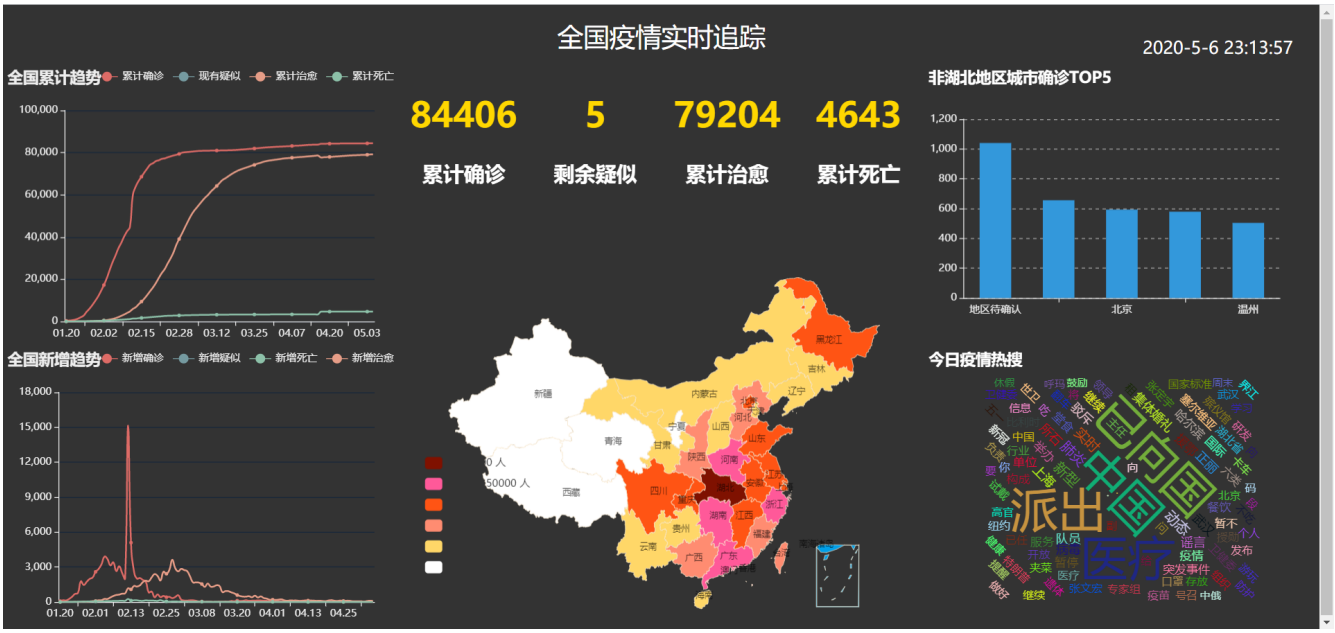
页面效果



项目准备

所用技术

springboot+mybatis+echarts+webmagic

实现过程

用webmagic爬取腾讯,百度疫情网站,获取数据

将返回的数据存储在mysql中

编写业务,在controller中调用业务

用ajax获取controller传来的数据

环境和软件

JDK1.8 ,IntelliJ IDEA 2020.1 x64, MySQL 5.5.40,node.js v12.16.2 ,Maven

依赖

```
<parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
```

```
        <version>2.0.2.RELEASE</version>
    </parent>

    <properties>
        <java.version>1.8</java.version>
    </properties>

    <dependencies>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-test</artifactId>
        </dependency>
        <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>4.12</version>
            <scope>test</scope>
        </dependency>
        <dependency>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
            <version>1.18.12</version>
        </dependency>
        <dependency>
            <groupId>org.seleniumhq.selenium</groupId>
            <artifactId>selenium-java</artifactId>
            <version>3.9.1</version>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-thymeleaf</artifactId>
        </dependency>
        <dependency>
            <groupId>com.huaban</groupId>
            <artifactId>jieba-analysis</artifactId>
            <version>1.0.2</version>
        </dependency>
        <!--SpringMVC-->
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-web</artifactId>
        </dependency>
        <dependency>
            <groupId>org.projectlombok</groupId>
            <artifactId>lombok</artifactId>
        </dependency>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-jdbc</artifactId>
        </dependency>
        <dependency>
            <groupId>org.mybatis.spring.boot</groupId>
            <artifactId>mybatis-spring-boot-starter</artifactId>
```

```
            <version>1.1.1</version>
        </dependency>
        <dependency>
            <groupId>mysql</groupId>
            <artifactId>mysql-connector-java</artifactId>
        </dependency>
        <dependency>
            <groupId>us.codecraft</groupId>
            <artifactId>webmagic-core</artifactId>
            <version>0.7.3</version>
        </dependency>
        <dependency>
            <groupId>us.codecraft</groupId>
            <artifactId>webmagic-extension</artifactId>
            <version>0.7.3</version>
        </dependency>
        <dependency>
            <groupId>org.apache.commons</groupId>
            <artifactId>commons-lang3</artifactId>
        </dependency>
    </dependencies>
```

数据库搭建

```
#详情信息
CREATE TABLE `details` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `update_time` varchar(50) DEFAULT NULL COMMENT '数据最后更新时间',
  `province` varchar(50) DEFAULT NULL COMMENT '省',
  `city` varchar(50) DEFAULT NULL COMMENT '市',
  `confirm` int(11) DEFAULT NULL COMMENT '累计确诊',
  `confirm_add` int(11) DEFAULT NULL COMMENT '新增确诊',
  `heal` int(11) DEFAULT NULL COMMENT '累计治愈',
  `dead` int(11) DEFAULT NULL COMMENT '累计死亡',
  PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=1826 DEFAULT CHARSET=utf8mb4
```

```
#历史信息
CREATE TABLE `history` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `ds` varchar(50) NOT NULL COMMENT '日期',
  `confirm` int(11) DEFAULT NULL COMMENT '累计确诊',
  `confirm_add` int(11) DEFAULT NULL COMMENT '当日新增确诊',
  `suspect` int(11) DEFAULT NULL COMMENT '剩余疑似',
  `suspect_add` int(11) DEFAULT NULL COMMENT '当日新增疑似',
  `heal` int(11) DEFAULT NULL COMMENT '累计治愈',
  `heal_add` int(11) DEFAULT NULL COMMENT '今日新增治愈',
  `dead` int(11) DEFAULT NULL COMMENT '累计死亡',
  `dead_add` int(11) DEFAULT NULL COMMENT '当日新增死亡',
  PRIMARY KEY (`id`)
```

```
) ENGINE=InnoDB AUTO_INCREMENT=108 DEFAULT CHARSET=utf8mb4
```

```
#热搜
Create Table

CREATE TABLE `hot` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `dt` varchar(50) DEFAULT NULL,
  `content` varchar(255) DEFAULT NULL,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=1085 DEFAULT CHARSET=utf8mb4
```

爬虫源网址

腾讯

https://view.inews.qq.com/g2/getOnsInfo?name=disease_h5 https://view.inews.qq.com/g2/getOnsInfo?name=disease_other

