

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。

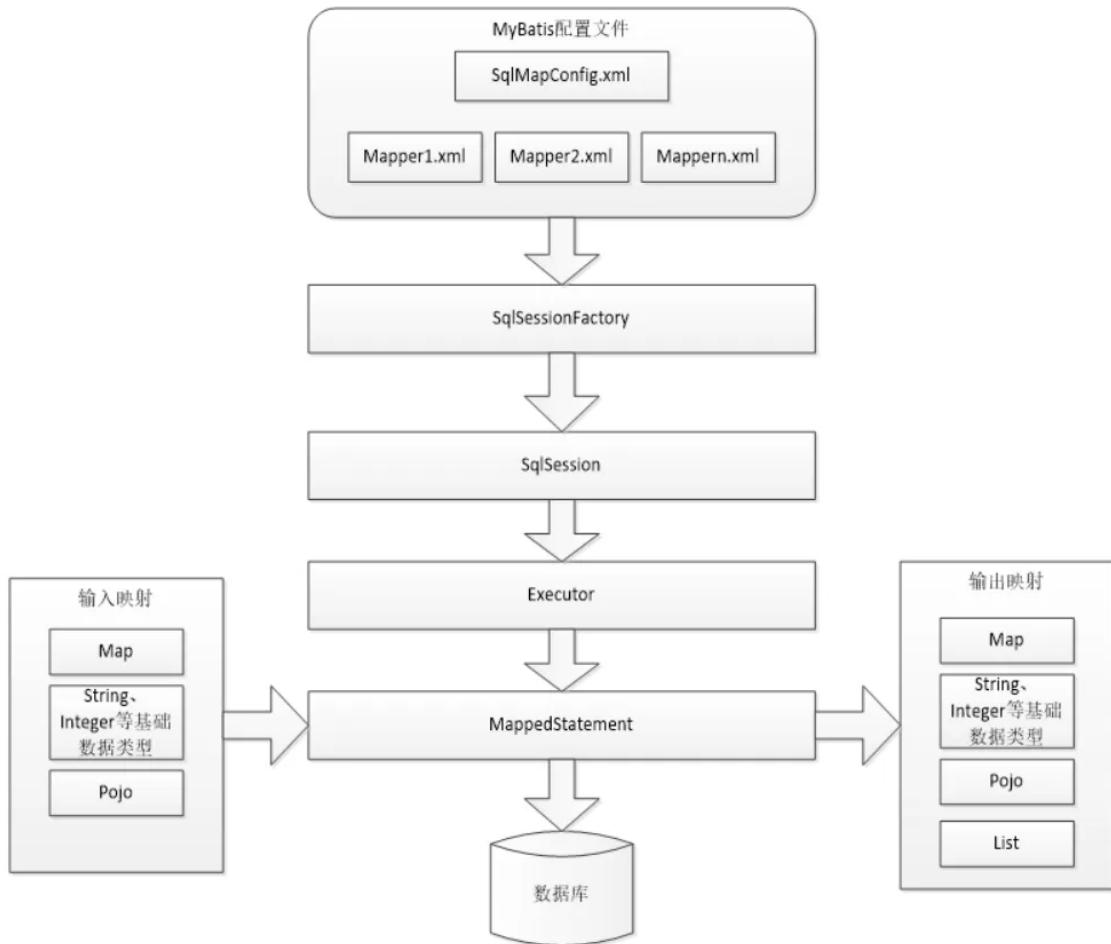
1.2 Jdbc编码的问题

- 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。

- 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



