Mybatis

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1.Mybatis入门

1.1 mybatis介绍

MyBatis 本是apache的一个开源项目iBatis, 2010年这个项目由apache software foundation 迁移到了google code，并且改名为MyBatis 。2013年11月迁移到Github。

MyBatis是一个优秀的持久层框架，它对jdbc的操作数据库的过程进行封装，使开发者只需要关注 SQL本身，而不需要花费精力去处理例如注册驱动、创建connection、创建statement、手动设置参数、结果集检索等jdbc繁杂的过程代码。

Mybatis通过xml或注解的方式将要执行的各种statement（statement、preparedStatemnt、CallableStatement）配置起来，并通过java对象和statement中的sql进行映射生成最终执行的sql语句，最后由mybatis框架执行sql并将结果映射成java对象并返回。

1.2 Jdbc编码的问题

1、 数据库连接创建、释放频繁造成系统资源浪费，从而影响系统性能。如果使用数据库连接池可解决此问题。

2、 Sql语句在代码中硬编码，造成代码不易维护，实际应用中sql变化的可能较大，sql变动需要改变java代码。

3、 使用preparedStatement向占有位符号传参数存在硬编码，因为sql语句的where条件不一定，可能多也可能少，修改sql还要修改代码，系统不易维护。

4、 对结果集解析存在硬编码（查询列名），sql变化导致解析代码变化，系统不易维护，如果能将数据库记录封装成pojo对象解析比较方便。

1 dbutils

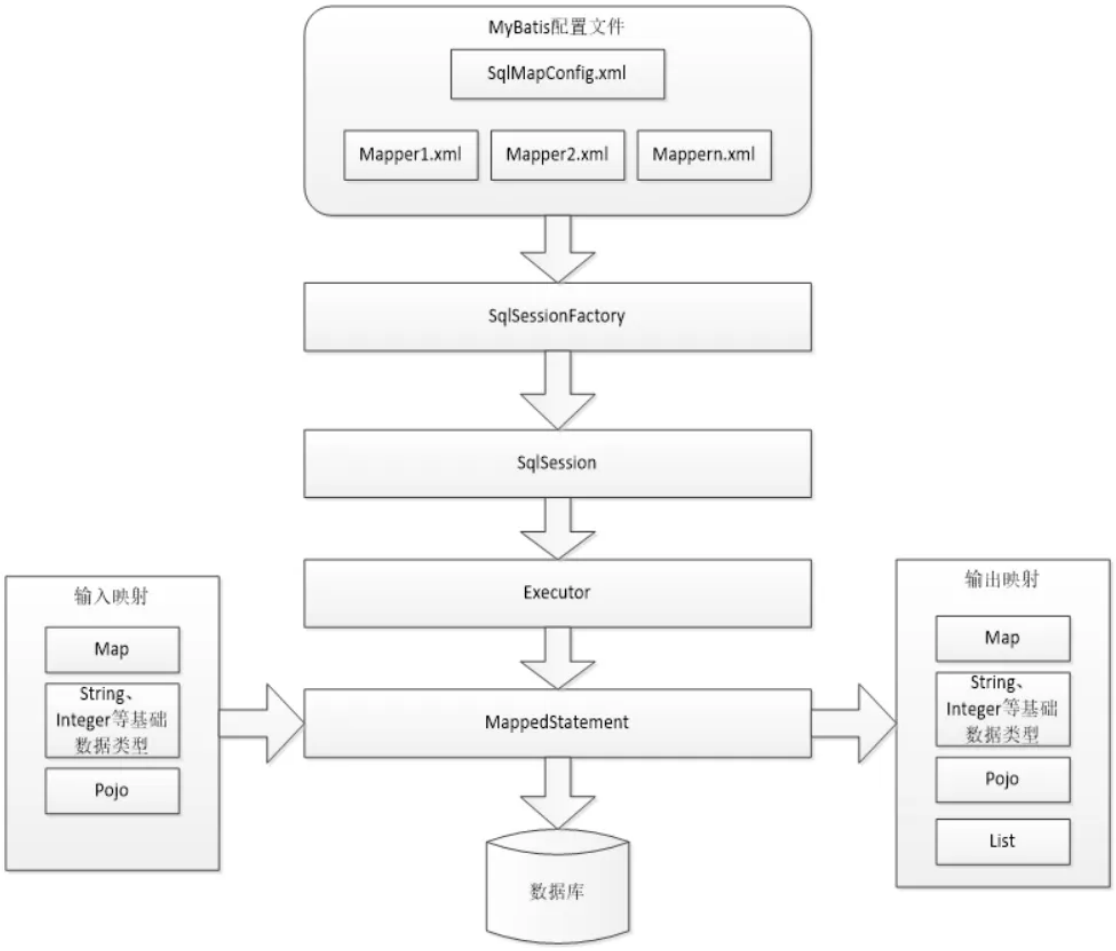
2　mybatis

3　hibernate

4　mybatis-plus　*mybatis通用mapper*　springdatajpa

orm框架　对象关系映射　javabean->数据库表映射起来

1.3 mybatis架构



1、 mybatis配置

SqlMapConfig.xml，此文件作为mybatis的全局配置文件，配置了mybatis的运行环境等信息。

mapper.xml文件即sql映射文件，文件中配置了操作数据库的sql语句。此文件需要在SqlMapConfig.xml中加载。

2、 通过mybatis环境等配置信息构造SqlSessionFactory即会话工厂

3、 由会话工厂创建sqlSession即会话，操作数据库需要通过sqlSession进行。

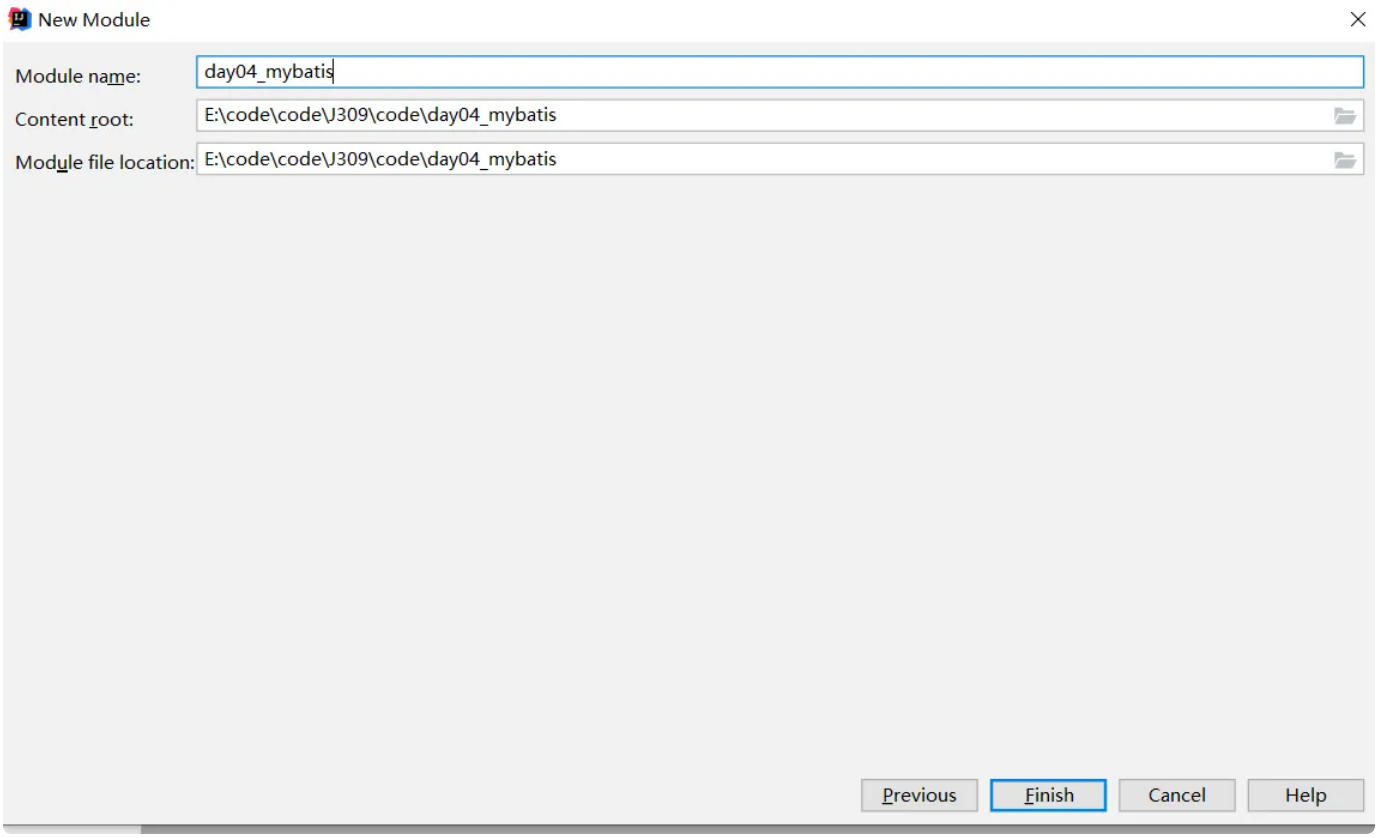
4、 mybatis底层自定义了Executor执行器接口操作数据库，Executor接口有两个实现，一个是基本执行器、一个是缓存执行器。

5、 Mapped Statement也是mybatis一个底层封装对象，它包装了mybatis配置信息及sql映射信息等。mapper.xml文件中一个sql对应一个Mapped Statement对象，sql的id即是Mapped statement的id。

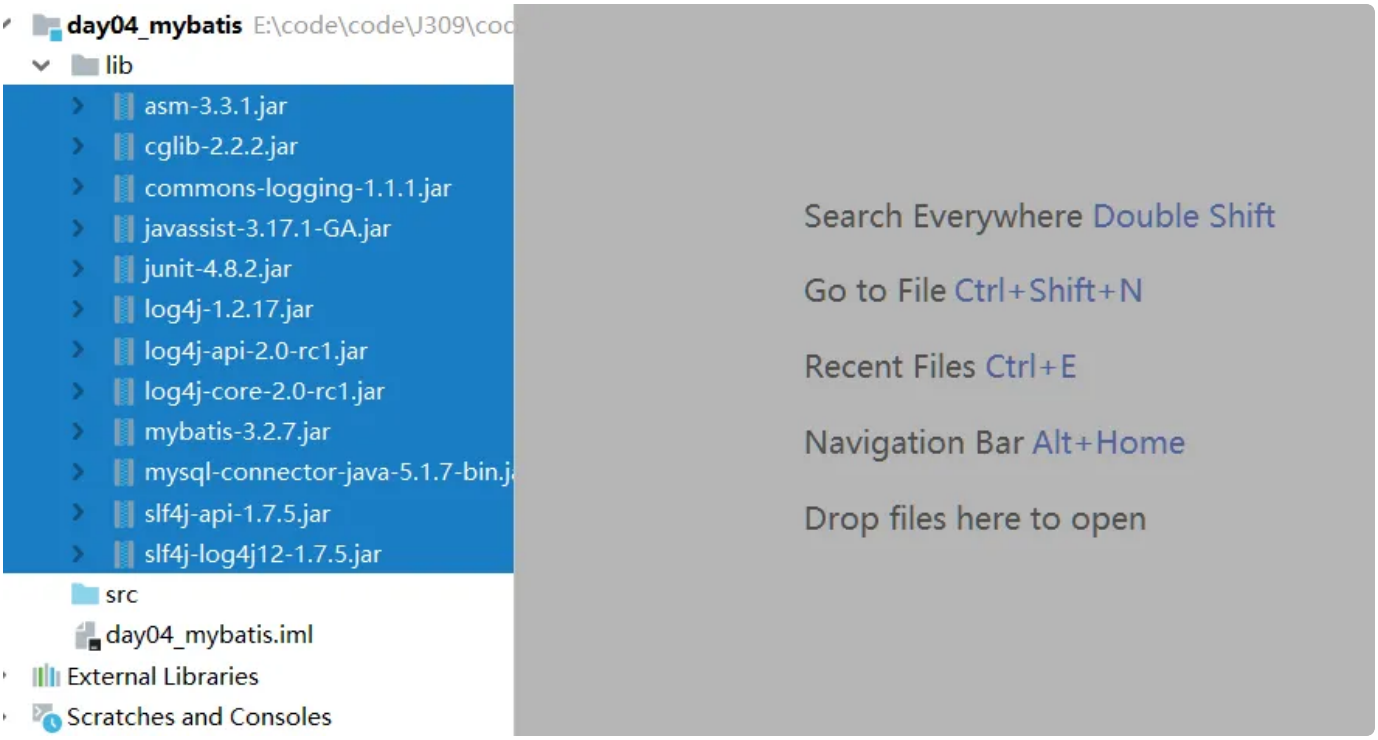
6、 Mapped Statement对sql执行输入参数进行定义，包括HashMap、基本类型、pojo，Executor通过Mapped Statement在执行sql前将输入的java对象映射至sql中，输入参数映射就是jdbc编程中对preparedStatement设置参数。

7、 Mapped Statement对sql执行输出结果进行定义，包括HashMap、基本类型、pojo，Executor通过Mapped Statement在执行sql后将输出结果映射至java对象中，输出结果映射过程相当于jdbc编程中对结果的解析处理过程。

1.4 环境搭建



导包


day04_mybatis E:\code\code\J309\coc
lib
asm-3.3.1.jar
cglib-2.2.2.jar
commons-logging-1.1.1.jar
javassist-3.17.1-GA.jar
junit-4.8.2.jar
log4j-1.2.17.jar
log4j-api-2.0-rc1.jar
log4j-core-2.0-rc1.jar
mybatis-3.2.7.jar
mysql-connector-java-5.1.7-bin.j
slf4j-api-1.7.5.jar
slf4j-log4j12-1.7.5.jar
src
day04_mybatis.iml
External Libraries
Scratches and Consoles
Search Everywhere Double Shift
Go to File Ctrl+Shift+N
Recent Files Ctrl+E
Navigation Bar Alt+Home
Drop files here to open