百度

https://voice.baidu.com/act/virussearch/virussearch

Application配置类

```
DB Configuration:
spring.datasource.driverClassName=com.mysql.jdbc.Driver
spring.datasource.url=jdbc:mysql://localhost:3306/pro?
serverTimezone=UTC&useUnicode=true&characterEncoding=utf-8
spring.datasource.username=root
spring.datasource.password=root


mybatis.type-aliases-package=CR553.Pojo
mybatis.mapper-locations=classpath:Mapper/*.xml

server.port=8088

//关闭缓存
spring.thymeleaf.cache=false
```

POJO,Mapper,Service

没啥特别的,基本的crud,直接上代码

POJO

```java
@Data//依赖于lombok
@AllArgsConstructor
@NoArgsConstructor
public class Details {
    private Long id;
    private String update_time; //更新时间
    private String province; //省
    private String city; //市
    private Long confirm; //累计确诊
    private Long confirm_add; //今日新增确诊
    private Long heal; //治愈
    private Long dead; //死亡
}
```

```java
@Data
@NoArgsConstructor
@AllArgsConstructor
public class History {
    private Long id;
    private String ds; //日期
    private Long confirm;//累计确诊
    private Long confirm_add;//今日累计确诊
    private Long suspect;//疑似
    private Long suspect_add;//今日新增疑似
    private Long heal;//治愈
    private Long heal_add;//当日新增治愈
    private Long dead;//死亡
    private Long dead_add;//今日新增死亡
}
```

```java
@Data
@AllArgsConstructor
@NoArgsConstructor
public class Hot {
    private Long id;
    private String content;
    private String dt;
}
```

mapper

```java
@Mapper
public interface DetailsMapper {

    //存储
    void saveDetails(Details details);

    //更新
    void updateDetails(Details details);
```

```
    //查找(省份和市名相同的)
    List<Details> findDetails(Details details);

    //查找省
    List<String> findProvince();

    //查找每个省的确诊人数
    List<Integer> findProvinceValue();

    //查找城市
    List<String> findCity();

    //查找每个城市的确诊人数
    List<Long> findCityValue();

}
```

```
@Mapper
public interface HistoryMapper {

    //保存
    void saveHistory(History history);

    //更新
    void updateHistory(History history);

    //查找 日期相同的
    List<History> findHistory(History history);

    //查找今日数据
    History findToday();

    //返回每天历史累计数据
    List<History> findEachDayTotal();

    //返回每天历史增加数据
    List<History> findEachDayAdd();

}
```

```
@Mapper
public interface HotMapper {

    //保存
    void saveHot(Hot hot);

    List<Hot> findTopHot20();

}
```

serviceImp

```
@Service
public class DetailsServiceImpl implements DetailsService {

    @Autowired
    private DetailsMapper detailsMapper;

    //查找并更新
    @Override
    public void saveDetails(Details details) {
        List<Details> list = this.findDetails(details);

        if (list.size() == 0) {
            //没查到,新增
            this.detailsMapper.saveDetails(details);
        }else
        {
            //查到了,修改
            this.detailsMapper.updateDetails(details);
        }
    }

    @Override
    public void updateDetails(Details details) {
        this.updateDetails(details);
    }

    @Override
    public List<Details> findDetails(Details details) {
        List<Details> list = this.detailsMapper.findDetails(details);
        return list;
    }

    @Override
    public List<String> findProvince() {
        List<String> list = this.detailsMapper.findProvince();
        return list;
    }

    @Override
    public List<Integer> findProvinceValue() {
        List<Integer> list = this.detailsMapper.findProvinceValue();
        return list;
    }

    @Override
    public List<String> findCity() {
        List<String> city = this.detailsMapper.findCity();
        return city;
    }

    @Override
```

```
    public List<Long> findCityValue() {
        List<Long> cityValue = this.detailsMapper.findCityValue();
        return cityValue;
    }

}
```

```
@Service
public class HistoryServiceImpl implements HistoryService {

    @Autowired
    private HistoryMapper historyMapper;

    @Override
    public void saveHistory(History history) {
        List<History> list = this.historyMapper.findHistory(history);
        if(list.size()==0)
        {

            this.historyMapper.saveHistory(history);
        }else
        {
            this.historyMapper.updateHistory(history);
        }
    }

    @Override
    public void updateHistory(History history) {
        this.historyMapper.updateHistory(history);
    }

    @Override
    public List<History> findHistory(History history) {
        return this.historyMapper.findHistory(history);
    }

    @Override
    public History findToday() {
        return this.historyMapper.findToday();
    }

    @Override
    public List<History> findEachDayTotal() {
        return this.historyMapper.findEachDayTotal();
    }

    @Override
    public List<History> findEachDayAdd() {
        return this.historyMapper.findEachDayAdd();
    }
```

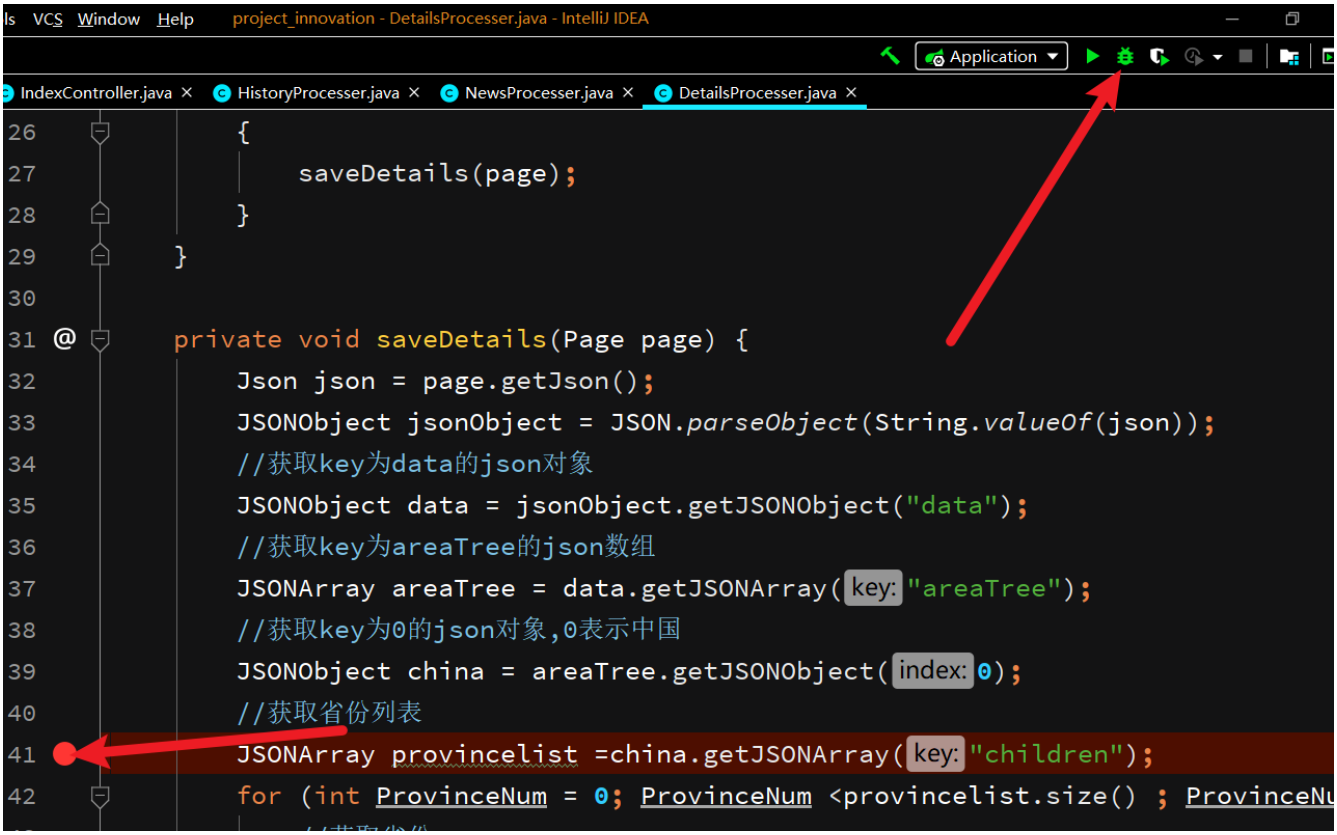
```
}
```

```
@Service
public class HotServiceImpl implements HotService {

    @Autowired
    private HotMapper hotMapper;

    @Override
    public void saveHot(Hot hot) {
       this.hotMapper.saveHot(hot);
    }

    @Override
    public List<Hot> findTopHot20() {
        return this.hotMapper.findTopHot20();
    }


}
```