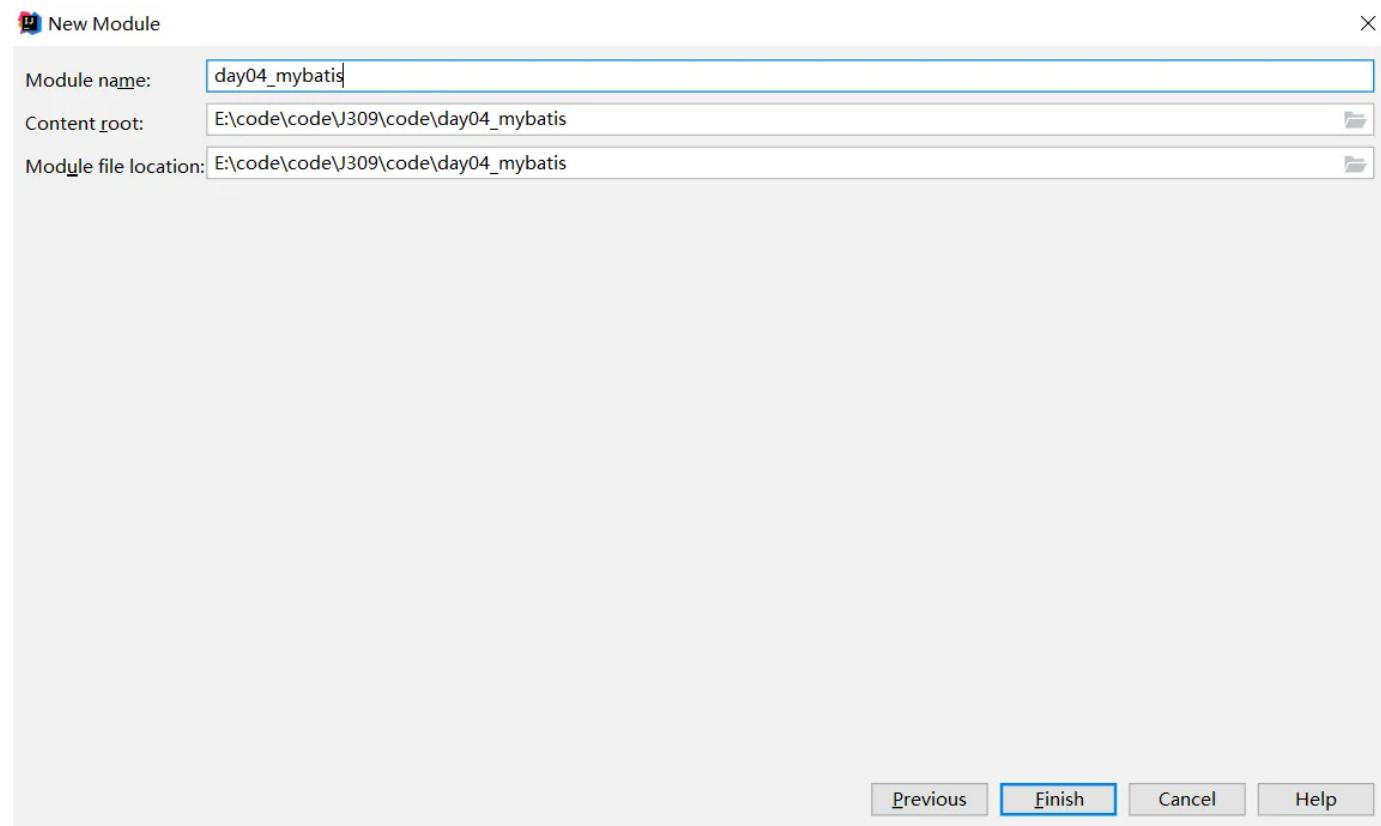
1、 mybatis配置

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。

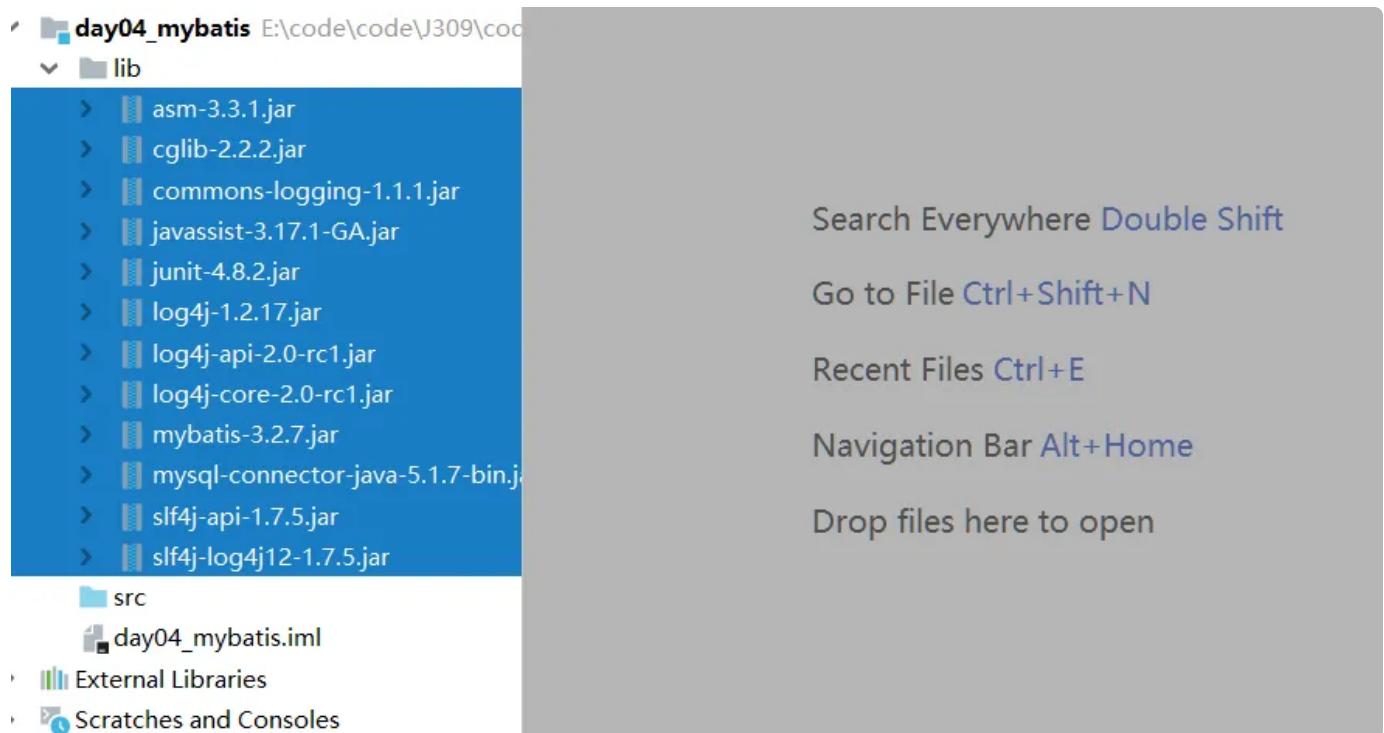
mapper.xml文件即sql映射文件，文件中配置了操作数据库的sql语句。此文件需要在**SqlMapConfig.xml**中加载。