导入sql

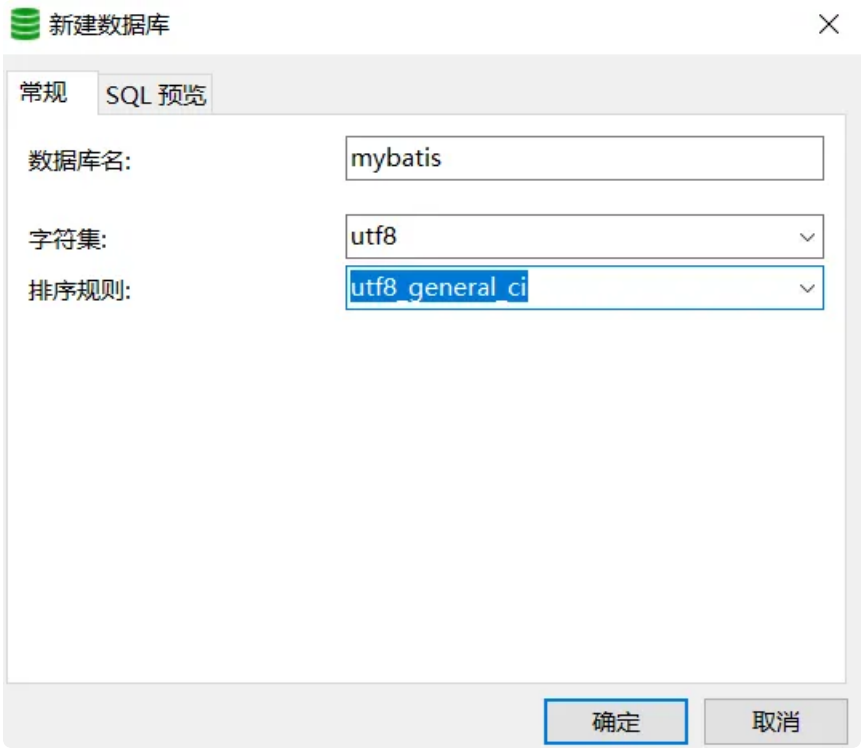

新建数据库
常规
SQL 预览
数据库名:
mybatis
字符集:
utf8
排序规则:
utf8_general_ci
确定
取消


表
gxa_category
gxa_goods
gxa_goods_desc
gxa_order
gxa_order_item
gxa_user

准备pojo

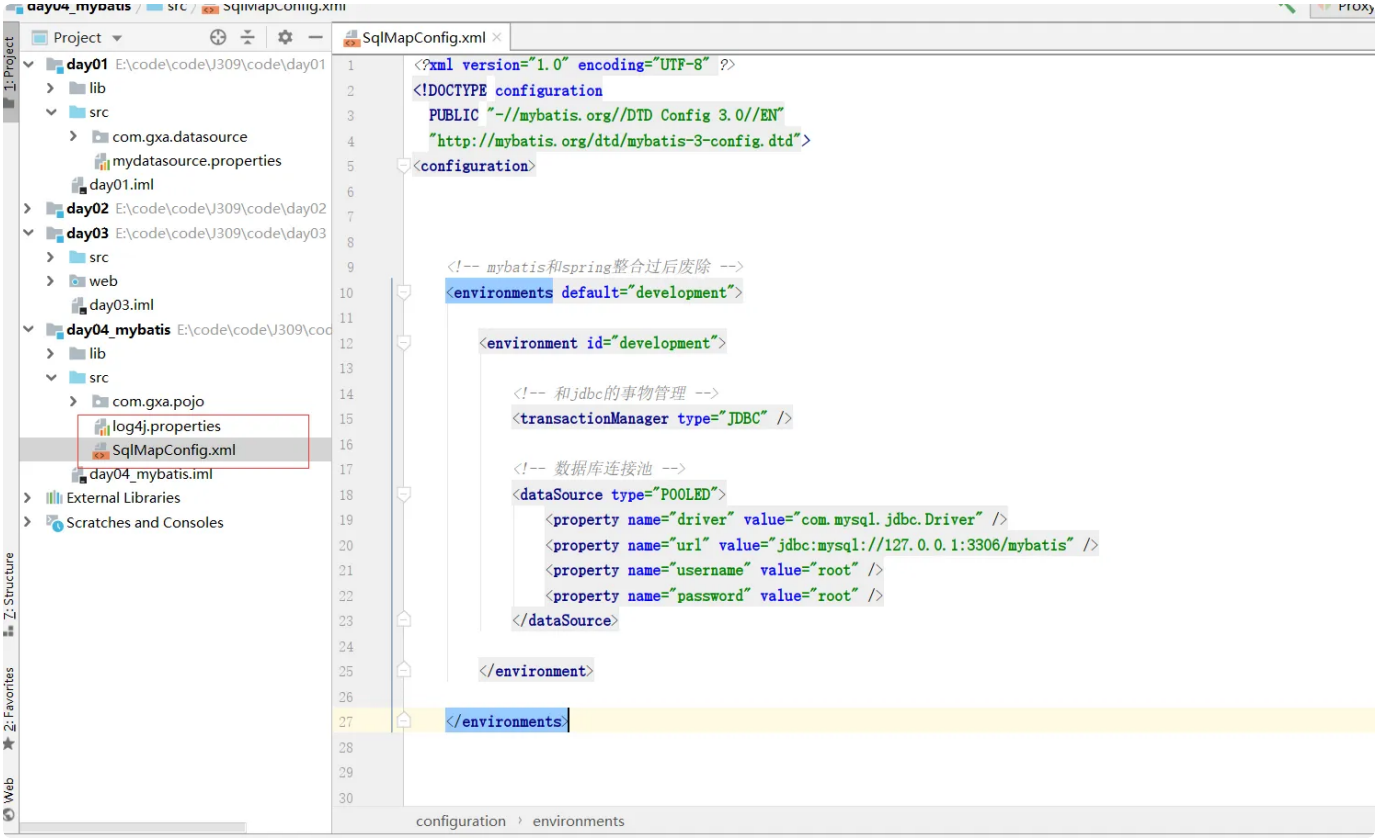
```java
/**
 * Created by zxd on 2022/10/18 9:37
 */
public class User implements Serializable {

    private Long id;

    private String username;

    private String password;

    private String salt;

    private String phone;

    private Date created;

    private Date lastLoginTime;

    private Integer status;

    public User(Long id, String username, String password, String salt, String phone, Date created, Date lastLoginTime, Integer status) {
        this.id = id;
        this.username = username;
        this.password = password;
        this.salt = salt;
        this.phone = phone;
        this.created = created;
        this.lastLoginTime = lastLoginTime;
        this.status = status;
    }

    public User() {
    }

    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    public String getUsername() {
```

```
45          return username;
46      }
47
48      public void setUsername(String username) {
49          this.username = username;
50      }
51
52      public String getPassword() {
53          return password;
54      }
55
56      public void setPassword(String password) {
57          this.password = password;
58      }
59
60      public String getSalt() {
61          return salt;
62      }
63
64      public void setSalt(String salt) {
65          this.salt = salt;
66      }
67
68      public String getPhone() {
69          return phone;
70      }
71
72      public void setPhone(String phone) {
73          this.phone = phone;
74      }
75
76      public Date getCreated() {
77          return created;
78      }
79
80      public void setCreated(Date created) {
81          this.created = created;
82      }
83
84      public Date getLastLoginTime() {
85          return lastLoginTime;
86      }
87
88      public void setLastLoginTime(Date lastLoginTime) {
89          this.lastLoginTime = lastLoginTime;
90      }
91
92      public Integer getStatus() {
```

```
        return status;
    }

    public void setStatus(Integer status) {
        this.status = status;
    }


    @Override
    public String toString() {
        return "User{" +
                "id=" + id +
                ", username='" + username + '\'' +
                ", password='" + password + '\'' +
                ", salt='" + salt + '\'' +
                ", phone='" + phone + '\'' +
                ", created=" + created +
                ", lastLoginTime=" + lastLoginTime +
                ", status=" + status +
                '}';
    }
}
```

1.5 实现根据id查询用户信息

1.5.1 准备主配置文件


day04_mybatis
Project
day01 E:\code\code\J309\code\day01
lib
src
com.gxa.datasource
mydatasource.properties
day01.iml
day02 E:\code\code\J309\code\day02
day03 E:\code\code\J309\code\day03
src
web
day03.iml
day04_mybatis E:\code\code\J309\cod
lib
src
com.gxa.pojo
log4j.properties
SqlMapConfig.xml
day04_mybatis.iml
External Libraries
Scratches and Consoles
SqlMapConfig.xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE configuration
PUBLIC "-//mybatis.org//DTD Config 3.0//EN"
"http://mybatis.org/dtd/mybatis-3-config.dtd">
<configuration>
<!-- mybatis和spring整合过后废除 -->
<environments default="development">
<environment id="development">
<!-- 和jdbc的事物管理 -->
<transactionManager type="JDBC" />
<!-- 数据库连接池 -->
<dataSource type="POOLED">
<property name="driver" value="com.mysql.jdbc.Driver" />
<property name="url" value="jdbc:mysql://127.0.0.1:3306/mybatis" />
<property name="username" value="root" />
<property name="password" value="root" />
</dataSource>
</environment>
</environments>
configuration › environments
1: Project
7: Structure
2: Favorites
Web

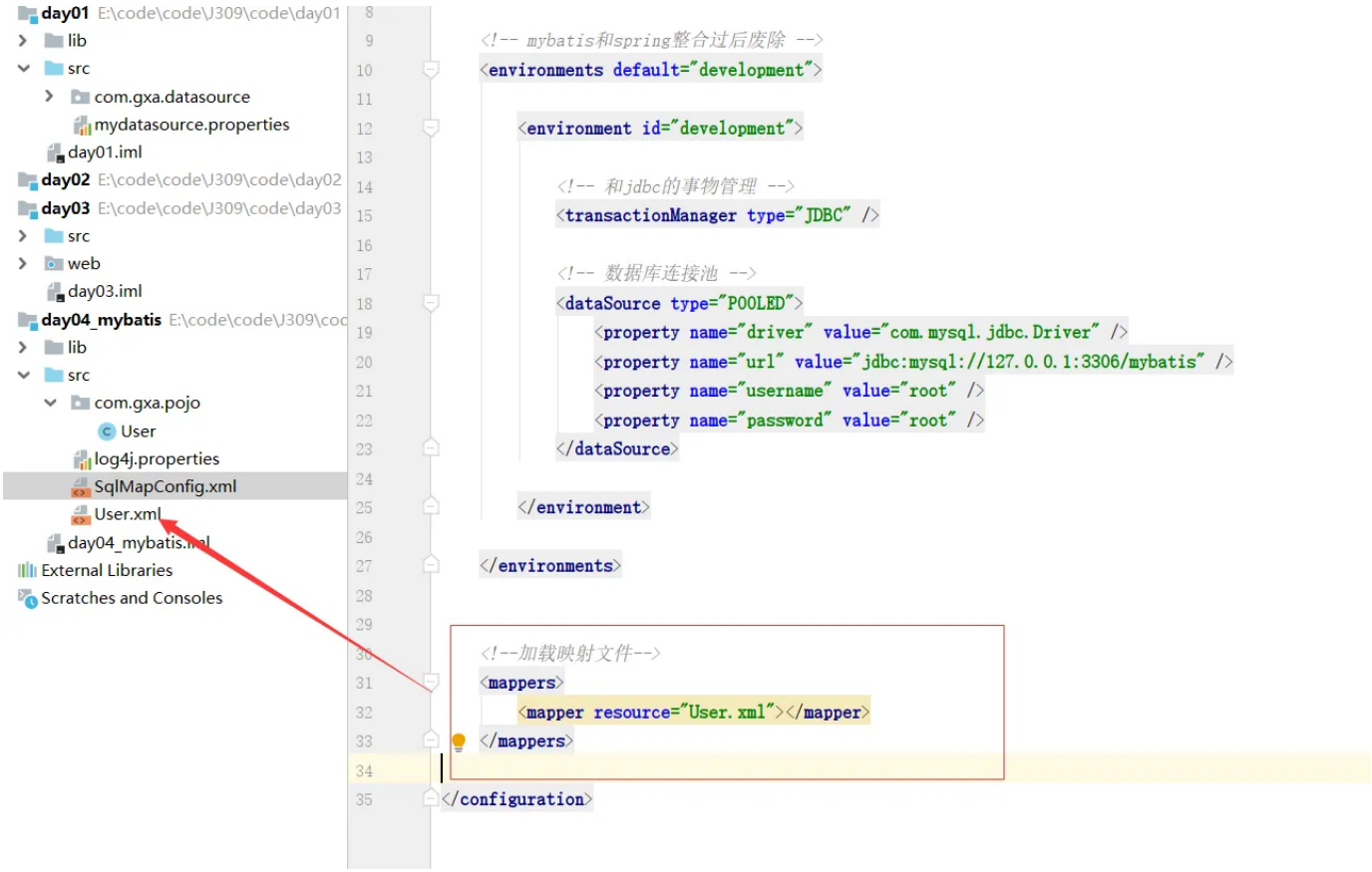
XML

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE configuration
  PUBLIC "-//mybatis.org//DTD Config 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-config.dtd">
<configuration>