Webmagic爬虫

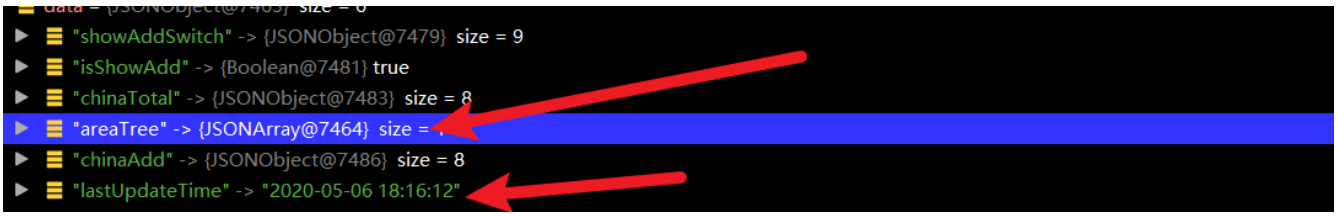
可能就是在解析数据的时候要花一点点时间

这里是通过打个断点,debug慢慢分析的

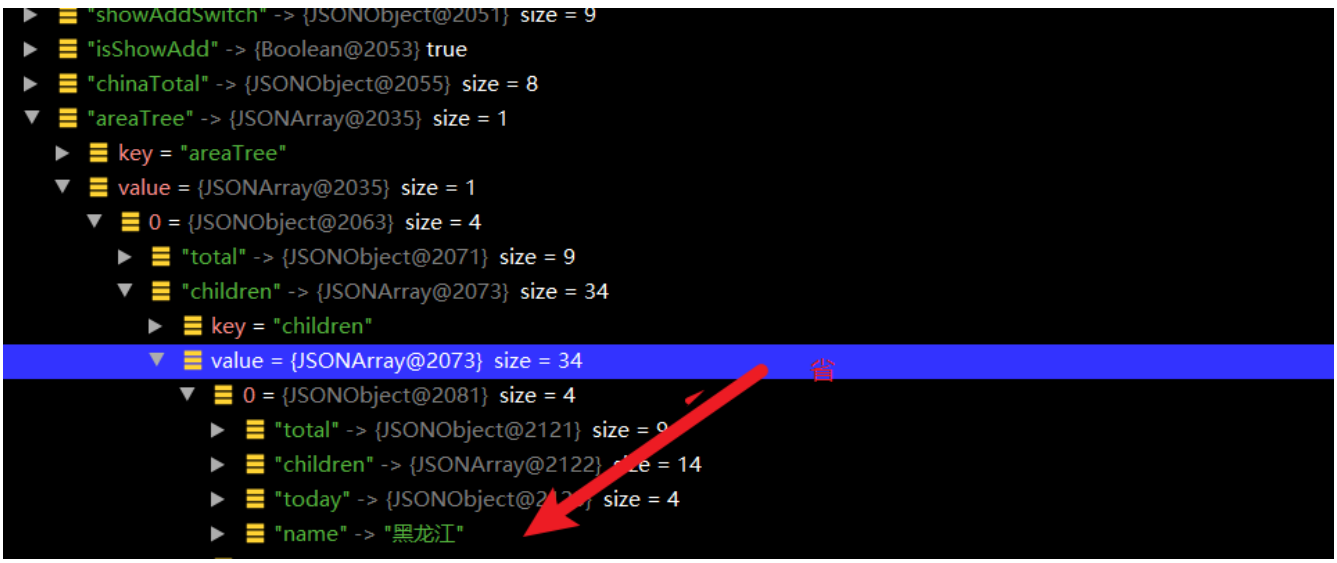


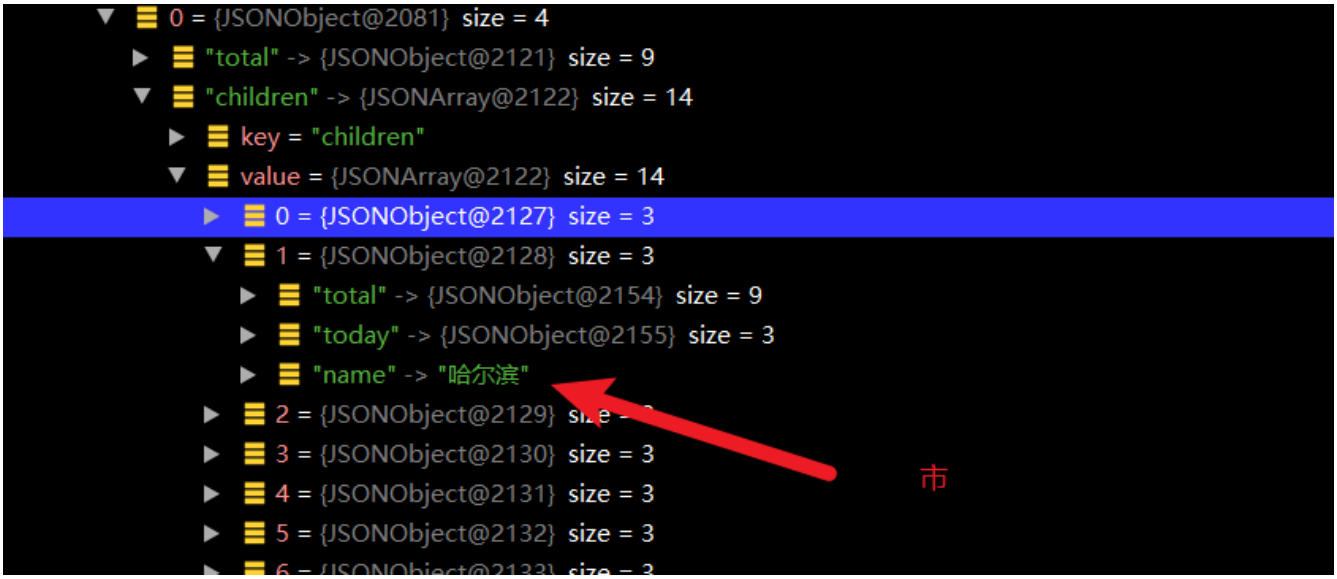
差不多就这样

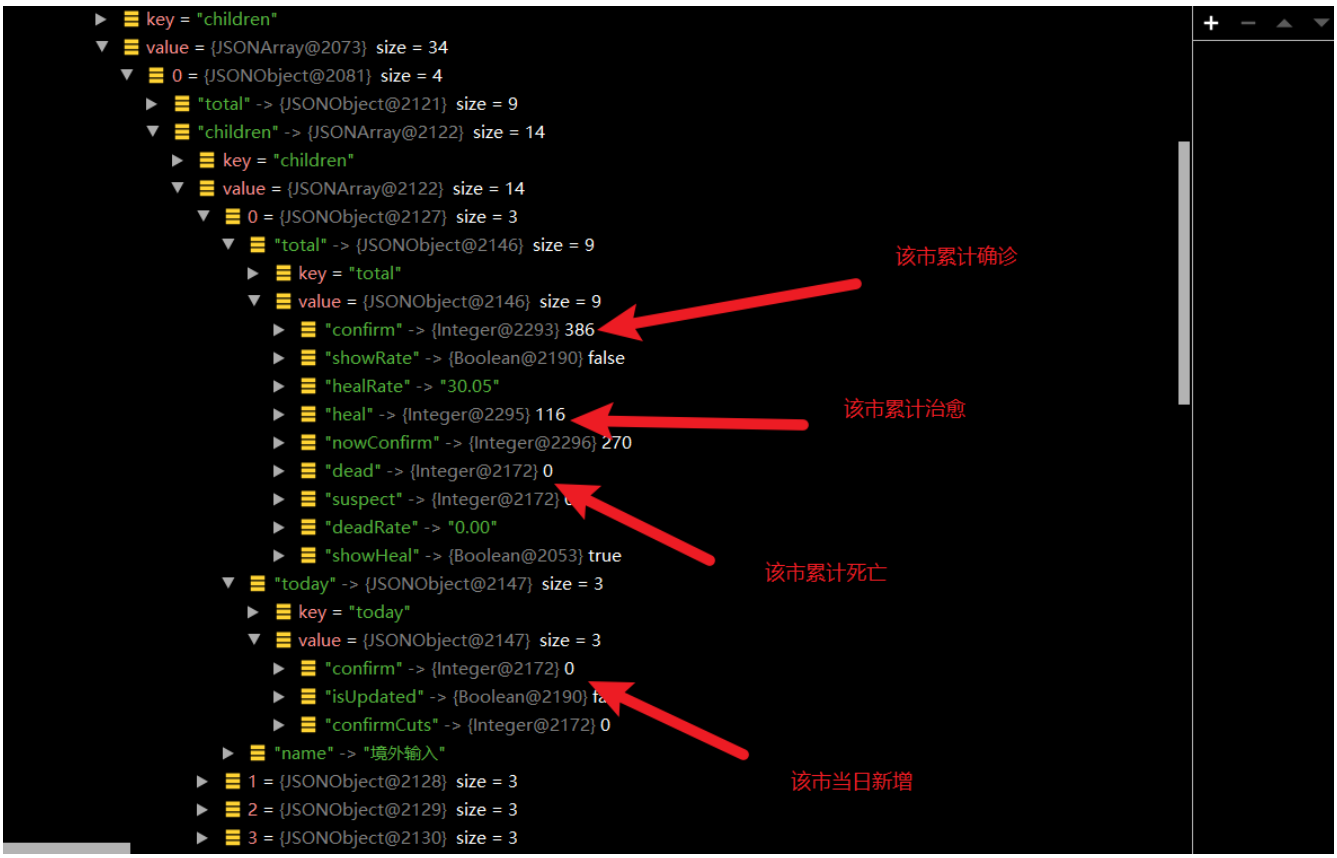
先看details数据的解析



数据在这两个中获取



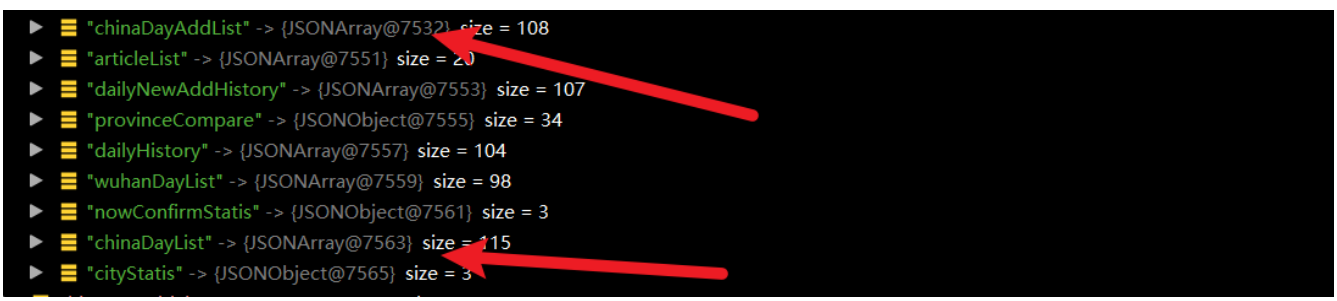


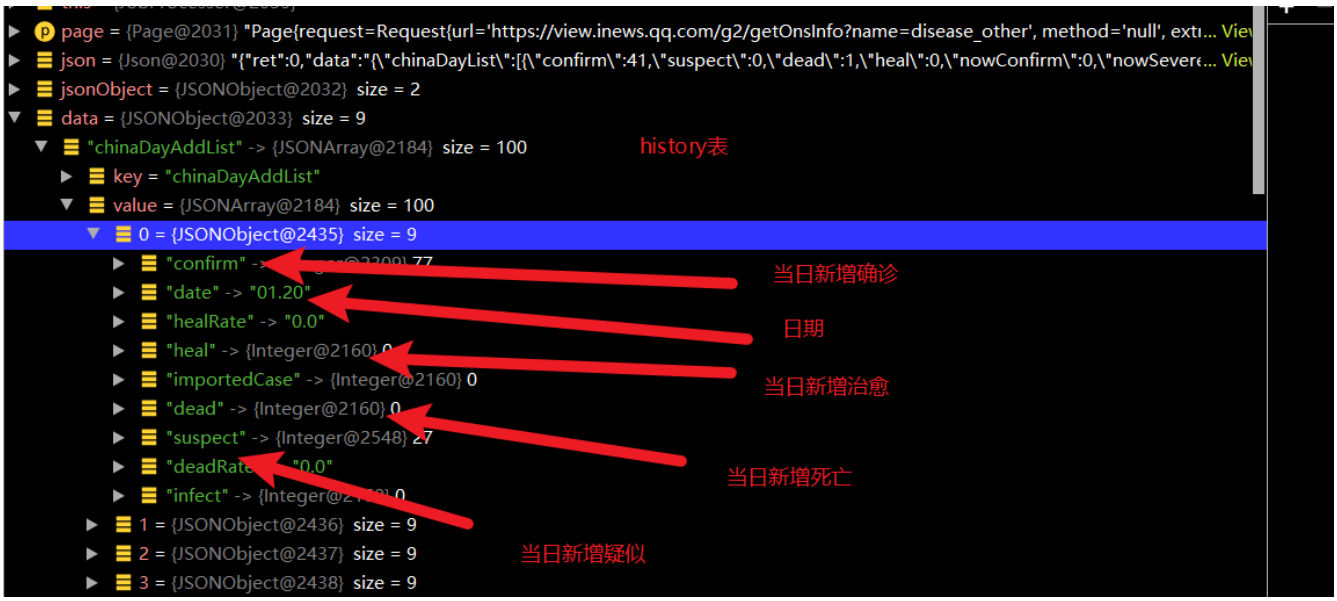


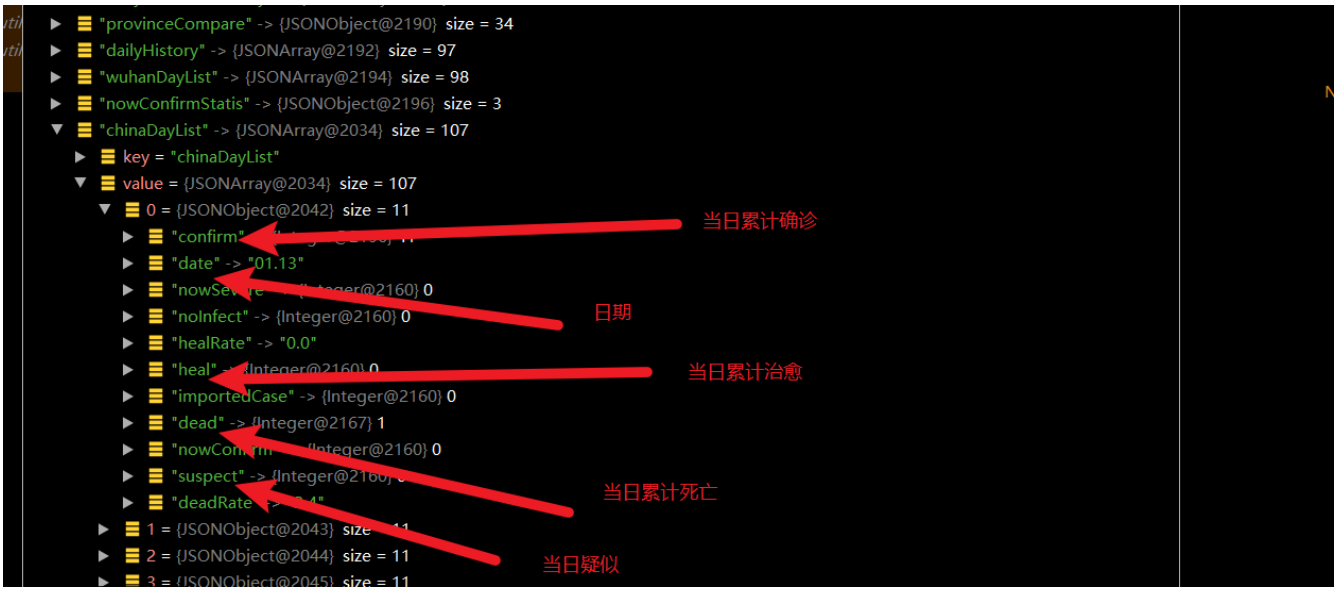
本质上就是遍历一个双重for循环

history的

注意的也是两个json数据







这里要注意一下,chinaDayList中的日期是从1月20号开始的,而chinaDayAddList中的日期是从1月13号开始的,

一个for循环就可以搞定了.

热搜hot表数据很少,debug一下很容易发现

数据的保存

以details为例

把数据先保存在ResultItems中,我这里用了随机id,防止key相同

```
        UUID uuid = UUID.randomUUID();
        //保存结果
        page.putField( key: "details"+uuid,details);

    }
```

使用pipepel

```
@Autowired
private DetailsSpringDataPipeline detailsSpringDataPipeline;

@Scheduled(initialDelay = 1000,fixedDelay = 12*60 *60* 1000)
public void process(){
    Spider.create(new DetailsProcesser())
            .addUrl("https://view.inews.qq.com/g2/getOnsInfo?name=disease_h5")
            .setScheduler(new QueueScheduler().setDuplicateRemover(new BloomFilterDuplicateRemover(
            .addPipeline(detailsSpringDataPipeline)
            .thread(5)
            .run();

}
```

遍历ResultItems,调用detailsService方法保存数据到数据库

```
@Autowired
private DetailsService detailsService;

@Override
public void process(ResultItems resultItems, Task task) {

    Map<String, Object> all = resultItems.getAll();

    for (Map.Entry<String, Object> entry : all.entrySet()) {
        String key = entry.getKey();
        Details details = resultItems.get(key);
        this.detailsService.saveDetails(details);
    }
}
```