- 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。

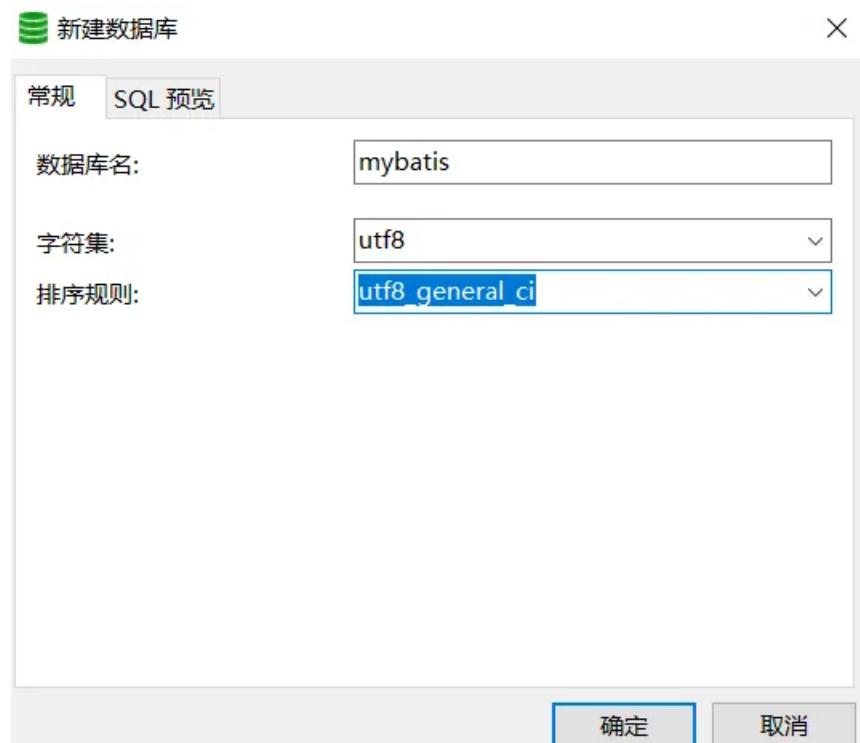
1.4 环境搭建



导包



导入sql



A screenshot of a database management system interface. On the left, there is a tree view with a node expanded to show several tables. The tables listed are: gxa_category, gxa_goods, gxa_goods_desc, gxa_order, gxa_order_item, and gxa_user. The 'gxa_user' table is highlighted with a light gray background.

...	...
表	gxa_category
	gxa_goods
	gxa_goods_desc
	gxa_order
	gxa_order_item
	gxa_user

准备pojo

```
1  /**
2   * Created by zxd on 2022/10/18 9:37
3   */
4  public class User implements Serializable {
5
6      private Long id;
7
8      private String username;
9
10     private String password;
11
12     private String salt;
13
14     private String phone;
15
16     private Date created;
17
18     private Date lastLoginTime;
19
20     private Integer status;
21
22     public User(Long id, String username, String password, String salt, S
23         tring phone, Date created, Date lastLoginTime, Integer status) {
24         this.id = id;
25         this.username = username;
26         this.password = password;
27         this.salt = salt;
28         this.phone = phone;
29         this.created = created;
30         this.lastLoginTime = lastLoginTime;
31         this.status = status;
32     }
33
34     public User() {
35
36     public Long getId() {
37         return id;
38     }
39
40     public void setId(Long id) {
41         this.id = id;
42     }
43
44     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     public void setStatus(Integer status) {
97         this.status = status;
98     }
99
100
101    @Override
102    public String toString() {
103        return "User{" +
104            "id=" + id +
105            ", username='" + username + '\'' +
106            ", password='" + password + '\'' +
107            ", salt='" + salt + '\'' +
108            ", phone='" + phone + '\'' +
109            ", created=" + created +
110            ", lastLoginTime=" + lastLoginTime +
111            ", status=" + status +
112            '}';
113    }
114 }
115 }
```

1.5 实现根据id查询用户信息

1.5.1 准备主配置文件

The screenshot shows a Java IDE interface with the following details:

- Project View:** Shows a project structure with several modules: day01, day02, day03, and day04_mybatis.
- SqlMapConfig.xml Content:** The code editor displays the XML configuration for MyBatis. The XML defines a development environment with a JDBC transaction manager and a pooled database source connected to MySQL at 127.0.0.1:3306.

```
<?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  <?xml version="1.0" encoding="UTF-8" ?>
2  <!DOCTYPE configuration
3      PUBLIC "-//mybatis.org//DTD Config 3.0//EN"
4      "http://mybatis.org/dtd/mybatis-3-config.dtd">
5  <configuration>
6
7
8
9      <!-- mybatis和spring整合过后废除 -->
10 <environments default="development">
11
12 <environment id="development">
13
14     <!-- 和jdbc的事物管理 -->
15     <transactionManager type="JDBC" />
16
17     <!-- 数据库连接池 -->
18     <dataSource type="POOLED">
19         <property name="driver" value="com.mysql.jdbc.Driver" />
20         <property name="url" value="jdbc:mysql://127.0.0.1:3306/mybatis" /
21         >
22             <property name="username" value="root" />
23             <property name="password" value="root" />
24     </dataSource>
25
26 </environment>
27
28
29
30
31
32 </configuration>
```

1.5.2 编写映射文件

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!DOCTYPE mapper
3      PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
4      "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
5  <!-- 命名空间, 用于隔离sql, 后面还有一个很重要的作用 -->
6  <mapper namespace="test">
7
8
9      <!--查询标签-->
10     <!--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-->
11     <!--parameterType: 输入参数类型-->
12     <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
13         select * from gxa_user where id=#{id}
14     </select>
15
16
17
18 </mapper>

```



1.5.3 主配置文件加载映射文件

The screenshot shows the file structure on the left and the configuration XML code on the right. A red arrow points from the 'User.xml' file in the file tree to the corresponding XML node in the code editor.

File Structure:

- 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\code\day04_mybatis
- lib
- src
 - com.gxa.pojo
 - User
 - log4j.properties
 - SqlMapConfig.xml
 - User.xml
- day04_mybatis.iml
- External Libraries
- Scratches and Consoles

Configuration XML (SqlMapConfig.xml):

