尚硅谷大数据之电商实时数仓

之

数据可视化接口实现

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版本：V3.0

第 1 章　数据可视化接口

1.1　设计思路

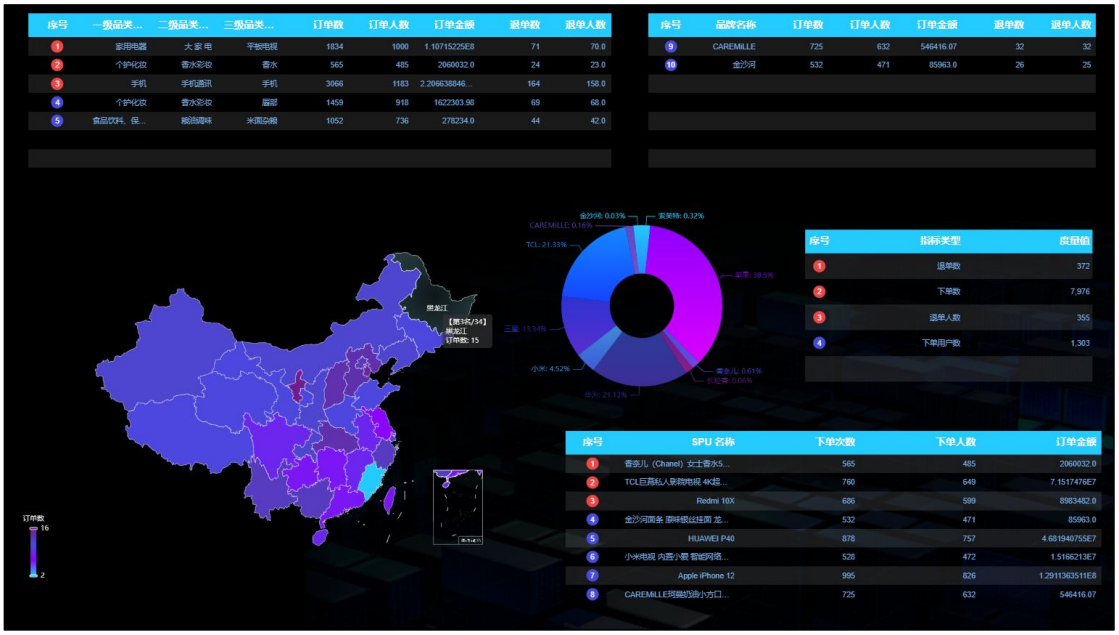
DWS 层把轻度聚合的结果保存到 ClickHouse 中，主要的目的就是提供即时的数据查询、统计、分析服务。这些统计服务一般会以两种形式呈现，一种是面向专业数据分析人员准备的 BI 工具，一种是面向非专业人员的更加直观的数据大屏。

本项目将面向 sugar 数据大屏开发数据接口服务。

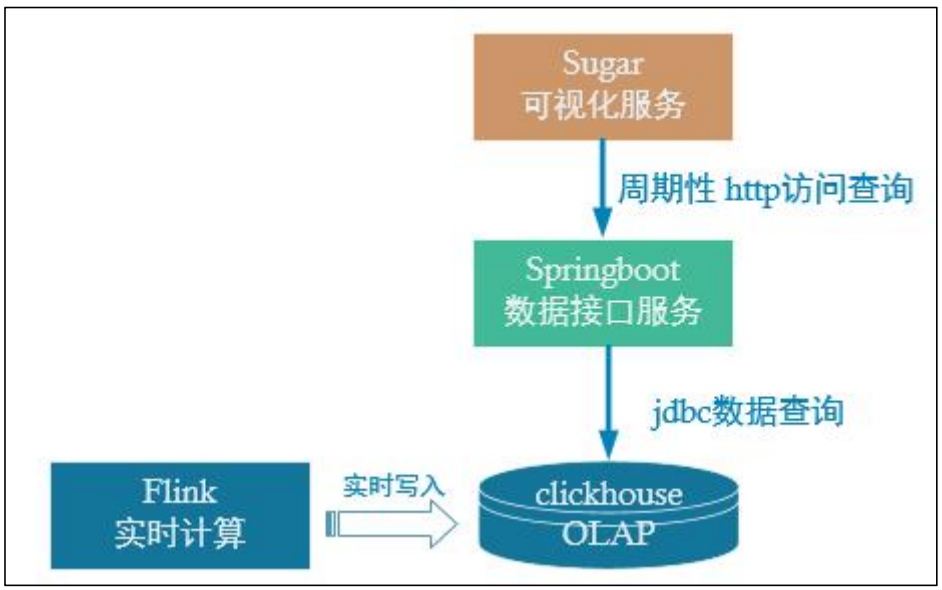
1.2　需求梳理

1.2.1 最终显示效果图


5万
4万
3万
2万
1万
0
huawei
360
web
oppo
wandoujia
Appstore
xiaomi
vivo
会话平均页面访问时长
序号
变动类型
用户数
1
back
0
2
newUserCt
20
3
activeUserCt
915
类别
新用户
老用户
用户数(人)
155
145
总访问页面数(次)
507
481
跳出率(%)
0
0
平均在线时长(秒)
33.659716129032255
35.37985517241379
平均访问页面数(人次)
3.270967741935484
3.3172413793103045
1
0.8
0.6
0.4
0.2
0
跳出率
1,000
800
600
400
200
0
00
01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22
23
独立访客数
页面浏览数
新访客数
100
80
60
40
20
0
会话数


序号
一级品类...
二级品类...
三级品类...
订单数
订单人数
订单金额
退单数
退单人数
1
家用电器
大家电
平板电视
1834
1000
1.1071525E8
71
70.0
2
个护化妆
香水彩妆
香水
565
485
2060032.0
24
23.0
3
手机
手机通讯
手机
3066
1183
2.206638846...
164
158.0
4
个护化妆
香水彩妆
唇部
1459
918
1622303.98
69
68.0
5
食品饮料、保...
粮油调味
米面杂粮
1052
736
278234.0
44
42.0
序号
品牌名称
订单数
订单人数
订单金额
退单数
退单人数
9
CAREMILLE
725
632
546416.07
32
32
10
金沙河
532
471
85963.0
26
25
金沙河: 0.03%
爱美特: 0.32%
CAREMILLE: 0.16%
TCL: 21.33%
苹果: 38.5%
三星: 13.34%
小米: 4.52%
香奈儿: 0.61%
长虹美: 0.06%
华为: 21.11%
黑龙江
【第3名/34】
黑龙江
订单数: 15
订单数
16
2
序号
指标类型
度量值
1
退单数
372
2
下单数
7,976
3
退单人数
355
4
下单用户数
1,303
序号
SPU 名称
下单次数
下单人数
订单金额
1
香奈儿（Chanel）女士香水5...
565
485
2060032.0
2
TCL巨幕私人影院电视 4K超...
760
649
7.1517476E7
3
Redmi 10X
686
599
8983482.0
4
金沙河面条 原味银丝挂面 龙...
532
471
85963.0
5
HUAWEI P40
878
757
4.681940755E7
6
小米电视 内置小爱 智能网络...
528
472
1.5166213E7
7
Apple iPhone 12
995
826
1.2911363511E8
8
CAREMILLE玛曼纳油小方口...
725
632
546416.07