另外两个类似操作

Controller+SQL+ajax

数据保存到数据库后,剩下就是发送数据了

整个数据的展示大体分为了六个部分,依次是l1,l2,c1,c2,r1,r2

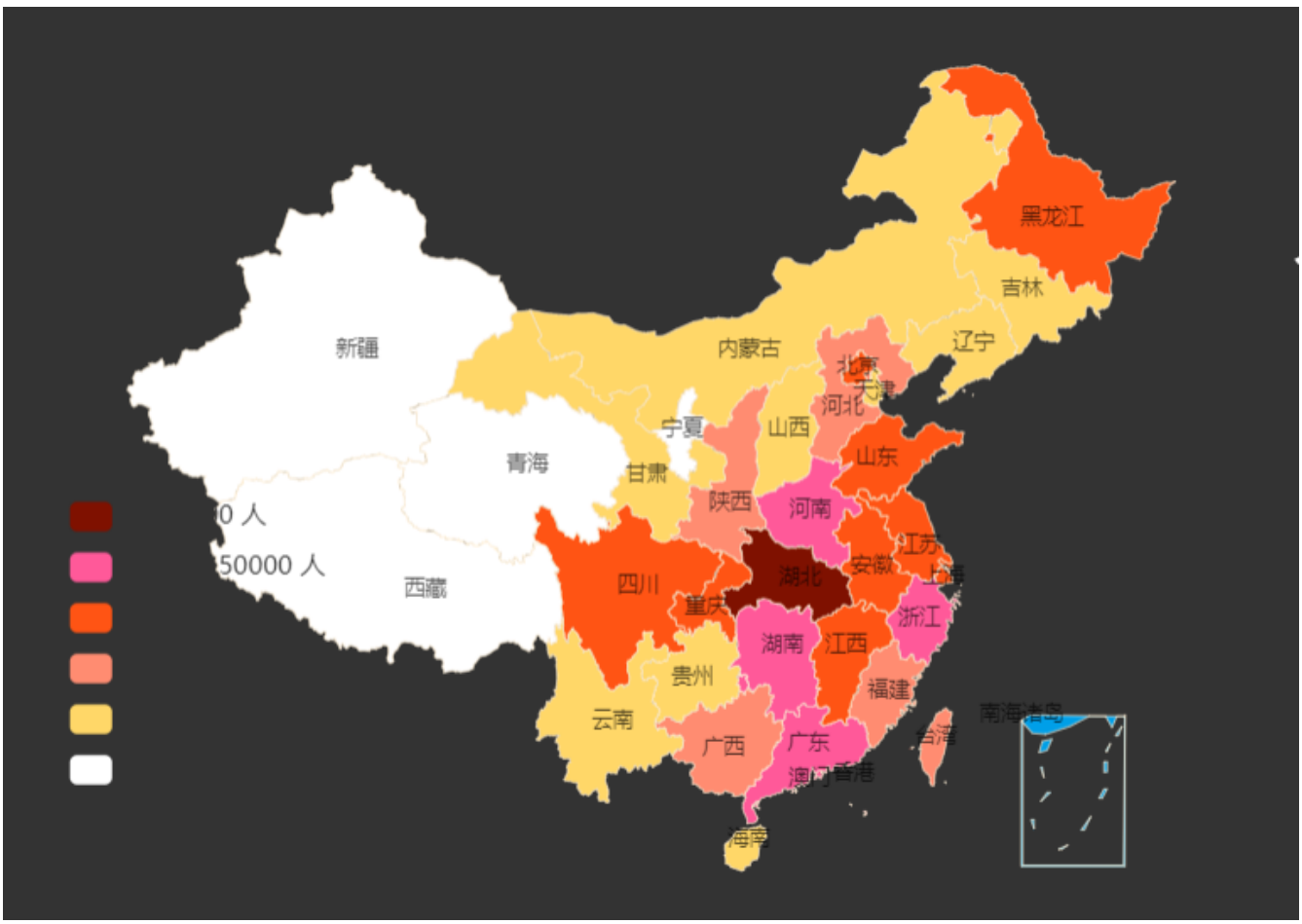
c1


```java
@RequestMapping("/c1")
@ResponseBody
public JSONObject getDateC1()
{
    History today = this.historyService.findToday();
    JSONObject json = new JSONObject();
    json.put("confirm",today.getConfirm());
    json.put("suspect",today.getSuspect());
    json.put("heal",today.getHeal());
    json.put("dead",today.getDead());
    return json;
}
```

```xml
<select id="findToday" resultType="History">
    SELECT * FROM history ORDER BY ds DESC LIMIT 1;
</select>
```

```
function get_c1_data(){
    $.ajax({
        url: "/c1",
        success:function (data) {
            $(".num h1").eq(0).text(data.confirm);
            $(".num h1").eq(1).text(data.suspect);
            $(".num h1").eq(2).text(data.heal);
            $(".num h1").eq(3).text(data.dead);
        }
    });
}
```

c2



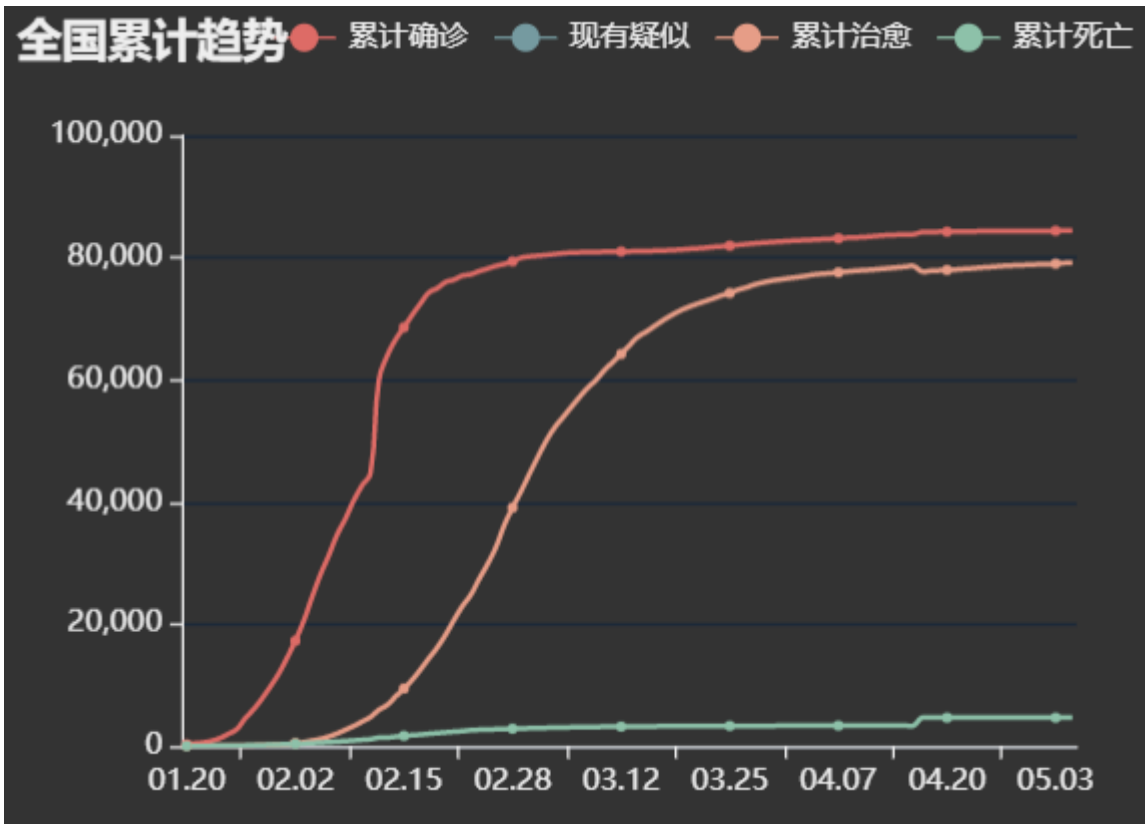
```java
@RequestMapping("/c2")
@ResponseBody
public JSONArray c2()
{
    JSONArray list = new JSONArray();
    List<String> province = this.detailsService.findProvince();
    List<Integer> provinceValue = this.detailsService.findProvinceValue();
    for (int i = 0; i <province.size() ; i++) {
        JSONObject js = new JSONObject();
        js.put("name",province.get(i));
        js.put("value",provinceValue.get(i));
        list.add(js);
    }
    return list;

}
```

```xml
<select id="findProvince" resultType="String">
    SELECT province FROM details
    WHERE update_time=(SELECT update_time FROM details
    ORDER BY update_time DESC LIMIT 1 )
    GROUP BY province;
</select>

<select id="findProvinceValue" resultType="Integer">
    SELECT SUM(confirm) FROM details
    WHERE update_time=(SELECT update_time FROM details
    ORDER BY update_time DESC LIMIT 1 )
    GROUP BY province;
</select>
```

```
function get_c2_data() {
    $.ajax({
        url: "/c2",
        success: function (response) {
            ec_center2_option.series[0].data=response;
            //console.log(response);
           // console.log(ec_center2_option.series[0].data);
            ec_center2.setOption(ec_center2_option);
        }
    });
}
```