```
<!-- 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>

<!--加载映射文件-->
<mappers>
    <mapper resource="User.xml" />
</mappers>

</configuration>
```

1.5.4 编写Java代码

```
1  /**
2  * Created by zxd on 2022/10/18 9:57
3  */
4  public class TestUserDao {
5
6
7      @Test
8      public void helloMybatis() throws IOException {
9
10         //1.加载主配置文件
11
12         //SqlSessionFactoryBuilder创建 SqlSessionFactory
13         SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
14
15         //2.加载主配置文件
16         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml")
17         ;
18
19         //3.解析xml的内容，创建sqlSessionFactory对象
20         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
21             in);
22
23         //4.通过sqlSessionFactory获取SqlSession
24         SqlSession sqlSession = sessionFactory.openSession();
25
26         //5.执行sql返回结果
27         User user = sqlSession.selectOne("test.findUserById", 3L);
28
29         System.out.println(user);
30     }
31
32 }
33 }
```

1.6 根据用户名进行模糊查询1

1.6.1 编写sql

```
SQL |  
1 select * from gxa_user where username like '%强%'
```

1.6.2 编写映射文件

```
XML |  
1 <?xml version="1.0" encoding="UTF-8" ?>  
2 <!DOCTYPE mapper  
3   PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"  
4   "http://mybatis.org/dtd/mybatis-3-mapper.dtd">  
5   <!-- 命名空间，用于隔离sql，后面还有一个很重要的作用 -->  
6   <mapper namespace="test">  
7  
8  
9  
10      <!--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poj  
o放入list集合-->  
11      <select id="findUserByUsername1" parameterType="string" resultTyp  
e="com.gxa.pojo.User">  
12          select * from gxa_user where username like #{username}  
13      </select>  
14  
15  
16  
17  </mapper>
```

底层原理

```

1 String sql="select * from gxa_user where username like ?";
2 st=conn.prepareStatement(sql);
3 st.setString(1,"%哥%");
4

```

1.6.3 测试代码

```

1 @Test
2 public void findUserName() throws IOException {
3
4     //1.加载主配置文件
5
6     //SqlSessionFactoryBuilder创建 SqlSessionFactory
7     SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9     //2.加载主配置文件
10    InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");
11
12    //3.解析xml的内容, 创建sqlSessionFactory对象
13    SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(in);
14
15    //4.通过sqlSessionFactory获取SqlSession
16    SqlSession sqlSession = sessionFactory.openSession();
17
18    //5.执行sql返回结果
19    List<User> users = sqlSession.selectList("test.findUserByUsername1",
20        "%哥%");
21
22    System.out.println(users);
23
24 }

```

1.7 根据用户名进行模糊查询2

1.7.1 编写映射文件

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

1.7.2 测试

```
1  @Test
2      public void findUserName2() throws IOException {
3
4          //1.加载主配置文件
5
6          //SqlSessionFactoryBuilder创建 SqlSessionFactory
7          SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9          //2.加载主配置文件
10         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml")
11
12         ;
13
14         //3.解析xml的内容，创建sqlSessionFactory对象
15         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
16             in);
17
18         //4.通过sqlSessionFactory获取SqlSession
19         SqlSession sqlSession = sessionFactory.openSession();
20
21
22         //5.执行sql返回结果
23         List<User> users = sqlSession.selectList("test.findUserByUsername
24             2", "哥");
25
26         System.out.println(users);
27     }
```

1.7.3 原理

```

1 String value="哥";
2
3 String sql="select * from gxa_user where username like '%"+value+"%'";
4
5 st=conn.createStatement();
6
7 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。如果有多个记录, 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selectOne查询的sql返回多条记录就会抛异常

The screenshot shows a Java code editor with the following code:

```
92 // System.out.println(users);
93
94 User user = sqlSession.selectOne("test.findUserByUsername2", "哥");
95
96 System.out.println(user);
97
98 }
99
100 }
```

Below the code, it says `TestUserDao > findUserName2()`. A test result window titled "serName2" shows:

- Tests failed: 1 of 1 test – 394 ms
- 11:38:03,006 DEBUG findUserByUsername2:139 - <== Total: 2
- org.apache.ibatis.exceptions.TooManyResultsException: Expected one result (or null) to be returned by selectOne(), but found: 2
- at org.apache.ibatis.session.defaults.DefaultSqlSession.selectOne(DefaultSqlSession.java:70)
- at junit.test.TestUserDao.findUserName2(TestUserDao.java:95) <22 internal calls>

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

The screenshot shows the Java source code for the `selectOne` method:

```
1 public <T> T selectOne(String statement, Object parameter) {
2     List<T> list = this.selectList(statement, parameter);
3     if (list.size() == 1) {
4         return list.get(0);
5     } else if (list.size() > 1) {
6         throw new TooManyResultsException("Expected one result (or null) to be returned by selectOne(), but found: " + list.size());
7     } else {
8         return null;
9     }
10 }
```

2.crud

2.1 插入

2.1.1 准备sql

```
1 insert into gxa_user(username,password,salt,phone,created,last_login_time,`  
status`) VALUES ()  
2
```

2.1.2 编写xml

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

#{}取的是pojo的属性值

2.1.3 测试

```
1  @Test
2      public void insertUser() throws IOException {
3
4          //1.加载主配置文件
5
6          //SqlSessionFactoryBuilder创建 SqlSessionFactory
7          SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9          //2.加载主配置文件
10         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");
11
12         //3.解析xml的内容，创建sqlSessionFactory对象
13         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
14             in);
15
16         //4.通过sqlSessionFactory获取SqlSession
17         SqlSession sqlSession = sessionFactory.openSession();
18
19         User user=new User(null,"坤坤","111","111","11",new Date(),new Date(),1);
20
21         int result = sqlSession.insert("test.insertUser", user);
22
23         System.out.println(result);
24
25         //提交事务
26         sqlSession.commit();
27
28     }
```