  <!-- mybatis和spring整合过后废除 -->
  <environments default="development">

    <environment id="development">

      <!-- 和jdbc的事物管理 -->
      <transactionManager type="JDBC" />

      <!-- 数据库连接池 -->
      <dataSource type="POOLED">
        <property name="driver" value="com.mysql.jdbc.Driver" />
        <property name="url" value="jdbc:mysql://127.0.0.1:3306/mybatis" />
        <property name="username" value="root" />
        <property name="password" value="root" />
      </dataSource>

    </environment>

  </environments>




</configuration>
```

1.5.2 编写映射文件

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
  PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->
<mapper namespace="test">


        <!--查询标签-->
        <!--id sql唯一的标记 statement的id或者sql的id,在一个命名空间中唯一-->
        <!--parameterType: 输入参数类型-->
        <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
            select * from gxa_user where id=#{id}
        </select>



</mapper>
```

1.5.3 主配置文件加载映射文件



1.5.4 编写Java代码

```java
/**
* Created by zxd on 2022/10/18 9:57
*/
public class TestUserDao {


    @Test
    public void helloMybatis() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();

        //5.执行sql返回结果
        User user = sqlSession.selectOne("test.findUserById", 3L);


        System.out.println(user);

    }

}

```

1.6 根据用户姓名进行模糊查询1

1.6.1 编写sql

```sql
select * from gxa_user where username like '%强%'
```

1.6.2 编写映射文件

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
  PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->
<mapper namespace="test">



        <!--如果有多条记录，mybatis会把每一条记录的结果信息封装到pojo中，然后把pojo放入list集合-->
        <select id="findUserByUsername1" parameterType="string" resultType="com.gxa.pojo.User">
            select * from gxa_user where username like #{username}
        </select>



</mapper>
```

底层原理

```java
String sql="select * from gxa_user where username like ?";
st=conn.prepareStatement(sql);
st.setString(1,"%哥%")

```

1.6.3 测试代码

```java
@Test
public void findUserName() throws IOException {

    //1.加载主配置文件

    //SqlSessionFactoryBuilder创建 SqlSessionFactory
    SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

    //2.加载主配置文件
    InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

    //3.解析xml的内容，创建sqlSessionFactory对象
    SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

    //4.通过sqlSessionFactory获取SqlSession
    SqlSession sqlSession = sessionFactory.openSession();

    //5.执行sql返回结果
    List<User> users = sqlSession.selectList("test.findUserByUsername1","%哥%");


    System.out.println(users);

    }
```

1.7 根据用户名进行模糊查询2

1.7.1 编写映射文件

```xml
        <select id="findUserByUsername2" parameterType="string" resultType="com.gxa.pojo.User">
                select * from gxa_user where username like '%${value}%'
         </select>
```

1.7.2 测试

```java
  @Test
    public void findUserName2() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();

        //5.执行sql返回结果
        List<User> users = sqlSession.selectList("test.findUserByUsername2", "哥");


        System.out.println(users);

    }
```

1.7.3 原理

```java
String value="哥";

String sql="select * from gxa_user where username like '%"+value+"%'";

st=conn.createStatement();

st.executeQuery(sql);
```

面临sql注入问题

1.8 #{}和${}区别

#{}表示一个占位符,没有sql注入问题,通过#{}可以实现向preparedStatement占位符?中设置参数。#{}可以防止sql注入问题 #{}可以接收简单类型或者pojo的属性值。如果是传递的简单数据类型,#{}中的名字随便写，最好还是见名之意 底层就是往第一个?设置参数

${} 表示拼接$sql$, sql注入问题, ${}可以接收简单类型或者pojo的属性值。如果是传递的简单数据类型,${}中的名字只能写value 底层是拼接的sql

parameterType：指定输入参数的类型，mybatis通过ognl表达式获取参数的值设置到sql中

resultType: 指定输出结果的类型,mybatis将sql查询结果的一行记录映射为resultType指定的对象中。如果有多条记录，分别映射，并且把对象放入list集合中。

1.9 selectOne和selectList区别?

selectOne查询一条记录，如果使用selctOne查询的sql返回多条记录就会抛异常

selectList 查询0条或者多条都行

selectOne底层是selectList来执行，并且正常情况是获取第一个元素

Java

```java
public <T> T selectOne(String statement, Object parameter) {
        List<T> list = this.selectList(statement, parameter);
        if (list.size() == 1) {
            return list.get(0);
        } else if (list.size() > 1) {
            throw new TooManyResultsException("Expected one result (or null) to be returned by selectOne(), but found: " + list.size());
        } else {
            return null;
        }
    }
```

2.crud

2.1 插入

2.1.1 准备sql

```xml
insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES ()
```

2.1.2 编写xml

```xml
  <insert id="insertUser" parameterType="com.gxa.pojo.User">
                insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
        </insert>
```

#{}取的是pojo的属性值

2.1.3 测试

XML

```
@Test
    public void insertUser() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFa
ctoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xm
l");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build
(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();

        User user=new User(null,"坤坤","111","111","11",new Date(),new Dat
e(),1);

        int result = sqlSession.insert("test.insertUser", user);

        System.out.println(result);


        //提交事务
        sqlSession.commit();

    }
```

2.2 修改

2.2.1 编写sql

```xml
update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
```

2.2.2 编写xml

```xml
  <update id="updateUser" parameterType="com.gxa.pojo.User">
              update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
        </update>

```

2.2.3 测试

```XML
 @Test
    public void updateUser() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();

        User user=new User(5L,"龙龙","222","111","333",new Date(),new Date(),1);

        int result = sqlSession.update("test.updateUser", user);

        System.out.println(result);


        //提交事务
        sqlSession.commit();

    }
```

2.3 删除

2.3.1 编写sql

```SQL
delete from gxa_user where id=#{id}
```

2.3.2 编写xml

```Java
    <delete id="deleteUserById" parameterType="long">
            delete from gxa_user where id=#{id}
        </delete>
```

2.3.3 测试

```SQL
  @Test
    public void deleteUser() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();


        int result = sqlSession.delete("test.deleteUserById", 5L);

        System.out.println(result);


        //提交事务
        sqlSession.commit();

    }
```

2.4 mysql自增主键的返回(重点)

2.4.1 自增主键的原理

```java
insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES ('aa','xxx','xxx','XX','2022-03-01','2022-03-01',1);

select LAST_INSERT_ID()

```

2.4.2 编写xml

```xml
      <insert id="insertUser" parameterType="com.gxa.pojo.User">
                <!--selectKey: 实现主键的返回-->
                <!--keyColumn:主键对应数据库的哪一列-->
                <!--keyProperty:主键对应pojo的哪一属性-->
                <!--配置在插入语句之前执行还是之后执行-->
                <!--resultType:主键的类型-->
                <selectKey keyColumn="id" keyProperty="id" order="AFTER" resultType="long">
                    select LAST_INSERT_ID()
                </selectKey>
                insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
                 (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
        </insert>
```

2.4.3 测试

```java
    @Test
     public void insertUser() throws IOException {

         //1.加载主配置文件

         //SqlSessionFactoryBuilder创建 SqlSessionFactory
         SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

         //2.加载主配置文件
         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

         //3.解析xml的内容，创建sqlSessionFactory对象
         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

         //4.通过sqlSessionFactory获取SqlSession
         SqlSession sqlSession = sessionFactory.openSession();

         User user=new User(null,"坤坤","111","111","11",new Date(),new Date(),1);

         int result = sqlSession.insert("test.insertUser", user);

         System.out.println(user);


         //提交事务
         sqlSession.commit();

     }

```

2.5 mysql自增主键的简化写法

```xml
    <insert id="insertUser" useGeneratedKeys="true" keyProperty="id"  parameterType="com.gxa.pojo.User">
        insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
        (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
    </insert>

```

2.6 使用mysql的uuid实现主键(了解)

复制表

```sql
CREATE TABLE `gxa_user2`  (
  `id` varchar(255) NOT NULL ,
  `username` varchar(255) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
  `password` varchar(255) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
  `salt` varchar(255) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
  `phone` varchar(255) CHARACTER SET utf8 COLLATE utf8_general_ci NULL DEFAULT NULL,
  `created` datetime NULL DEFAULT NULL ON UPDATE CURRENT_TIMESTAMP,
  `last_login_time` datetime NULL DEFAULT NULL ON UPDATE CURRENT_TIMESTAMP,
  `status` int(11) NULL DEFAULT NULL,
  PRIMARY KEY (`id`)
) ENGINE = InnoDB AUTO_INCREMENT = 10 CHARACTER SET = utf8 COLLATE = utf8_general_ci ROW_FORMAT = Compact;
```

新建pojo

Java

```java
/**
* Created by zxd on 2022/10/18 9:37
*/
public class User2 implements Serializable {

    private String id;

    private String username;

    private String password;

    private String salt;

    private String phone;

    private Date created;

    private Date lastLoginTime;

    private Integer status;

    public User2(String id, String username, String password, String salt, String phone, Date created, Date lastLoginTime, Integer status) {
        this.id = id;
        this.username = username;
        this.password = password;
        this.salt = salt;
        this.phone = phone;
        this.created = created;
        this.lastLoginTime = lastLoginTime;
        this.status = status;
    }

    public User2() {
    }

    public String getId() {
        return id;
    }

    public void setId(String id) {
        this.id = id;
    }

    public String getUsername() {
```

```
45          return username;
46      }
47
48      public void setUsername(String username) {
49          this.username = username;
50      }
51
52      public String getPassword() {
53          return password;
54      }
55
56      public void setPassword(String password) {
57          this.password = password;
58      }
59
60      public String getSalt() {
61          return salt;
62      }
63
64      public void setSalt(String salt) {
65          this.salt = salt;
66      }
67
68      public String getPhone() {
69          return phone;
70      }
71
72      public void setPhone(String phone) {
73          this.phone = phone;
74      }
75
76      public Date getCreated() {
77          return created;
78      }
79
80      public void setCreated(Date created) {
81          this.created = created;
82      }
83
84      public Date getLastLoginTime() {
85          return lastLoginTime;
86      }
87
88      public void setLastLoginTime(Date lastLoginTime) {
89          this.lastLoginTime = lastLoginTime;
90      }
91
92      public Integer getStatus() {
```

```
93          return status;
94      }
95
96
97      public void setStatus(Integer status) {
98          this.status = status;
99      }
100
101
102     @Override
103     public String toString() {
104         return "User{" +
105             "id=" + id +
106             ", username='" + username + '\'' +
107             ", password='" + password + '\'' +
108             ", salt='" + salt + '\'' +
109             ", phone='" + phone + '\'' +
110             ", created=" + created +
111             ", lastLoginTime=" + lastLoginTime +
112             ", status=" + status +
113             '}';
114     }
115 }
```

编写xml

```java
 <insert id="insertUser2"  parameterType="com.gxa.pojo.User2">

                        <!--selectKey: 实现主键的返回-->
                        <!--keyColumn:主键对应数据库的哪一列-->
                        <!--keyProperty:主键对应pojo的哪一属性-->
                        <!--配置在插入语句之前执行还是之后执行-->
                        <!--resultType:主键的类型-->
                        <selectKey keyColumn="id" keyProperty="id" order="BEFORE" resultType="string">
                            select uuid()
                        </selectKey>

        insert into gxa_user2(id,username,password,salt,phone,created,last_login_time,`status`) VALUES
        (#{id},#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
    </insert>

```

测试代码

```java
    @Test
    public void insertUser2() throws IOException {

        //1.加载主配置文件

        //SqlSessionFactoryBuilder创建 SqlSessionFactory
        SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();

        //2.加载主配置文件
        InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

        //3.解析xml的内容，创建sqlSessionFactory对象
        SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);

        //4.通过sqlSessionFactory获取SqlSession
        SqlSession sqlSession = sessionFactory.openSession();

        User2 user=new User2(null,"坤坤","111","111","11",new Date(),new Date(),1);

        int result = sqlSession.insert("test.insertUser2", user);

        System.out.println(user);


        //提交事务
        sqlSession.commit();

    }
```

3.原始dao开发

3.1 编写工具类

```java
/**
 * Created by zxd on 2022/10/18 15:16
 */
public class MybatisUtils {

    private  static SqlSessionFactory sqlSessionFactory;


    static {

        try {

            //1.加载主配置文件
            SqlSessionFactoryBuilder sqlSessionFactoryBuilder = new SqlSessionFactoryBuilder();

            //2.加载主配置文件
            InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");

            //3.解析xml的内容，创建sqlSessionFactory对象
            sqlSessionFactory = sqlSessionFactoryBuilder.build(in);

        }catch (Exception e){
            e.printStackTrace();
            throw new RuntimeException("配置文件加载失败!");
        }

    }


    /**
     * 获取sqlSession
     * @return
     */
    public static SqlSession getSqlSession(){
        return sqlSessionFactory.openSession();
    }

}

```

3.2 编写接口

```java
/**
 * Created by zxd on 2022/10/18 15:19
 */
public interface UserDao {


    User findUserById(Long id);

    List<User> findUserByUsername(String username);

    void insertUser(User user);

    void updateUser(User user);

    void deleteUserById(Long id);

}
```

3.3 编写dao实现

```java
/**
 * Created by zxd on 2022/10/18 15:22
 */
public class UserDaoImpl implements UserDao {

    @Override
    public User findUserById(Long id) {
        SqlSession sqlSession = MybatisUtils.getSqlSession();
        return sqlSession.selectOne("test.findUserById",id);
    }

    @Override
    public List<User> findUserByUsername(String username) {
        SqlSession sqlSession = MybatisUtils.getSqlSession();
        return sqlSession.selectList("test.findUserByUsername",username);
    }

    @Override
    public void insertUser(User user) {
        SqlSession sqlSession = MybatisUtils.getSqlSession();
        sqlSession.insert("test.insertUser",user);
        sqlSession.commit();
    }

