', required=True,
# allow_null=False, allow_blank=False, write_only=True)

```

```

# password2 = serializers.CharField(label='确认密码', required=True,
allow_null=False, allow_blank=False, write_only=True)
# token = serializers.CharField(label='jwt', read_only=True)
verify_code = serializers.CharField(label="极验验证的验证字符串",write_only=True)
# class Meta:
#     model=User
#     fields = ('id','sms_code', 'mobile',
'password','password2','token',"verify_code")
#     extra_kwargs={
#         "password":{
#             "write_only":True
#         },
#         "id":{
#             "read_only":True,
#         }
#     }

def validate_verify_code(self,value):
    """验证当前客户端是否已经通过了极验验证码的验证"""
    redis = get_redis_connection("verify_code")
    verify_code = redis.get(value)
    print(verify_code)
    if(not verify_code):
        raise serializers.ValidationError('验证码失效~')

    return value

# def validate_mobile(self, value):
#     """验证手机号"""
#     if not re.match(r'^1[345789]\d{9}$', value):
#         raise serializers.ValidationError('手机号格式错误')
#
#     # 验证手机号是否已经被注册了
#     # try:
#     #     user = User.objects.get(mobile=value)
#     # except:
#     #     user = None
#     #
#     # if user:
#     #     raise serializers.ValidationError('当前手机号已经被注册')
#
#     # 上面验证手机号是否存在的代码[优化版]
#     try:
#         User.objects.get(mobile=value)
#         # 如果有获取到用户信息,则下面的代码不会被执行,如果没有获取到用户信息,则表示手机号没有注册过,可以直接pass
#         raise serializers.ValidationError('当前手机号已经被注册')
#     except:
#         pass
#
#     return value
#

```

```

# def validate(self, data):
#     """验证密码"""
#     password = data.get("password")
#     password2 = data.get("password2")
#     if len(password)<6:
#         raise serializers.ValidationError('密码太短不安全~')
#
#     if password !=password2:
#         raise serializers.ValidationError('密码和确认必须一致~')
#
#     """验证短信验证码"""
#
#     mobile = data.get("mobile")
#     sms_code = data.get("sms_code")
#
#     # 从redis中提取短信验证码
#     redis = get_redis_connection("sms_code")
#     # 注意,在redis中保存数据的格式,最终都是bytes类型的字符串,所以提取数据时,要转下编码
#     redis_sms_code = redis.get("sms_%s" % mobile).decode()
#     # 把redis中的短信验证码和客户端提交的验证码进行匹配
#     if not (redis_sms_code and redis_sms_code == sms_code):
#         raise serializers.ValidationError('手机验证码无效~')
#
#     return data
#
# def create(self, validated_data):
#     # 删除一些不需要保存到数据库里面的字段
#     del validated_data['password2']
#     del validated_data['sms_code']
#     del validated_data['verify_code']
#
#     # 可以补充删除redis的验证码逻辑
#
#     # 因为数据库中默认用户名是唯一的,所以我们把用户手机号码作为用户名
#     validated_data["username"] = validated_data["mobile"]
#
#     # 继续调用ModelSerializer内置的添加数据功能
#     user = super().create(validated_data)
#
#     # 针对密码要加密
#     user.set_password(user.password)
#     # 修改密码等用于更新了密码,所以需要保存
#     user.save()
#
#     # 一旦注册成功以后,则默认表示当前用户已经登录了
#     # 所以后端要生成一个jwt提供给客户端
#     from rest_framework_jwt.settings import api_settings
#     jwt_payload_handler = api_settings.JWT_PAYLOAD_HANDLER
#     jwt_encode_handler = api_settings.JWT_ENCODE_HANDLER
#
#     payload = jwt_payload_handler(user)
#     # 把jwt生成的token作为user模型的字段
#     user.token = jwt_encode_handler(payload)

```

```
#
# return users
```

前端显示课程列表页面

把之前切好的课程列表页面组件放到项目中。

[illegible]