2.2 修改

2.2.1 编写sql

XML |

```
1 update gxa_user set username=#{username},password=#{password},phone=#{phon  
e} where id=#{id}
```

2.2.2 编写xml

XML |

```
1 <update id="updateUser" parameterType="com.gxa.pojo.User">  
2         update gxa_user set username=#{username},password=#{passwor  
d},phone=#{phone} where id=#{id}  
3     </update>  
4
```

2.2.3 测试

```
1  @Test
2      public void updateUser() throws IOException {
3
4          //1.加载主配置文件
5
6          //SqlSessionFactoryBuilder创建 SqlSessionFactory
7          SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9          //2.加载主配置文件
10         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");
11
12         //3.解析xml的内容，创建sqlSessionFactory对象
13         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
14             in);
15
16         //4.通过sqlSessionFactory获取SqlSession
17         SqlSession sqlSession = sessionFactory.openSession();
18
19         User user=new User(5L,"龙龙","222","111","333",new Date(),new Date());
20
21         int result = sqlSession.update("test.updateUser", user);
22
23         System.out.println(result);
24
25         //提交事务
26         sqlSession.commit();
27
28     }
```

2.3 删 除

2.3.1 编写sql

SQL |

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

Java |

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

2.3.3 测试

```
1  @Test
2  public void deleteUser() throws IOException {
3
4      //1.加载主配置文件
5
6      //SqlSessionFactoryBuilder创建 SqlSessionFactory
7      SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9      //2.加载主配置文件
10     InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml")
11 ;
12
13     //3.解析xml的内容，创建sqlSessionFactory对象
14     SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
15         in);
16
17     //4.通过sqlSessionFactory获取SqlSession
18     SqlSession sqlSession = sessionFactory.openSession();
19
20
21     int result = sqlSession.delete("test.deleteUserById", 5L);
22
23     System.out.println(result);
24
25     //提交事务
26     sqlSession.commit();
27 }
```

2.4 mysql自增主键的返回(重点)

2.4.1 自增主键的原理

Java

```
1 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);  
2  
3 select LAST_INSERT_ID()  
4
```

2.4.2 编写xml

XML

```
1 <insert id="insertUser" parameterType="com.gxa.pojo.User">  
2     <!--selectKey: 实现主键的返回-->  
3     <!--keyColumn: 主键对应数据库的哪一列-->  
4     <!--keyProperty: 主键对应pojo的哪一属性-->  
5     <!--配置在插入语句之前执行还是之后执行-->  
6     <!--resultType: 主键的类型-->  
7         <selectKey keyColumn="id" keyProperty="id" order="AFTER" re  
sultType="long">  
8             select LAST_INSERT_ID()  
9         </selectKey>  
10        insert into gxa_user(username,password,salt,phone,created,l  
ast_login_time,`status`) VALUES  
11            (#{$username},#${password},#${salt},#${phone},#${crea  
tedLoginTime},#${status})  
12    </insert>
```

2.4.3 测试

```
1  @Test
2      public void insertUser() throws IOException {
3
4          //1.加载主配置文件
5
6          //SqlSessionFactoryBuilder创建 SqlSessionFactory
7          SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9          //2.加载主配置文件
10         InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml")
11
12         ;
13
14         //3.解析xml的内容，创建sqlSessionFactory对象
15         SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
16             in);
17
18         //4.通过sqlSessionFactory获取SqlSession
19         SqlSession sqlSession = sessionFactory.openSession();
20
21         User user=new User(null,"坤坤","111","111","11",new Date(),new Date(),1);
22
23         int result = sqlSession.insert("test.insertUser", user);
24
25         System.out.println(user);
26
27         //提交事务
28         sqlSession.commit();
29     }
```

2.5 mysql自增主键的简化写法

XML |

```
1 <insert id="insertUser" useGeneratedKeys="true" keyProperty="id" parameterType="com.gxa.pojo.User">
2     insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
3     (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
4   </insert>
5
```

2.6 使用mysql的uuid实现主键(了解)

复制表

SQL |

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

新建pojo

```
1  /**
2  * Created by zxd on 2022/10/18 9:37
3  */
4  public class User2 implements Serializable {
5
6      private String id;
7
8      private String username;
9
10     private String password;
11
12     private String salt;
13
14     private String phone;
15
16     private Date created;
17
18     private Date lastLoginTime;
19
20     private Integer status;
21
22     public User2(String id, String username, String password, String salt
23 , String phone, Date created, Date lastLoginTime, Integer status) {
24         this.id = id;
25         this.username = username;
26         this.password = password;
27         this.salt = salt;
28         this.phone = phone;
29         this.created = created;
30         this.lastLoginTime = lastLoginTime;
31         this.status = status;
32     }
33
34     public User2() {
35
36     public String getId() {
37         return id;
38     }
39
40     public void setId(String id) {
41         this.id = id;
42     }
43
44     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     public void setStatus(Integer status) {
97         this.status = status;
98     }
99
100
101    @Override
102    public String toString() {
103        return "User{" +
104            "id=" + id +
105            ", username='" + username + '\'' +
106            ", password='" + password + '\'' +
107            ", salt='" + salt + '\'' +
108            ", phone='" + phone + '\'' +
109            ", created=" + created +
110            ", lastLoginTime=" + lastLoginTime +
111            ", status=" + status +
112            '}';
113    }
114 }
115 }
```