       @Override
    public void updateUser(User user) {
        SqlSession sqlSession = MybatisUtils.getSqlSession();
        sqlSession.update("test.updateUser",user);
        sqlSession.commit();
    }

      @Override
    public void deleteUserById(Long id) {
        SqlSession sqlSession = MybatisUtils.getSqlSession();
        sqlSession.delete("test.deleteUserById",id);
        sqlSession.commit();
    }
}

```

3.4 编写xml

XML

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
  PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->
<mapper namespace="test">


        <!--查询标签-->
        <!--id sql唯一的标记 statement的id或者sql的id,在一个命名空间中唯一-->
        <!--parameterType: 输入参数类型-->
        <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
            select * from gxa_user where id=#{id}
        </select>



        <select id="findUserByUsername" parameterType="string" resultType="com.gxa.pojo.User">
              select * from gxa_user where username like '%${value}%'
        </select>


    <insert id="insertUser" useGeneratedKeys="true" keyProperty="id"  parameterType="com.gxa.pojo.User">
        insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
        (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
    </insert>


       <update id="updateUser" parameterType="com.gxa.pojo.User">
              update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
       </update>

       <delete id="deleteUserById" parameterType="long">
           delete from gxa_user where id=#{id}
       </delete>


</mapper>

```

```
40
41
42
43
```

3.5 测试

Java

```java
/**
 * Created by zxd on 2022/10/18 15:25
 */
public class TestUserDao2 {

    private UserDao userDao=new UserDaoImpl();

    @Test
    public void testFind(){
        User user = userDao.findUserById(3L);
        System.out.println(user);
    }

    @Test
    public void testFindUsername(){

        List<User> userList = userDao.findUserByUsername("强");
        System.out.println(userList);

    }

    @Test
    public void insert(){

        User user=new User(null,"龙龙","111","111","11",new Date(),new Date(),1);
        userDao.insertUser(user);
    }

    @Test
    public void update(){

        User user=new User(10L,"龙龙2","22","111","22",new Date(),new Date(),1);
        userDao.updateUser(user);
    }


    @Test
    public void delete(){
        userDao.deleteUserById(11L);
    }



```

```
44  }
45
```

3.6 思考

dao实现类存在大量的重复代码

1.接口的名字和sql的id一致

2.接口的参数类型和paramterType类型一致

3.接口返回值类型和resultType的类型一致

mybatis可不可以帮我们去生成实现类的代码!!! 可以

4.Mapper动态代理开发

dao存在大量重复代码，mybatis底层使用动态代理帮我们自动生成实现类代码

4.1 mapper动态代理开发规范

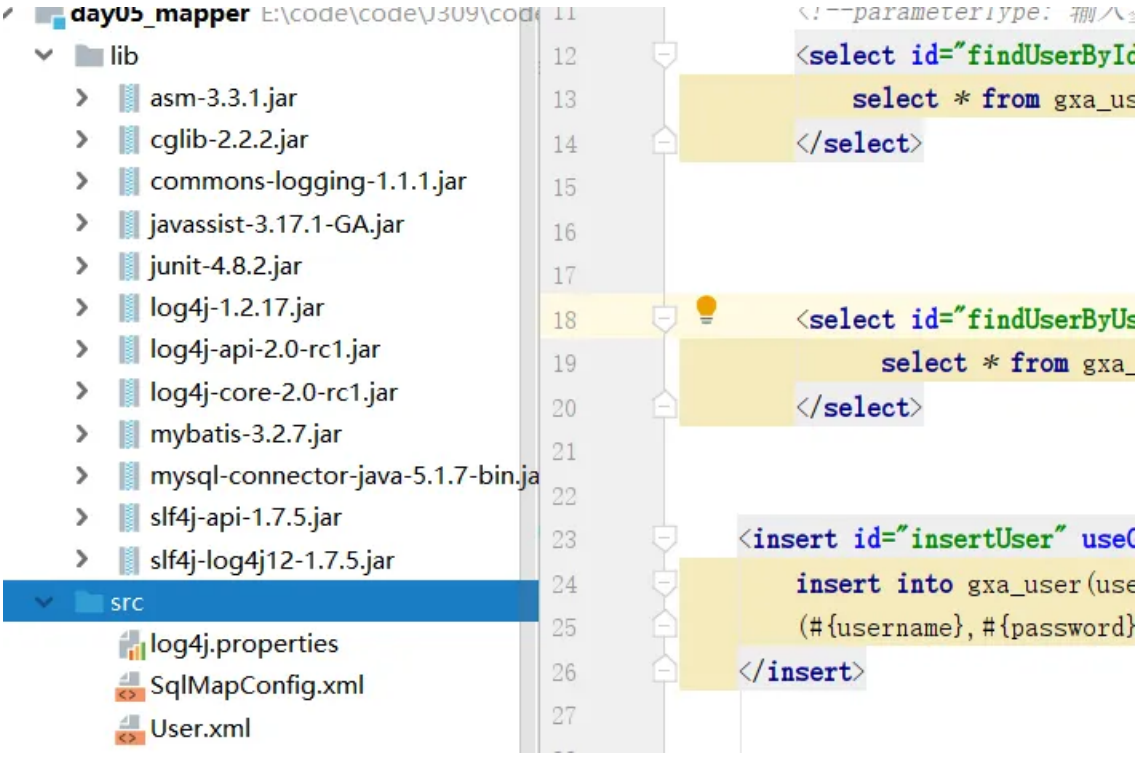
1.Mapper.xml文件的namespace和mapper接口的全限定名一致

2.Mapper接口的方法名和mapper.xml中定义的每个sql的id要一致

3.mapper接口方法的参数类型要和mapper.xml中的parameterType的类型要一致

4.mapper接口的输出参数类型要和mapper.xml中定义的每个sql的resultTyp的类型要一致

4.2 项目准备



4.3 编写mapper接口

```java
/**
* Created by zxd on 2022/10/18 15:19
*/
public interface UserMapper {


    User findUserById(Long id);

    List<User> findUserByUsername(String username);

    void insertUser(User user);

    void updateUser(User user);

    void deleteUserById(Long id);

}

```

4.4 编写mapper.xml

XML

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
  PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->
<mapper namespace="com.gxa.mapper.UserMapper">


        <!--查询标签-->
        <!--id sql唯一的标记 statement的id或者sql的id,在一个命名空间中唯一-->
        <!--parameterType: 输入参数类型-->
        <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
            select * from gxa_user where id=#{id}
        </select>



        <select id="findUserByUsername" parameterType="string" resultType="com.gxa.pojo.User">
              select * from gxa_user where username like '%${value}%'
        </select>


    <insert id="insertUser" useGeneratedKeys="true" keyProperty="id"  parameterType="com.gxa.pojo.User">
        insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
        (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
    </insert>


       <update id="updateUser" parameterType="com.gxa.pojo.User">
              update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
       </update>

       <delete id="deleteUserById" parameterType="long">
           delete from gxa_user where id=#{id}
       </delete>


</mapper>

```

```
40
41
42
43
```

4.5 测试

Java

```java
/**
* Created by zxd on 2022/10/18 16:49
*/
public class TestUserMapper {



    @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);


        User user = userMapper.findUserById(3L);

        System.out.println(user);

    }

}

```

5.主动配置文件

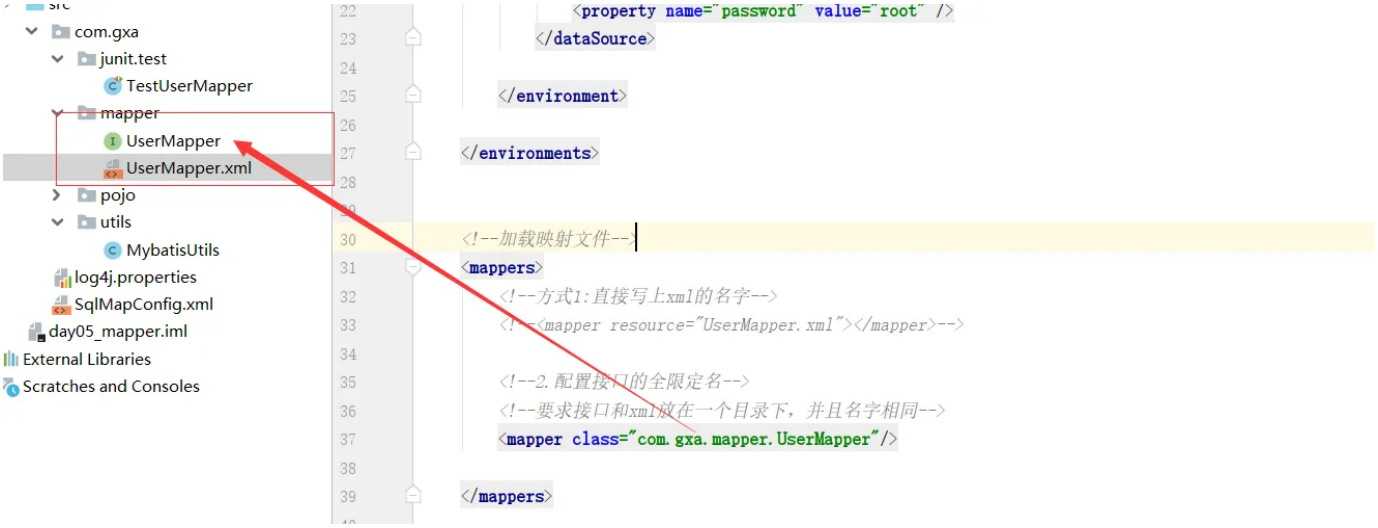
5.1 加载映射文件

5.1.1 直接写上xml名字

```xml
<!--加载映射文件-->
<mappers>
  <!--方式1:直接写上xml的名字-->
  <mapper resource="User.xml"></mapper>
</mappers>

```

5.1.2 直接写上接口的全限定名

```xml
<!--加载映射文件-->
<mappers>
  <!--方式1:直接写上xml的名字-->
      <!--<mapper resource="UserMapper.xml"></mapper>-->

  <!--2.配置接口的全限定名-->
  <!--要求接口和xml放在一个目录下，并且名字相同-->
  <mapper class="com.gxa.mapper.UserMapper"/>

</mappers>
```



5.1.3 批量加载

XML

```xml
    <!--加载映射文件-->
    <mappers>
      <!--方式1:直接写上xml的名字-->
          <!--<mapper resource="UserMapper.xml"></mapper>-->

      <!--2.配置接口的全限定名-->
      <!--要求接口和xml放在一个目录下，并且名字相同-->
<!--    <mapper class="com.gxa.mapper.UserMapper"/>-->

      <!--3.批量加载mapper接口-->
      <!--要求接口和xml放在一个目录下，并且名字相同-->
       <package name="com.gxa.mapper"/>

    </mappers>
```

5.2 mybatis别名

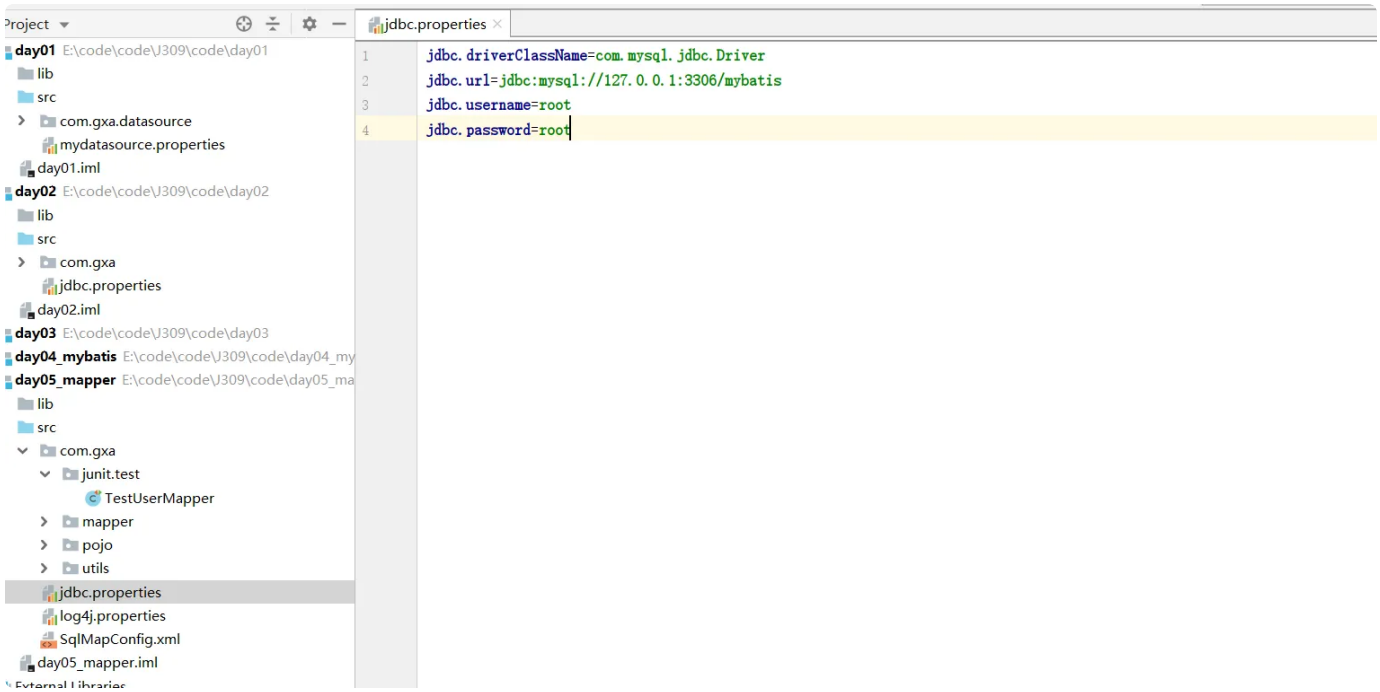
5.2.1 mybatis默认配置的别名

别名	映射的类型
_byte	byte
_long	long
_short	short
_int	int
_integer	int
_double	double
_float	float
_boolean	boolean
string	String
byte	Byte
long	Long
short	Short
int	Integer
integer	Integer
double	Double
float	Float
boolean	Boolean
date	Date
decimal	BigDecimal
bigdecimal	BigDecimal
map	Map

5.2.2 自定义别名