```

<el-col :span="12" class="course-item-right">
  <div class="course-title">
    <p class="box-title">Go编程33天从入门到放弃系列</p>
    <p class="box-number">30074人已加入学习</p>
  </div>
  <div class="author">
    <p class="box-author">Alex 金角大王 老男孩Python教学总监</p>
    <p class="lesson">共154课时<span>/更新完成</span></p>
  </div>
  <el-row class="course-content">
    <el-col :span="12"><i class="el-icon-caret-right"></i>01 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
    <el-col :span="12"><i class="el-icon-caret-right"></i>02 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
    <el-col :span="12"><i class="el-icon-caret-right"></i>03 |
三元运算符... <span class="free">免费</span> </el-col>
    <el-col :span="12"><i class="el-icon-caret-right"></i>04 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
  </el-row>
  <div class="course-price">
    <p class="course-price-left">
      <span class="discount">限时免费</span>
      <span class="count">¥0.00</span>
      <span class="old_count">原价： ¥8.00元</span>
    </p>
    <button class="buy">立即购买</button>
  </div>
</el-col>
</el-row>
</el-col>
</el-row>
<el-row class="course-item">
  <el-col :span="24" class="course-item-box">
    <el-row>
      <el-col :span="12" class="course-item-left"></el-col>
      <el-col :span="12" class="course-item-right">
        <div class="course-title">
          <p class="box-title">Go编程33天从入门到放弃系列</p>
          <p class="box-number">30074人已加入学习</p>
        </div>
        <div class="author">
          <p class="box-author">Alex 金角大王 老男孩Python教学总监</p>
          <p class="lesson">共154课时<span>/更新完成</span></p>
        </div>
        <el-row class="course-content">
          <el-col :span="12"><i class="el-icon-caret-right"></i>01 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
          <el-col :span="12"><i class="el-icon-caret-right"></i>02 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
          <el-col :span="12"><i class="el-icon-caret-right"></i>03 |
三元运算符... <span class="free">免费</span> </el-col>

```



```

        <el-col :span="12"><i class="el-icon-caret-right"></i>04 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
    </el-row>
    <div class="course-price">
        <p class="course-price-left">
            <span class="discount">限时免费</span>
            <span class="count">¥0.00</span>
            <span class="old_count">原价： ¥8.00元</span>
        </p>
        <button class="buy">立即购买</button>
    </div>
</el-col>
</el-row>
</el-col>
</el-row>
<el-row class="course-item">
    <el-col :span="24" class="course-item-box">
        <el-row>
            <el-col :span="12" class="course-item-left"></el-col>
            <el-col :span="12" class="course-item-right">
                <div class="course-title">
                    <p class="box-title">Go编程33天从入门到放弃系列</p>
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                    <p class="lesson">共154课时<span>/更新完成</span></p>
                </div>
            </el-row>
            <div class="course-content">
                <el-col :span="12"><i class="el-icon-caret-right"></i>01 |
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            </el-row>
            <div class="course-price">
                <p class="course-price-left">
                    <span class="discount">限时免费</span>
                    <span class="count">¥0.00</span>
                    <span class="old_count">原价： ¥8.00元</span>
                </p>
                <button class="buy">立即购买</button>
            </div>
        </el-col>
    </el-row>
</el-col>
</el-row>
<el-row class="course-item">
    <el-col :span="24" class="course-item-box">

```

```

        <el-row>
            <el-col :span="12" class="course-item-left"></el-col>
            <el-col :span="12" class="course-item-right">
                <div class="course-title">
                    <p class="box-title">Go编程33天从入门到放弃系列</p>
                    <p class="box-number">30074人已加入学习</p>
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                    <el-col :span="12"><i class="el-icon-caret-right"></i>02 |
常用模块学习-模块的种类和... <span class="free">免费</span> </el-col>
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                </el-row>
                <div class="course-price">
                    <p class="course-price-left">
                        <span class="discount">限时免费</span>
                        <span class="count">¥0.00</span>
                        <span class="old_count">原价： ¥8.00元</span>
                    </p>
                    <button class="buy">立即购买</button>
                </div>
            </el-col>
        </el-row>
    </el-col>
</el-row>
</div>
<Footer/>
</div>
</template>