编写xml

```
1 <insert id="insertUser2" parameterType="com.gxa.pojo.User2">
2
3         <!--selectKey: 实现主键的返回-->
4         <!--keyColumn: 主键对应数据库的哪一列-->
5         <!--keyProperty: 主键对应pojo的哪一属性-->
6         <!--配置在插入语句之前执行还是之后执行-->
7         <!--resultType: 主键的类型-->
8         <selectKey keyColumn="id" keyProperty="id" order="B
EF0RE" resultType="string">
9             select uuid()
10            </selectKey>
11
12        insert into gxa_user2(id,username,password,salt,phone,created,last
13 _login_time,`status`) VALUES
14             (#{id},#{username},#{password},#{salt},#{phone},#{created},#{lastL
oginTime},#{status})
15        </insert>
```

测试代码

```
1  @Test
2  public void insertUser2() throws IOException {
3
4      //1.加载主配置文件
5
6      //SqlSessionFactoryBuilder创建 SqlSessionFactory
7      SqlSessionFactoryBuilder sqlSessionFactoryBuilder=new SqlSessionFactoryBuilder();
8
9      //2.加载主配置文件
10     InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml")
11 ;
12
13     //3.解析xml的内容，创建sqlSessionFactory对象
14     SqlSessionFactory sessionFactory = sqlSessionFactoryBuilder.build(
15         in);
16
17     //4.通过sqlSessionFactory获取SqlSession
18     SqlSession sqlSession = sessionFactory.openSession();
19
20     User2 user=new User2(null,"坤坤","111","111","11",new Date(),new Date(),1);
21
22     int result = sqlSession.insert("test.insertUser2", user);
23
24     System.out.println(user);
25
26     sqlSession.commit();
27
28 }
```

3.原始dao开发

3.1 编写工具类

Java

```
1   */
2  * Created by zxd on 2022/10/18 15:16
3  */
4  public class MybatisUtils {
5
6      private static SqlSessionFactory sqlSessionFactory;
7
8
9      static {
10
11         try {
12
13             //1.加载主配置文件
14             SqlSessionFactoryBuilder sqlSessionFactoryBuilder = new SqlSessionFactoryBuilder();
15
16             //2.加载主配置文件
17             InputStream in = Resources.getResourceAsStream("SqlMapConfig.xml");
18
19             //3.解析xml的内容，创建sqlSessionFactory对象
20             sqlSessionFactory = sqlSessionFactoryBuilder.build(in);
21
22         }catch (Exception e){
23             e.printStackTrace();
24             throw new RuntimeException("配置文件加载失败!");
25         }
26
27     }
28
29
30     /**
31      * 获取sqlSession
32      * @return
33      */
34     public static SqlSession getSqlSession(){
35         return sqlSessionFactory.openSession();
36     }
37
38 }
39
```

3.2 编写接口

```
1   */
2  * Created by zxd on 2022/10/18 15:19
3  */
4  public interface UserDao {
5
6
7      User findUserById(Long id);
8
9      List<User> findUserByUsername(String username);
10
11     void insertUser(User user);
12
13     void updateUser(User user);
14
15     void deleteUserById(Long id);
16
17 }
```

3.3 编写dao实现

```
1  /**
2   * Created by zxd on 2022/10/18 15:22
3   */
4  public class UserDaoImpl implements UserDao {
5
6      @Override
7      public User findUserById(Long id) {
8          SqlSession sqlSession = MybatisUtils.getSqlSession();
9          return sqlSession.selectOne("test.findUserById",id);
10     }
11
12     @Override
13     public List<User> findUserByUsername(String username) {
14         SqlSession sqlSession = MybatisUtils.getSqlSession();
15         return sqlSession.selectList("test.findUserByUsername",username);
16     }
17
18     @Override
19     public void insertUser(User user) {
20         SqlSession sqlSession = MybatisUtils.getSqlSession();
21         sqlSession.insert("test.insertUser",user);
22         sqlSession.commit();
23     }
24
25     @Override
26     public void updateUser(User user) {
27         SqlSession sqlSession = MybatisUtils.getSqlSession();
28         sqlSession.update("test.updateUser",user);
29         sqlSession.commit();
30     }
31
32     @Override
33     public void deleteUserById(Long id) {
34         SqlSession sqlSession = MybatisUtils.getSqlSession();
35         sqlSession.delete("test.deleteUserById",id);
36         sqlSession.commit();
37     }
38 }
39
```

3.4 编写xml

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!DOCTYPE mapper
3      PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
4      "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
5  <!-- 命名空间, 用于隔离sql, 后面还有一个很重要的作用 -->
6  <mapper namespace="test">
7
8
9      <!--查询标签-->
10     <!--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-->
11     <!--parameterType: 输入参数类型-->
12     <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
13         select * from gxa_user where id=#{id}
14     </select>
15
16
17
18     <select id="findUserByUsername" parameterType="string" resultType="com.gxa.pojo.User">
19         select * from gxa_user where username like '%${value}%'
20     </select>
21
22
23     <insert id="insertUser" useGeneratedKeys="true" keyProperty="id" parameterType="com.gxa.pojo.User">
24         insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
25             (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
26     </insert>
27
28
29     <update id="updateUser" parameterType="com.gxa.pojo.User">
30         update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
31     </update>
32
33     <delete id="deleteUserById" parameterType="long">
34         delete from gxa_user where id=#{id}
35     </delete>
36
37
38 </mapper>
39

```

40

41

42

43

3.5 测试