1.2.2 接口执行过程



DWS 层计算结果存储在 ClickHouse，本项目将开发数据接口查询 ClickHouse 中的数据，提供给 Sugar 进行大屏展示。这里主要有两项工作：

- 配置可视化大屏服务。
- 编写数据查询接口以供可视化大屏进行访问。

第 2 章　环境准备

2.1　sugar 简介

2.1.1 产品介绍

Sugar 是百度云推出的敏捷 BI 和数据可视化平台，目标是解决报表和大屏的数据 BI 分析和可视化问题，解放数据可视化系统的开发人力。

2.1.2 使用入口

https://cloud.baidu.com/product/sugar.html

2.1.3 创建数据大屏

(1) 点击【立即使用】后，登录百度账号

(2) 然后首先创建组织

(3) 创建中选择产品【大屏尝鲜版】，首次使用有一个月的试用期

(4) 新建好组织后选择【进入组织】

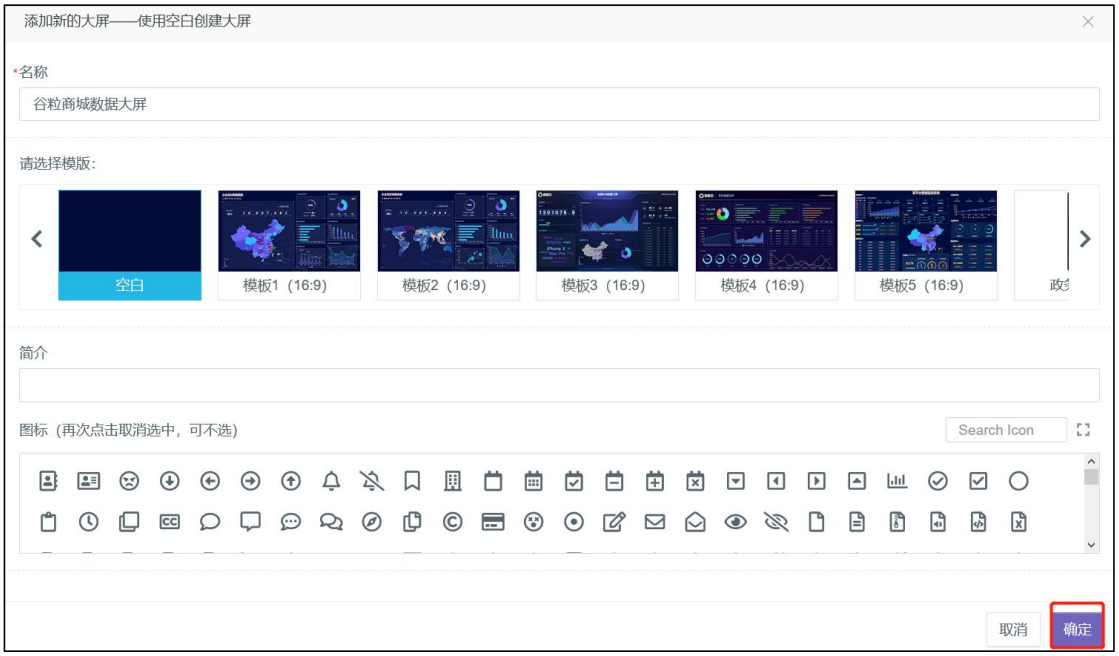
(5) 然后进入默认的【第一个空间】

(6) 在空间中选择【待创建大屏】后的【新建】

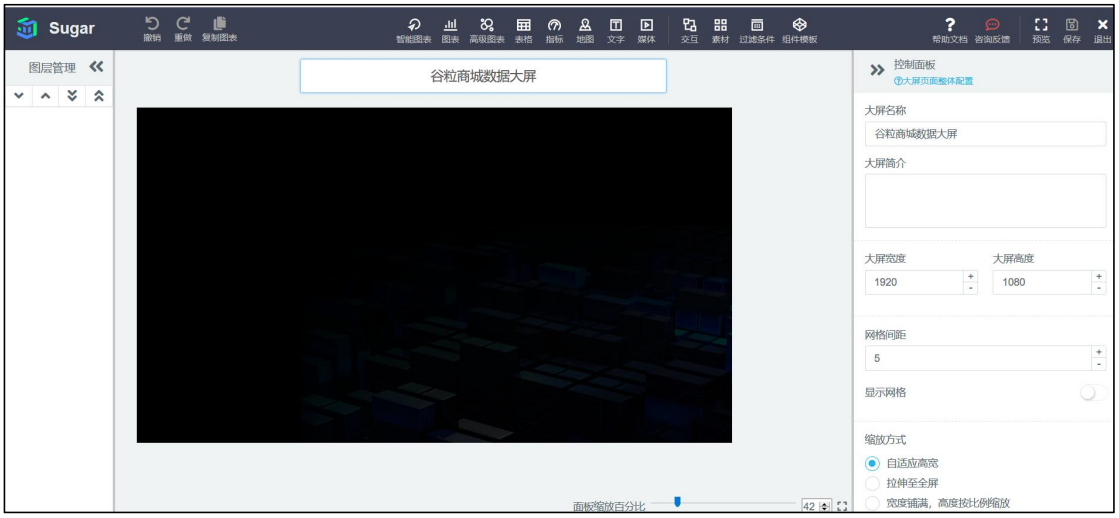
(7) 选择大屏的模板

(8) 可以选空模板，也可以根据现有的模板进行修改

我们这里选择空白模板，并指定大屏的名称



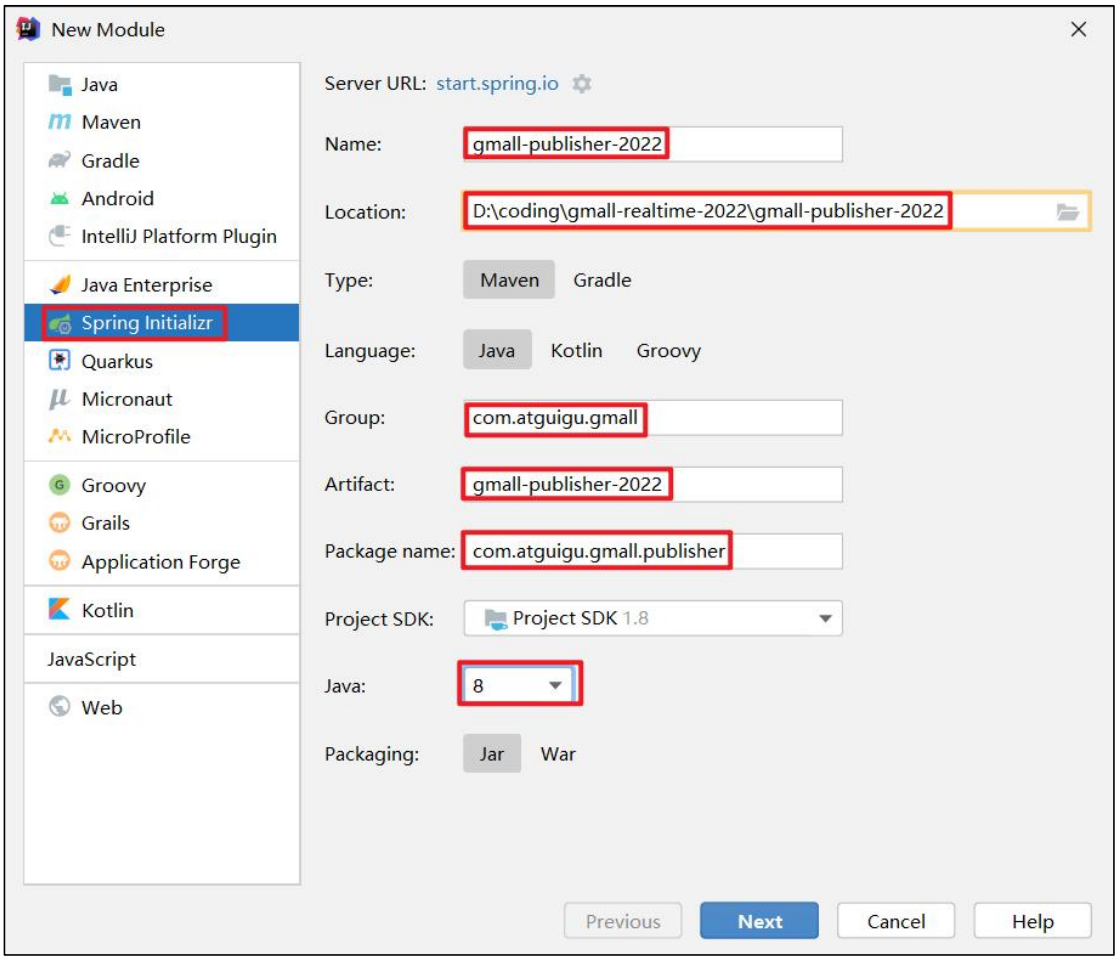
(9) 进入大屏的编辑窗口



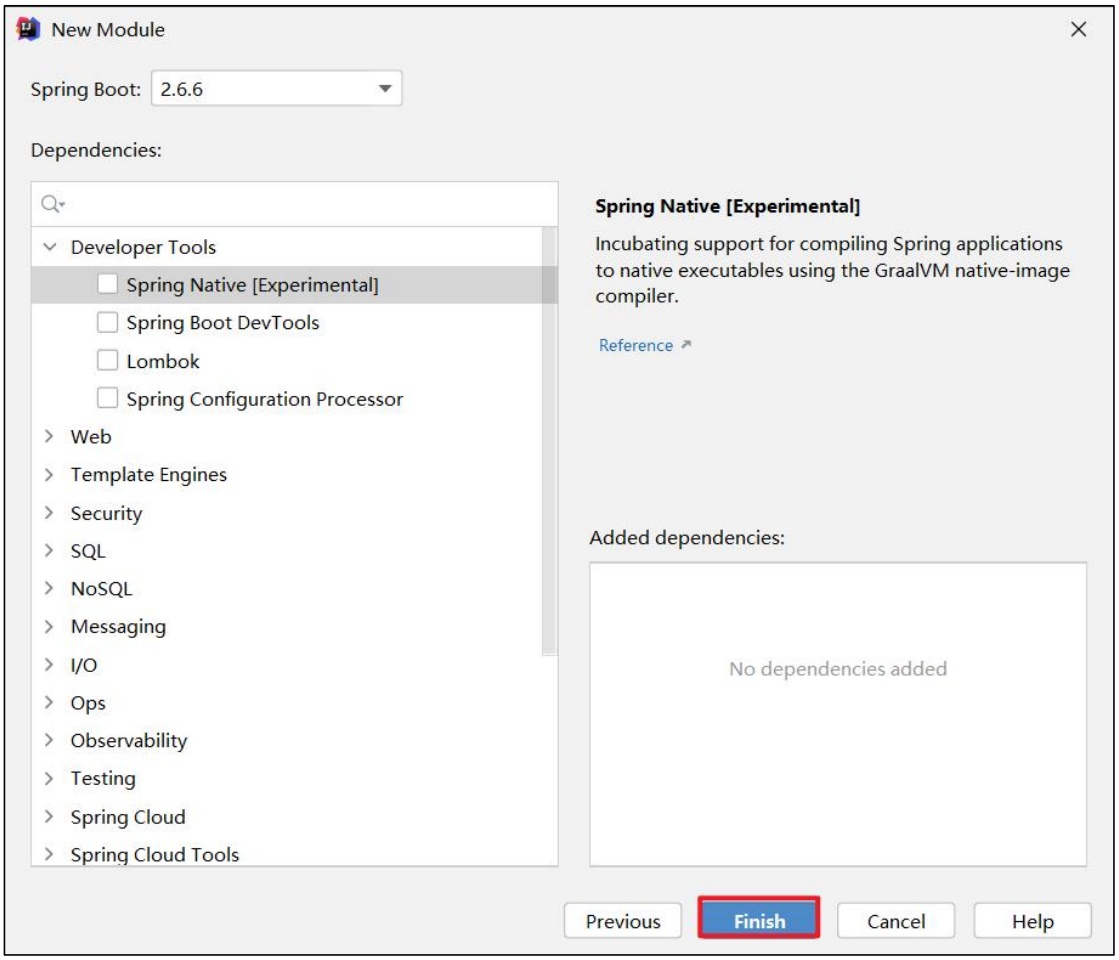
2.2 SpringBoot 开发环境构建

2.2.1 步骤

(1) 在 gmall2022-parent 项目下新建模块 gmall2022-publisher



此处不勾选，在 pom 文件中添加依赖。

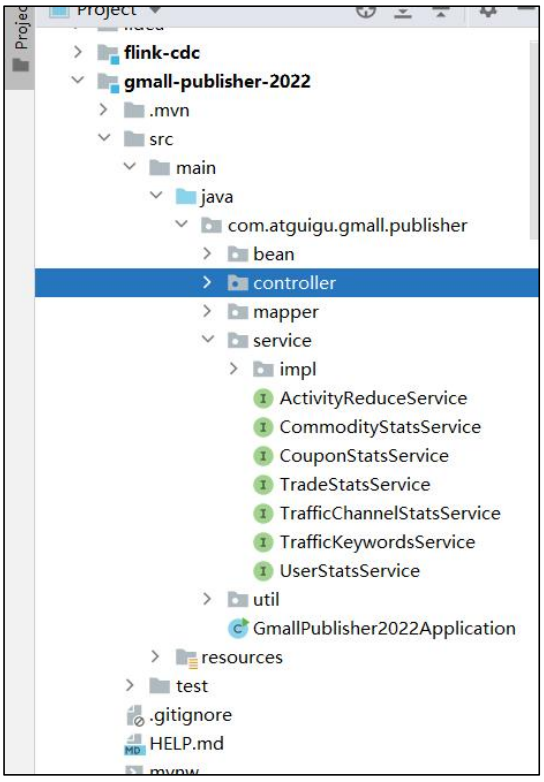


(2) 添加依赖

```
<dependencies>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-jdbc</artifactId>
    </dependency>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-web</artifactId>
    </dependency>
    <dependency>
        <groupId>org.mybatis.spring.boot</groupId>
        <artifactId>mybatis-spring-boot-starter</artifactId>
        <version>2.1.3</version>
    </dependency>

    <dependency>
        <groupId>org.projectlombok</groupId>
        <artifactId>lombok</artifactId>
        <optional>true</optional>
    </dependency>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-test</artifactId>
        <scope>test</scope>
        <exclusions>
```

```
            <exclusion>
                <groupId>org.junit.vintage</groupId>
                <artifactId>junit-vintage-engine</artifactId>
            </exclusion>
        </exclusions>
    </dependency>

    <dependency>
        <groupId>org.apache.commons</groupId>
        <artifactId>commons-lang3</artifactId>
        <version>3.11</version>
    </dependency>

    <dependency>
        <groupId>ru.yandex.clickhouse</groupId>
        <artifactId>clickhouse-jdbc</artifactId>
        <version>0.1.55</version>
    </dependency>

</dependencies>
```

(3) 目录结构如下



(4) 在 application.properties 内添加如下内容

SpringBoot 内嵌了 Tomact，默认端口为 8080。集群 Zookeeper 版本为 3.5.7，该版本提供的 AdminServer 服务端口号也是 8080，为了避免端口冲突，此处将 SpringBoot 内嵌的 Tomcat 容器端口号修改为 8070。

接口对接的数据库为 ClickHouse，需要指定驱动及 url。

```
server.port=8070
#配置 ClickHouse 驱动以及 URL
spring.datasource.driver-class-name=ru.yandex.clickhouse.ClickHou
seDriver
spring.datasource.url=jdbc:clickhouse://hadoop102:8123/gmall_rebu
ild
```

2.2.2 SpringBoot 项目分层

(1) 表示层（也叫控制层）

主要任务是拦截并处理请求。表示层代码通常在 controller 包下。

(2) 业务层

业务层代码通常在 service 包下。

service 下会有个名为 impl 的子包，里面放置 service 层接口的实现类。

实现类类名规范：接口名后面加 Impl

(3) 持久层

和数据库交互，最常用的框架是 Mybatis，所以也叫 Mapper 层。

持久层代码通常在 mapper 包下。

2.3 内网穿透

2.3.1 内网穿透简介

内网即局域网。假设局域网中有一台电脑部署了 web 服务，现在希望所有人都能访问它。很显然，这台电脑只有一个局域网 ip，没有公网 ip。同一局域网内的设备可以通过局域网 ip 访问此电脑，而局域网之外的设备无法访问。

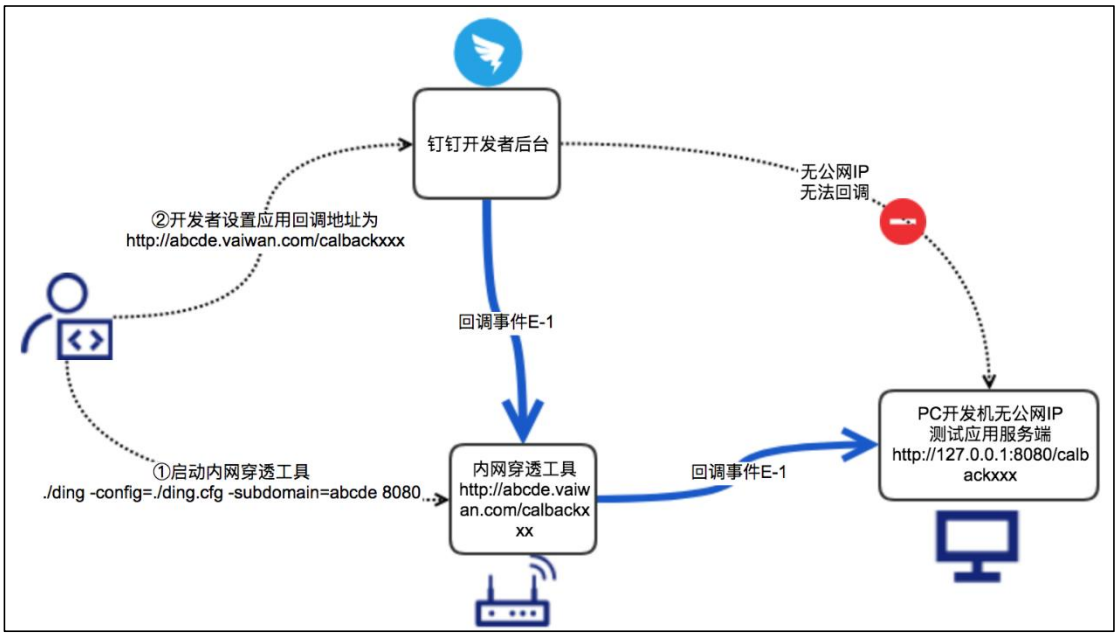
内网穿透可以将 ip + 端口唯一标识的本机服务映射为公网域名，局域网之外的设备可以通过该域名访问本机服务。

2.3.2 实现步骤

本项目将使用钉钉提供的内网穿透工具。

Github 地址为 https://github.com/open-dingtalk/dingtalk-pierced-client

(1) 原理

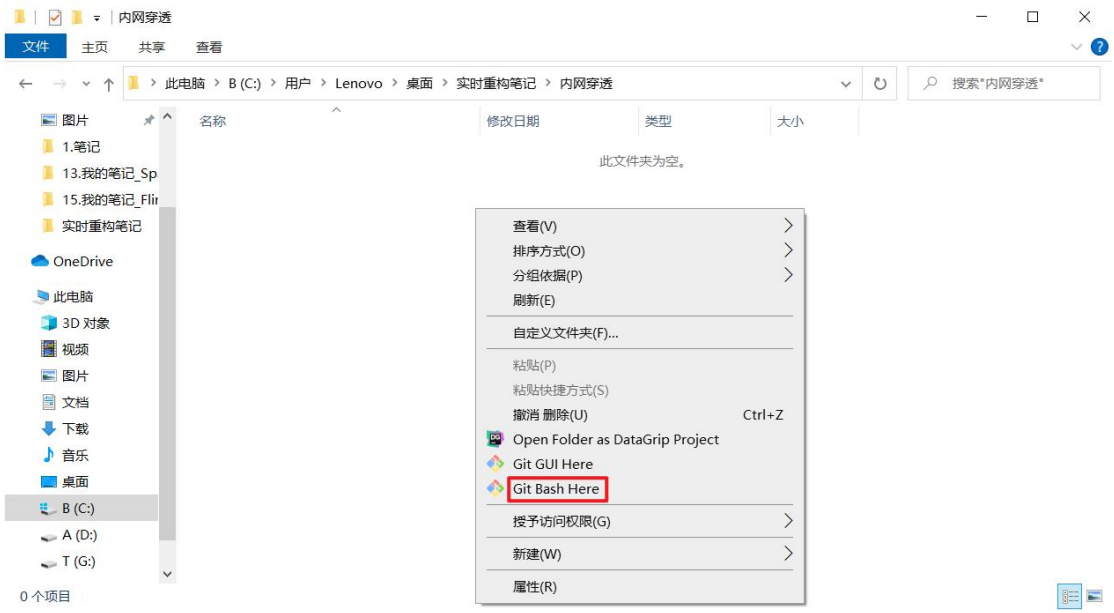


(2) 步骤

- 下载工具

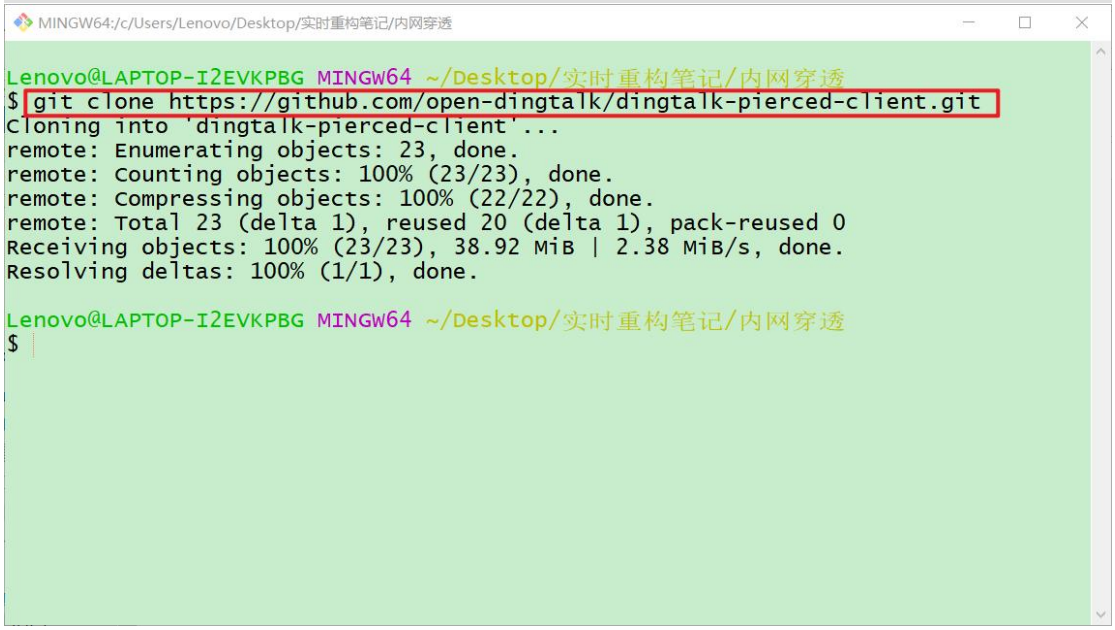
  确保本机已安装 git。

- 在任意目录右键空白处，单击 Git Bash Here。



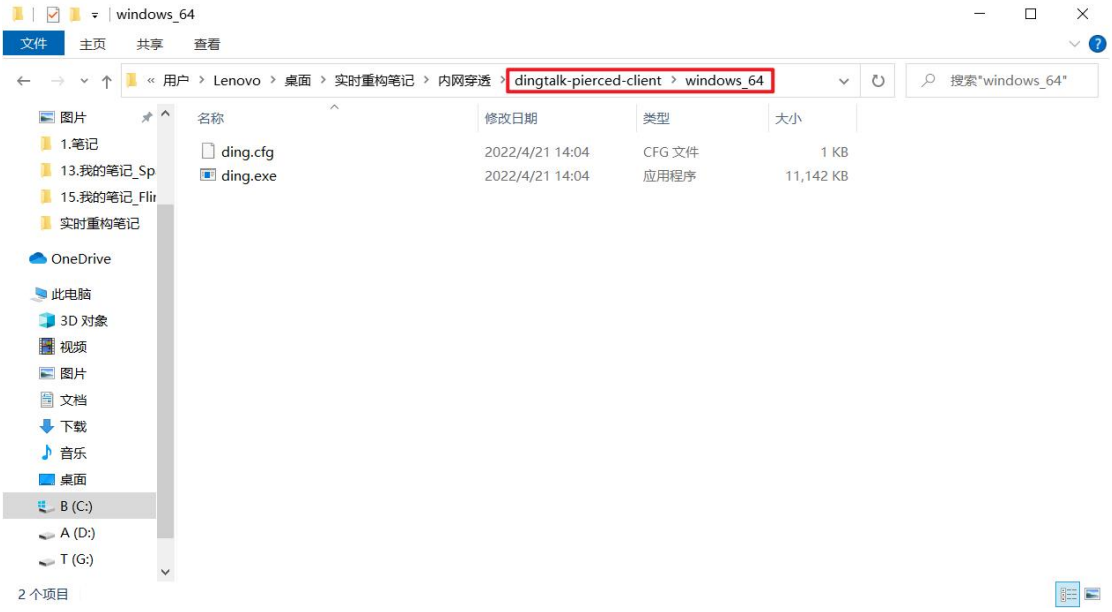
- 在弹出的窗口中执行以下命令

```
git clone https://github.com/open-dingtalk/dingtalk-pierced-client.git
```

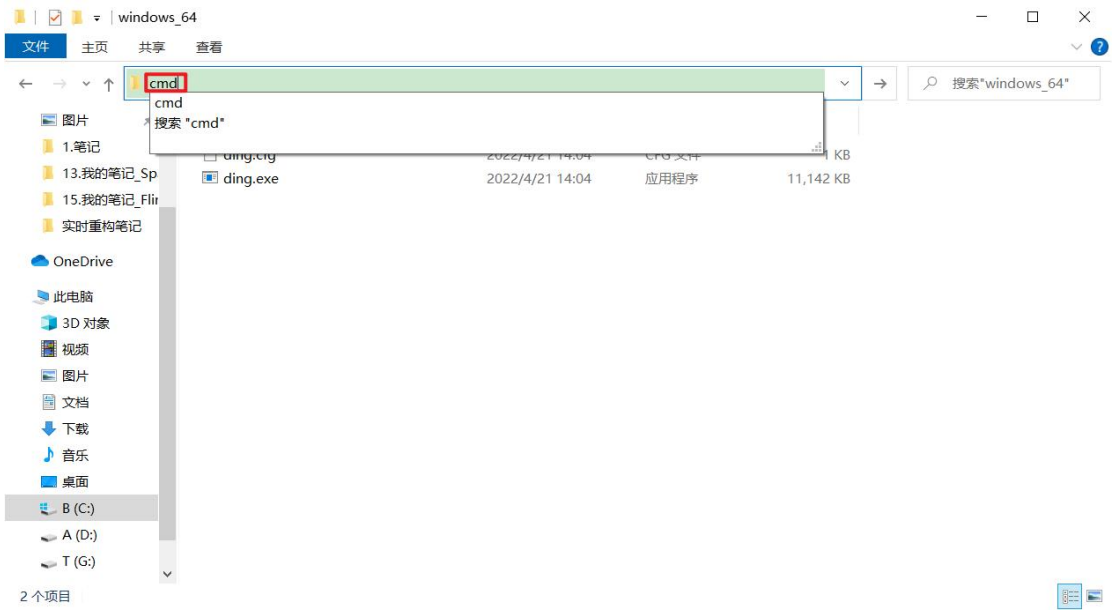


- 查看目录，多了 dingtalk-pierced-client 文件。

➢ 进入 windows_64 目录



➢ 在地址栏输入 cmd，回车



- 在弹出的 cmd 窗口中执行以下命令

```
ding --config ding.cfg --subdomain dinghhh 8070
```

  - --config 指定内网穿透的配置文件，固定为钉钉提供的./ding.cfg，无需修改。
  - --subdomain 指定需要使用的域名前缀，该前缀将会匹配到“vaiwan.cn”前面，此处 subdomain 是 dinghhh，启动工具后会将 dinghhh.vaiwan.cn 映射到本地。
  - 8070 为需要代理的本地服务 http-server 端口。