<script>
import Header from "../common/Header"
import Footer from "../common/Footer"
export default {
    name: "Courses",
    data() {
        return {
            current_page: 1,
            filter_price: false,
        }
    },
    components: {
        Header,
    },
}

```

```
        Footer,  
    },  
    methods:{  
    }  
}  
</script>
```

```
<style scoped>  
.courses{  
    padding-top: 80px;  
}  
.main{  
    width: 1100px;  
    height: auto;  
    margin: 0 auto;  
    padding-top: 35px;  
}  
.main .filter{  
    width: 100%;  
    height: auto;  
    margin-bottom: 35px;  
    padding: 25px 0px 25px 0px;  
    background: #fff;  
    border-radius: 4px;  
    box-shadow: 0 2px 4px 0 #f0f0f0;  
}  
.filter .el-col{  
    text-align: center;  
    padding: 6px 0px;  
    line-height: 16px;  
    margin-left: 14px;  
    position: relative;  
    transition: all .3s ease;  
    cursor: pointer;  
    color: #4a4a4a;  
}  
.filter-el-row1{  
    padding-bottom: 18px;  
    margin-bottom: 17px;  
}  
.filter .filter-text{  
    text-align: right;  
    font-size: 16px;  
    color: #888;  
}  
.filter .filter-text2{  
}  
.filter .filter-el-row1 .current{  
    color: #ffc210;  
    border: 1px solid #ffc210!important;  
    border-radius: 30px;  
}
```

```
.filter .filter-el-row2 .current{
    color: #ffc210;
}
.filter-price{
    display:inline-block;
    vertical-align: middle;
}
.filter-price .up, .filter-price .down{
    display: block;
    line-height: 8px;
    font-size: 13px;
    margin: -4px;
    color: #d8d8d8;
}
.current .filter-price .active{
    color: #ffc210;
}
.course-item{
    margin-bottom: 35px;
}
.course-item .course-item-box{
    padding: 20px 30px 20px 20px;
}
.course-item{
    box-shadow: 2px 3px 16px rgba(0,0,0,.1);
    transition: all .2s ease;
}
.course-item .course-item-left{
    width: 423px;
    height: 210px;
    margin-right: 30px;
}
.course-title{
    overflow: hidden; /* 在父元素中使用可以清除子元素的浮动影响 */
}
.course-title .box-title{
    font-size: 26px;
    color: #333333;
    float: left;
    margin-bottom: 8px;
}
.course-title .box-number{
    font-size: 14px;
    color: #9b9b9b;
    font-family: PingFangSC-Light;
    float: right;
    padding-top: 12px;
}
.course-item-right{
    width: 56.6%;
}
.author{
    font-size: 14px;
```

```
        color: #9b9b9b;
        margin-bottom: 14px;
        padding-bottom: 14px;
        overflow: hidden;
    }
    .author .box-author{
        float:left;
    }
    .author .lesson{
        float: right;
    }
    .course-content .el-icon-caret-right{
        border: 1px solid #000;
        border-radius: 50%;
        margin-right: 6px;
    }
    .course-content .el-col{
        font-size: 14px;
        color: #666;
        width: 50%;
        margin-bottom: 15px;
        cursor: pointer;
    }
    .course-content .el-col:hover{
        color: #ffc210;
    }
    .course-content .el-col:hover .el-icon-caret-right, .course-content .el-col:hover .free{
        border-color: #ffc210;
        color: #ffc210;
    }
    .course-content .el-col .free{
        width: 34px;
        height: 20px;
        color: #fd7b4d;
        margin-left: 10px;
        border: 1px solid #fd7b4d;
        border-radius: 2px;
        text-align: center;
        font-size: 13px;
        white-space: nowrap;
    }
    .course-price{
        overflow: hidden;
    }
    .course-price .course-price-left{
        float: left;
    }
    .course-price .discount{
        padding: 6px 10px;
        display: inline-block;
        font-size: 16px;
        color: #fff;
        text-align: center;
```