```xml
    <!--自定义别名-->
    <typeAliases>

        <!--配置单个别名 忽略大小写-->
    <!--    <typeAlias type="com.gxa.pojo.User"  alias="user"/>-->

        <!--批量定义别名-->
        <package name="com.gxa.pojo"/>

    </typeAliases>
```

5.3 加载外部的properties文件



XML

```xml
  <!--加载外部的properties文件-->
  <properties resource="jdbc.properties">
    <!--如果外部也有该属性外部的覆盖内部的-->
        <property name="jdbc.username" value="xxx"/>
  </properties>


  <!--自定义别名-->
  <typeAliases>

    <!--配置单个别名 忽略大小写-->
<!--    <typeAlias type="com.gxa.pojo.User"  alias="user"/>-->

    <!--批量定义别名-->
    <package name="com.gxa.pojo"/>

  </typeAliases>



  <!-- mybatis和spring整合过后废除 -->
  <environments default="development">

    <environment id="development">

      <!-- 和jdbc的事物管理 -->
      <transactionManager type="JDBC" />

      <!-- 数据库连接池 -->
      <dataSource type="POOLED">
        <property name="driver" value="${jdbc.driverClassName}" />
        <property name="url" value="${jdbc.url}" />
        <property name="username" value="${jdbc.username}" />
        <property name="password" value="${jdbc.password}" />
      </dataSource>

    </environment>

  </environments>

```

6.输入映射

6.1 输入映射的介绍

parameterType

1.传递简单类型

int long string ...

使用#{}或者${}都能获取，#{}名字可以任意,${}名字只能写成value

2.传递pojo类型 ***

#{}或者${}获取pojo的属性名

3.传递包装的pojo类型 **

4.传递map集合(不推荐)

5.通过@Param注解来传递参数 **

6.2 传递简单类型

传递简单类型

int long string ...

使用#{}或者${}都能获取，#{}名字可以任意,${}名字只能写成value

接口

```java
User findUserById(Long id);

```

xml

```java
<select id="findUserById" parameterType="long" resultType="user">
          select * from gxa_user where id=#{id}
</select>
```

6.3 传递pojo类型

#{}或者${}获取pojo的属性名

parameterType写pojo的全限定名，如果配置了别名也可以写别名

接口

```java
void insertUser(User user);
```

xml

```Java
    <insert id="insertUser" useGeneratedKeys="true" keyProperty="id"  parameterType="com.gxa.pojo.User">
        insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
        (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
    </insert>
```

6.4 传递包装的pojo类型

DTO 数据传输对象

6.4.1 编写包装的pojo

```Java
/**
 * Created by zxd on 2022/10/19 10:35
 */
public class UserDto {

    private User user;

    //其它条件

    public User getUser() {
        return user;
    }

    public void setUser(User user) {
        this.user = user;
    }
}

```

6.4.2 编写接口

```java
List<User>  findUserByUserDto(UserDto userDto);
```

6.4.3 编写xml

```java
    <select id="findUserByUserDto" parameterType="userDto" resultType="com.gxa.pojo.User">
                select * from gxa_user where username like #{user.username}
      </select>

```

6.4.4 测试

```java
    @Test
     public void testFindUserDto(){

         SqlSession sqlSession = MybatisUtils.getSqlSession();

         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);


         UserDto userDto=new UserDto();
         User user=new User();
         user.setUsername("%哥%");
         userDto.setUser(user);

         List<User> userList = userMapper.findUserByUserDto(userDto);

         System.out.println(userList);

     }
```

6.5 传递map集合

6.5.1 编写接口

```java
   void insertUser2(Map map);
```

6.5.2 编写xml

```Java
    <insert id="insertUser2" useGeneratedKeys="true" keyProperty="id"  parameterType="map">
        insert into gxa_user(username,password,phone) VALUES (#{username},#{password},#{phone})
    </insert>
```

6.5.3 测试

```Java
    @Test
    public void testInsert(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

        Map map=new HashMap<>();
        map.put("username","banban");
        map.put("password","xxx");
        map.put("phone","xxx");

        userMapper.insertUser2(map);

        sqlSession.commit();

    }
```

不方便进行维护，不推荐

6.6 通过@param注解来标记参数 **

需求: 根据用户名和密码查询一个用户的信息

编写接口

```java
    //用@Param注解标记的参数，此时mybatis底层会把该参数放入map集合,用注解配置的名字作为key，传递的值作为value
    User findUserByUsernameAndPassword(@Param("username") String username,@Param("password")  String password);

```

编写xml

```java
   <select id="findUserByUsernameAndPassword" parameterType="map" resultType="user">
            select * from gxa_user where username =#{username} and password=#{password}
    </select>
```

测试

```java
   @Test
     public void testFindUsername(){

         SqlSession sqlSession = MybatisUtils.getSqlSession();

         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

         User user = userMapper.findUserByUsernameAndPassword("强哥", "RbWEEsXVVxiR765qwusODQ==");

         System.out.println(user);


     }
```

7.输出映射

7.1 输出简单类型

7.1.1 编写接口

```Java
Long findUserCount();
```

7.1.2 编写xml

```Java
    <select id="findUserCount" resultType="long">
          select count(*) from gxa_user
    </select>

```

7.1.3 测试

```java
    @Test
    public void testCount(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

        Long count = userMapper.findUserCount();

        System.out.println(count);

    }
```

7.2 输出pojo类型

resultType配置的是pojo的全限定名，如果配置了别名也可以使用别名。如果查询的记录有多条，会把多条记录分别映射到pojo当中，然后把pojo放入list集合中。

```java
    <select id="findUserByUsername" parameterType="string" resultType="com.gxa.pojo.User">
            select * from gxa_user where username like '%${value}%'
        </select>
```

7.3 输出map集合(不推荐)

一个map对象相当于一个pojo对象，一个map集合封装了一条结果。如果有条结果把map放入list集合中

编写接口

```java
Map findUserById2(Long id);
```

编写xml

```java
<select id="findUserById2" parameterType="long" resultType="map">
            select * from gxa_user where id=#{id}
        </select>
```

测试

```java
    @Test
    public void testFind2(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);


        Map map = userMapper.findUserById2(3L);

        Object username = map.get("username");

        System.out.println(username);

        System.out.println(map);

    }
```

7.4 resultMap

7.4.1 订单表结构

订单列表:

订单详情:

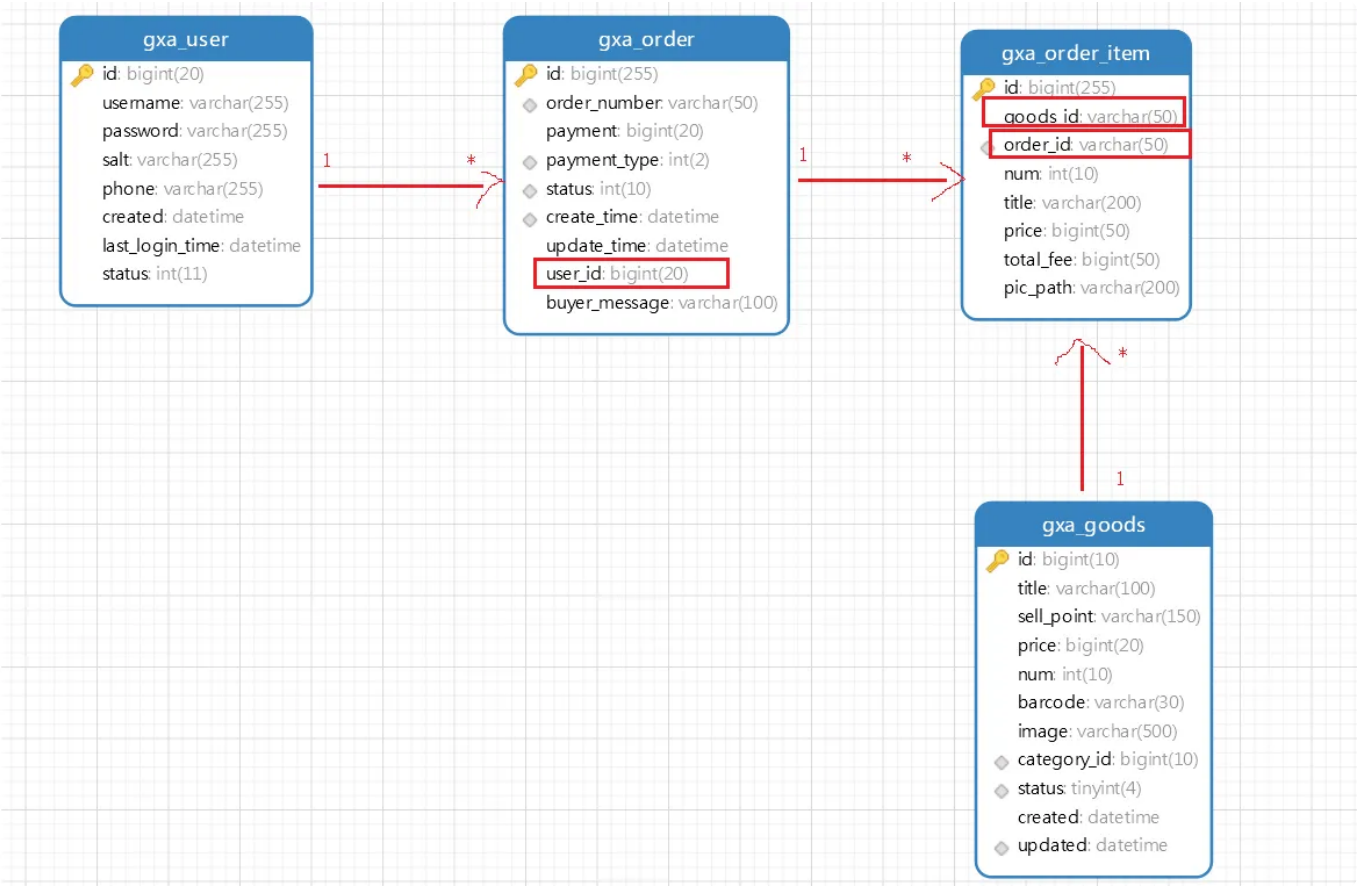
如何存储下单的商品信息?

订单主表　订单编号，总金额，状态

必须要去记住下单的商品

订单项表

每个订单项记住下单的每个商品信息



7.4.2 查询订单列表

7.4.2.1 编写mapper接口

```java
/**
 * Created by zxd on 2022/10/19 14:14
 */
public interface OrderMapper {

    /**
     * 查询所有的订单
     * @return
     */
    List<Order> findOrderAll();

}
```

7.4.2.2 编写xml

```java
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper
  PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
  "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
<!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->
<mapper namespace="com.gxa.mapper.OrderMapper">


        <select id="findOrderAll" resultType="order">
            select * from gxa_order
        </select>




</mapper>
```

7.4.2.3 测试

```java
@Test
public void testFind(){

    SqlSession sqlSession = MybatisUtils.getSqlSession();

    OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);


    List<Order> orderList = orderMapper.findOrderAll();

    System.out.println(orderList);

}
```

```
14:20:03,185 DEBUG findOrderAll:139 - ==> Parameters:
14:20:03,205 DEBUG findOrderAll:139 - <==      Total: 3
[Order{id=1, orderNumber='null', payment=1, paymentType=null, status=1, createTime=null, updateTime=null, userId=null, buyerMessage='null'}, Order{id=2, orderI

Process finished with exit code 0
```

id	order_number	payment	payment_type	status	create_
1	xxx001	1	1	1	2020-1
2	xxx002	1	1	1	2020-1
3	xxx003	1	1	1	2020-1

```
14:20:03,205 DEBUG findOrderAll:139 - <==      Total: 3
[Order{id=1, orderNumber='null', payment=1, paymentType=null, status=1, createTime=null, updateTime=null, u

Process finished with exit code 0
```

mybatis在查询到数据后，把数据库中的每一行数据要通过resultType指定的pojo进行封装，拿着表中的字段名去pojo中找到对应的属性进行设置，如果不一致不管

7.4.3 取别名(方式一)

```java
        <select id="findOrderAll" resultType="order">
            select id,order_number as orderNumber,payment,payment_type as paymentType,status,create_time
            as createTime,update_time as updateTime,user_id as userId,buyer_message as buyerMessage from gxa_order
        </select>

```

7.4.4 resultMap(方式二)

resultMap手动处理字段和属性的关系

```Java
    <!--定义自定义的结果集映射-->
    <resultMap id="orderResultMap" type="com.gxa.pojo.Order">

        <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
        <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
        <id column="id" property="id"/>

        <!--映射普通属性-->
        <result column="order_number" property="orderNumber" />
        <result column="payment" property="payment" />
        <result column="payment_type" property="paymentType" />
        <result column="status" property="status" />
        <result column="create_time" property="createTime" />
        <result column="update_time" property="updateTime" />
        <result column="user_id" property="userId" />
        <result column="buyer_message" property="buyerMessage" />

    </resultMap>


    <select id="findOrderAll" resultMap="orderResultMap">
            select * from gxa_order
    </select>

```

7.4.5 配置自动转换（下划线自动转驼峰）方式三

```java
<!--加载外部的properties文件-->
    <properties resource="jdbc.properties">
        <!--如果外部也有该属性外部的覆盖内部的-->
        <property name="jdbc.username" value="xxx"/>
    </properties>