执行完毕后，局域网之外的设备可以通过 http://dinghhh.vaiwan.cn 访问本地 8070 端口的 web 服务。

- 启动客户端后 http://dinghhh.vaiwan.cn/xxx 的请求会映射到 http://localhost:8070/xxx。

第 3 章　数仓开发之 ADS 层

3.1　流量主题

3.1.1 各渠道流量统计

1）需求说明

统计周期	统计粒度	指标	说明
当日	渠道	独立访客数	统计访问人数
当日	渠道	会话总数	统计会话总数
当日	渠道	会话平均浏览页面数	统计每个会话平均浏览页面数
当日	渠道	会话平均停留时长	统计每个会话平均停留时长
当日	渠道	跳出率	只有一个页面的会话的比例

2）需求分析

柱状图可以直观展示不同渠道的度量值，本节将为上述五个指标各生成一张柱状图。

3）数据结构

图表所需数据结构的获取详见本节 **7）Sugar 配置**。

```
{
  "status": 0,
  "msg": "",
  "data": {
    "categories": [
      "Appstore",
      "xiaomi",
      ...
    ],
    "series": [
      {
        "name": "独立访客数",
        "data": [
          "99",
          "74",
          ...
        ]
      }
    ]
  }
}
```

（1）categories

数组中存储的元素为柱状图横轴所有取值。

（2）data

数组中存储的元素为与横轴对应的纵轴取值。

4）Mapper 层

（1）实体类

① TrafficUvCt

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TrafficUvCt {
    // 渠道
    String ch;
    // 独立访客数
    Integer uvCt;
}
```

② TrafficSvCt

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@AllArgsConstructor
public class TrafficSvCt {
    // 渠道
    String ch;
    // 会话数
    Integer svCt;
}
```

③ TrafficPvPerSession

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@AllArgsConstructor
public class TrafficPvPerSession {
    // 渠道
    String ch;
    // 各会话页面浏览数
    Double pvPerSession;
}
```

④ TrafficDurPerSession

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@AllArgsConstructor
public class TrafficDurPerSession {
    // 渠道
    String ch;
    // 各会话页面访问时长
    Double durPerSession;
}
```

⑤ TrafficUjRate

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;

@Data
@AllArgsConstructor
public class TrafficUjRate {
    // 渠道
    String ch;
    // 跳出率
    Double ujRate;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.*;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface TrafficChannelStatsMapper {
    // 1. 获取各渠道独立访客数
    @Select("select ch,\n" +
            "       sum(uv_ct)          uv_ct\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), ch\n" +
            "order by uv_ct desc;")
    List<TrafficUvCt> selectUvCt(@Param("date")Integer date);

    // 2. 获取各渠道会话数
```

```
    @Select("select ch,\n" +
            "       sum(sv_ct)          sv_ct\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), ch\n" +
            "order by sv_ct desc;")
    List<TrafficSvCt> selectSvCt(@Param("date")Integer date);

    // 3. 获取各渠道会话平均页面浏览数
    @Select("select ch,\n" +
            "       sum(pv_ct) / sum(sv_ct)   pv_per_session\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), ch\n" +
            "order by pv_per_session desc;")
    List<TrafficPvPerSession>
selectPvPerSession(@Param("date")Integer date);

    // 4. 获取各渠道会话平均页面访问时长
    @Select("select ch,\n" +
            "       sum(dur_sum) / sum(sv_ct) dur_per_session\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), ch\n" +
            "order by dur_per_session desc;")
    List<TrafficDurPerSession>
selectDurPerSession(@Param("date")Integer date);

    // 5. 获取各渠道跳出率
    @Select("select ch,\n" +
            "       sum(uj_ct) / sum(sv_ct)   uj_rate\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), ch\n" +
            "order by uj_rate desc;")
    List<TrafficUjRate> selectUjRate(@Param("date")Integer date);
}
```

（3）注解

① @Select 注解

位于方法定义语句上方，修饰方法。

添加该注解后， Mybatis 会自动实现 JDBC 的环境准备，实现对应的 Mapper 层接口，并在 Tomcat 容器启动时将该实现类加载到容器中，包含 @Service 注解的功能。可以在服务层的 Impl 类中通过 @Autowired 自动装载该实现类。该实现类是单例的。

注意：要将该类加载到容器中，需要在启动类上方添加 @MapperScan 注解，指明

mapper 包路径，如下。

```
package com.atguigu.gmall.publisher;

import org.mybatis.spring.annotation.MapperScan;
import org.springframework.boot.SpringApplication;
import
org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication
@MapperScan(basePackages = "com.atguigu.gmall.publisher.mapper")
public class GmallPublisher2022Application {

    public static void main(String[] args) {
        SpringApplication.run(GmallPublisher2022Application.class,
args);
    }

}
```

② @Param 注解

位于方法参数数据类型之前，修饰参数。

该注解可以将方法参数接收的值赋给注解参数中的变量，该变量可以在方法上方@Select 注解的 SQL 语句中使用，调用方式为 #{变量名}。

如 @Param("paramDate")Integer date，将参数 date 接收到的数据赋值给paramDate，可以在 SQL 中通过 #{paramDate} 获取 paramDate 参数的值。

5）Service 层

（1）service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.*;

import java.util.List;

public interface TrafficChannelStatsService {
    // 1. 获取各渠道独立访客数
    List<TrafficUvCt> getUvCt(Integer date);

    // 2. 获取各渠道会话数
    List<TrafficSvCt> getSvCt(Integer date);

    // 3. 获取各渠道会话平均页面浏览数
    List<TrafficPvPerSession> getPvPerSession(Integer date);
```

```
    // 4. 获取各渠道会话平均页面访问时长
    List<TrafficDurPerSession> getDurPerSession(Integer date);

    // 5. 获取各渠道跳出率
    List<TrafficUjRate> getUjRate(Integer date);
}
```

（2）service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.*;
import
com.atguigu.gmall.publisher.mapper.TrafficChannelStatsMapper;
import
com.atguigu.gmall.publisher.service.TrafficChannelStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public     class     TrafficChannelStatsServiceImpl     implements
TrafficChannelStatsService {

    // 自动装载 Mapper 接口实现类
    @Autowired
    TrafficChannelStatsMapper trafficChannelStatsMapper;

    // 1. 获取各渠道独立访客数
    @Override
    public List<TrafficUvCt> getUvCt(Integer date) {
        return trafficChannelStatsMapper.selectUvCt(date);
    }

    // 2. 获取各渠道会话数
    @Override
    public List<TrafficSvCt> getSvCt(Integer date) {
        return trafficChannelStatsMapper.selectSvCt(date);
    }

    // 3. 获取各渠道会话平均页面浏览数
    @Override
    public List<TrafficPvPerSession> getPvPerSession(Integer date) {
        return trafficChannelStatsMapper.selectPvPerSession(date);
    }

    // 4. 获取各渠道会话平均页面访问时长
    @Override
    public List<TrafficDurPerSession> getDurPerSession(Integer date)
{
        return trafficChannelStatsMapper.selectDurPerSession(date);
    }
```

```
    // 5．获取各渠道跳出率
    @Override
    public List<TrafficUjRate> getUjRate(Integer date) {
        return trafficChannelStatsMapper.selectUjRate(date);
    }
}
```

（3）注解

① @Service 注解

位于实现类定义语句上方，修饰类。

把该实现类注册成一个组件，这个组件常驻内存，而且默认为单态（即单例，整个服务器进程，该类对象只有一个）。启动时会扫描所有被 @Service 注解修饰的实现类，将它们加载到内存。

② @Autowired 注解

位于成员变量（属性）定义语句上方，修饰类的属性。

① 控制器组件会扫描接口名上方添加了 @Autowired（自动装配）注解的接口，然后去内存的常驻组件中寻找适配组件（实现类），令此处的引用指向适配组件。

② 如果一个接口有多个实现类注册成为了组件，可以通过 @ Qualifier("组件名称") 注解指定不同的适配组件。此处的组件名称在 @Service 注解的参数中指定，如 @Service("组件名称")，只有一个实现类时可以不起名（不传参），直接使用 @Service 注解。

6）controller 层

（1）代码

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.*;
import
com.atguigu.gmall.publisher.service.TrafficChannelStatsService;
import com.atguigu.gmall.publisher.service.TrafficKeywordsService;
import
com.atguigu.gmall.publisher.service.TrafficVisitorStatsService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.apache.commons.lang3.StringUtils;
```

```
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

@RestController
@RequestMapping("/gmall/realtime/traffic")
public class TrafficController {

    // 自动装载渠道流量统计服务实现类
    @Autowired
    private TrafficChannelStatsService trafficChannelStatsService;

    // 1. 独立访客请求拦截方法
    @RequestMapping("/uvCt")
    public String getUvCt(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrafficUvCt>              trafficUvCtList              =
trafficChannelStatsService.getUvCt(date);
        if (trafficUvCtList == null) {
            return "";
        }
        StringBuilder categories = new StringBuilder("[");
        StringBuilder uvCtValues = new StringBuilder("[");

        for (int i = 0; i < trafficUvCtList.size(); i++) {
            TrafficUvCt trafficUvCt = trafficUvCtList.get(i);
            String ch = trafficUvCt.getCh();
            Integer uvCt = trafficUvCt.getUvCt();

            categories.append("\"").append(ch).append("\"");
            uvCtValues.append("\"").append(uvCt).append("\"");

            if (i < trafficUvCtList.size() - 1) {
                categories.append(",");
                uvCtValues.append(",");
            } else {
                categories.append("]");
                uvCtValues.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"categories\":" + categories + ",\n" +
                "    \"series\": [\n" +
                "      {\n" +
                "        \"name\": \"独立访客数\",\n" +
                "        \"data\": " + uvCtValues + "\n" +
```

```
            "     }\n" +
            "   ]\n" +
            "  }\n" +
            "}";
    }

    // 2. 会话数请求拦截方法
    @RequestMapping("/svCt")
    public String getPvCt(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrafficSvCt>             trafficSvCtList             =
trafficChannelStatsService.getSvCt(date);
        if (trafficSvCtList == null) {
            return "";
        }
        StringBuilder categories = new StringBuilder("[");
        StringBuilder svCtValues = new StringBuilder("[");

        for (int i = 0; i < trafficSvCtList.size(); i++) {
            TrafficSvCt trafficSvCt = trafficSvCtList.get(i);
            String ch = trafficSvCt.getCh();
            Integer svCt = trafficSvCt.getSvCt();

            categories.append("\"").append(ch).append("\"");
            svCtValues.append("\"").append(svCt).append("\"");

            if (i < trafficSvCtList.size() - 1) {
                categories.append(",");
                svCtValues.append(",");
            } else {
                categories.append("]");
                svCtValues.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"categories\":" + categories + ",\n" +
                "    \"series\": [\n" +
                "      {\n" +
                "        \"name\": \"会话数\",\n" +
                "        \"data\": " + svCtValues + "\n" +
                "      }\n" +
                "    ]\n" +
                "  }\n" +
                "}";
    }

    // 3. 各会话浏览页面数请求拦截方法
    @RequestMapping("/pvPerSession")
    public String getPvPerSession(
```

```
          @RequestParam(value = "date", defaultValue = "1") Integer
date) {
       if (date == 1) {
          date = DateUtil.now();
       }
       List<TrafficPvPerSession>     trafficPvPerSessionList     =
trafficChannelStatsService.getPvPerSession(date);
       if (trafficPvPerSessionList == null) {
          return "";
       }
       StringBuilder categories = new StringBuilder("[");
       StringBuilder pvPerSessionValues = new StringBuilder("[");

       for (int i = 0; i < trafficPvPerSessionList.size(); i++) {
          TrafficPvPerSession        trafficPvPerSession        =
trafficPvPerSessionList.get(i);
          String ch = trafficPvPerSession.getCh();
          Double                   pvPerSession                   =
trafficPvPerSession.getPvPerSession();

          categories.append("\"").append(ch).append("\"");

pvPerSessionValues.append("\"").append(pvPerSession).append("\"")
;

          if (i < trafficPvPerSessionList.size() - 1) {
             categories.append(",");
             pvPerSessionValues.append(",");
          } else {
             categories.append("]");
             pvPerSessionValues.append("]");
          }
       }

       return "{\n" +
              "  \"status\": 0,\n" +
              "  \"msg\": \"\",\n" +
              "  \"data\": {\n" +
              "    \"categories\":" + categories + ",\n" +
              "    \"series\": [\n" +
              "      {\n" +
              "        \"name\": \"会话平均页面浏览数\",\n" +
              "        \"data\": " + pvPerSessionValues + "\n" +
              "      }\n" +
              "    ]\n" +
              "  }\n" +
              "}";
   }

   // 4. 各会话累计访问时长请求拦截方法
   @RequestMapping("/durPerSession")
   public String getDurPerSession(
          @RequestParam(value = "date", defaultValue = "1") Integer
date) {
       if (date == 1) {
          date = DateUtil.now();
       }
```

```
        List<TrafficDurPerSession>    trafficDurPerSessionList    =
trafficChannelStatsService.getDurPerSession(date);
        if (trafficDurPerSessionList == null) {
            return "";
        }
        StringBuilder categories = new StringBuilder("[");
        StringBuilder durPerSessionValues = new StringBuilder("[");

        for (int i = 0; i < trafficDurPerSessionList.size(); i++) {
            TrafficDurPerSession       trafficDurPerSession       =
trafficDurPerSessionList.get(i);
            String ch = trafficDurPerSession.getCh();
            Double                  durPerSession                 =
trafficDurPerSession.getDurPerSession();

            categories.append("\"").append(ch).append("\"");

durPerSessionValues.append("\"").append(durPerSession).append("\"
");

            if (i < trafficDurPerSessionList.size() - 1) {
                categories.append(",");
                durPerSessionValues.append(",");
            } else {
                categories.append("]");
                durPerSessionValues.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"categories\":" + categories + ",\n" +
                "    \"series\": [\n" +
                "      {\n" +
                "        \"name\": \"会话平均页面访问时长\",\n" +
                "        \"data\": " + durPerSessionValues + "\n" +
                "      }\n" +
                "    ]\n" +
                "  }\n" +
                "}";
    }

    // 5. 跳出率请求拦截方法
    @RequestMapping("/ujRate")
    public String getUjRate(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrafficUjRate>           trafficUjRateList           =
trafficChannelStatsService.getUjRate(date);
        if (trafficUjRateList == null) {
            return "";
        }
```

```
        StringBuilder categories = new StringBuilder("[");
        StringBuilder ujRateValues = new StringBuilder("[");

        for (int i = 0; i < trafficUjRateList.size(); i++) {
            TrafficUjRate trafficUjRate = trafficUjRateList.get(i);
            String ch = trafficUjRate.getCh();
            Double ujRate = trafficUjRate.getUjRate();

            categories.append("\"").append(ch).append("\"");
            ujRateValues.append("\"").append(ujRate).append("\"");

            if (i < trafficUjRateList.size() - 1) {
                categories.append(",");
                ujRateValues.append(",");
            } else {
                categories.append("]");
                ujRateValues.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"categories\":" + categories + ",\n" +
                "    \"series\": [\n" +
                "      {\n" +
                "        \"name\": \"跳出率\",\n" +
                "        \"data\": " + ujRateValues + "\n" +
                "      }\n" +
                "    ]\n" +
                "  }\n" +
                "}";
    }
}
```

（2）注解

① @RestController

位于控制类定义语句上方，修饰控制类。

标注方法为控制类，可以将外部请求引入该类的方法中。当方法返回值类型为 String 时，不会发生页面跳转，相当于 @Controller + @ResponseBody。

② @RequestMapping

可以在控制类定义语句上方添加，也可以在方法定义语句上方添加。

示例：@RequestMapping(value = "/traffic", method = RequestMethod.GET)。

该注解用于建立请求 URL 和请求处理方法之间的对应关系。value 用于指定请求 URL。

请求处理方法最终拦截的 URL 为类注解指定的路径与方法注解指定的路径拼接所得的 URL。如当前 SpringBoot 服务占用了本机的 8080 端口，类上注解为 @RequestMapping("/gmall ")，方法上方注解为 @RequestMapping("/uvCt")，则最终拦截的 url 为 localhost:8080/gmall/uvCt。控制类上方可以没有该注解。

如果拦截的是 GET 请求，method 参数赋值语句可以省略。此外，SpringBoot 的注解只有一个参数，且参数名称为 value 时，可以省略参数名称和等号。

所以，@RequestMapping(value = "/traffic", method = RequestMethod.GET) 可简写为 @RequestMapping("/traffic")。

该注解相当于 @GetMapping("/traffic")

③ @RequestParma("name")

位于方法参数数据类型之前。接收请求路径中键值对(名值对)的参数(通常用于查询条件、辅助参数) 并传递给所修饰的参数。

如 URL 为 localhost:8080/test?paramDt=20220221，注解为 @RequestParam("paramDt") Integer dt，则 20220221 会被解析为 Integer 类型数据赋值给 dt 参数。