```

    margin-right: 8px;
    background: #fa6240;
    border: 1px solid #fa6240;
    border-radius: 10px 0 10px 0;
}
.course-price .course-price-left{
    line-height: 22px;
}
.course-price .count{
    font-size: 24px;
    color: #fa6240;
}
.course-price .old_count{
    font-size: 14px;
    color: #9b9b9b;
    text-decoration: line-through;
    margin-left: 10px;
}
.course-price .buy{
    float: right;
    width: 120px;
    height: 38px;
    font-size: 16px;
    border-radius: 3px;
    border: 1px solid #fd7b4d;
    background: transparent; /* 透明 */
    color: #fa6240;
    cursor: pointer;
    transition: all .2s ease-in-out; /* css3新版本的样式中支持支持 jQuery里面的动画预设效果 */
    /* all表示当前元素的所有样式 .2s表示改变样式完成的时间 ease-in-out */
}
.course-price .buy:hover{
    color: #fff;
    background: #ffc210;
    border: 1px solid #ffc210;
}
</style>

```

注册路由

```

// import Vue from "vue"
// import Router from "vue-router"
//
// // 导入需要注册路由的组件
// import Home from "../components/Home"
// import Login from "../components/Login"
// import Register from "../components/Register"
import Courses from "../components/Courses"
// Vue.use(Router);

```

```
//  
// // 配置路由列表  
// export default new Router({  
//   mode:"history",  
//   routes:[  
//     // 路由列表  
//     {  
//       name:"Home",  
//       path: "/home",  
//       component:Home,  
//     },  
//     {  
//       name:"Home",  
//       path: "/",  
//       component:Home,  
//     },  
//     {  
//       name:"Login",  
//       path: "/login",  
//       component:Login,  
//     },  
//     {  
//       name:"Register",  
//       path: "/register",  
//       component:Register,  
//     },  
//     {  
//       name:"Courses",  
//       path: "/courses",  
//       component: Courses,  
//     }  
//   ]  
// })
```

####

分析课程内容的关系

课程分类：
课程表：
课程章节：
老师表：
价格服务表：(限时免费\限时折扣\限时满减)

子应用创建

```
python ../../manage.py startapp courses
```

注册子应用

```
INSTALLED_APPS = [  
    ...  
    'courses',  
]
```

数据模型创建

```
from django.db import models  
  
# Create your models here.  
class CourseCategory(models.Model):  
    """  
    课程分类  
    """  
    name = models.CharField(max_length=64, unique=True, verbose_name="分类名称")  
    is_show = models.BooleanField(default=True, verbose_name="是否上线")  
    is_delete = models.BooleanField(default=False, verbose_name="逻辑删除")  
    class Meta:  
        db_table = "ly_course_category"  
        verbose_name = "课程分类"  
        verbose_name_plural = "课程分类"  
  
    def __str__(self):  
        return "%s" % self.name  
  
class Course(models.Model):  
    """  
    专题课程  
    """  
    course_type = (  
        (0, '付费'),  
        (1, 'VIP专享'),  
        (2, '学位课程')  
    )  
    level_choices = (  
        (0, '初级'),  
        (1, '中级'),  
        (2, '高级')  
    )  
    status_choices = (  
        (0, '未发布'),  
        (1, '已发布'),  
        (2, '已下架')  
    )
```