    <!--配置下划线自动转换驼峰-->
    <settings>
        <setting name="mapUnderscoreToCamelCase" value="true"/>
    </settings>

    <!--自定义别名-->
    <typeAliases>

        <!--配置单个别名 忽略大小写-->
<!--        <typeAlias type="com.gxa.pojo.User"  alias="user"/>-->

        <!--批量定义别名-->
        <package name="com.gxa.pojo"/>

    </typeAliases>
```

8.动态sql

8.1 if标签

8.1.1 多条件查询

需求:

根据用户的状态和用户名进行模糊查询

编写sql

```Java
select * from gxa_user where `status`=1 and username like '%强%'
```

编写DTO

```Java
/**
 * Created by zxd on 2022/10/19 15:20
 */
public class UserQueryDto implements Serializable {

    private String username;

    private Integer status;

    public String getUsername() {
        return username;
    }

    public void setUsername(String username) {
        this.username = username;
    }

    public Integer getStatus() {
        return status;
    }

    public void setStatus(Integer status) {
        this.status = status;
    }
}

```

编写接口

```java
List<User> findUserByQueryDto(UserQueryDto userQueryDto);
```

编写xml

```java
  <select id="findUserByQueryDto" parameterType="userQueryDto" resultType="user">
            select * from gxa_user where `status`=#{status} and username like '%${username}%'
        </select>

```

测试

```java
  @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);


        UserQueryDto userQueryDto=new UserQueryDto();
        userQueryDto.setUsername("强");
        userQueryDto.setStatus(1);

        List<User> userList = userMapper.findUserByQueryDto(userQueryDto);


        System.out.println(userList);


    }

```

需求变更:

必须跟两个条件

根据状态查询用户信息

根据用户名模糊查询

根据用户的状态和用户名进行模糊查询

不跟条件

8.1.2 if标签改造

```Java
        <select id="findUserByQueryDto" parameterType="userQueryDto" result
Type="user">

            select * from gxa_user
            where 1=1
            <if test="status !=null ">
                and `status`=#{status}
            </if>
            <if test="username !=null and username !=''">
                and  username like '%${username}%'
            </if>

        </select>
```

where后面不能直接跟上and

8.2 where标签

where标签可以自动生成where，并且自动去除where后的第一个and

```java
        <select id="findUserByQueryDto" parameterType="userQueryDto" result
Type="user">

            select * from gxa_user
           <where>
            <if test="status !=null ">
                and `status`=#{status}
            </if>
            <if test="username !=null and username !=''">
                and  username like '%${username}%'
            </if>
           </where>

        </select>
```

8.3 sql片段

sql语句有公共的语句，可以把公共的语句抽取出来

include标签来引入

```Java
    <sql id="selectUserFrom">
        select * from gxa_user
    </sql>

        <!--查询标签-->
        <!--id sql唯一的标记 statement的id或者sql的id,在一个命名空间中唯一-->
        <!--parameterType: 输入参数类型-->
        <select id="findUserById" parameterType="long" resultType="user">
             <include refid="selectUserFrom"/>
             where id=#{id}
        </select>
```

8.4 foreach标签

准备sql

```Java
select * from gxa_user where id in(1,2,3)
```

改造dto

```java
/**
 * Created by zxd on 2022/10/19 15:20
 */
public class UserQueryDto implements Serializable {

    private String username;

    private Integer status;

    private List<Long> ids;

    public List<Long> getIds() {
        return ids;
    }

    public void setIds(List<Long> ids) {
        this.ids = ids;
    }

    public String getUsername() {
        return username;
    }

    public void setUsername(String username) {
        this.username = username;
    }

    public Integer getStatus() {
        return status;
    }

    public void setStatus(Integer status) {
        this.status = status;
    }
}

```

编写接口

```java
List<User> findUserByIds(UserQueryDto userQueryDto);
```

编写xml

```java
        <select id="findUserByIds" parameterType="userQueryDto" resultType="user">
            select * from gxa_user
            <!-- where id in(1,2,3) -->
            <where>

                <!--collection: 需要跌到集合-->
                 <!--item: 代表迭代出来的每一项-->
                 <!--open 在迭代之前添加的sql-->
                 <!--separator 指定分隔符-->
                 <!--close在迭代后添加的sql-->
                 <foreach collection="ids" item="id" open="id in(" separator="," close=")">
                     #{id}
                 </foreach>

            </where>
        </select>
```

测试

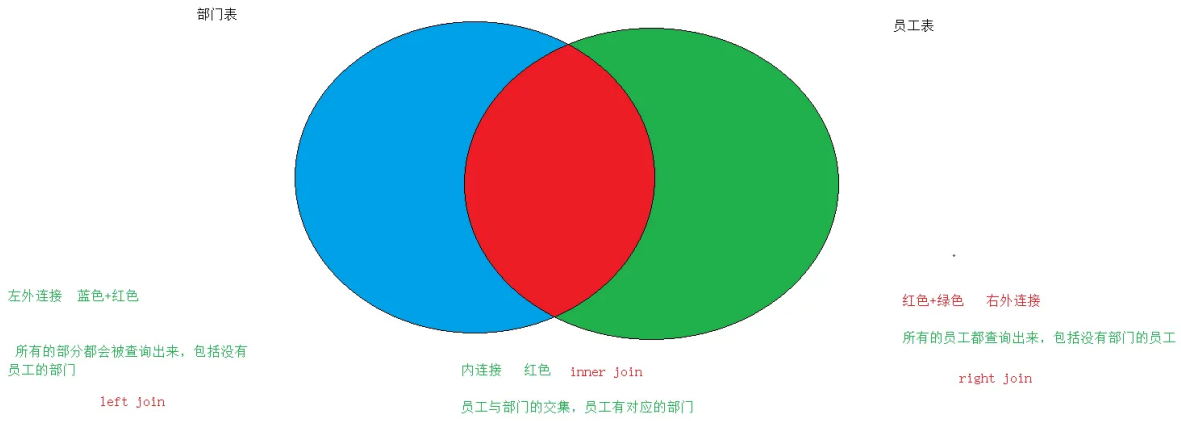
```java
@Test
  public void testFind(){

      SqlSession sqlSession = MybatisUtils.getSqlSession();

      UserMapper userMapper = sqlSession.getMapper(UserMapper.class);


      UserQueryDto userQueryDto=new UserQueryDto();
      userQueryDto.setIds(Arrays.asList(1L,2L,3L));


      List<User> userList = userMapper.findUserByIds(userQueryDto);

      System.out.println(userList);


  }

```

9.关联查询

9.1 一对一查询

需求: 查询所有订单，关联查询订单下面所有用户

一个订单记录会对应一个用户信息



9.1.1 编写sql

Java

```
SELECT
    o.id,
    o.order_number,
    o.payment,
    u.username,
    u.phone
FROM
    gxa_order o,
    gxa_user u
WHERE
    o.user_id = u.id
```

信息 结果 1 剖析 状态

id	order_number	payment	username	phone
1	xxx001	1	吴优哥雅	sada@126.com
2	xxx002	1	林老师	sada@126.com
3	xxx003	1	强哥	sada@126.com

9.1.2 编写vo接口结果

Java

```java
/**
 * Created by zxd on 2022/10/19 16:52
 */
public class OrderUserVo implements Serializable {


    private Integer id;

    private String orderNumber;

    private Integer payment;

    private String username;

    private String phone;

    public Integer getId() {
        return id;
    }

    public void setId(Integer id) {
        this.id = id;
    }

    public String getOrderNumber() {
        return orderNumber;
    }

    public void setOrderNumber(String orderNumber) {
        this.orderNumber = orderNumber;
    }

    public Integer getPayment() {
        return payment;
    }

    public void setPayment(Integer payment) {
        this.payment = payment;
    }

    public String getUsername() {
        return username;
    }

    public void setUsername(String username) {
```

```
        this.username = username;
    }

    public String getPhone() {
        return phone;
    }

    public void setPhone(String phone) {
        this.phone = phone;
    }

    @Override
    public String toString() {
        return "OrderUserVo{" +
                "id=" + id +
                ", orderNumber='" + orderNumber + '\'' +
                ", payment=" + payment +
                ", username='" + username + '\'' +
                ", phone='" + phone + '\'' +
                '}';
    }
}
```

9.1.3 编写接口

```java
/**
 * Created by zxd on 2022/10/19 14:14
 */
public interface OrderMapper {

    /**
     * 查询所有的订单
     * @return
     */
    List<Order> findOrderAll();


    /**
     * 查询所有订单关联查询用户信息
     * @return
     */
    List<OrderUserVo> findOrderUserAll();

}

```

9.1.4 编写xml

```java

        <select id="findOrderUserAll" resultType="orderUserVo">
                            SELECT
                    o.id,
                    o.order_number,
                    o.payment,
                    u.username,
                    u.phone
                FROM
                    gxa_order o,
                    gxa_user u
                WHERE
                    o.user_id = u.id
        </select>


```

9.1.5 测试

```java
/**
 * Created by zxd on 2022/10/18 16:49
 */
public class TestOrderMapper {



    @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);


        List<OrderUserVo> orderUserAll = orderMapper.findOrderUserAll();

        System.out.println(orderUserAll);

    }



}
```

9.2 一对一查询(方式二)

使用resultMap

使用面向对象的方式来实现多表查询的结果

9.2.1 修改pojo

```java
/**
 * Created by zxd on 2022/10/19 14:18
 */
public class Order implements Serializable {


    private Long id;

     //...


    //记住用户信息
    private User user;

    //get set

}
```

9.2.2 编写xml

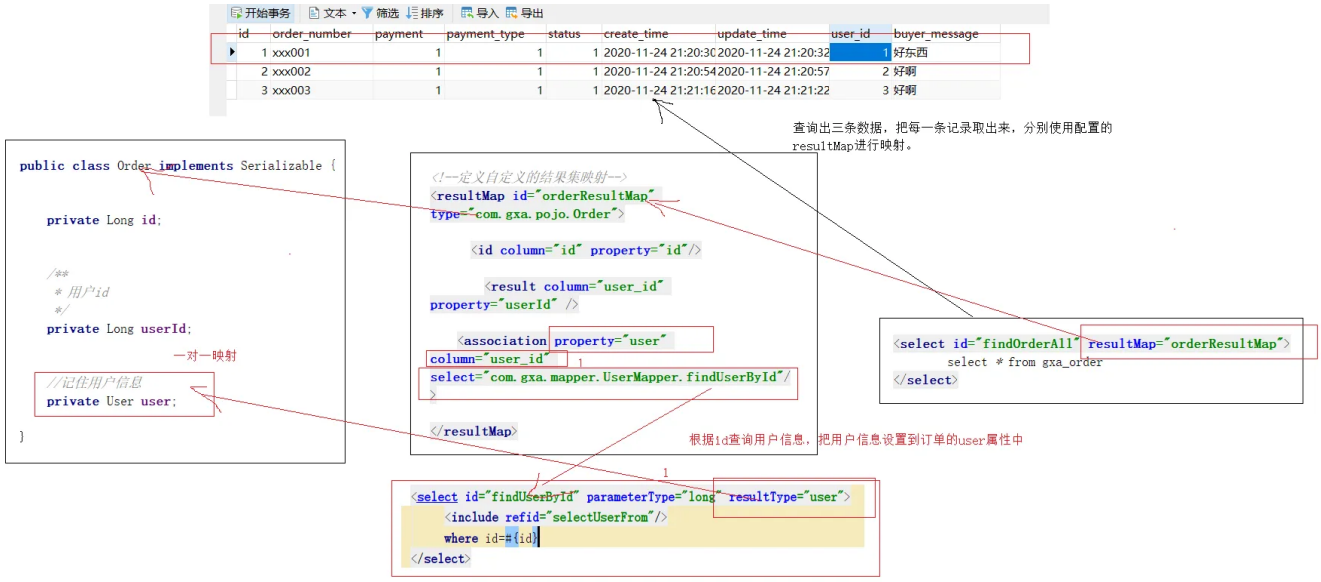
```Java
    <!--定义自定义的结果集映射-->
    <resultMap id="orderResultMap" type="com.gxa.pojo.Order">

        <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
        <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
        <id column="id" property="id"/>

        <!--映射普通属性-->
        <result column="order_number" property="orderNumber" />
        <result column="payment" property="payment" />
        <result column="payment_type" property="paymentType" />
        <result column="status" property="status" />
        <result column="create_time" property="createTime" />
        <result column="update_time" property="updateTime" />
        <result column="user_id" property="userId" />
        <result column="buyer_message" property="buyerMessage" />

        <!--一对一的关系映射 一个订单只有一个用户信息-->
        <!--property: 需要映射的属性-->
        <!--column: 根据当前表的哪一列作为查询条件-->
        <!--select找对应的sql来执行-->
        <association property="user" column="user_id" select="com.gxa.mapper.UserMapper.findUserById"/>

    </resultMap>


    <select id="findOrderAll" resultMap="orderResultMap">
            select * from gxa_order
    </select>
```

```java

    @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);

        List<Order> orderList = orderMapper.findOrderAll();


        System.out.println(orderList);

    }

```

好处: 配置了一次过后，后面查询订单相关的sql只用考虑订单表的sql，然后配置之前的resultMap，他会根据查询出来的用户id去关联查询用户信息。

```java
    <select id="findOrderById" resultMap="orderResultMap">
          select * from gxa_order where id=#{id}
    </select>
```

resultMap适合于单条数据查询然后关联进行多表查询,如果使用resultMap关联查询列表性能不太好



9.3 一对多的查询

查询用户信息，关联查询用户的订单信息

9.3.1 修改pojp

Java

```java
public class User implements Serializable {

    private Long id;

    //...