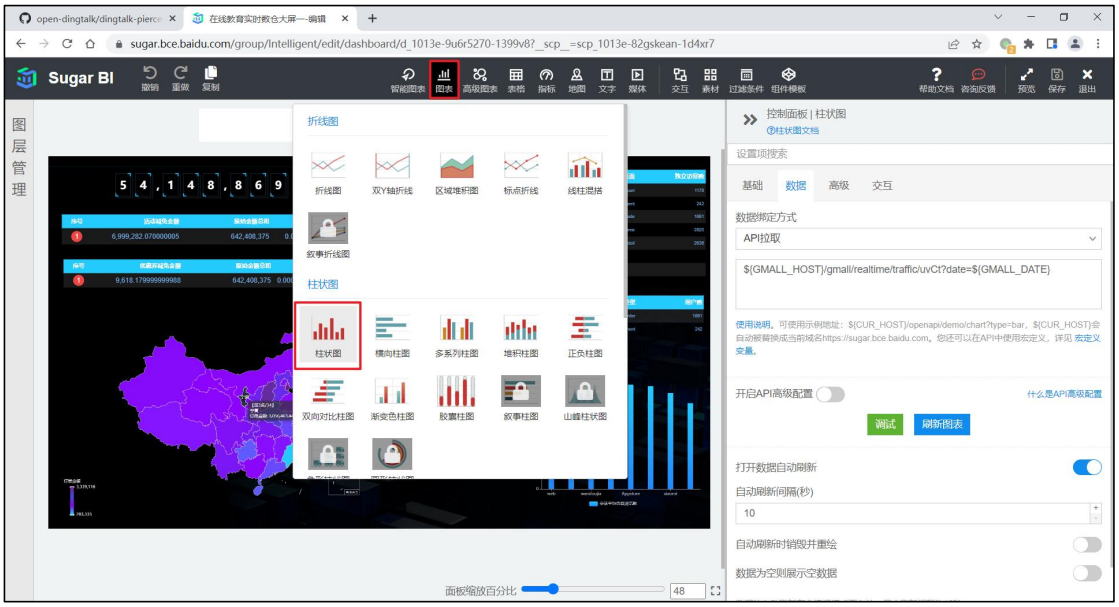
7）Sugar 配置

（1）页面宏定义变量

单击大屏空白处，在右侧“控制面板”中点击“页面宏定义变量”，定义 GMALL_HOST 和 GMALL_DATE。

- GMALL_HOST：本地 8070 端口服务映射的公网域名。
- GMALL_DATE：当日日期。本项目的“当日”为模拟数据的业务日期。

（2）在“图表”中选择“柱状图”



（3）在弹出的控制面板中选择 API 拉取

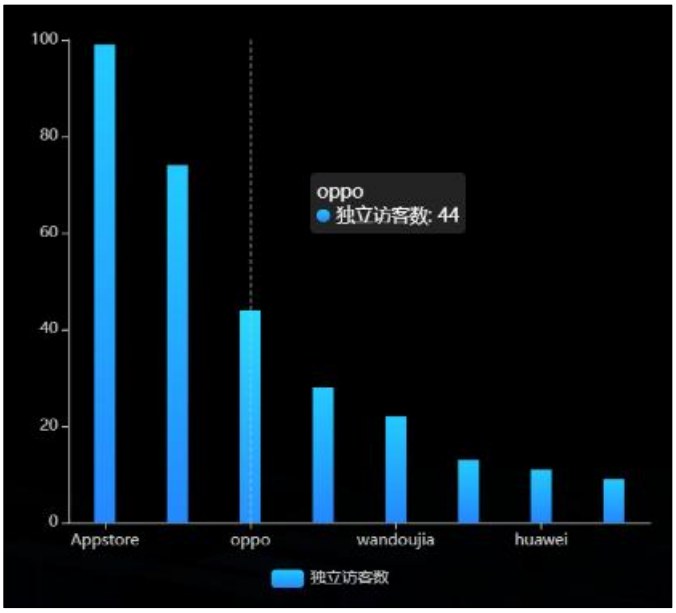
- API 拉取：通过给定的数据接口获取数据。我们选择这种方式。
- 静态 JSON：通过给定的静态 JSON 字符串获取数据。

API 拉取返回的数据格式与静态 JSON 相同，因此可以通过静态 JSON 的示例数据查看数据格式。

（4）输入数据接口的 URL

```
${GMALL_HOST}/gmall/realtime/traffic/uvCt?date=${GMALL_DATE}
```

（5）刷新图表，查看效果



另外四张柱状图的配置同理，不再赘述。

所有图表的 URL 如下。

```
# 独立访客
${GMALL_HOST}/gmall/realtime/traffic/uvCt?date=${GMALL_DATE}

# 会话数
${GMALL_HOST}/gmall/realtime/traffic/svCt?date=${GMALL_DATE}

# 会话平均页面浏览数
${GMALL_HOST}/gmall/realtime/traffic/pvPerSession?date=${GMALL_DATE}

# 会话平均访问时长
${GMALL_HOST}/gmall/realtime/traffic/durPerSession?date=${GMALL_DATE}

# 跳出率
${GMALL_HOST}/gmall/realtime/traffic/ujRate?date=${GMALL_DATE}
```

3.1.2 流量分时统计

1）需求说明

统计周期	指标	说明
1 小时	独立访客数	统计当日各小时独立访客数
1 小时	页面浏览数	统计当日各小时页面浏览数

1 小时	新访客数	统计当日各小时新访客数

2）需求分析

本节统计分时指标，选用折线图进行展示。三个指标将体现在同一张折线图中。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "categories": [
      "00",
      "01",
      ...
    ],
    "series": [
      {
        "name": "独立访客数",
        "data": [
          0,
          300,
          ...
        ]
      },
      {
        "name": "页面浏览数",
        "data": [
          0,
          988,
          ...
        ]
      },
      {
        "name": "新访客数",
        "data": [
          0,
          155,
          ...
        ]
      }
    ]
  }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
```

```
@Data
@AllArgsConstructor
public class TrafficVisitorStatsPerHour {
    // 小时
    Integer hr;
    // 独立访客数
    Long uvCt;
    // 页面浏览数
    Long pvCt;
    // 新访客数
    Long newUvCt;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.TrafficVisitorTypeStats;
import
com.atguigu.gmall.publisher.bean.TrafficVisitorStatsPerHour;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface TrafficVisitorStatsMapper {

    // 分时流量数据查询
    @Select("select\n" +
            "toHour(stt) hr,\n" +
            "sum(uv_ct)  uv_ct,\n" +
            "sum(pv_ct)  pv_ct,\n" +
            "sum(if(is_new                    =                    '1',
dws_traffic_channel_page_view_window.uv_ct, 0)) new_uv_ct\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by hr")
    List<TrafficVisitorStatsPerHour>
selectVisitorStatsPerHr(Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import
com.atguigu.gmall.publisher.bean.TrafficVisitorStatsPerHour;
import com.atguigu.gmall.publisher.bean.TrafficVisitorTypeStats;

import java.util.List;

public interface TrafficVisitorStatsService {
```

```
    // 获取分时流量数据
    List<TrafficVisitorStatsPerHour>  getVisitorPerHrStats(Integer
date);
}
```

（2）实现类

```
package com.atguigu.gmall.publisher.service.impl;

import
com.atguigu.gmall.publisher.bean.TrafficVisitorStatsPerHour;
import com.atguigu.gmall.publisher.bean.TrafficVisitorTypeStats;
import
com.atguigu.gmall.publisher.mapper.TrafficVisitorStatsMapper;
import
com.atguigu.gmall.publisher.service.TrafficVisitorStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public     class     TrafficVisitorStatsServiceImpl     implements
TrafficVisitorStatsService {

    @Autowired
    private TrafficVisitorStatsMapper trafficVisitorStatsMapper;

    // 获取分时流量统计数据
    @Override
    public                          List<TrafficVisitorStatsPerHour>
getVisitorPerHrStats(Integer date) {
        return
trafficVisitorStatsMapper.selectVisitorStatsPerHr(date);
    }
}
```

6）Controller 层

在 TrafficController 类中补充成员变量和请求拦截方法。

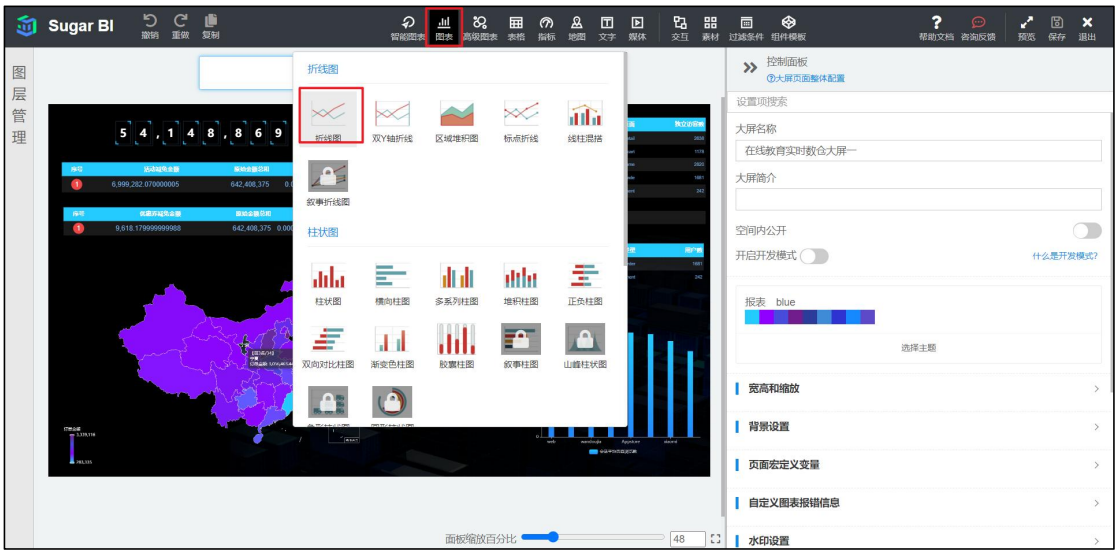
```
    // 自动装载访客状态统计服务实现类
    @Autowired
    private TrafficVisitorStatsService trafficVisitorStatsService;

    // 访客状态分时统计请求拦截方法
    @RequestMapping("/visitorPerHr")
    public String getVisitorPerHr(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrafficVisitorStatsPerHour>  visitorPerHrStatsList  =
trafficVisitorStatsService.getVisitorPerHrStats(date);
        if       (visitorPerHrStatsList       ==       null       ||
```

```
visitorPerHrStatsList.size() == 0) {
          return "";
       }

       TrafficVisitorStatsPerHour[]      perHrArr      =      new
TrafficVisitorStatsPerHour[24];
       for (TrafficVisitorStatsPerHour trafficVisitorStatsPerHour :
visitorPerHrStatsList) {
          Integer hr = trafficVisitorStatsPerHour.getHr();
          perHrArr[hr] = trafficVisitorStatsPerHour;
       }

       String[] hrs = new String[24];
       Long[] uvArr = new Long[24];
       Long[] pvArr = new Long[24];
       Long[] newUvArr = new Long[24];

       for (int hr = 0; hr < 24; hr++) {
          hrs[hr] = String.format("%02d", hr);
          TrafficVisitorStatsPerHour  trafficVisitorStatsPerHour  =
perHrArr[hr];
          if (trafficVisitorStatsPerHour != null) {
             uvArr[hr] = trafficVisitorStatsPerHour.getUvCt();
             pvArr[hr] = trafficVisitorStatsPerHour.getPvCt();
             newUvArr[hr]                                          =
trafficVisitorStatsPerHour.getNewUvCt();
          } else{
             uvArr[hr] = 0L;
             pvArr[hr] = 0L;
             newUvArr[hr] = 0L;
          }
       }

       return "{\n" +
              "  \"status\": 0,\n" +
              "  \"msg\": \"\",\n" +
              "  \"data\": {\n" +
              "    \"categories\": [\n\"" +
             StringUtils.join(hrs, "\",\"") + "\"\n" +
              "    ],\n" +
              "    \"series\": [\n" +
              "      {\n" +
              "        \"name\": \"独立访客数\",\n" +
              "        \"data\": [\n" +
             StringUtils.join(uvArr, ",") + "\n" +
              "        ]\n" +
              "      },\n" +
              "      {\n" +
              "        \"name\": \"页面浏览数\",\n" +
              "        \"data\": [\n" +
             StringUtils.join(pvArr, ",") + "\n" +
              "        ]\n" +
              "      },\n" +
              "      {\n" +
              "        \"name\": \"新访客数\",\n" +
              "        \"data\": [\n" +
             StringUtils.join(newUvArr, ",") + "\n" +
```

```
                "        ]\n" +
                "      }\n" +
                "    ]\n" +
                "  }\n" +
                "}";
    }
```

7）Sugar 配置

① 选择折线图。



② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/traffic/visitorPerHr?date=${GMALL_DATE}
```

③ 效果如下。

3.1.3 新老访客流量统计

1）需求介绍

统计周期	统计粒度	指标	说明
当日	访客类型	访客数	分别统计新老访客数
当日	访客类型	页面浏览数	分别统计新老访客页面浏览数
当日	访客类型	跳出率	分别统计新老访客跳出率
当日	访客类型	平均在线时长	分别统计新老访客平均在线时长
当日	访客类型	平均访问页面数	分别统计新老访客平均访问页面数

2）需求分析

本节将通过表格对数据进行展示。所有指标将在同一张表格中体现。

3）数据结构


```
{
  "status": 0,
  "data": {
    "total": 5,
    "columns": [
      {
        "name": "类别",
        "id": "type"
      },
      {
        "name": "新访客",
        "id": "new"
      },
      {
        "name": "老访客",
        "id": "old"
      }
    ],
    "rows": [
      {
        "type": "访客数(人)",
        "new": 155,
        "old": 145
      },
      {
        "type": "总访问页面数(次)",
        "new": 507,
        "old": 481
      },
      {
        "type": "跳出率(%)",
```

```
      "new": 0,
      "old": 0
    },
    {
      "type": "平均在线时长(秒)",
      "new": 33.659716129032255,
      "old": 35.37985517241379
    },
    {
      "type": "平均访问页面数(人次)",
      "new": 3.270967741935484,
      "old": 3.317241379310345
    }
  ]
 }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import org.springframework.web.bind.annotation.RequestMapping;

@Data
@AllArgsConstructor
public class TrafficVisitorTypeStats {
    // 新老访客状态标记
    String isNew;
    // 独立访客数
    Long uvCt;
    // 页面浏览数
    Long pvCt;
    // 会话数
    Long svCt;
    // 跳出会话数
    Long ujCt;
    // 累计访问时长
    Long durSum;
    // 跳出率
    public Double getUjRate(){
        if(svCt == 0) {
            return 0.0;
        }
        return (double)ujCt/(double)svCt;
    }
    // 会话平均在线时长（秒）
    public Double getAvgDurSum() {
        if(svCt == 0) {
```

```
            return 0.0;
        }
        return (double)durSum/(double) svCt / 1000;
    }
    // 会话平均访问页面数
    public Double getAvgPvCt(){
        if(svCt == 0) {
            return 0.0;
        }
        return (double)pvCt / (double) svCt;
    }


}
```

（2）Mapper 接口

在 TrafficVisitorStatsMapper 接口中补充方法。

```
    @Select("select\n" +
            "is_new,\n" +
            "sum(uv_ct) uv_ct,\n" +
            "sum(pv_ct) pv_ct,\n" +
            "sum(sv_ct) sv_ct,\n" +
            "sum(uj_ct) uj_ct,\n" +
            "sum(dur_sum) dur_sum\n" +
            "from dws_traffic_channel_page_view_window\n" +
            "where toYYYYMMDD(stt) =#{date}\n" +
            "group by is_new")
    List<TrafficVisitorTypeStats>
selectVisitorTypeStats(@Param("date")Integer date);
```

5）Service 层

（1）Service 接口

在 TrafficVisitorStatsService 接口中补充方法。

```
    List<TrafficVisitorTypeStats>       getVisitorTypeStats(Integer
date);
```

（2）Service 实现类

在 TrafficVisitorStatsServiceImpl 实现类中补充 getVisitorTypeStats 方法的实现，

```
    @Override
    public                              List<TrafficVisitorTypeStats>
getVisitorTypeStats(Integer date) {
        return
trafficVisitorStatsMapper.selectVisitorTypeStats(date);
    }
```