```
1  /**
2   * Created by zxd on 2022/10/18 15:25
3   */
4  public class TestUserDao2 {
5
6      private UserDao userDao=new UserDaoImpl();
7
8      @Test
9      public void testFind(){
10         User user = userDao.findUserById(3L);
11         System.out.println(user);
12     }
13
14     @Test
15     public void testFindUsername(){
16
17         List<User> userList = userDao.findUserByUsername("强");
18         System.out.println(userList);
19
20     }
21
22     @Test
23     public void insert(){
24
25         User user=new User(null,"龙龙","111","111","11",new Date(),new Date(),1);
26         userDao.insertUser(user);
27     }
28
29     @Test
30     public void update(){
31
32         User user=new User(10L,"龙龙2","22","111","22",new Date(),new Date(),1);
33         userDao.updateUser(user);
34     }
35
36
37     @Test
38     public void delete(){
39         userDao.deleteUserById(11L);
40     }
41
42
43
```

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parameterType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

The screenshot shows a file browser and a code editor side-by-side. On the left, the project structure is displayed under 'day05_mapper'. It includes a 'lib' folder containing various JAR files such as 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.jar, slf4j-api-1.7.5.jar, and slf4j-log4j12-1.7.5.jar. Below the lib folder is the 'src' folder, which contains log4j.properties, SqlMapConfig.xml, and User.xml. On the right, a portion of the User.xml file is shown in the code editor. The XML code includes several SQL statements: a select statement for finding a user by ID, another select statement for finding a user by name, and an insert statement for adding a new user. The code editor highlights certain parts of the XML with yellow boxes, likely indicating errors or specific annotations.

```
<!--parameterType: 删 />
<select id="findUserById" resultType="User">
    select * from gxa_user
    where id = #{id}
</select>

<select id="findUserByName" resultType="User">
    select * from gxa_user
    where name = #{name}
</select>

<insert id="insertUser" useGeneratedKey="true" resultType="User">
    insert into gxa_user(user_name, password)
    values(#{username}, #{password})
</insert>
```

4.3 编写mapper接口

```
1   */
2  * Created by zxd on 2022/10/18 15:19
3  */
4  public interface UserMapper {
5
6
7      User findUserById(Long id);
8
9      List<User> findUserByUsername(String username);
10
11     void insertUser(User user);
12
13     void updateUser(User user);
14
15     void deleteUserById(Long id);
16
17 }
18
```

4.4 编写mapper.xml

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!DOCTYPE mapper
3      PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
4      "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
5  <!-- 命名空间, 用于隔离sql, 后面还有一个很重要的作用 -->
6  <mapper namespace="com.gxa.mapper.UserMapper">
7
8
9      <!--查询标签-->
10     <!--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-->
11     <!--parameterType: 输入参数类型-->
12     <select id="findUserById" parameterType="long" resultType="com.gxa.pojo.User">
13         select * from gxa_user where id=#{id}
14     </select>
15
16
17
18     <select id="findUserByUsername" parameterType="string" resultType="com.gxa.pojo.User">
19         select * from gxa_user where username like '%${value}%'
20     </select>
21
22
23     <insert id="insertUser" useGeneratedKeys="true" keyProperty="id" parameterType="com.gxa.pojo.User">
24         insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
25             (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
26     </insert>
27
28
29     <update id="updateUser" parameterType="com.gxa.pojo.User">
30         update gxa_user set username=#{username},password=#{password},phone=#{phone} where id=#{id}
31     </update>
32
33     <delete id="deleteUserById" parameterType="long">
34         delete from gxa_user where id=#{id}
35     </delete>
36
37
38 </mapper>
39

```

40
41
42
43

4.5 测试

Java

```
1   */
2  * Created by zxd on 2022/10/18 16:49
3  */
4  public class TestUserMapper {
5
6
7
8      @Test
9  public void testFind(){
10
11         SqlSession sqlSession = MybatisUtils.getSqlSession();
12
13         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
14
15
16         User user = userMapper.findUserById(3L);
17
18         System.out.println(user);
19
20     }
21
22 }
23
```

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

```
1      <!--加载映射文件-->
2  <mappers>
3      <!--方式1:直接写上xml的名字-->
4          <mapper resource="User.xml"></mapper>
5      </mappers>
6
```

5.1.2 直接写上接口的全限定名

```
1      <!--加载映射文件-->
2  <mappers>
3      <!--方式1:直接写上xml的名字-->
4          <!--<mapper resource="UserMapper.xml"></mapper>-->
5
6      <!--2.配置接口的全限定名-->
7          <!--要求接口和xml放在一个目录下，并且名字相同-->
8          <mapper class="com.gxa.mapper.UserMapper"/>
9
10     </mappers>
```

```

22 <property name="password" value="root" />
23 </dataSource>
24
25 </environment>
26
27 </environments>
28
29
30 <!--加载映射文件--|
31 <mappers>
32     <!--方式1:直接写上xml的名字-->
33     <!--<mapper resource="UserMapper.xml"></mapper>-->
34
35     <!--2.配置接口的全限定名-->
36     <!--要求接口和xml放在一个目录下，并且名字相同-->
37     <mapper class="com.gxa.mapper.UserMapper"/>
38
39 </mappers>
40

```

5.1.3 批量加载

```

1      <!--加载映射文件-->
2  <mappers>
3      <!--方式1:直接写上xml的名字-->
4          <!--<mapper resource="UserMapper.xml"></mapper>-->
5
6      <!--2.配置接口的全限定名-->
7      <!--要求接口和xml放在一个目录下，并且名字相同-->
8      <!--      <mapper class="com.gxa.mapper.UserMapper"/>-->
9
10     <!--3.批量加载mapper接口-->
11     <!--要求接口和xml放在一个目录下，并且名字相同-->
12     <package name="com.gxa.mapper"/>
13
14 </mappers>