    //封装订单信息
    private List<Order> orders;

}
```

9.3.2 编写xml

UserMapper.xml Java

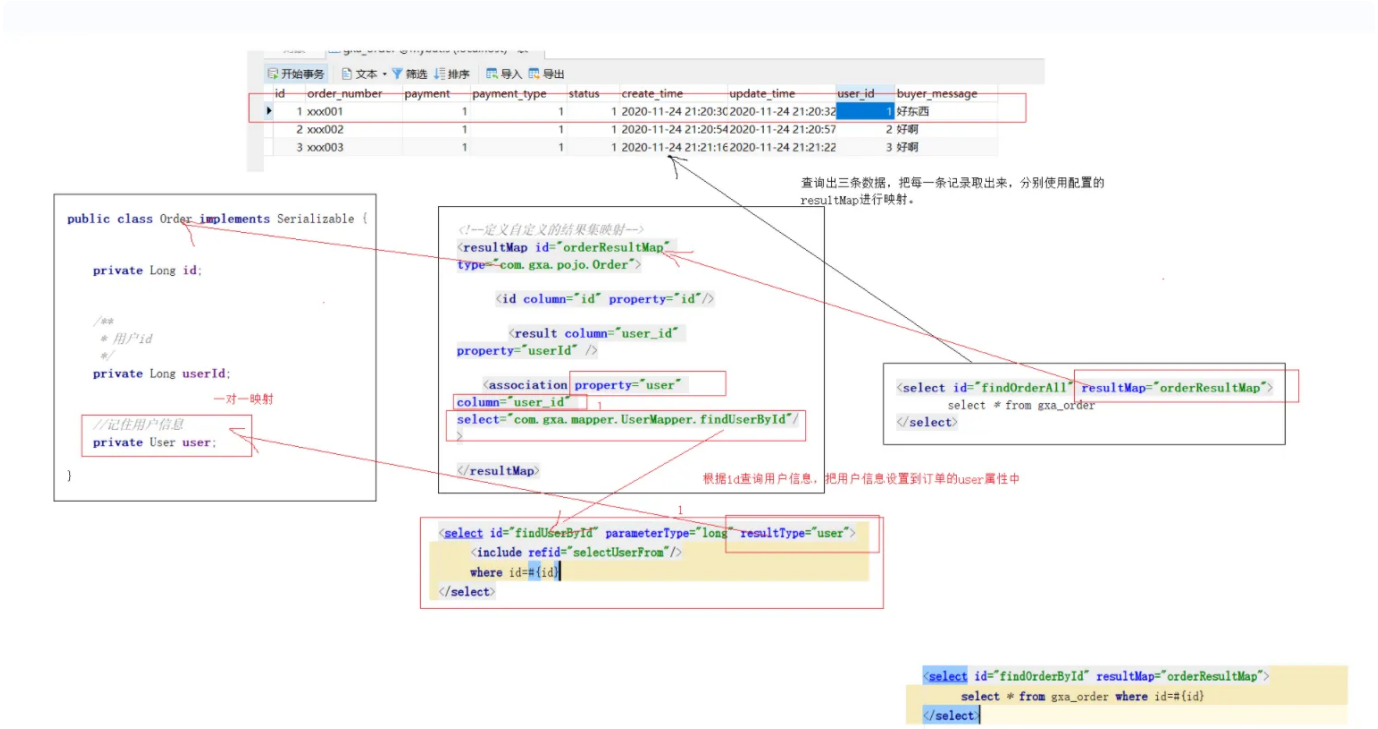
```
 <resultMap id="userResultMap" type="com.gxa.pojo.User">

        <id column="id" property="id"/>

        <!--映射普通属性-->
        <result column="username" property="username" />
        <result column="phone" property="phone" />

        <!--collection 映射一对多的关系-->
        <!--property 需要映射的集合-->
        <!--column 查询条件-->
        <!--select 需要执行的sql 根据id查询这个用户对应的订单信息-->
        <collection property="orders" column="id" select="com.gxa.mapper.OrderMapper.findOrderByUserId"/>

    </resultMap>


    <!--查询标签-->
    <!--id sql唯一的标记 statement的id或者sql的id,在一个命名空间中唯一-->
    <!--parameterType: 输入参数类型-->
    <select id="findUserById" parameterType="long" resultMap="userResultMap">
            select * from gxa_user where id=#{id}
    </select>

```

OrderMapper.xml Java

```
    <!--定义自定义的结果集映射-->
    <resultMap id="orderResultMap" type="com.gxa.pojo.Order">

        <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
        <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
        <id column="id" property="id"/>

        <!--映射普通属性-->
        <result column="order_number" property="orderNumber" />
        <result column="payment" property="payment" />
        <result column="payment_type" property="paymentType" />
        <result column="status" property="status" />
        <result column="create_time" property="createTime" />
        <result column="update_time" property="updateTime" />
        <result column="user_id" property="userId" />
        <result column="buyer_message" property="buyerMessage" />

        <!--一对一的关系映射 一个订单只有一个用户信息-->
        <!--property: 需要映射的属性-->
        <!--column: 根据当前表的哪一列作为查询条件-->
        <!--select找对应的sql来执行-->
        <association property="user" column="user_id" select="com.gxa.mapper.UserMapper.findUserById"/>

    </resultMap>


    <!--如果一个sql只是内部使用，接口可以不写-->
    <select id="findOrderByUserId" parameterType="long" resultMap="orderResultMap">
            select * from gxa_order where user_id=#{userId}
    </select>
```

9.3.3 测试

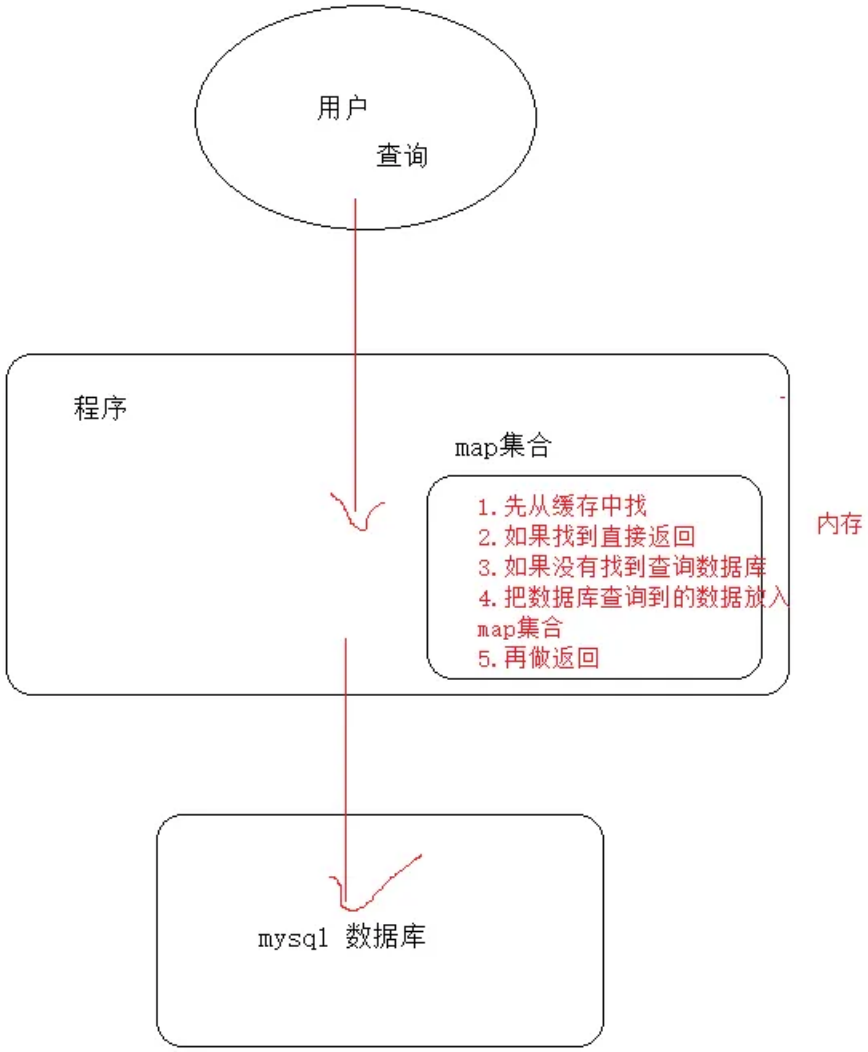
```java
    @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

        User user = userMapper.findUserById(1L);

        System.out.println(user);