这里的两个sql其实是可以放一起,我这里多走了一步路

l1



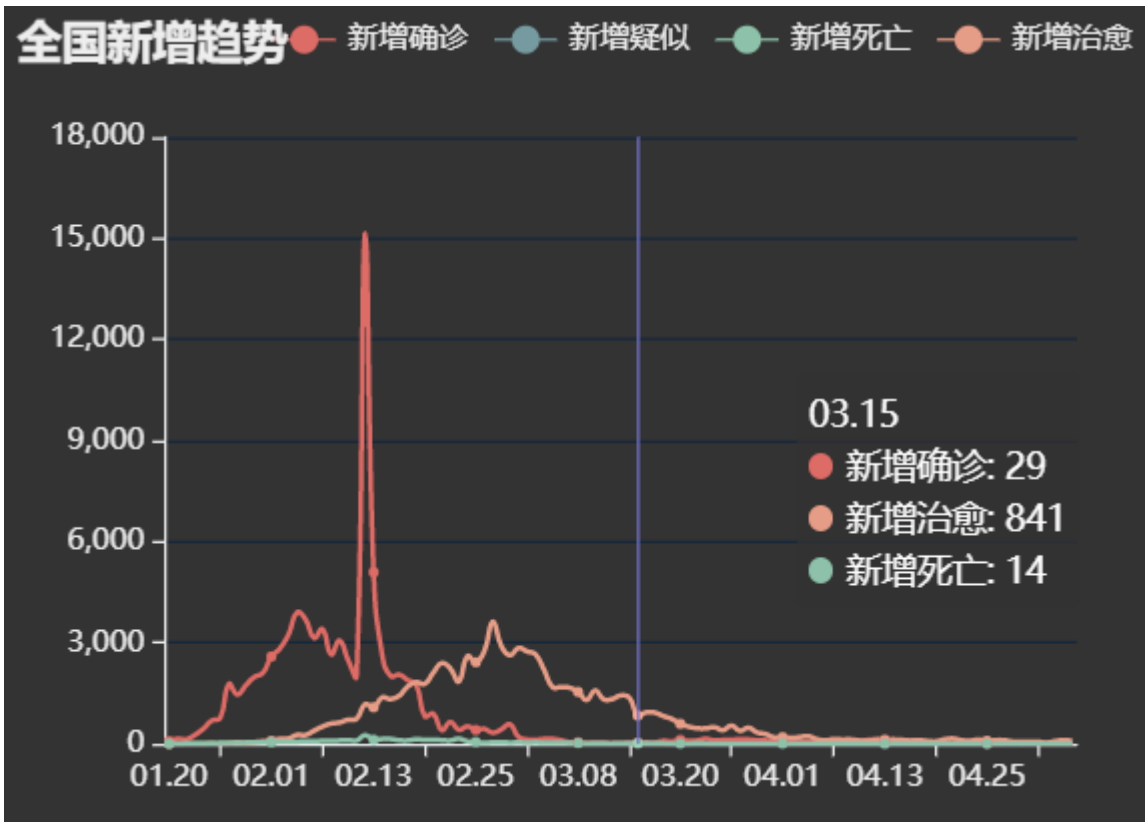
```java
@RequestMapping("/l1")
@ResponseBody
public JSONObject l1()
{
    List<History> eachDayTotal = this.historyService.findEachDayTotal
    JSONObject json = new JSONObject();
    List<String> daylist=new ArrayList<>();
    List<Long> confirmlist=new ArrayList<>();
    List<Long> heallist=new ArrayList<>();
    List<Long> deadlist=new ArrayList<>();
    List<Long> suspectlist=new ArrayList<>();

    for (History history : eachDayTotal) {
        daylist.add(history.getDs());
        confirmlist.add(history.getConfirm());
        heallist.add(history.getHeal());
        deadlist.add(history.getDead());
        suspectlist.add(history.getSuspect());
    }
```

```java
    json.put("day",daylist);
    json.put("confirm",confirmlist);
    json.put("heal",heallist);
    json.put("dead",deadlist);
    return json;
}
```

```xml
    <select id="findEachDayTotal" resultType="History">
        SELECT ds,confirm,suspect,heal,dead FROM history;
    </select>
```

```
function get_l1_data() {
    $.ajax({
        url: "/l1",
        success: function (response) {
          //  console.log(response);
            ec_left1_option.xAxis[0].data=response.day;
            ec_left1_option.series[0].data=response.confirm;
            ec_left1_option.series[1].data=response.suspect;
            ec_left1_option.series[2].data=response.heal;
            ec_left1_option.series[3].data=response.dead;

            ec_left1.setOption(ec_left1_option);
        }
    });
}
```

l2



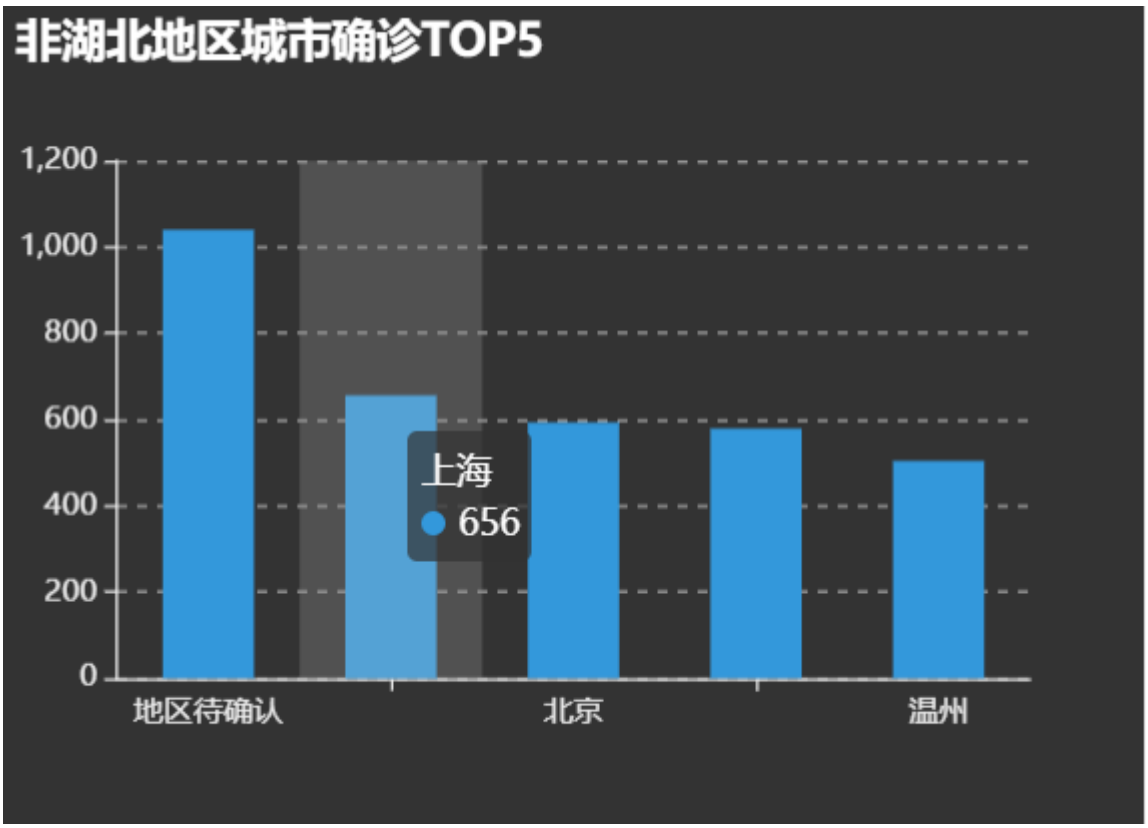
```java
@RequestMapping("/l2")
@ResponseBody
public JSONObject l2()
{
    List<History> eachDayTotal = this.historyService.findEachDayAdd();
    JSONObject json = new JSONObject();
    List<String> daylist=new ArrayList<>();
    List<Long> confirmlist=new ArrayList<>();
    List<Long> heallist=new ArrayList<>();
    List<Long> deadlist=new ArrayList<>();
    List<Long> suspectlist=new ArrayList<>();

    for (History history : eachDayTotal) {
        daylist.add(history.getDs());
        confirmlist.add(history.getConfirm_add());
        heallist.add(history.getHeal_add());
        deadlist.add(history.getDead_add());
        suspectlist.add(history.getSuspect_add());
    }
```

```java
    }

    json.put("day",daylist);
    json.put("confirm",confirmlist);
    json.put("heal",heallist);
    json.put("dead",deadlist);
    return json;
}
```

```xml
<select id="findEachDayAdd" resultType="History">
    SELECT ds,confirm_add,suspect_add,heal_add,dead_add FROM history;
</select>
```

```
function get_l2_data() {
    $.ajax({
        url: "/l2",
        success: function (response) {
          //  console.log(response);
            ec_left2_option.xAxis[0].data=response.day;
            ec_left2_option.series[0].data=response.confirm;
            ec_left2_option.series[1].data=response.suspect;
            ec_left2_option.series[2].data=response.heal;
            ec_left2_option.series[3].data=response.dead;

            ec_left2.setOption(ec_left2_option);
        }
    });
}
```