6）Controller 层

在 TrafficController 类中补充请求拦截方法。

```
   @RequestMapping("/visitorPerType")
   public String getVisitorPerType(
          @RequestParam(value = "date", defaultValue = "1") Integer
date) {
       if (date == 1) {
          date = DateUtil.now();
       }
       List<TrafficVisitorTypeStats>     visitorTypeStatsList     =
trafficVisitorStatsService.getVisitorTypeStats(date);
       if (visitorTypeStatsList == null || visitorTypeStatsList.size()
== 0) {
          return "";
       }
       // 方法一：通过循环的方式拼接字符串，较为繁琐，不推荐
//       StringBuilder columns = new StringBuilder("[\n" +
//             "     {\n" +
//             "       \"name\": \"指标\",\n" +
//             "       \"id\": \"indicators\"\n" +
//             "     },");
//
//       StringBuilder uvRow = new StringBuilder("{\n" +
//             "       \"indicators\": \"独立访客数\",\n");
//
//       StringBuilder pvRow = new StringBuilder("{\n" +
//             "       \"indicators\": \"页面浏览数\",\n");
//
//       StringBuilder ujRow = new StringBuilder("{\n" +
//             "       \"indicators\": \"跳出率\",\n");
//
//       StringBuilder avgDurRow = new StringBuilder("{\n" +
//             "       \"indicators\": \"会话平均访问时长\",\n");
//
//       StringBuilder avgPvRow = new StringBuilder("{\n" +
//             "       \"indicators\": \"会话平均页面浏览数\",\n");
//
//       for (int i = 0; i < visitorTypeStatsList.size(); i++) {
//              TrafficVisitorTypeStats trafficVisitorTypeStats =
visitorTypeStatsList.get(i);
//          String isNew = trafficVisitorTypeStats.getIsNew();
//          Integer uvCt = trafficVisitorTypeStats.getUvCt();
//          Integer pvCt = trafficVisitorTypeStats.getPvCt();
//          Double ujRate = trafficVisitorTypeStats.getUjRate();
//                                          Double    avgDurSum    =
trafficVisitorTypeStats.getAvgDurSum();
//          Double avgPvCt = trafficVisitorTypeStats.getAvgPvCt();
//          if (isNew.equals("1")) {
//             columns.append("{\n" +
//                   "       \"name\": \"新访客\",\n" +
//                   "       \"id\": \"newVisitor\"\n" +
//                   "     }");
//             uvRow.append("\"newVisitor\": " + uvCt);
//             pvRow.append("\"newVisitor\": " + pvCt);
//             ujRow.append("\"newVisitor\": " + ujRate);
//             avgDurRow.append("\"newVisitor\": " + avgDurSum);
```

```
//              avgPvRow.append("\"newVisitor\": " + avgPvCt);
//          } else {
//              columns.append("{\n" +
//                      "       \"name\": \"老访客\",\n" +
//                      "       \"id\": \"oldVisitor\"\n" +
//                      "     }");
//
//              uvRow.append("\"oldVisitor\": " + uvCt + "\n");
//              pvRow.append("\"oldVisitor\": " + pvCt + "\n");
//              ujRow.append("\"oldVisitor\": " + ujRate + "\n");
//               avgDurRow.append("\"oldVisitor\": " + avgDurSum +
"\n");
//              avgPvRow.append("\"oldVisitor\": " + avgPvCt + "\n");
//          }
//          if (i == 0) {
//              columns.append(",\n");
//              uvRow.append(",\n");
//              pvRow.append(",\n");
//              ujRow.append(",\n");
//              avgDurRow.append(",\n");
//              avgPvRow.append(",\n");
//          } else {
//              columns.append("\n]");
//              uvRow.append("\n}");
//              pvRow.append("\n}");
//              ujRow.append("\n}");
//              avgDurRow.append("\n}");
//              avgPvRow.append("\n}");
//          }
//       }
//       return "{\n" +
//              "  \"status\": 0,\n" +
//              "  \"msg\": \"\",\n" +
//              "  \"data\": {\n" +
//              "    \"columns\": "+ columns +",\n" +
//              "    \"rows\": [\n" +
//              "      "+ uvRow +",\n" +
//              "      "+ pvRow +",\n" +
//              "      "+ ujRow +",\n" +
//              "      "+ avgDurRow +",\n" +
//              "      "+ avgPvRow +"\n" +
//              "    ]\n" +
//              "  }\n" +
//              "}";


       // 方法二，直接拼接字符串，简单明了
       TrafficVisitorTypeStats newVisitorStats = null;
       TrafficVisitorTypeStats oldVisitorStats = null;
       for       (TrafficVisitorTypeStats       visitorStats       :
visitorTypeStatsList) {
//          System.out.println(visitorStats);
          if ("1".equals(visitorStats.getIsNew())) {
              // 新访客
              newVisitorStats = visitorStats;
          } else {
              // 老访客
```

```
                oldVisitorStats = visitorStats;
            }
        }
        //拼接 json 字符串
        String json = "{\"status\":0,\"data\":{\"total\":5," +
                "\"columns\":[" +
                "{\"name\":\"类别\",\"id\":\"type\"}," +
                "{\"name\":\"新访客\",\"id\":\"new\"}," +
                "{\"name\":\"老访客\",\"id\":\"old\"}]," +
                "\"rows\":[" +
                "{\"type\":\"  访  客  数  (  人  )\",\"new\":"  +
newVisitorStats.getUvCt() + ",\"old\":" + oldVisitorStats.getUvCt()
+ "}," +
                "{\"type\":\" 总 访 问 页 面 数 ( 次 )\",\"new\":"  +
newVisitorStats.getPvCt() + ",\"old\":" + oldVisitorStats.getPvCt()
+ "}," +
                "{\"type\":\"  跳  出  率  (%)\",\"new\":"  +
newVisitorStats.getUjRate()  +  ",\"old\":"  +
oldVisitorStats.getUjRate() + "}," +
                "{\"type\":\" 平 均 在 线 时 长 ( 秒 )\",\"new\":"  +
newVisitorStats.getAvgDurSum()  +  ",\"old\":"  +
oldVisitorStats.getAvgDurSum() + "}," +
                "{\"type\":\"平均访问页面数(人次)\",\"new\":"  +
newVisitorStats.getAvgPvCt()  +  ",\"old\":"  +
oldVisitorStats.getAvgPvCt() + "}]}}";

        return json;
    }
```

7）Sugar 配置

① 选择表格。

② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/traffic/visitorPerType?date=${GMALL_
DATE}
```

③ 效果如下。

类别	新访客	老访客
访客数(人)	155	145
总访问页面数(次)	507	481
跳出率(%)	0	0
平均在线时长(秒)	33.659716129032255	35.37985517241379
平均访问页面数(人次)	3.270967741935484	3.317241379310345

3.1.4 关键词统计

1）需求介绍

统计周期	统计粒度	指标	说明
当日	关键词	关键词评分	根据不同来源和频次计算得分

2）需求分析

关键词的展示使用 3D 词云实现。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": [
    {
      "name": "小米",
      "value": 2370
    },
    {
      "name": "ps5",
      "value": 1290
    },
    ...
  ]
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;
```

```
@Data
@AllArgsConstructor
public class TrafficKeywords {
    // 关键词
    String keyword;
    // 关键词评分
    Integer keywordScore;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.TrafficKeywords;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface TrafficKeywordsMapper {
    @Select("select keyword,\n" +
            "       sum(keyword_count * multiIf(\n" +
            "               source = 'SEARCH', 10,\n" +
            "               source = 'ORDER', 5,\n" +
            "               source = 'CART', 2,\n" +
            "               source = 'CLICK', 1, 0\n" +
            "           ))         keyword_score\n" +
            "from dws_traffic_source_keyword_page_view_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt), keyword\n" +
            "order by keyword_score desc;")
    List<TrafficKeywords>  selectKeywords(@Param(value  =  "date")
Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.TrafficKeywords;

import java.util.List;

public interface TrafficKeywordsService {
    List<TrafficKeywords> getKeywords(Integer date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.TrafficKeywords;
import com.atguigu.gmall.publisher.mapper.TrafficKeywordsMapper;
import com.atguigu.gmall.publisher.service.TrafficKeywordsService;
import org.springframework.beans.factory.annotation.Autowired;
```

```
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public      class      TrafficKeywordsServiceImpl      implements
TrafficKeywordsService {

    @Autowired
    TrafficKeywordsMapper trafficKeywordsMapper;

    @Override
    public List<TrafficKeywords> getKeywords(Integer date) {
        return trafficKeywordsMapper.selectKeywords(date);
    }
}
```

6) Controller 层

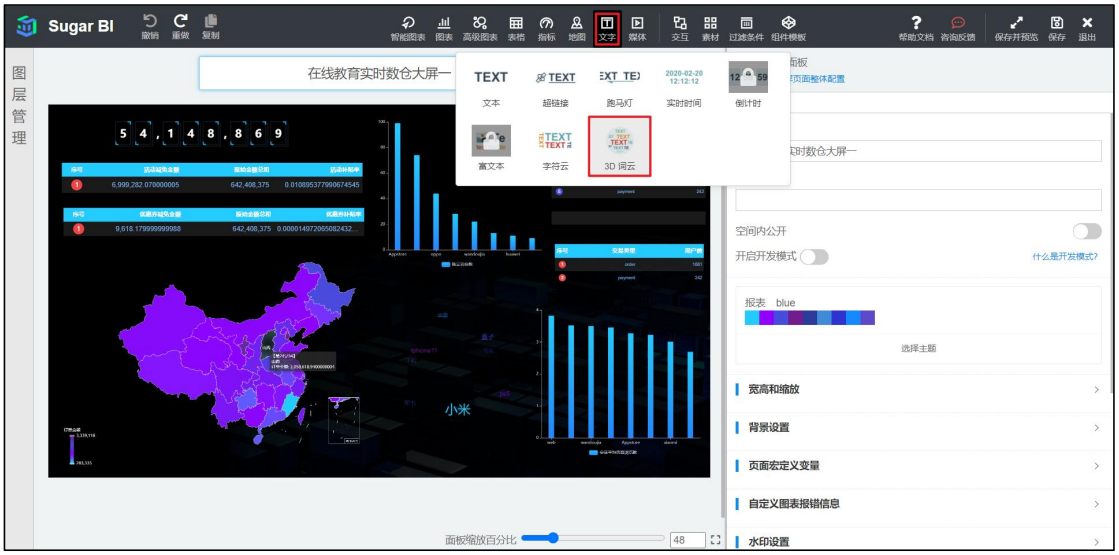
在 TrafficController 中补充关键词服务接口类型成员变量和请求拦截方法。

```
    @Autowired
    private TrafficKeywordsService trafficKeywordsService;

    @RequestMapping("/keywords")
    public String getKeywords(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrafficKeywords>             keywordsList             =
trafficKeywordsService.getKeywords(date);
        if (keywordsList == null) {
            return "";
        }

        StringBuilder data = new StringBuilder("[");

        for (int i = 0; i < keywordsList.size(); i++) {
            TrafficKeywords trafficKeywords = keywordsList.get(i);
            String keyword = trafficKeywords.getKeyword();
            Integer keywordScore = trafficKeywords.getKeywordScore();
            data.append("" +
                    "{\n" +
                    "     \"name\": \"" + keyword + "\",\n" +
                    "     \"value\": " + keywordScore + "\n" +
                    "    }");
            if (i < keywordsList.size() - 1) {
                data.append(",");
            } else {
                data.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
```

```
                "  \"data\": " + data + "\n" +
                "}";
    }
```

7）Sugar 配置

① 选择 3D 词云



② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/traffic/keywords?date=${GMALL_DATE}
```

③ 效果如下

3.2 用户主题

3.2.1 用户变动统计

1）需求介绍

统计周期	指标	说明
当日	回流用户数	之前的活跃用户，一段时间未活跃（流失），今日又活跃了，就称为回流用户。此处要求统计回流用户总数。

本节需求与 3.2.2 节需求合并展示。

3.2.2 用户新增活跃统计

需求说明如下

统计周期	指标	指标说明
当日	新增用户数	略
当日	活跃用户数	略

2）需求分析

本节和 3.2.1 节指标展示将使用表格展示。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "变动类型",
        "id": "type"
      },
      {
        "name": "用户数",
        "id": "user_ct"
      }
    ],
    "rows": [
      {
        "type": "activeUserCt",
        "user_ct": "915"
      },
      {
        "type": "newUserCt",
        "user_ct": "20"
      },
      {
        "type": "backCt",
```

```
      "user_ct": "0"
    }
  ]
 }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class UserChangeCtPerType {
    // 变动类型
    String type;
    // 用户数
    Integer userCt;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.UserChangeCtPerType;
import com.atguigu.gmall.publisher.bean.UserPageCt;
import com.atguigu.gmall.publisher.bean.UserTradeCt;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface UserStatsMapper {

    @Select("select 'backCt'         type,\n" +
            "       sum(back_ct)    back_ct\n" +
            "from dws_user_user_login_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "union all\n" +
            "select 'activeUserCt'    type,\n" +
            "       sum(uu_ct)     uu_ct\n" +
            "from dws_user_user_login_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "union all\n" +
            "select 'newUserCt' type,\n" +
            "       sum(register_ct) register_ct\n" +
            "from dws_user_user_register_window\n" +
            "where toYYYYMMDD(stt) = #{date};")
    List<UserChangeCtPerType>
selectUserChangeCtPerType(@Param("date")Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.UserChangeCtPerType;
import com.atguigu.gmall.publisher.bean.UserPageCt;
import com.atguigu.gmall.publisher.bean.UserTradeCt;

import java.util.List;

public interface UserStatsService {
    List<UserChangeCtPerType> getUserChangeCt(Integer date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.UserChangeCtPerType;
import com.atguigu.gmall.publisher.bean.UserPageCt;
import com.atguigu.gmall.publisher.bean.UserTradeCt;
import com.atguigu.gmall.publisher.mapper.UserStatsMapper;
import com.atguigu.gmall.publisher.service.UserStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.autoconfigure.AutoConfigureOrder;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public class UserStatsServiceImpl implements UserStatsService {

    @Autowired
    UserStatsMapper userStatsMapper;

    @Override
    public List<UserChangeCtPerType> getUserChangeCt(Integer date) {
        return userStatsMapper.selectUserChangeCtPerType(date);
    }
}
```

6）Controller 层

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.UserChangeCtPerType;
import com.atguigu.gmall.publisher.bean.UserPageCt;
import com.atguigu.gmall.publisher.bean.UserTradeCt;
import com.atguigu.gmall.publisher.service.UserStatsService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

@RestController
```

```
@RequestMapping("/gmall/realtime/user")
public class UserStatsController {

    @Autowired
    private UserStatsService userStatsService;

    @RequestMapping("/userChangeCt")
    public String getUserChange(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<UserChangeCtPerType>          userChangeCtList          =
userStatsService.getUserChangeCt(date);
        if (userChangeCtList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < userChangeCtList.size(); i++) {
            UserChangeCtPerType              userChangeCt              =
userChangeCtList.get(i);
            String type = userChangeCt.getType();
            Integer userCt = userChangeCt.getUserCt();
            rows.append("{\n" +
                    "\t\"type\": \"" + type + "\",\n" +
                    "\t\"user_ct\": \"" + userCt + "\"\n" +
                    "}");
            if (i < userChangeCtList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"columns\": [\n" +
                "      {\n" +
                "        \"name\": \"变动类型\",\n" +
                "        \"id\": \"type\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"用户数\",\n" +
                "        \"id\": \"user_ct\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": " + rows + "\n" +
                "  }\n" +
                "}";
    }
}
```

7）Sugar 配置

① 选择表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

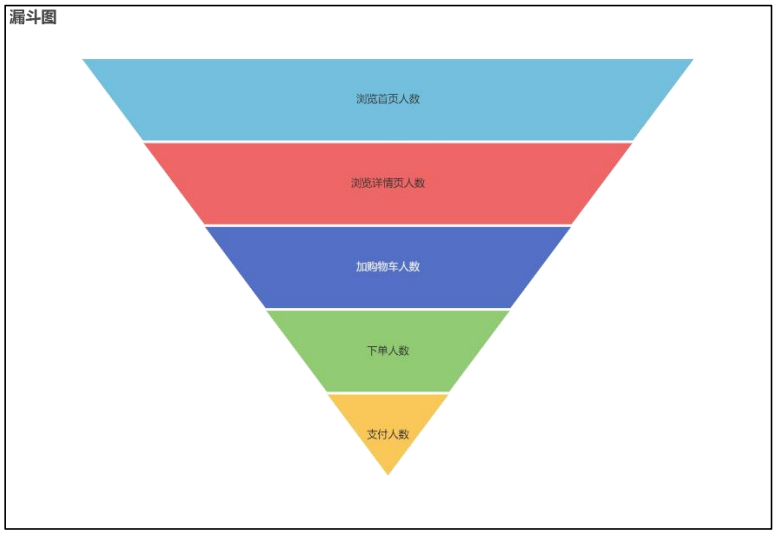
```
${GMALL_HOST}/gmall/realtime/user/userChangeCt?date=${GMALL_DATE}
```

② 效果如下

3.2.3 用户行为漏斗分析

1）需求介绍

漏斗分析是一个数据分析模型，它能够科学反映一个业务过程从起点到终点各阶段用户转化情况。由于其能将各阶段环节都展示出来，故哪个阶段存在问题，就能一目了然。



该需求要求统计一个完整的购物流程各个阶段的人数，具体说明如下：

统计周期	指标	说明
当日	首页浏览人数	略
当日	商品详情页浏览人数	略
当日	加购人数	略

当日	下单人数	略
当日	支付人数	支付成功人数

2）需求分析

本节指标展示使用轮播表格实现。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "页面",
        "id": "page_id"
      },
      {
        "name": "独立访客数",
        "id": "uv_ct"
      }
    ],
    "rows": [
      {
        "page_id": "home",
        "uv_ct": "2820"
      },
      {
        "page_id": "good_detail",
        "uv_ct": "2638"
      },
      {
        "page_id": "payment",
        "uv_ct": "242"
      },
      {
        "page_id": "cart",
        "uv_ct": "1178"
      },
      {
        "page_id": "trade",
        "uv_ct": "1681"
      }
    ]
  }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;
```

```
import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class UserPageCt {
    // 页面 id
    String pageId;
    //独立访客数
    Integer uvCt;
}
```

（2）Mapper 接口

在 UserStatsMapper 接口中补充查询方法。

```
    @Select("select 'home'  page_id,\n" +
            "       sum(home_uv_ct)       uvCt\n" +
            "       from dws_traffic_page_view_window\n" +
            "       where toYYYYMMDD(stt) = #{date}\n" +
            "       union all\n" +
            "select 'good_detail' page_id,\n" +
            "       sum(good_detail_uv_ct) uvCt\n" +
            "       from dws_traffic_page_view_window\n" +
            "       where toYYYYMMDD(stt) = #{date}\n" +
            "       union all\n" +
            "select 'cart' page_id,\n" +
            "       sum(cart_add_uu_ct) uvCt\n" +
            "       from dws_trade_cart_add_uu_window\n" +
            "       where toYYYYMMDD(stt) = #{date}\n" +
            "       union all\n" +
            "select 'trade' page_id,\n" +
            "       sum(order_unique_user_count) uvCt\n" +
            "       from dws_trade_order_window\n" +
            "       where toYYYYMMDD(stt) = #{date}\n" +
            "       union all\n" +
            "select 'payment' page_id,\n" +
            "       sum(payment_suc_unique_user_count) uvCt\n" +
            "       from dws_trade_payment_suc_window\n" +
            "       where toYYYYMMDD(stt) = #{date};")
    List<UserPageCt> selectUvByPage(@Param("date") Integer date);
```

5）Service 层

（1）Service 接口

在 UserStatsService 接口中补充方法。

```
    List<UserPageCt> getUvByPage(Integer date);
```

（2）Service 实现类

在实现类 UserStatsServiceImpl 中补充方法

```
@Override
```

```
    public List<UserPageCt> getUvByPage(Integer date) {
        return userStatsMapper.selectUvByPage(date);
    }
```