    }

```

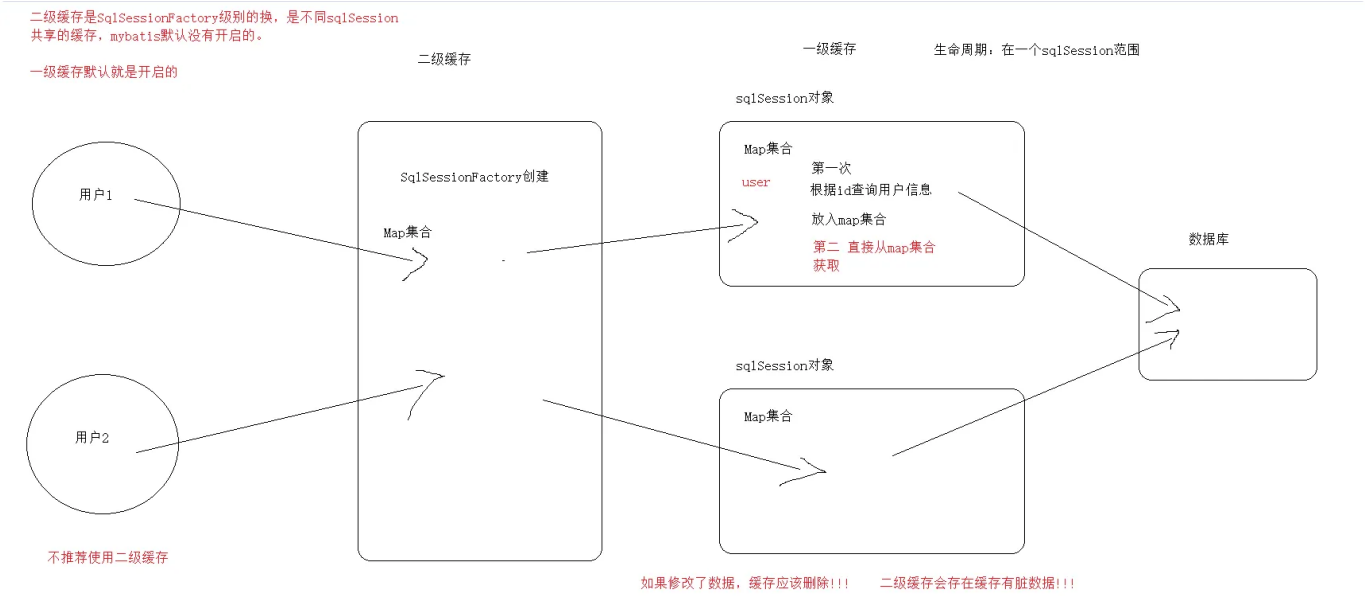


10.缓存(了解)

10.1 缓存的介绍

为什么要使用缓存，缓存可以提高查询速度，减少对数据库的访问，减轻服务器的压力。



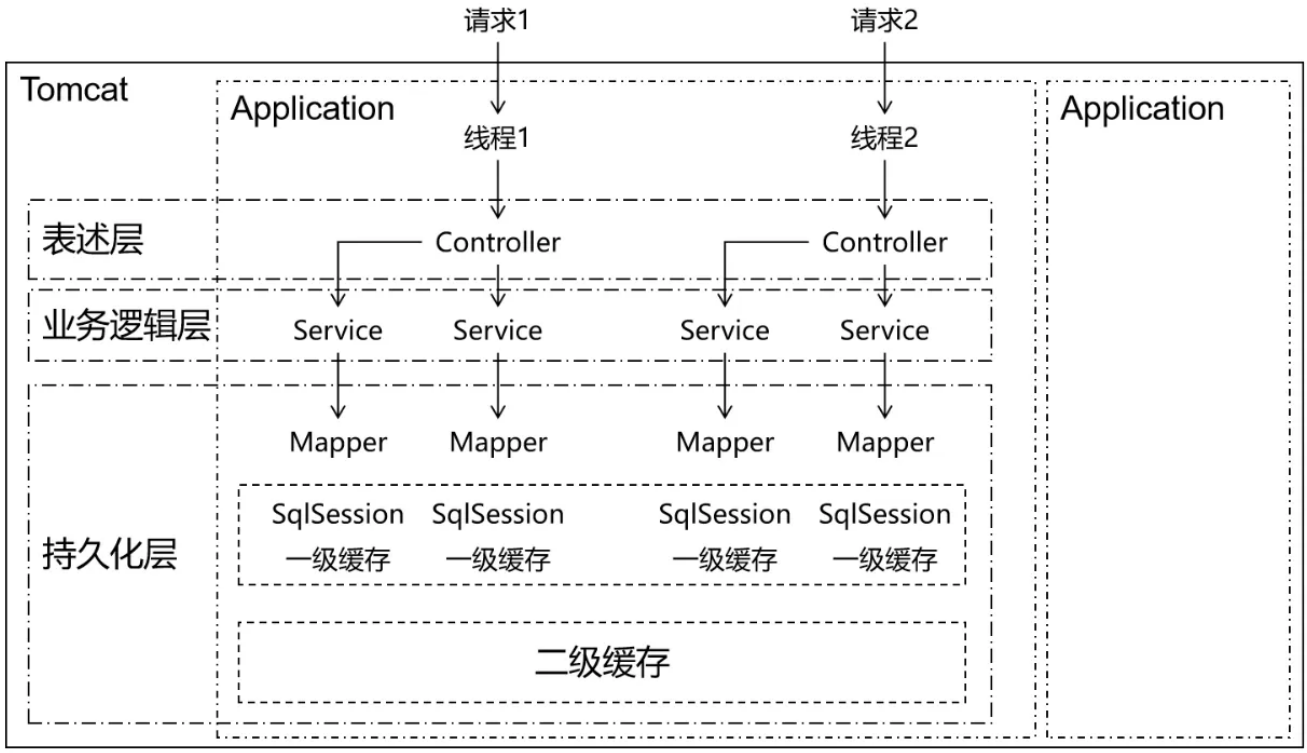


查询的顺序是：

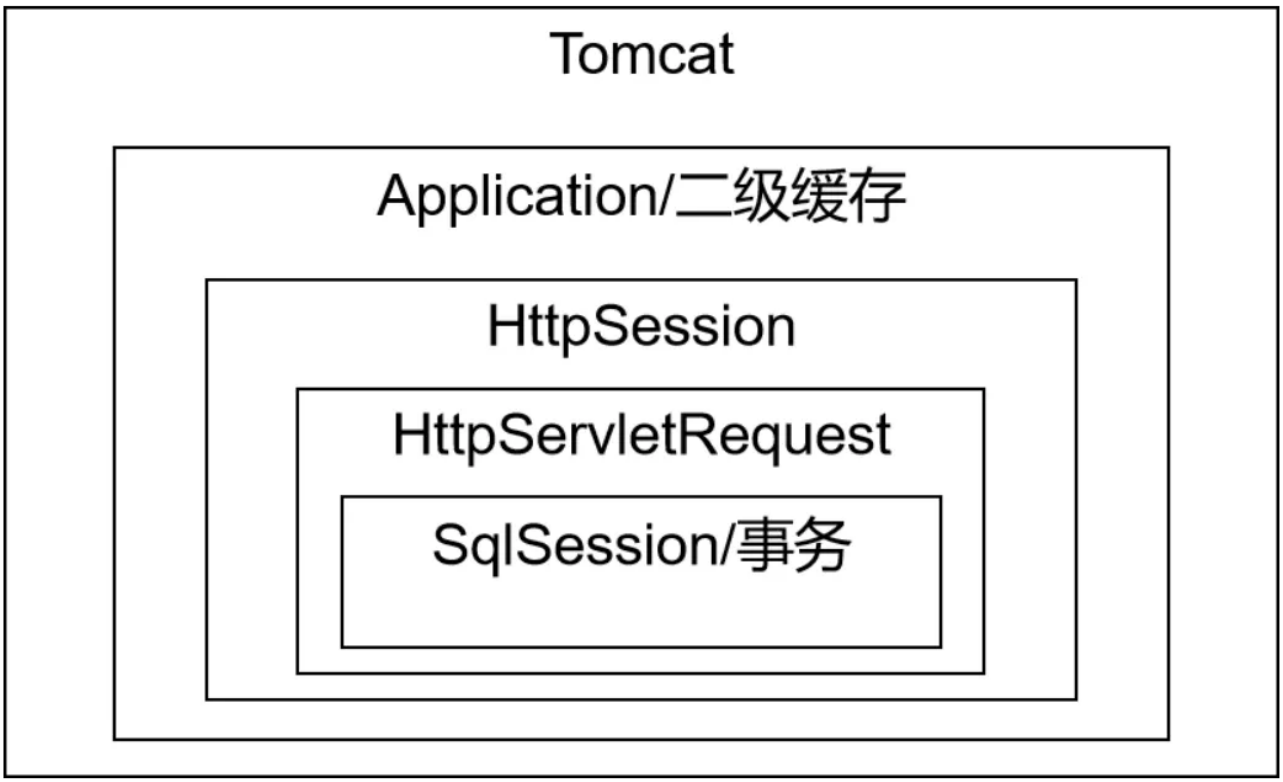
- 先查询二级缓存，因为二级缓存中可能会有其他程序已经查出来的数据，可以拿来直接使用。
- 如果二级缓存没有命中，再查询一级缓存
- 如果一级缓存也没有命中，则查询数据库
- SqlSession关闭之前，一级缓存中的数据会写入二级缓存

②效用范围

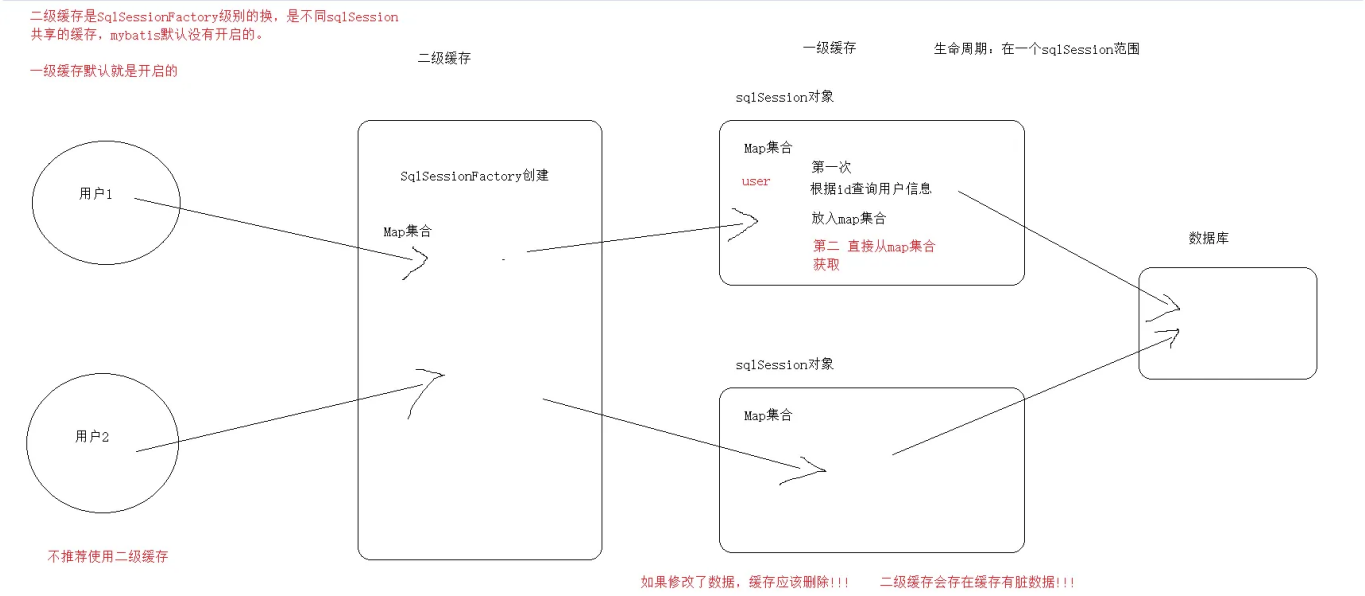
- 一级缓存：SqlSession级别
- 二级缓存：SqlSessionFactory级别



它们之间范围的大小参考下面图：



10.2 一级缓存



Java

```java
@Test
public void testFind(){

    SqlSession sqlSession = MybatisUtils.getSqlSession();

    UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

    User user = userMapper.findUserById(1L);

    System.out.println(user);


    User user2 = userMapper.findUserById(1L);
    System.out.println(user2);


}
```

10.3 二级缓存(了解)

10.3.1 验证二级缓存默认是否存在

```java
@Test
 public void testFind(){

     SqlSession sqlSession = MybatisUtils.getSqlSession();

     UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

     User user = userMapper.findUserById(1L);

     System.out.println(user);

     sqlSession.close();


     SqlSession sqlSession2 = MybatisUtils.getSqlSession();

     UserMapper userMapper2 = sqlSession2.getMapper(UserMapper.class);

     User user2 = userMapper2.findUserById(1L);

     System.out.println(user2);

     sqlSession.close();

 }
```

10.3.2 开启二级缓存

1.在SqlMapConfig.xml开启二级缓存的总开关

```java
<!--配置下划线自动转换驼峰-->
<settings>
    <setting name="mapUnderscoreToCamelCase" value="true"/>
    <!--开启mybatis二级缓存-->
    <setting name="cacheEnabled" value="true"></setting>
</settings>
```

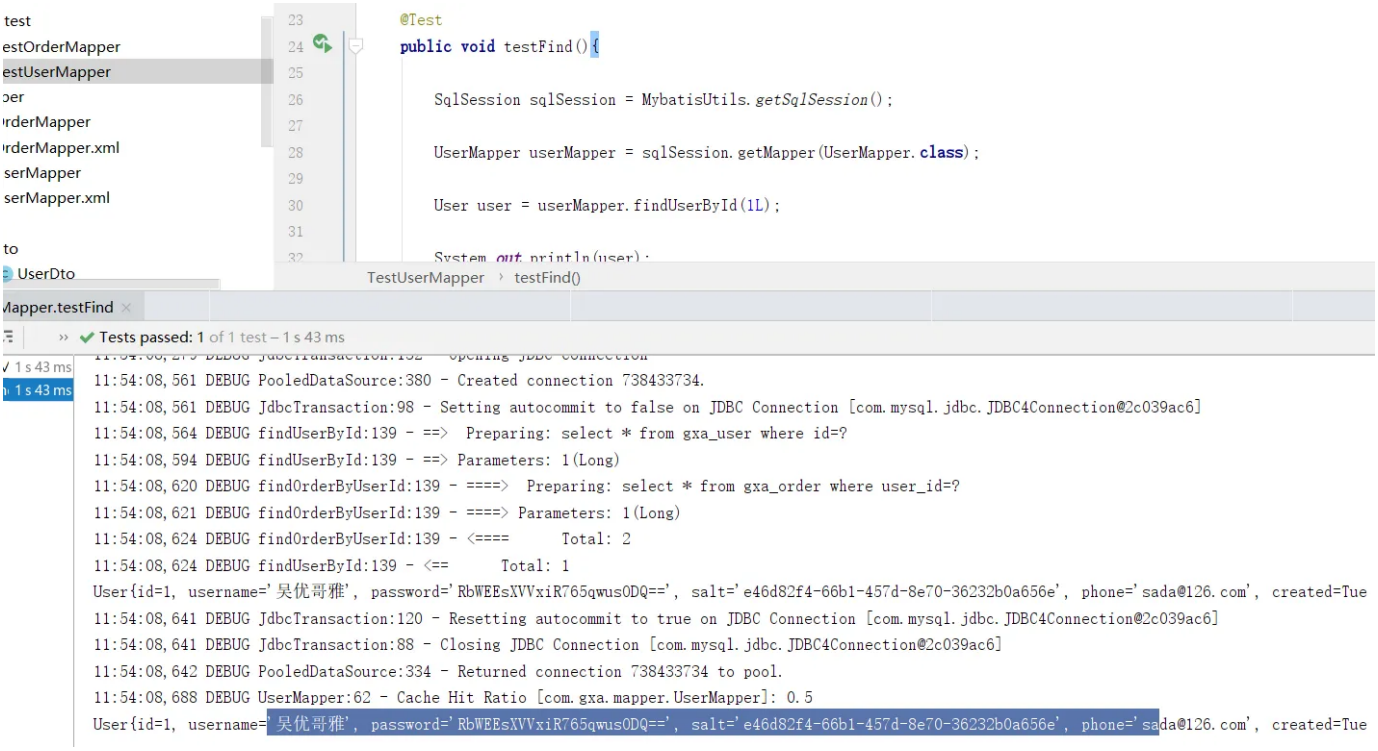
2.在需要使用二级缓存的mapper文件中开启分开关

UserMapper.xml Java

```
1    <!--开启二级缓存的分开关-->
2        <cache></cache>
```

3.pojo必须实现序列化接口

User Order 需要实现序列化接口



二级缓存相关配置

在Mapper配置文件中添加的cache标签可以设置一些属性：

- eviction属性：缓存回收策略LRU（Least Recently Used） — 最近最少使用的：移除最长时间不被使用的对象。FIFO（First in First out） — 先进先出：按对象进入缓存的顺序来移除它们。SOFT — 软引用：移除基于垃圾回收器状态和软引用规则的对象。WEAK — 弱引用：更积极地移除基于垃圾收集器状态和弱引用规则的对象。默认的是 LRU。
- flushInterval属性：刷新间隔，单位毫秒默认情况是不设置，也就是没有刷新间隔，缓存仅仅调用语句时刷新（修删）
- size属性：引用数目，正整数代表缓存最多可以存储多少个对象，太大容易导致内存溢出
- readOnly属性：只读，true/falsetrue：只读缓存；会给所有调用者返回缓存对象的相同实例。因此这些对象不能被修改。这提供了很重要的性能优势。false：读写缓存；会返回缓存对象的拷贝（通过序列化）。这会慢一些，但是安全，因此默认是 false。

10.4 懒加载

全局开启 SqlMapConfig.xml 开启懒加载

Java

```
    <!--配置下划线自动转换驼峰-->
    <settings>
        <setting name="mapUnderscoreToCamelCase" value="true"/>
        <!--开启mybatis二级缓存-->
        <setting name="cacheEnabled" value="true"></setting>


        <!--开启懒加载 lazyLoadingEnable-->
        <setting name="lazyLoadingEnabled" value="true"/>
        <setting name="aggressiveLazyLoading" value="false"/>
        <setting name="lazyLoadTriggerMethods" value=""/>

    </settings>
```

```java
    @Test
    public void testFind(){

        SqlSession sqlSession = MybatisUtils.getSqlSession();

        UserMapper userMapper = sqlSession.getMapper(UserMapper.class);

        User user = userMapper.findUserById(1L);

        System.out.println(user);

        System.out.println(user.getOrders());
    }

```

局部配置

```java
 <collection property="orders" column="id" select="com.gxa.mapper.OrderMapper.findOrderByUserId" fetchType="lazy"/>
```

mybatis注解