r1



```java
    @RequestMapping("/r1")
    @ResponseBody
    public JSONObject r1()
    {
        JSONObject json = new JSONObject();
        List<String> city = this.detailsService.findCity();
        List<Long> cityValue = this.detailsService.findCityValue();
        json.put("city",city);
        json.put("cityValue",cityValue);
        return json;
    }

}
```

```xml
    <select id="findCity" resultType="String">
            SELECT city FROM
    (SELECT city,confirm FROM details
     WHERE update_time=(SELECT update_time FROM details ORDER BY update_time DESC LIMIT 1)
     AND province NOT IN("湖北","北京","上海","天津","重庆")
     UNION ALL
     SELECT province AS city ,SUM(confirm) AS confirm FROM details
     WHERE update_time=(SELECT update_time FROM details ORDER BY update_time DESC LIMIT 1)
     AND province IN("北京","上海","天津","重庆") GROUP BY province ) AS a
     ORDER BY confirm DESC LIMIT 5;

    </select>
```

```xml
<select id="findCityValue" resultType="Long">
    SELECT confirm FROM
(SELECT city,confirm FROM details
 WHERE update_time=(SELECT update_time FROM details ORDER BY update_time DESC LIMIT 1)
 AND province NOT IN("湖北","北京","上海","天津","重庆")
 UNION ALL
 SELECT province AS city ,SUM(confirm) AS confirm FROM details
 WHERE update_time=(SELECT update_time FROM details ORDER BY update_time DESC LIMIT 1)
 AND province IN("北京","上海","天津","重庆") GROUP BY province ) AS a
 ORDER BY confirm DESC LIMIT 5;
</select>
```

这两个sql其实是可以放在一起的,但是我的放一起只查出了一列数据,于是就多走了一步路

r2

这里用到了jieba分词器,将分词后的关键字和数值返回给前端


```
@RequestMapping("/r2")
@ResponseBody
public JSONArray r2()
{
    //获取hot前20
    List<Hot> topHot20 = this.hotService.findTopHot20();
    //jieba分词
    JiebaSegmenter segmenter = new JiebaSegmenter();
    JSONArray list = new JSONArray();
    for (Hot hot : topHot20) {
        String content=hot.getContent();
        //获取数字
        String num = content.replaceAll(regex:"[\\u4e00-\\u9fa5]", replacement:"");
        //获取中文
        String  msg= content.replaceAll(regex:"[0-9]", replacement:"");
        //分词
        List<String> strings = segmenter.sentenceProcess(msg);
        for (String string : strings) {
            Pattern pattern = Pattern.compile("[0-9]*");
            if(!pattern.matcher(string).matches())//不为数字
            {
                JSONObject jsonObject = new JSONObject();
                jsonObject.put("name",string);
                jsonObject.put("value",num);
                list.add(jsonObject);
            }
        }
    }
    return list;
}
```

```
<select id="findTopHot20"   resultType="Hot" >
    SELECT content FROM hot ORDER BY id DESC LIMIT 20;
</select>
```

```
function get_r2_data() {
    $.ajax({
        url: "/r2",
        success: function (response) {
            ec_right2_option.series[0].data= response;
           // console.log(response);
            ec_right2.setOption(ec_right2_option);
        }
    });
}
```

其他技术

五分钟上手echarts

https://echarts.apache.org/zh/tutorial.html#5%20%E5%88%86%E9%92%9F%E4%B8%8A%E6%89%8B%20ECharts

简单实用jieba

https://blog.csdn.net/wbcg111/article/details/53191721

selenium基本实用

https://blog.csdn.net/qq_22003641/article/details/79137327

总结

这个项目简单,基础,适合新手.这是我学完springboot 之后第一个小项目,做之前感觉无从下手,做完后又觉得没有什么,项目是参考b站上一个基于python实现的视频做的. 数据库的搭建,sql语句,都是模仿的.自己的部分主要是爬虫和业务的编写.尽管如此,我还是花了好几天时间,从一开始的懵逼到慢慢拨云见日,做完还是有一丢丢的成就感的.

获取资源的路有点曲折,那个视频拿资料要加vx,我一加,说要去他们的培训机构官网注册账号,当时嫌麻烦,没要

在视频的评论区有人先做出来了,基本和视频没差,他把链接发了到了评论(事实上他在好几个疫情可视化的视频下面都留了链接,我真的是服了),我顺着网站找到了他的博客,下面有人留言说可不可以要源码,他说先加vx.我兴冲冲的去加了,但是向他要的时候他说**"有偿!!!"**

我理解但不认同这种做法,也幸亏他拒绝了我,浇灭了我想偷懒的心

在网上也很少搜到基于java实现的疫情可视化项目(其实主要是爬虫数据解析部分不明朗,大家好像都去用python了)

基于以上原因,还有我一路对白嫖过来的视频和资源提供者感激,我当时就决定自己把这种项目写出来,发到网上,供像我一样的萌新参考,学习.

第一次写,可能整理的不太详细,具体的就参照源码吧,. 基本的框架差不多就是这样,网站我会慢慢修改,逐渐脱离之前的布局(u1s1,真的有点丑),与此同时这也是一个融合和学习的好途径.

开源是一种精神