```

        (0, '上线'),
        (1, '下线'),
        (2, '预上线')
    )
    name = models.CharField(max_length=128, verbose_name="课程名称")
    course_img = models.ImageField(max_length=255, verbose_name="封面图片", blank=True,
null=True)
    course_type = models.SmallIntegerField(choices=course_type, verbose_name="付费类型")
    # 使用这个字段的原因
    brief = models.TextField(max_length=2048, verbose_name="课程概述", null=True,
blank=True)
    level = models.SmallIntegerField(choices=level_choices, default=1, verbose_name="难
度等级划分")
    pub_date = models.DateField(verbose_name="发布日期", auto_now_add=True)
    period = models.IntegerField(verbose_name="建议学习周期(day)", default=7)
    orders = models.IntegerField(verbose_name="课程排序")
    attachment_path = models.FileField(max_length=128, verbose_name="课件路径",
blank=True, null=True)
    status = models.SmallIntegerField(choices=status_choices, default=0,
verbose_name="课程状态")
    course_category = models.ForeignKey("CourseCategory", on_delete=models.CASCADE,
null=True, blank=True, verbose_name="课程分类")
    students = models.IntegerField(verbose_name="学习人数", default = 0)
    lessons = models.IntegerField(verbose_name="总课时数量", default = 0)
    pub_lessons = models.IntegerField(verbose_name="课时更新数量", default = 0)
    price = models.DecimalField(max_digits=6, decimal_places=2, verbose_name="课程原
价", default=0)
    class Meta:
        db_table = "ly_course"
        verbose_name = "专题课程"
        verbose_name_plural = "专题课程"

    def __str__(self):
        return "%s" % self.name


class Teacher(models.Model):
    """讲师、导师表"""
    role_choices = (
        (0, '讲师'),
        (1, '导师'),
    )
    name = models.CharField(max_length=32, verbose_name="讲师title")
    role = models.SmallIntegerField(choices=role_choices, default=0, verbose_name="讲师
身份")
    title = models.CharField(max_length=64, verbose_name="职位、职称")
    signature = models.CharField(max_length=255, help_text="导师签名", blank=True,
null=True)
    image = models.CharField(max_length=128, verbose_name = "讲师封面")
    brief = models.TextField(max_length=1024, verbose_name="讲师描述")

    class Meta:
        db_table = "ly_teacher"

```

```

        verbose_name = "讲师导师"
        verbose_name_plural = "讲师导师"

    def __str__(self):
        return "%s" % self.name

class CourseChapter(models.Model):
    """课程章节"""
    course = models.ForeignKey("Course", related_name='coursechapters',
on_delete=models.CASCADE, verbose_name="课程名称")
    chapter = models.SmallIntegerField(verbose_name="第几章", default=1)
    name = models.CharField(max_length=128, verbose_name="章节标题")
    summary = models.TextField(verbose_name="章节介绍", blank=True, null=True)
    pub_date = models.DateField(verbose_name="发布日期", auto_now_add=True)

    class Meta:
        db_table = "ly_course_chapter"
        verbose_name = "课程章节"
        verbose_name_plural = "课程章节"

    def __str__(self):
        return "%s:(第%s章)%s" % (self.course, self.chapter, self.name)

class CourseLesson(models.Model):
    """课程课时"""
    section_type_choices = (
        (0, '文档'),
        (1, '练习'),
        (2, '视频')
    )
    chapter = models.ForeignKey("CourseChapter", related_name='coursesections',
on_delete=models.CASCADE, verbose_name="课程章节")
    name = models.CharField(max_length=128, verbose_name="课时标题")
    orders = models.PositiveSmallIntegerField(verbose_name="课时排序")
    section_type = models.SmallIntegerField(default=2, choices=section_type_choices,
verbose_name="课时种类")
    section_link = models.CharField(max_length=255, blank=True, null=True,
verbose_name="课时链接", help_text="若是video, 填vid,若是文档, 填link")
    duration = models.CharField(verbose_name="视频时长", blank=True, null=True,
max_length=32) # 仅在前端展示使用
    pub_date = models.DateTimeField(verbose_name="发布时间", auto_now_add=True)
    free_trail = models.BooleanField(verbose_name="是否可试看", default=False)

    class Meta:
        db_table = "ly_course_lesson"
        verbose_name = "课程课时"
        verbose_name_plural = "课程课时"

    def __str__(self):
        return "%s-%s" % (self.chapter, self.name)

```

执行数据迁移

```
python manage.py makemigrations
python manage.py migrate
```

执行数据库时,如果发生以下错误