6）Controller 层

在 UserStatsController 控制类中补充方法

```
    @RequestMapping("/uvPerPage")
    public String getUvPerPage(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<UserPageCt>                uvByPageList                =
userStatsService.getUvByPage(date);
        if (uvByPageList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < uvByPageList.size(); i++) {
            UserPageCt userPageCt = uvByPageList.get(i);
            String pageId = userPageCt.getPageId();
            Integer uvCt = userPageCt.getUvCt();
            rows.append("{\n" +
                    "       \"page_id\": \"" + pageId + "\",\n" +
                    "       \"uv_ct\": \"" + uvCt + "\"\n" +
                    "     }");
            if (i < uvByPageList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"columns\": [\n" +
                "      {\n" +
                "        \"name\": \"页面\",\n" +
                "        \"id\": \"page_id\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"独立访客数\",\n" +
                "        \"id\": \"uv_ct\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": " + rows + "\n" +
                "  }\n" +
                "}";
    }
```

7）Sugar 配置

① 选择轮播表格

② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/user/uvPerPage?date=${GMALL_DATE}
```

③ 效果如下

序号	页面	独立访客数
1	cart	1178
2	good_detail	2638
3	home	2820
4	payment	242
5	trade	1681

3.2.4 新增交易用户统计

1）需求说明

统计周期	指标	说明
当日	新增下单人数	略
当日	新增支付人数	略

2）需求分析

本节指标展示使用轮播表格实现。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "交易类型",
        "id": "type"
      },
      {
        "name": "新增用户数",
        "id": "user_ct"
      }
    ],
    "rows": [
      {
        "type": "order",
        "user_ct": "1681"
      },
      {
        "type": "payment",
        "user_ct": "242"
      }
    ]
  }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class UserTradeCt {
    // 交易类型
    String type;
    // 用户数
    Integer userCt;
}
```

（2）Mapper 接口

在 UserStatsMapper 类中补充方法。

```
    @Select("select 'order' trade_type,\n" +
            "       sum(order_new_user_count) order_new_user_count\n"
+
            "       from dws_trade_order_window\n" +
```

```
            "      where toYYYYMMDD(stt) = #{date}\n" +
            "      union all\n" +
            "select 'payment' trade_type,\n" +
            "                              sum(payment_new_user_count)
pay_suc_new_user_count\n" +
            "      from dws_trade_payment_suc_window\n" +
            "      where toYYYYMMDD(stt) = #{date};")
    List<UserTradeCt>       selectTradeUserCt(@Param("date")Integer
date);
```

5）Service 层

（1）Service 接口

在 UserStatsService 接口中补充方法。

```
    List<UserTradeCt> getTradeUserCt(Integer date);
```

（2）Service 实现类

在 UserStatsServiceImpl 实现类中补充方法。

```
    @Override
    public List<UserTradeCt> getTradeUserCt(Integer date) {
        return userStatsMapper.selectTradeUserCt(date);
    }
```

6）Controller 层

在 UserStatsController 控制类中补充方法。

```
    @RequestMapping("/userTradeCt")
    public String getUserTradeCt(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<UserTradeCt>              tradeUserCtList              =
userStatsService.getTradeUserCt(date);
        if (tradeUserCtList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < tradeUserCtList.size(); i++) {
            UserTradeCt userTradeCt = tradeUserCtList.get(i);
            String type = userTradeCt.getType();
            Integer userCt = userTradeCt.getUserCt();
            rows.append("{\n" +
                    "\t\"type\": \"" + type + "\",\n" +
                    "\t\"user_ct\": \"" + userCt + "\"\n" +
                    "}");
            if (i < tradeUserCtList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
            }
```

```
        }

        return "{\n" +
               "  \"status\": 0,\n" +
               "  \"msg\": \"\",\n" +
               "  \"data\": {\n" +
               "    \"columns\": [\n" +
               "      {\n" +
               "        \"name\": \"交易类型\",\n" +
               "        \"id\": \"type\"\n" +
               "      },\n" +
               "      {\n" +
               "        \"name\": \"新增用户数\",\n" +
               "        \"id\": \"user_ct\"\n" +
               "      }\n" +
               "    ],\n" +
               "    \"rows\": " + rows + "\n" +
               "  }\n" +
               "}";
    }
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/user/userTradeCt?date=${GMALL_DATE}
```

② 效果如下

3.3 商品主题

3.3.1 各品牌商品交易统计

1）需求说明

统计周期	统计粒度	指标	说明
当日	品牌	订单数	略
当日	品牌	订单人数	略
当日	品牌	订单金额	略
当日	品牌	退单数	略

当日	品牌	退单人数	略

2）需求分析

本节指标的展示使用轮播表格和环形饼图实现。其中轮播表格展示所有指标，环形饼图仅展示订单金额。

3）数据结构

（1）轮播表格数据结构


```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "品牌名称",
        "id": "trademark"
      },
      {
        "name": "订单数",
        "id": "order_count"
      },
      {
        "name": "订单人数",
        "id": "uu_count"
      },
      {
        "name": "订单金额",
        "id": "order_amount"
      },
      {
        "name": "退单数",
        "id": "refund_count"
      },
      {
        "name": "退单人数",
        "id": "refund_uu_count"
      }
    ],
    "rows": [
      {
        "trademark": "索芙特",
        "order_count": "734",
        "uu_count": "628",
        "order_amount": "1075887.91",
        "refund_count": "37",
        "refund_uu_count": "36"
      },
```

```
      {
        "trademark": "苹果",
        "order_count": "995",
        "uu_count": "826",
        "order_amount": "1.2911363511E8",
        "refund_count": "52",
        "refund_uu_count": "49"
      },
      ...
    ]
  }
}
```

（2）环形饼图数据结构

```
{
  "status": 0,
  "msg": "",
  "data": [
    {
      "name": "索芙特",
      "value": 1075887.91
    },
    {
      "name": "苹果",
      "value": 129113635.11
    },
    ...
  ]
}
```

4）Mapper 层

（1）实体类

① 轮播表格实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TrademarkCommodityStats {
    // 品牌名称
    String trademarkName;
    // 订单数
    Integer orderCt;
    // 订单人数
    Integer uuCt;
    // 订单金额
    Double orderAmount;
    // 退单数
```

```
    Integer refundCt;
    // 退单人数
    Integer refundUuCt;
}
```

② 环形饼图实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TrademarkOrderAmountPieGraph {
    // 品牌名称
    String trademarkName;
    // 销售额
    Double orderAmount;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.CategoryCommodityStats;
import com.atguigu.gmall.publisher.bean.SpuCommodityStats;
import
com.atguigu.gmall.publisher.bean.TrademarkOrderAmountPieGraph;
import com.atguigu.gmall.publisher.bean.TrademarkCommodityStats;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface CommodityStatsMapper {
    @Select("select trademark_name,\n" +
            "      order_count,\n" +
            "      uu_count,\n" +
            "      order_amount,\n" +
            "      refund_count,\n" +
            "      refund_uu_count\n" +
            "from (select trademark_id,\n" +
            "           trademark_name,\n" +
            "           sum(order_count)       order_count,\n" +
            "           sum(order_uu_count) uu_count,\n" +
            "           sum(order_amount)      order_amount\n" +
            "     from dws_trade_sku_order_window\n" +
            "     where toYYYYMMDD(stt) = #{date}\n" +
            "     group by trademark_id, trademark_name) oct\n" +
            "       full outer join\n" +
            "    (select trademark_id,\n" +
            "           trademark_name,\n" +
            "           sum(refund_count)      refund_count,\n" +
            "           count(distinct user_id) refund_uu_count\n" +
            "                                                  from
dws_trade_trademark_category_user_refund_window\n" +
```

```
          "     where toYYYYMMDD(stt) = #{date}\n" +
          "     group by trademark_id, trademark_name) rct\n" +
          "    on oct.trademark_id = rct.trademark_id;\n")
   List<TrademarkCommodityStats>
selectTrademarkStats(@Param("date") Integer date);

   @Select("select trademark_name,\n" +
          "      sum(order_amount) order_amount\n" +
          "from dws_trade_sku_order_window\n" +
          "where toYYYYMMDD(stt) = #{date}\n" +
          "group by trademark_id, trademark_name;")
   List<TrademarkOrderAmountPieGraph>
selectTmOrderAmtPieGra(@Param("date")Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.CategoryCommodityStats;
import com.atguigu.gmall.publisher.bean.SpuCommodityStats;
import com.atguigu.gmall.publisher.bean.TrademarkCommodityStats;
import
com.atguigu.gmall.publisher.bean.TrademarkOrderAmountPieGraph;

import java.util.List;

public interface CommodityStatsService {
   List<TrademarkCommodityStats>
getTrademarkCommodityStatsService(Integer date);

   List<TrademarkOrderAmountPieGraph>  getTmOrderAmtPieGra(Integer
date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.CategoryCommodityStats;
import com.atguigu.gmall.publisher.bean.SpuCommodityStats;
import com.atguigu.gmall.publisher.bean.TrademarkCommodityStats;
import
com.atguigu.gmall.publisher.bean.TrademarkOrderAmountPieGraph;
import com.atguigu.gmall.publisher.mapper.CommodityStatsMapper;
import com.atguigu.gmall.publisher.service.CommodityStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public      class      CommodityStatsServiceImpl      implements
CommodityStatsService {

   @Autowired
```

```
    private CommodityStatsMapper commodityStatsMapper;

    @Override
    public                              List<TrademarkCommodityStats>
getTrademarkCommodityStatsService(Integer date) {
        return commodityStatsMapper.selectTrademarkStats(date);
    }

    @Override
    public                         List<TrademarkOrderAmountPieGraph>
getTmOrderAmtPieGra(Integer date) {
        return commodityStatsMapper.selectTmOrderAmtPieGra(date);
    }
}
```

6) Controller 层

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.CategoryCommodityStats;
import com.atguigu.gmall.publisher.bean.SpuCommodityStats;
import com.atguigu.gmall.publisher.bean.TrademarkCommodityStats;
import
com.atguigu.gmall.publisher.bean.TrademarkOrderAmountPieGraph;
import com.atguigu.gmall.publisher.service.CommodityStatsService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

@RestController
@RequestMapping("/gmall/realtime/commodity")
public class CommodityStatsController {

    @Autowired
    private CommodityStatsService commodityStatsService;

    @RequestMapping("/trademark")
    public String getTrademarkCommodityStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TrademarkCommodityStats> trademarkCommodityStatsList =
commodityStatsService.getTrademarkCommodityStatsService(date);
        if (trademarkCommodityStatsList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < trademarkCommodityStatsList.size(); i++)
{
            TrademarkCommodityStats    trademarkCommodityStats    =
trademarkCommodityStatsList.get(i);
            String                  trademarkName                 =
trademarkCommodityStats.getTrademarkName();
```

```
          Integer orderCt = trademarkCommodityStats.getOrderCt();
          Integer uuCt = trademarkCommodityStats.getUuCt();
          Double                    orderAmount                    =
trademarkCommodityStats.getOrderAmount();
          Integer refundCt = trademarkCommodityStats.getRefundCt();
          Integer                     refundUuCt                    =
trademarkCommodityStats.getRefundUuCt();

          rows.append("{\n" +
                "\t\"trademark\": \"" + trademarkName + "\",\n" +
                "\t\"order_count\": \"" + orderCt + "\",\n" +
                "\t\"uu_count\": \"" + uuCt + "\",\n" +
                "\t\"order_amount\": \"" + orderAmount + "\",\n" +
                "\t\"refund_count\": \"" + refundCt + "\",\n" +
                "\t\"refund_uu_count\": \"" + refundUuCt + "\"\n" +
                "}");
          if (i < trademarkCommodityStatsList.size() - 1) {
             rows.append(",");
          } else {
             rows.append("]");
          }
       }
       return "{\n" +
             "  \"status\": 0,\n" +
             "  \"msg\": \"\",\n" +
             "  \"data\": {\n" +
             "    \"columns\": [\n" +
             "      {\n" +
             "        \"name\": \"品牌名称\",\n" +
             "        \"id\": \"trademark\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"订单数\",\n" +
             "        \"id\": \"order_count\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"订单人数\",\n" +
             "        \"id\": \"uu_count\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"订单金额\",\n" +
             "        \"id\": \"order_amount\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"退单数\",\n" +
             "        \"id\": \"refund_count\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"退单人数\",\n" +
             "        \"id\": \"refund_uu_count\"\n" +
             "      }\n" +
             "    ],\n" +
             "    \"rows\": " + rows + "\n" +
             "  }\n" +
             "}";
```

```
    }

    @RequestMapping("/tmPieGraph")
    public String getTmOrderAmtPieGra(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if(date == 1) {
            date = DateUtil.now();
        }
        List<TrademarkOrderAmountPieGraph>  tmOrderAmtPieGraList  =
commodityStatsService.getTmOrderAmtPieGra(date);
        if(tmOrderAmtPieGraList == null || tmOrderAmtPieGraList.size()
== 0) {
            return "";
        }
        StringBuilder dataSet = new StringBuilder("[");
        for (int i = 0; i < tmOrderAmtPieGraList.size(); i++) {
            TrademarkOrderAmountPieGraph
trademarkOrderAmountPieGraph = tmOrderAmtPieGraList.get(i);
            String                  trademarkName                  =
trademarkOrderAmountPieGraph.getTrademarkName();
            Double                   orderAmount                   =
trademarkOrderAmountPieGraph.getOrderAmount();
            dataSet.append("{\n" +
                    "     \"name\": \""+ trademarkName +"\",\n" +
                    "     \"value\": "+ orderAmount +"\n" +
                    "   }");
            if(i < tmOrderAmtPieGraList.size() - 1) {
                dataSet.append(",");
            } else {
                dataSet.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": "+ dataSet +"\n" +
                "}";
    }
}
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/commodity/trademark?date=${GMALL_DAT
E}
```

② 效果如下

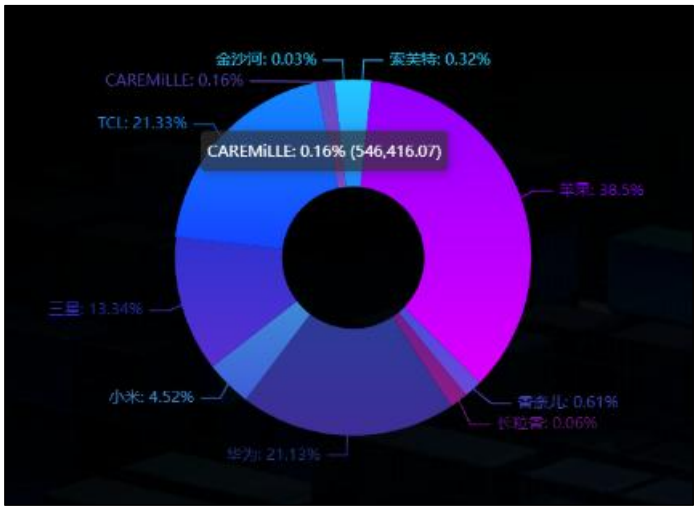
序号	品牌名称	订单数	订单人数	订单金额	退单数	退单人数
1	索芙特	734	628	1075887.91	37	36
2	苹果	995	826	1.2911363511E8	52	49
3	香奈儿	565	485	2060032.0	24	23
4	长粒香	520	451	192271.0	18	18
5	华为	1424	909	7.085094355E7	62	61
6	小米	528	472	1.5166213E7	13	13
7	三星	1193	970	4.4730842E7	69	67
8	TCL	760	649	7.1517476E7	39	38

③ 选择环形饼图。

④ 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/commodity/tmPieGraph?date=${GMALL_DATE}
```

⑤ 效果如下。



3.3.2 各品类商品交易统计

1）需求说明

统计周期	统计粒度	指标	说明
当日	品类	订单数	略
当日	品类	订单人数	略
当日	品类	订单金额	略
当日	品类	退单数	略
当日	品类	退单人数	略

2）需求分析

本节指标的展示使用轮播表格实现。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "一级品类名称",
        "id": "category1_name"
      },
      {
        "name": "二级品类名称",
```

```
      "id": "category2_name"
    },
    {
      "name": "三级品类名称",
      "id": "category3_name"
    },
    {
      "name": "订单数",
      "id": "order_count"
    },
    {
      "name": "订单人数",
      "id": "uu_count"
    },
    {
      "name": "订单金额",
      "id": "order_amount"
    },
    {
      "name": "退单数",
      "id": "refund_count"
    },
    {
      "name": "退单人数",
      "id": "refund_uu_count"
    }
  ],
  "rows": [
    {
      "category1_name": "家用电器",
      "category2_name": "大 家 电",
      "category3_name": "平板电视",
      "order_count": "1834",
      "uu_count": "1000",
      "order_amount": "1.10715225E8",
      "refund_count": "71",
      "refund_uu_count": "70.0"
    },
    ...
  ]
 }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
```

```
@AllArgsConstructor
public class CategoryCommodityStats {
    // 一级品类名称
    String category1_name;
    // 二级品类名称
    String category2_name;
    // 三级品类名称
    String category3_name;
    // 订单数
    Integer orderCt;
    // 下单用户数
    Integer uuCt;
    // 订单金额
    Double orderAmount;
    // 退单数
    Integer refundCt;
    // 退单金额
    Double refundUcCt;
}
```

（2）Mapper 接口

在 CommodityStatsMapper 接口中补充方法。

```
    @Select("select category1_name,\n" +
            "      category2_name,\n" +
            "      category3_name,\n" +
            "      order_count,\n" +
            "      uu_count,\n" +
            "      order_amount,\n" +
            "      refund_count,\n" +
            "      refund_uu_count\n" +
            "from (select category1_id,\n" +
            "           category1_name,\n" +
            "           category2_id,\n" +
            "           category2_name,\n" +
            "           category3_id,\n" +
            "           category3_name,\n" +
            "           sum(order_count)       order_count,\n" +
            "           sum(order_uu_count) uu_count,\n" +
            "           sum(order_amount)      order_amount\n" +
            "     from dws_trade_sku_order_window\n" +
            "     where toYYYYMMDD(stt) = #{date}\n" +
            "     group by category1_id,\n" +
            "              category1_name,\n" +
            "              category2_id,\n" +
            "              category2_name,\n" +
            "              category3_id,\n" +
            "              category3_name) oct\n" +
            "        full outer join\n" +
            "    (select category1_id,\n" +
            "           category1_name,\n" +
            "           category2_id,\n" +
            "           category2_name,\n" +
```