```
return connection.ops.adapt_decimalfield_value(self.to_python(value), self.max_digits, self.decimal_places)
File "D:\test\luffy\lib\site-packages\django\db\backends\base\operations.py", line 521, in adapt_decimalfield_value
    return utils.format_number(value, max_digits, decimal_places)
File "D:\test\luffy\lib\site-packages\django\db\backends\utils.py", line 239, in format_number
    value = value.quantize(decimal.Decimal(1).scaleb(-decimal_places), context=context)
TypeError: bad operand type for unary -: 'str'
```

则到 django/db/backends/utils.py : 237,修改代码如下:

```
if value is None:
    return None
if isinstance(value, decimal.Decimal):
    context = decimal.getcontext().copy()
    if max_digits is not None:
        # 增加转型类型转换
        context.prec = int(max_digits)
    if decimal_places is not None:
        # 增加转型类型转换
        value = value.quantize(decimal.Decimal(1).scaleb(-int(decimal_places)),
context=context)
    else:
        context.traps[decimal.Rounded] = 1
        value = context.create_decimal(value)
    return "{:f}".format(value)
if decimal_places is not None:
    return "%. *f" % (decimal_places, value)
return "{:f}".format(value)
```

把当前新增的模型注册到xadmin里面.

coursers/adminx.py,代码:

```
import xadmin

from .models import CourseCategory
```

```

class CourseCategoryModelAdmin(object):
    """课程分类模型管理类"""
    pass
xadmin.site.register(CourseCategory, CourseCategoryModelAdmin)

from .models import Course
class CourseModelAdmin(object):
    """课程模型管理类"""
    pass
xadmin.site.register(Course, CourseModelAdmin)

from .models import Teacher
class TeacherModelAdmin(object):
    """老师模型管理类"""
    pass
xadmin.site.register(Teacher, TeacherModelAdmin)

from .models import CourseChapter
class CourseChapterModelAdmin(object):
    """课程章节模型管理类"""
    pass
xadmin.site.register(CourseChapter, CourseChapterModelAdmin)

from .models import CourseLesson
class CourseLessonModelAdmin(object):
    """课程课时模型管理类"""
    pass
xadmin.site.register(CourseLesson, CourseLessonModelAdmin)

```

注册账号: <http://www.polyv.net/>

后端实现课程分类列表接口

新增一个排序字段

courses/models.py

```

class CourseCategory(models.Model):
    """
    课程分类
    """
    ...
    orders = models.IntegerField(verbose_name="课程排序", null=True)

```

执行数据迁移

```
python manage.py makemigrations
python manage.py migrate
```

创建序列化器

courses/serializers.py

```
from rest_framework import serializers
from .models import CourseCategory
class CourseCategorySerializer(serializers.ModelSerializer):
    class Meta:
        model = CourseCategory
        fields = ("id", "name")
```

创建视图

courses/views.py

```
from django.shortcuts import render

# Create your views here.
from rest_framework.generics import ListAPIView
from .models import CourseCategory
from .serializers import CourseCategorySerializer

class CourseCategoryAPIView(ListAPIView):
    queryset = CourseCategory.objects.filter( is_delete=False, is_show=True
).order_by("-orders")
    serializer_class = CourseCategorySerializer
```

注册路由

```
# courses/urls.py
from django.urls import path
from . import views
urlpatterns = [
    path(r"cate/", views.CourseCategoryAPIView.as_view()),
]

# 总路由
path('courses/', include("courses.urls")),
```

客户端发送请求获取课程分类信息

```
<el-row class="filter-el-row1">
  <el-col :span="2" class="filter-text">课程分类:</el-col>
  <el-col :span="2" class="current">全部</el-col>
  <el-col :span="2" v-for="item in cate_list">{{item.name}}</el-col>
  <!--<el-col :span="2">Linux运维</el-col>-->
  <!--<el-col :span="2">Python进阶</el-col>-->
  <!--<el-col :span="2">开发工具</el-col>-->
  <!--<el-col :span="2">Go语言</el-col>-->
  <!--<el-col :span="2">机器学习</el-col>-->
  <!--<el-col :span="2">技术生涯</el-col>-->
</el-row>

<script>
  export default {
    data(){
      return {
        ...
        cate_list:[],
      }
    },
    ...

    created(){
      // 获取课程分类信息
      this.$axios.get("http://127.0.0.1:8000/courses/cate/").then(response=>{
        console.log( response.data );
        this.cate_list = response.data
      }).catch(error=>{
        console.log(error.response);
      })
    }
  }
</script>
```

后端实现课程信息列表接口

创建序列化器，代码

```
# 开发中一个序列化器 A 中需要同时序列化其他模型 B 的数据返回给客户端,那么直接通过外键默认只会返回主键ID
# 所以我们可以再创建一个模型B的序列化器,对模型B的数据进行序列化
# 在序列化器A中直接把模型B的序列化器调用作为字段值来声明即可。
```

```
from .models import Teacher
class TeacherSerializer(serializers.ModelSerializer):
```

```

class Meta:
    model = Teacher
    fields = ("id", "name", "title")

from .models import Course
class CourseSerializer(serializers.ModelSerializer):
    # 这里调用的序列化器,必须事先在前面已经声明好的,否则报错
    teacher = TeacherSerializer()
    class Meta:
        model = Course
        fields =
("id", "name", "course_img", "students", "lessons", "pub_lessons", "price", "teacher")

```

视图代码:

```

from .models import Course
from .serializers import CourseSerializer
class CourseAPIView(ListAPIView):
    queryset = Course.objects.filter(status=0).order_by("-orders", "-students")
    serializer_class = CourseSerializer

```

补充!

```

# 之前的课程模型并没有声明老师的字段,所以补充进来
# courses/models.py

class Course(models.Model):
    teacher = models.ForeignKey("Teacher", on_delete=models.DO_NOTHING, null=True,
blank=True, verbose_name="授课老师")

```

客户端发送请求获取课程列表信息

```

<template>
<div class="courses">
    <Header :current_page="current_page"/>
    <div class="main">
        <div class="filter">
            <el-row class="filter-el-row1">
                <el-col :span="2" class="filter-text">课程分类:</el-col>
                <el-col :span="2" class="current">全部</el-col>
                <el-col :span="2" v-for="item in cate_list">{{item.name}}</el-col>
                <!--<el-col :span="2">Linux运维</el-col>-->
                <!--<el-col :span="2">Python进阶</el-col>-->
                <!--<el-col :span="2">开发工具</el-col>-->
                <!--<el-col :span="2">Go语言</el-col>-->
                <!--<el-col :span="2">机器学习</el-col>-->
            </el-row>

```

[illegible]


```

        </el-col>
      </el-row>
    </el-col>
  </el-row>
</div>
<el-pagination
  background
  layout="prev, pager, next"
  :total="1000">
</el-pagination>
</div>
<Footer/>
</div>
</template>

<script>
import Header from "../common/Header"
import Footer from "../common/Footer"
export default {
  name: "Courses",
  data() {
    return {
      current_page: 1,
      filter_price: false,
      cate_list: [], // 课程分类列表
      course_list: [], // 专题课程列表
    }
  },
  components: {
    Header,
    Footer,
  },
  methods: {
  },
  created() {
    // 获取课程分类信息
    this.$axios.get("http://127.0.0.1:8000/courses/cate/").then(response => {
      this.cate_list = response.data
    }).catch(error => {
      console.log(error.response);
    });

    // 获取课程信息
    this.$axios.get("http://127.0.0.1:8000/courses/").then(response => {
      this.course_list = response.data
    }).catch(error => {
      console.log(error.response);
    });
  }
}

```