```
            "           category3_id,\n" +
            "           category3_name,\n" +
            "           sum(refund_count)      refund_count,\n" +
            "           count(distinct user_id) refund_uu_count\n" +
            "                                                   from
dws_trade_trademark_category_user_refund_window\n" +
            "     where toYYYYMMDD(stt) = #{date}\n" +
            "     group by category1_id,\n" +
            "              category1_name,\n" +
            "              category2_id,\n" +
            "              category2_name,\n" +
            "              category3_id,\n" +
            "              category3_name) rct\n" +
            "    on oct.category1_id = rct.category1_id\n" +
            "       and oct.category2_id = rct.category2_id\n" +
            "       and oct.category3_id = rct.category3_id;")
    List<CategoryCommodityStats> selectCategoryStats(@Param("date")
Integer date);
```

5）Service 层

（1）Service 接口

在 CommodityStatsService 接口中补充方法。

```
    List<CategoryCommodityStats>    getCategoryStatsService(Integer
date);
```

（2）Service 实现类

在 CommodityStatsServiceImpl 实现类中补充方法。

```
    @Override
    public                                List<CategoryCommodityStats>
getCategoryStatsService(Integer date) {
        return commodityStatsMapper.selectCategoryStats(date);
    }
```

6）Controller 层

在 CommodityStatsController 类中补充方法。

```
    @RequestMapping("/category")
    public String getCategoryStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<CategoryCommodityStats>   categoryStatsServiceList   =
commodityStatsService.getCategoryStatsService(date);
        if (categoryStatsServiceList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < categoryStatsServiceList.size(); i++) {
            CategoryCommodityStats     categoryCommodityStats     =
```

```
categoryStatsServiceList.get(i);
          String                  category1Name                  =
categoryCommodityStats.getCategory1_name();
          String                  category2Name                  =
categoryCommodityStats.getCategory2_name();
          String                  category3Name                  =
categoryCommodityStats.getCategory3_name();
          Integer orderCt = categoryCommodityStats.getOrderCt();
          Integer uuCt = categoryCommodityStats.getUuCt();
          Double                   orderAmount                   =
categoryCommodityStats.getOrderAmount();
          Integer refundCt = categoryCommodityStats.getRefundCt();
          Double                   refundUcCt                    =
categoryCommodityStats.getRefundUcCt();

          rows.append("{\n" +
                "\t\"category1_name\": \"" + category1Name + "\",\n"
+
                "\t\"category2_name\": \"" + category2Name + "\",\n"
+
                "\t\"category3_name\": \"" + category3Name + "\",\n"
+
                "\t\"order_count\": \"" + orderCt + "\",\n" +
                "\t\"uu_count\": \"" + uuCt + "\",\n" +
                "\t\"order_amount\": \"" + orderAmount + "\",\n" +
                "\t\"refund_count\": \"" + refundCt + "\",\n" +
                "\t\"refund_uu_count\": \"" + refundUcCt + "\"\n" +
                "}");
          if (i < categoryStatsServiceList.size() - 1) {
             rows.append(",");
          } else {
             rows.append("]");
          }
       }

       return "{\n" +
             "  \"status\": 0,\n" +
             "  \"msg\": \"\",\n" +
             "  \"data\": {\n" +
             "    \"columns\": [\n" +
             "      {\n" +
             "        \"name\": \"一级品类名称\",\n" +
             "        \"id\": \"category1_name\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"二级品类名称\",\n" +
             "        \"id\": \"category2_name\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"三级品类名称\",\n" +
             "        \"id\": \"category3_name\"\n" +
             "      },\n" +
             "      {\n" +
             "        \"name\": \"订单数\",\n" +
             "        \"id\": \"order_count\"\n" +
             "      },\n" +
```

```
                "      {\n" +
                "        \"name\": \"订单人数\",\n" +
                "        \"id\": \"uu_count\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"订单金额\",\n" +
                "        \"id\": \"order_amount\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"退单数\",\n" +
                "        \"id\": \"refund_count\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"退单人数\",\n" +
                "        \"id\": \"refund_uu_count\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": " + rows + "\n" +
                "  }\n" +
                "}";
    }
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/commodity/category?date=${GMALL_DATE
}
```

② 效果如下

序号	一级品类...	二级品类...	三级品类...	订单数	订单人数	订单金额	退单数	退单人数
1	家用电器	大家电	平板电视	1834	1000	1.10715225E8	71	70.0
2	个护化妆	香水彩妆	香水	565	485	2060032.0	24	23.0
3	手机	手机通讯	手机	3066	1183	2.206638846...	164	158.0
4	个护化妆	香水彩妆	唇部	1459	918	1622303.98	69	68.0
5	食品饮料、保...	粮油调味	米面杂粮	1052	736	278234.0	44	42.0

3.3.3 各 SPU 商品交易统计

1）需求说明

统计周期	统计粒度	指标	说明
当日	SPU	订单数	略
当日	SPU	订单人数	略

当日	SPU	订单金额	略

2）需求分析

关键词的展示使用轮播表格实现。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "columns": [
      {
        "name": "SPU 名称",
        "id": "spu_name"
      },
      {
        "name": "下单次数",
        "id": "order_count"
      },
      {
        "name": "下单人数",
        "id": "uu_count"
      },
      {
        "name": "订单金额",
        "id": "order_amount"
      }
    ],
    "rows": [
      {
        "spu_name": "香奈儿(Chanel)女士香水 5 号香水 粉邂逅柔情淡香水 EDT ",
        "order_count": "565",
        "uu_count": "485",
        "order_amount": "2060032.0"
      },
      ...
    ]
  }
}
```

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
```

```
public class SpuCommodityStats {
    // SPU 名称
    String spuName;
    // 下单数
    Integer orderCt;
    // 下单用户数
    Integer uuCt;
    // 下单金额
    Double orderAmount;
}
```

（2）Mapper 接口

在 CommodityStatsMapper 接口中补充方法。

```
    @Select("select spu_name,\n" +
            "       sum(order_count)       order_count,\n" +
            "       sum(order_uu_count) uu_count,\n" +
            "       sum(order_amount)      order_amount\n" +
            "from dws_trade_sku_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by spu_id, spu_name;")
    List<SpuCommodityStats>  selectSpuStats(@Param("date")  Integer
date);
```

5）Service 层

（1）Service 接口

在 CommodityStatsService 中补充方法。

```
    List<SpuCommodityStats> getSpuCommodityStats(Integer date);
```

（2）Service 实现类

在 CommodityStatsServiceImpl 实现类中补充方法。

```
    @Override
    public List<SpuCommodityStats> getSpuCommodityStats(Integer date)
{
        return commodityStatsMapper.selectSpuStats(date);
    }
```

6）Controller 层

在 CommodityStatsController 中补充方法。

```
    @RequestMapping("/spu")
    public String getSpuStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<SpuCommodityStats>       spuCommodityStatsList       =
```

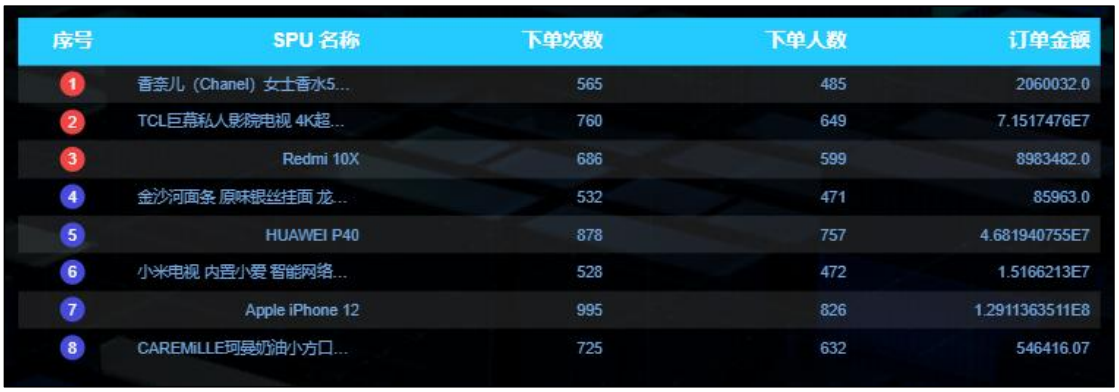
```
commodityStatsService.getSpuCommodityStats(date);
       if (spuCommodityStatsList == null) {
          return "";
       }
       StringBuilder rows = new StringBuilder("[");
       for (int i = 0; i < spuCommodityStatsList.size(); i++) {
          SpuCommodityStats          spuCommodityStats          =
spuCommodityStatsList.get(i);
          String spuName = spuCommodityStats.getSpuName();
          Integer orderCt = spuCommodityStats.getOrderCt();
          Integer uuCt = spuCommodityStats.getUuCt();
          Double orderAmount = spuCommodityStats.getOrderAmount();
          rows.append("{\n" +
                "\t\"spu_name\": \"" + spuName + "\",\n" +
                "\t\"order_count\": \"" + orderCt + "\",\n" +
                "\t\"uu_count\": \"" + uuCt + "\",\n" +
                "\t\"order_amount\": \"" + orderAmount + "\"\n" +
                "}");
          if (i < spuCommodityStatsList.size() - 1) {
             rows.append(",");
          } else {
             rows.append("]");
          }
       }

       return "{\n" +
              "  \"status\": 0,\n" +
              "  \"msg\": \"\",\n" +
              "  \"data\": {\n" +
              "    \"columns\": [\n" +
              "      {\n" +
              "        \"name\": \"SPU 名称\",\n" +
              "        \"id\": \"spu_name\"\n" +
              "      },\n" +
              "      {\n" +
              "        \"name\": \"下单次数\",\n" +
              "        \"id\": \"order_count\"\n" +
              "      },\n" +
              "      {\n" +
              "        \"name\": \"下单人数\",\n" +
              "        \"id\": \"uu_count\"\n" +
              "      },\n" +
              "      {\n" +
              "        \"name\": \"订单金额\",\n" +
              "        \"id\": \"order_amount\"\n" +
              "      }\n" +
              "    ],\n" +
              "    \"rows\": " + rows + "\n" +
              "  }\n" +
              "}";
   }
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/commodity/spu?date=${GMALL_DATE}
```

② 效果如下



序号	SPU 名称	下单次数	下单人数	订单金额
1	香奈儿（Chanel）女士香水5...	565	485	2060032.0
2	TCL巨幕私人影院电视 4K超...	760	649	7.1517476E7
3	Redmi 10X	686	599	8983482.0
4	金沙河面条 原味银丝挂面 龙...	532	471	85963.0
5	HUAWEI P40	878	757	4.681940755E7
6	小米电视 内置小爱 智能网络...	528	472	1.5166213E7
7	Apple iPhone 12	995	826	1.2911363511E8
8	CAREMiLLE珂曼奶油小方口...	725	632	546416.07

3.4 交易主题

3.4.1 交易综合统计

1）需求说明

统计周期	指标	说明
当日	订单总额	订单最终金额
当日	订单数	略
当日	订单人数	略
当日	退单数	略
当日	退单人数	略

2）需求分析

订单总额用数字翻牌器展示，其余指标用轮播表格展示。

3）数据结构

（1）数字翻牌器

```
{
  "status": 0,
  "msg": "",
  "data": 54148869.14
}
```

（2）轮播表格

同上，不再展示。

4）Mapper 层

（1）实体类

数字翻牌器无须实体类。

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TradeStats {
    // 指标类型
    String type;
    // 度量值
    Integer orderCt;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.TradeProvinceOrderAmount;
import com.atguigu.gmall.publisher.bean.TradeProvinceOrderCt;
import com.atguigu.gmall.publisher.bean.TradeStats;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface TradeStatsMapper {
    // 交易总金额
    @Select("select sum(order_amount) order_total_amount\n" +
            "from dws_trade_province_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt);")
    Double selectTotalAmount(@Param("date")Integer date);

    // 下单情况统计
    @Select("select '下单数' type,\n" +
            "       sum(order_count)       value\n" +
            "from dws_trade_sku_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "union all\n" +
            "select '下单人数' type,\n" +
            "       sum(order_uu_count) value\n" +
            "from dws_trade_sku_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "union all\n" +
```

```
            "select '退单数' type,\n" +
            "       sum(refund_count)      value\n" +
            "from dws_trade_trademark_category_user_refund_window\n"
+
            "where toYYYYMMDD(stt) = #{date}\n" +
            "union all\n" +
            "select '退单人数' type,\n" +
            "       count(distinct user_id) value\n" +
            "from dws_trade_trademark_category_user_refund_window\n"
+
            "where toYYYYMMDD(stt) = #{date};")
    List<TradeStats> selectTradeStats(@Param("date")Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.TradeProvinceOrderAmount;
import com.atguigu.gmall.publisher.bean.TradeProvinceOrderCt;
import com.atguigu.gmall.publisher.bean.TradeStats;

import java.util.List;

public interface TradeStatsService {
    Double getTotalAmount(Integer date);

    List<TradeStats> getTradeStats(Integer date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.TradeProvinceOrderAmount;
import com.atguigu.gmall.publisher.bean.TradeProvinceOrderCt;
import com.atguigu.gmall.publisher.bean.TradeStats;
import com.atguigu.gmall.publisher.mapper.TradeStatsMapper;
import com.atguigu.gmall.publisher.service.TradeStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public class TradeStatsServiceImpl implements TradeStatsService {

    @Autowired
    TradeStatsMapper tradeStatsMapper;

    @Override
    public Double getTotalAmount(Integer date) {
        return tradeStatsMapper.selectTotalAmount(date);
    }
```

```
    @Override
    public List<TradeStats> getTradeStats(Integer date) {
        return tradeStatsMapper.selectTradeStats(date);
    }
}
```

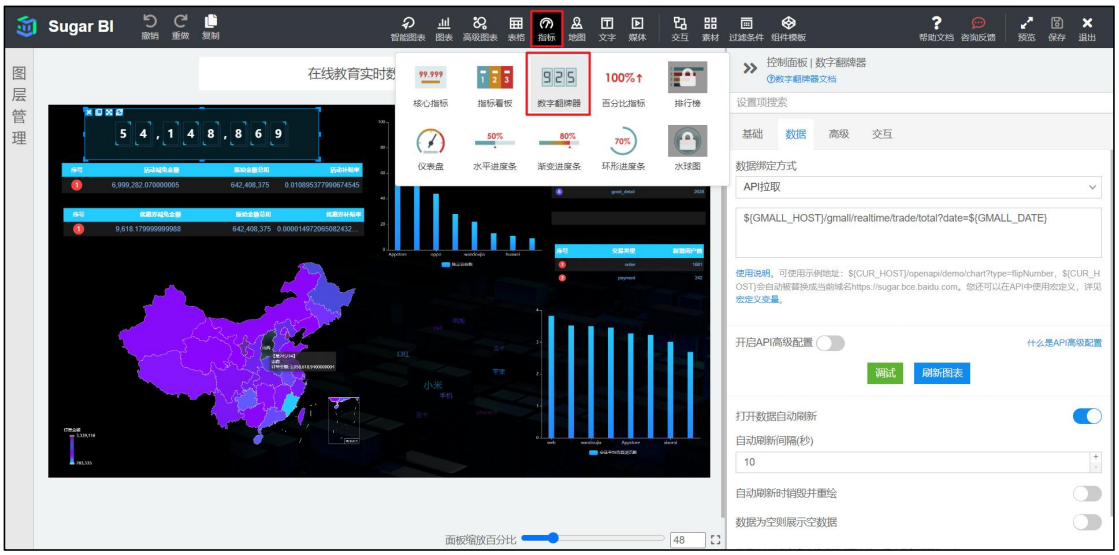
6) Controller 层

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.TradeProvinceOrderAmount;
import com.atguigu.gmall.publisher.bean.TradeProvinceOrderCt;
import com.atguigu.gmall.publisher.bean.TradeStats;
import com.atguigu.gmall.publisher.service.TradeStatsService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

@RestController
@RequestMapping("/gmall/realtime/trade")
public class TradeController {

    @Autowired
    private TradeStatsService tradeStatsService;

    @RequestMapping("/total")
    public String getTotalAmount(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        Double totalAmount = tradeStatsService.getTotalAmount(date);
        if (totalAmount == null) {
            return "";
        }
        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": " + totalAmount + "\n" +
                "}";
    }

    @RequestMapping("/stats")
    public String getStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<TradeStats>              tradeStatsList              =
tradeStatsService.getTradeStats(date);
        if (tradeStatsList == null) {
            return "";
        }
```

```
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < tradeStatsList.size(); i++) {
            TradeStats tradeStats = tradeStatsList.get(i);
            String type = tradeStats.getType();
            Integer orderCt = tradeStats.getOrderCt();
            rows.append("{\n" +
                    "\t\"type\": \"" + type + "\",\n" +
                    "\t\"value\": " + orderCt + "\n" +
                    "}\n");
            if (i < tradeStatsList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"columns\": [\n" +
                "      {\n" +
                "        \"name\": \"指标类型\",\n" +
                "        \"id\": \"type\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"度量值\",\n" +
                "        \"id\": \"value\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": " + rows + "\n" +
                "  }\n" +
                "}\n";
    }
}
```

7）Sugar 配置

① 选择数字翻牌器



② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/trade/total?date=${GMALL_DATE}
```

③ 效果如下

④ 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/trade/stats?date=${GMALL_DATE}
```

⑤ 效果如下

3.4.2 各省份交易统计

1）需求说明

统计周期	统计粒度	指标	说明

当日	省份	订单数	略
当日	省份	订单金额	略

2）需求分析

本节将为两个指标各生成一张中国省份色彩地图。

3）数据结构