```
</script>
```

```
<style scoped>
```

```
.courses{
  padding-top: 80px;
}
.main{
  width: 1100px;
  height: auto;
  margin: 0 auto;
  padding-top: 35px;
}
.main .filter{
  width: 100%;
  height: auto;
  margin-bottom: 35px;
  padding: 25px 0px 25px 0px;
  background: #fff;
  border-radius: 4px;
  box-shadow: 0 2px 4px 0 #f0f0f0;
}
.filter .el-col{
  text-align: center;
  padding: 6px 0px;
  line-height: 16px;
  margin-left: 14px;
  position: relative;
  transition: all .3s ease;
  cursor: pointer;
  color: #4a4a4a;
}
.filter-el-row1{
  padding-bottom: 18px;
  margin-bottom: 17px;
}
.filter .filter-text{
  text-align: right;
  font-size: 16px;
  color: #888;
}
.filter .filter-text2{
}
.filter .filter-el-row1 .current{
  color: #ffc210;
  border: 1px solid #ffc210!important;
  border-radius: 30px;
}
.filter .filter-el-row2 .current{
  color: #ffc210;
}
.filter-price{
  display:inline-block;
```

```
vertical-align: middle;
}
.filter-price .up, .filter-price .down{
  display: block;
  line-height: 8px;
  font-size: 13px;
  margin: -4px;
  color: #d8d8d8;
}
.current .filter-price .active{
  color: #ffc210;
}
.course-item{
  margin-bottom: 35px;
}
.course-item .course-item-box{
  padding: 20px 30px 20px 20px;
}
.course-item{
  box-shadow: 2px 3px 16px rgba(0,0,0,.1);
  transition: all .2s ease;
}
.course-item .course-item-left{
  width: 423px;
  height: 210px;
  margin-right: 30px;
}
.course-title{
  overflow: hidden; /* 在父元素中使用可以清除子元素的浮动影响 */
}
.course-title .box-title{
  font-size: 26px;
  color: #333333;
  float: left;
  margin-bottom: 8px;
}
.course-title .box-number{
  font-size: 14px;
  color: #9b9b9b;
  font-family: PingFangSC-Light;
  float: right;
  padding-top: 12px;
}
.course-item-right{
  width: 56.6%;
}
.author{
  font-size: 14px;
  color: #9b9b9b;
  margin-bottom: 14px;
  padding-bottom: 14px;
  overflow: hidden;
}
```

```
.author .box-author{
  float:left;
}
.author .lesson{
  float: right;
}
.course-content .el-icon-caret-right{
  border: 1px solid #000;
  border-radius: 50%;
  margin-right: 6px;
}
.course-content .el-col{
  font-size: 14px;
  color: #666;
  width: 50%;
  margin-bottom: 15px;
  cursor: pointer;
}
.course-content .el-col:hover{
  color: #ffc210;
}
.course-content .el-col:hover .el-icon-caret-right,.course-content .el-col:hover .free{
  border-color: #ffc210;
  color: #ffc210;
}
.course-content .el-col .free{
  width: 34px;
  height: 20px;
  color: #fd7b4d;
  margin-left: 10px;
  border: 1px solid #fd7b4d;
  border-radius: 2px;
  text-align: center;
  font-size: 13px;
  white-space: nowrap;
}
.course-price{
  overflow: hidden;
}
.course-price .course-price-left{
  float: left;
}
.course-price .discount{
  padding: 6px 10px;
  display: inline-block;
  font-size: 16px;
  color: #fff;
  text-align: center;
  margin-right: 8px;
  background: #fa6240;
  border: 1px solid #fa6240;
  border-radius: 10px 0 10px 0;
}
```

```
.course-price .course-price-left{
  line-height: 22px;
}
.course-price .count{
  font-size: 24px;
  color: #fa6240;
}
.course-price .old_count{
  font-size: 14px;
  color: #9b9b9b;
  text-decoration: line-through;
  margin-left: 10px;
}
.course-price .buy{
  float: right;
  width: 120px;
  height: 38px;
  font-size: 16px;
  border-radius: 3px;
  border: 1px solid #fd7b4d;
  background: transparent; /* 透明 */
  color: #fa6240;
  cursor: pointer;
  transition: all .2s ease-in-out; /* css3新版本的样式中支持支持 jQuery里面的动画预设效果 */
  /* all表示当前元素的所有样式 .2s表示改变样式完成的时间 ease-in-out */
}
.course-price .buy:hover{
  color: #fff;
  background: #ffc210;
  border: 1px solid #ffc210;
}
</style>
```