```
{
  "status": 0,
  "msg": "",
  "data": {
    "mapData": [
      {
        "name": "内蒙古",
        "value": 12
      },
      {
        "name": "上海",
        "value": 10
      },
      ...
    ],
    "valueName": "订单数"
  }
}
```

4）Mapper 层

（1）实体类

① 订单数实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TradeProvinceOrderCt {
    // 省份名称
    String provinceName;
    // 订单数
    Integer orderCt;
}
```

② 订单金额实体类

```
package com.atguigu.gmall.publisher.bean;
```

```
import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class TradeProvinceOrderAmount {
    // 省份名称
    String provinceName;
    // 下单金额
    Double orderAmount;
}
```

（2）Mapper 接口

在 TradeStatsMapper 接口中补充方法。

```
    @Select("select province_name,\n" +
            "       sum(order_count)  order_count\n" +
            "from dws_trade_province_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by province_id, province_name;")
    List<TradeProvinceOrderCt>
selectTradeProvinceOrderCt(@Param("date")Integer date);

    @Select("select province_name,\n" +
            "       sum(order_amount) order_amount\n" +
            "from dws_trade_province_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by province_id, province_name;")
    List<TradeProvinceOrderAmount>
selectTradeProvinceOrderAmount(@Param("date")Integer date);
```

5）Service 层

（1）Service 接口

在 TradeStatsService 接口中补充方法。

```
    List<TradeProvinceOrderCt>      getTradeProvinceOrderCt(Integer
date);

    List<TradeProvinceOrderAmount>
getTradeProvinceOrderAmount(Integer date);
```

（2）Service 实现类

在 TradeStatsServiceImpl 实现类中补充方法。

```
    @Override
    public                                  List<TradeProvinceOrderCt>
getTradeProvinceOrderCt(Integer date) {
        return tradeStatsMapper.selectTradeProvinceOrderCt(date);
    }

    @Override
```

```
   public                              List<TradeProvinceOrderAmount>
getTradeProvinceOrderAmount(Integer date) {
       return
tradeStatsMapper.selectTradeProvinceOrderAmount(date);
   }
```

6) Controller 层

在 TradeController 控制类中补充方法。

```
   @RequestMapping("/provinceOrderCt")
   public String getProvinceOrderCt(
           @RequestParam(value = "date", defaultValue = "1") Integer
date) {
       if (date == 1) {
           date = DateUtil.now();
       }
       List<TradeProvinceOrderCt>    tradeProvinceOrderCtList    =
tradeStatsService.getTradeProvinceOrderCt(date);
       if (tradeProvinceOrderCtList == null) {
           return "";
       }
       StringBuilder mapData = new StringBuilder("[");
       for (int i = 0; i < tradeProvinceOrderCtList.size(); i++) {
           TradeProvinceOrderCt        tradeProvinceOrderCt        =
tradeProvinceOrderCtList.get(i);
           String                    provinceName                  =
tradeProvinceOrderCt.getProvinceName();
           Integer orderCt = tradeProvinceOrderCt.getOrderCt();
           mapData.append("{\n" +
                   "       \"name\": \"" + provinceName + "\",\n" +
                   "       \"value\": " + orderCt + "\n" +
                   "     }");
           if (i < tradeProvinceOrderCtList.size() - 1) {
               mapData.append(",");
           } else {
               mapData.append("]");
           }
       }

       return "{\n" +
               "  \"status\": 0,\n" +
               "  \"msg\": \"\",\n" +
               "  \"data\": {\n" +
               "    \"mapData\": " + mapData + ",\n" +
               "    \"valueName\": \"订单数\"\n" +
               "  }\n" +
               "}";
   }

   @RequestMapping("/provinceOrderAmount")
   public String getProvinceOrderAmount(
           @RequestParam(value = "date", defaultValue = "1") Integer
date) {
       if (date == 1) {
           date = DateUtil.now();
       }
```

```
        List<TradeProvinceOrderAmount> tradeProvinceOrderAmountList
= tradeStatsService.getTradeProvinceOrderAmount(date);
        if (tradeProvinceOrderAmountList == null) {
            return "";
        }
        StringBuilder mapData = new StringBuilder("[");
        for (int i = 0; i < tradeProvinceOrderAmountList.size(); i++)
{
            TradeProvinceOrderAmount    tradeProvinceOrderAmount    =
tradeProvinceOrderAmountList.get(i);
            String                      provinceName                =
tradeProvinceOrderAmount.getProvinceName();
            Double                      orderAmount                 =
tradeProvinceOrderAmount.getOrderAmount();
            mapData.append("{\n" +
                    "       \"name\": \"" + provinceName + "\",\n" +
                    "       \"value\": " + orderAmount + "\n" +
                    "     }");
            if (i < tradeProvinceOrderAmountList.size() - 1) {
                mapData.append(",");
            } else {
                mapData.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"mapData\": " + mapData + ",\n" +
                "    \"valueName\": \"订单金额\"\n" +
                "  }\n" +
                "}";
    }
```

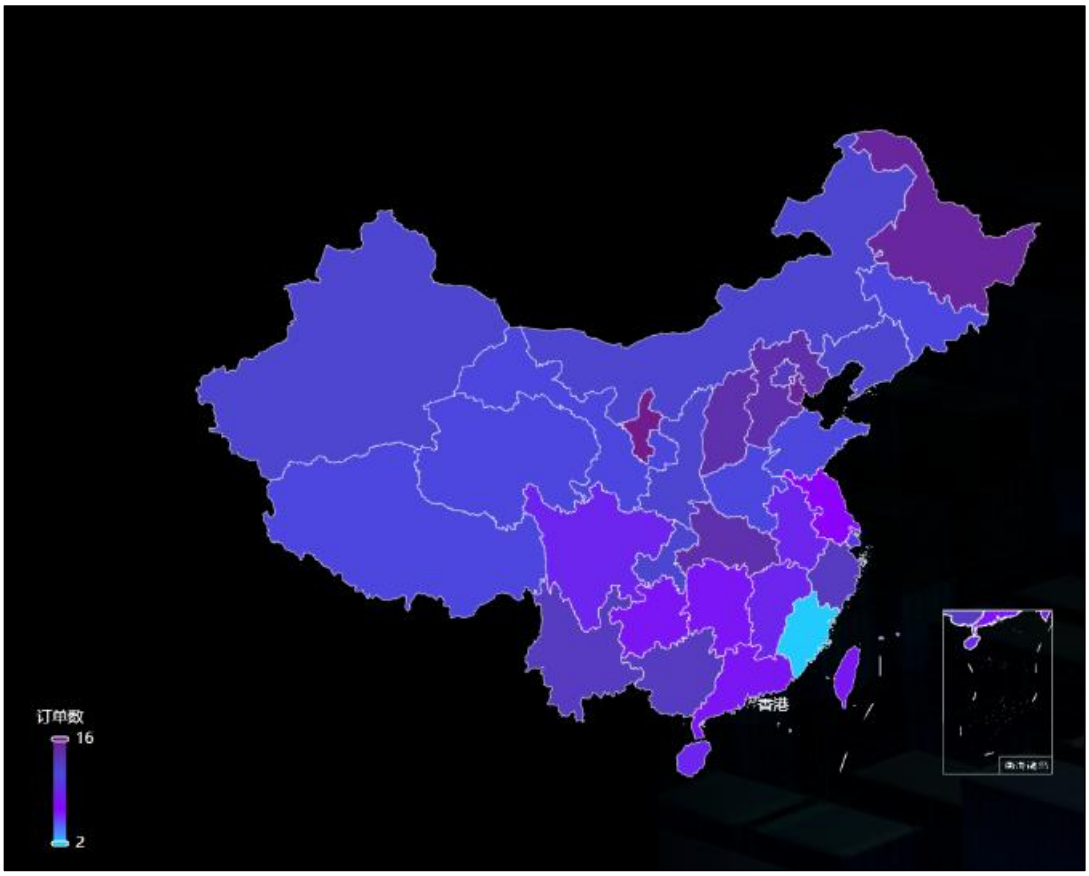
7）Sugar 配置

① 选择中国省份色彩地图

② 数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
# 订单数 URL
${GMALL_HOST}/gmall/realtime/trade/provinceOrderCt?date=${GMALL_DATE}
# 订单金额 URL
${GMALL_HOST}/gmall/realtime/trade/provinceOrderAmount?date=${GMALL_DATE}
```

③ 效果如下



3.5 优惠券主题

3.5.1 当日优惠券补贴率

1）需求说明

统计周期	统计粒度	指标	说明
当日	优惠券	补贴率	用券的订单明细优惠券减免金额总和/原始金额总和

2）需求分析

本节指标使用轮播表格展示。

3）数据结构

前文已有展示，略。

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;
```

```
import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class CouponReduceStats {
    // 优惠券减免金额
    Double couponReduceAmount;
    // 原始金额
    Double originTotalAmount;
    // 优惠券补贴率
    Double couponSubsidyRate;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;

import com.atguigu.gmall.publisher.bean.CouponReduceStats;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface CouponStatsMapper {
    @Select("select                 sum(order_coupon_reduce_amount)
coupon_reduce_amount,\n" +
            "                        sum(order_origin_total_amount)
origin_total_amount,\n" +
            "        round(round(toFloat64(coupon_reduce_amount), 5)
/\n" +
            "           round(toFloat64(origin_total_amount), 5), 20)
coupon_subsidy_rate\n" +
            "from dws_trade_sku_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt);")
    List<CouponReduceStats> selectCouponStats(@Param("date")Integer
date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.CouponReduceStats;

import java.util.List;

public interface CouponStatsService {
    List<CouponReduceStats> getCouponStats(Integer date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;
```

```
import com.atguigu.gmall.publisher.bean.CouponReduceStats;
import com.atguigu.gmall.publisher.mapper.CouponStatsMapper;
import com.atguigu.gmall.publisher.service.CouponStatsService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public class CouponStatsServiceImpl implements CouponStatsService {

    @Autowired
    private CouponStatsMapper couponStatsMapper;

    @Override
    public List<CouponReduceStats> getCouponStats(Integer date) {
        return couponStatsMapper.selectCouponStats(date);
    }
}
```

6) Controller 层

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.CouponReduceStats;
import com.atguigu.gmall.publisher.service.CouponStatsService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

/**
 * description:
 * Created by 铁盾 on 2022/4/19
 */
@RestController
@RequestMapping("gmall/realtime/coupon")
public class CouponStatsController {

    @Autowired
    private CouponStatsService couponStatsService;

    @RequestMapping("/stats")
    public String getCouponStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date){
        if(date == 1) {
            date = DateUtil.now();
        }
        List<CouponReduceStats>          couponStatsList          =
couponStatsService.getCouponStats(date);
        if(couponStatsList == null) {
            return "";
        }
```

```
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < couponStatsList.size(); i++) {
            CouponReduceStats           couponReduceStats           =
couponStatsList.get(i);
            Double                couponReduceAmount                =
couponReduceStats.getCouponReduceAmount();
            Double                originTotalAmount                 =
couponReduceStats.getOriginTotalAmount();
            Double                couponSubsidyRate                 =
couponReduceStats.getCouponSubsidyRate();
            rows.append("{\n" +
                    "                       \"couponReduceAmount\":   "+
couponReduceAmount +",\n" +
                    "                        \"originTotalAmount\":   "+
originTotalAmount +",\n" +
                    "                        \"couponSubsidyRate\":   "+
couponSubsidyRate +"\n" +
                    "     }");
            if(i < couponStatsList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"columns\": [\n" +
                "      {\n" +
                "        \"name\": \"优惠券减免金额\",\n" +
                "        \"id\": \"couponReduceAmount\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"原始金额总和\",\n" +
                "        \"id\": \"originTotalAmount\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"优惠券补贴率\",\n" +
                "        \"id\": \"couponSubsidyRate\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": "+ rows +"\n" +
                "  }\n" +
                "}";
    }
}
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/coupon/stats?date=${GMALL_DATE}
```

② 效果如下

序号	优惠券减免金额	原始金额总和	优惠券补贴率
1	9,618.179999999988	642,408,375	0.000014972065082432...

3.6 活动主题

3.6.1 当日活动补贴率

1）需求说明

统计周期	统计粒度	指标	说明
当日	活动	补贴率	参与促销活动的订单明细活动减免金额总和/原始金额总和

2）需求分析

本节指标使用轮播表格展示。

3）数据结构

略。

4）Mapper 层

（1）实体类

```
package com.atguigu.gmall.publisher.bean;

import lombok.AllArgsConstructor;
import lombok.Data;

@Data
@AllArgsConstructor
public class ActivityReduceStats {
    // 活动减免金额
    Double activityReduceAmount;
    // 原始金额
    Double originTotalAmount;
    // 活动补贴率
    Double activitySubsidyRate;
}
```

（2）Mapper 接口

```
package com.atguigu.gmall.publisher.mapper;
```

```
import com.atguigu.gmall.publisher.bean.ActivityReduceStats;
import org.apache.ibatis.annotations.Param;
import org.apache.ibatis.annotations.Select;

import java.util.List;

public interface ActivityStatsMapper {
    @Select("select               sum(order_activity_reduce_amount)
activity_reduce_amount,\n" +
            "                        sum(order_origin_total_amount)
origin_total_amount,\n" +
            "      round(round(toFloat64(activity_reduce_amount), 5)
/\n" +
            "           round(toFloat64(origin_total_amount), 5), 20)
subsidyRate\n" +
            "from dws_trade_sku_order_window\n" +
            "where toYYYYMMDD(stt) = #{date}\n" +
            "group by toYYYYMMDD(stt);")
    List<ActivityReduceStats>  selectActivityStats(@Param(value  =
"date")Integer date);
}
```

5）Service 层

（1）Service 接口

```
package com.atguigu.gmall.publisher.service;

import com.atguigu.gmall.publisher.bean.ActivityReduceStats;

import java.util.List;

public interface ActivityReduceService {
    List<ActivityReduceStats> getActivityStats(Integer date);
}
```

（2）Service 实现类

```
package com.atguigu.gmall.publisher.service.impl;

import com.atguigu.gmall.publisher.bean.ActivityReduceStats;
import com.atguigu.gmall.publisher.mapper.ActivityStatsMapper;
import com.atguigu.gmall.publisher.service.ActivityReduceService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;

@Service
public       class       ActivityReduceServiceImpl       implements
ActivityReduceService {

    @Autowired
    private ActivityStatsMapper activityStatsMapper;

    @Override
    public List<ActivityReduceStats> getActivityStats(Integer date)
{
```

```
        return activityStatsMapper.selectActivityStats(date);
    }
}
```

6) Controller 层

```
package com.atguigu.gmall.publisher.controller;

import com.atguigu.gmall.publisher.bean.ActivityReduceStats;
import com.atguigu.gmall.publisher.service.ActivityReduceService;
import com.atguigu.gmall.publisher.util.DateUtil;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

import java.util.List;

@RestController
@RequestMapping("/gmall/realtime/activity")
public class ActivityStatsController {

    @Autowired
    private ActivityReduceService activityReduceService;

    @RequestMapping("/stats")
    public String getActivityStats(
            @RequestParam(value = "date", defaultValue = "1") Integer
date) {
        if (date == 1) {
            date = DateUtil.now();
        }
        List<ActivityReduceStats>        activityStatsList        =
activityReduceService.getActivityStats(date);
        if (activityStatsList == null) {
            return "";
        }
        StringBuilder rows = new StringBuilder("[");
        for (int i = 0; i < activityStatsList.size(); i++) {
            ActivityReduceStats        activityReduceStats        =
activityStatsList.get(i);
            Double               activityReduceAmount               =
activityReduceStats.getActivityReduceAmount();
            Double                originTotalAmount                =
activityReduceStats.getOriginTotalAmount();
            Double               activitySubsidyRate               =
activityReduceStats.getActivitySubsidyRate();
            rows.append("{\n" +
                    "            \t\"activityReduceAmount\":    "    +
activityReduceAmount + ",\n" +
                    "    \t\"originTotalAmount\": " + originTotalAmount
+ ",\n" +
                    "            \t\"activitySubsidyRate\":    "    +
activitySubsidyRate + "\n" +
                    "    }");
            if (i < activityStatsList.size() - 1) {
                rows.append(",");
            } else {
                rows.append("]");
```

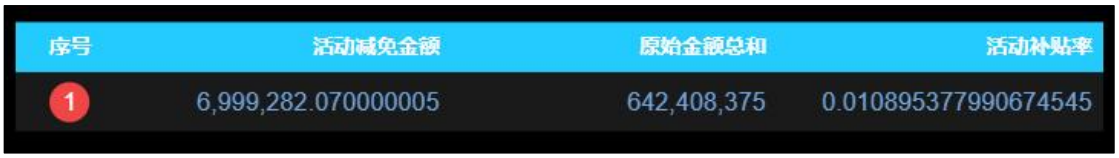
```
            }
        }

        return "{\n" +
                "  \"status\": 0,\n" +
                "  \"msg\": \"\",\n" +
                "  \"data\": {\n" +
                "    \"columns\": [\n" +
                "      {\n" +
                "        \"name\": \"活动减免金额\",\n" +
                "        \"id\": \"activityReduceAmount\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"原始金额总和\",\n" +
                "        \"id\": \"originTotalAmount\"\n" +
                "      },\n" +
                "      {\n" +
                "        \"name\": \"活动补贴率\",\n" +
                "        \"id\": \"activitySubsidyRate\"\n" +
                "      }\n" +
                "    ],\n" +
                "    \"rows\": " + rows + "\n" +
                "  }\n" +
                "}";
    }
}
```

7）Sugar 配置

① 选择轮播表格，数据绑定方式为 “API 拉取”，输入数据接口的 URL，如下。

```
${GMALL_HOST}/gmall/realtime/activity/stats?date=${GMALL_DATE}
```

② 效果如下



序号	活动减免金额	原始金额总和	活动补贴率
1	6,999,282.070000005	642,408,375	0.010895377990674545