```

5.2 mybatis别名

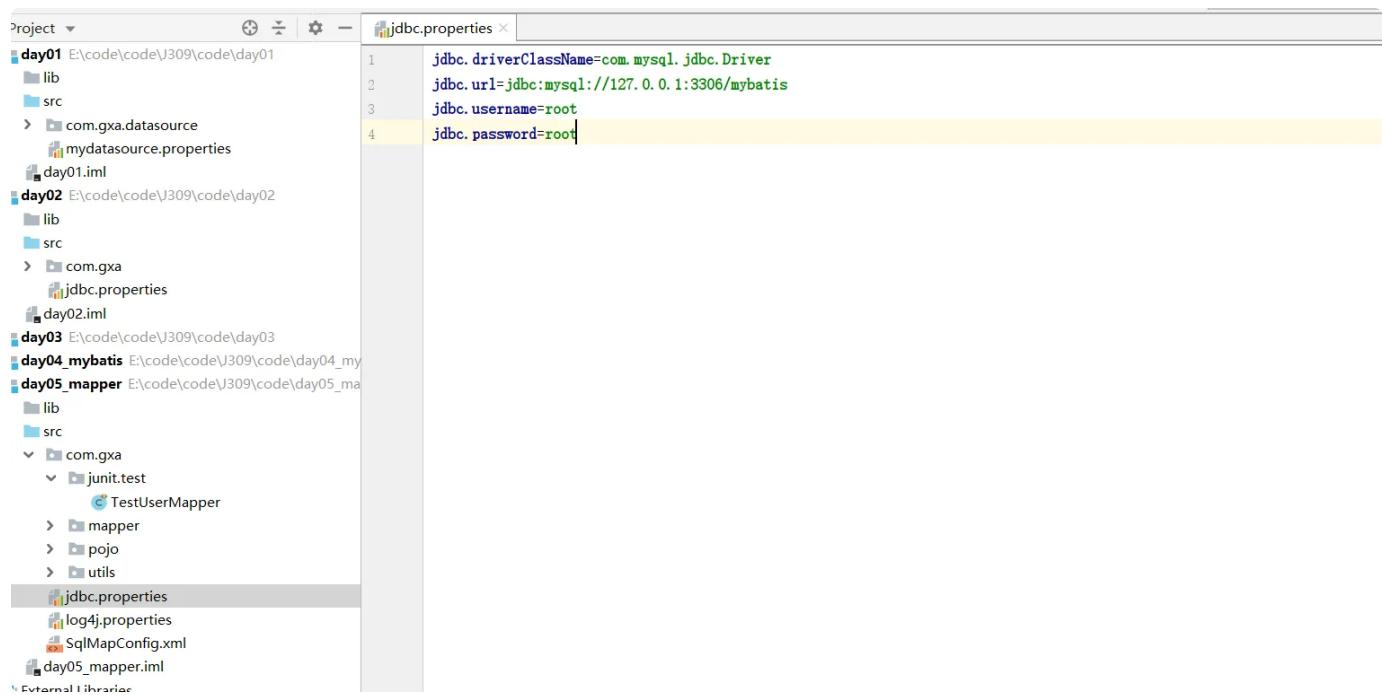
5.2.1 mybatis默认配置的别名

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

```
1      <!--自定义别名-->
2  <typeAliases>
3
4      <!--配置单个别名 忽略大小写-->
5      <!--    <typeAlias type="com.gxa.pojo.User" alias="user"/>-->
6
7      <!--批量定义别名-->
8      <package name="com.gxa.pojo"/>
9
10     </typeAliases>
```

5.3 加载外部的properties文件



The screenshot shows the IntelliJ IDEA interface with the project navigation bar at the top. The left sidebar displays a project structure with several modules: day01, day02, day03, day04_mybatis, day05_mapper, and day05_mapper.iml. The day01 module contains a lib folder, a src folder, and a com.gxa.datasource package which includes a mydatasource.properties file. The day02 module contains a lib folder, a src folder, and a com.gxa package which includes a jdbc.properties file. The day03 module contains a lib folder, a src folder, and a com.gxa package which includes a junit.test sub-package containing a TestUserMapper class, a mapper sub-package, a pojo sub-package, and a utils sub-package. The day04_mybatis module contains a lib folder, a src folder, and a com.gxa package. The day05_mapper module contains a lib folder, a src folder, and a com.gxa package. The day05_mapper.iml file is also listed. On the right side, the main editor window shows the contents of the jdbc.properties file:

```
1 jdbc.driverClassName=com.mysql.jdbc.Driver
2 jdbc.url=jdbc:mysql://127.0.0.1:3306/mybatis
3 jdbc.username=root
4 jdbc.password=root
```

```
1      <!--加载外部的properties文件-->
2      <properties resource="jdbc.properties">
3          <!--如果外部也有该属性外部的覆盖内部的-->
4              <property name="jdbc.username" value="xxx"/>
5      </properties>
6
7
8      <!--自定义别名-->
9      <typeAliases>
10
11         <!--配置单个别名 忽略大小写-->
12         <!--    <typeAlias type="com.gxa.pojo.User" alias="user"/>-->
13
14         <!--批量定义别名-->
15         <package name="com.gxa.pojo"/>
16
17     </typeAliases>
18
19
20
21     <!-- mybatis和spring整合过后废除 -->
22     <environments default="development">
23
24         <environment id="development">
25
26             <!-- 和jdbc的事物管理 -->
27             <transactionManager type="JDBC" />
28
29             <!-- 数据库连接池 -->
30             <dataSource type="POOLED">
31                 <property name="driver" value="${jdbc.driverClassName}" />
32                 <property name="url" value="${jdbc.url}" />
33                 <property name="username" value="${jdbc.username}" />
34                 <property name="password" value="${jdbc.password}" />
35             </dataSource>
36
37         </environment>
38
39     </environments>
40
```

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

```
1 User findUserById(Long id);  
2
```

xml

Java

```
1 <select id="findUserById" parameterType="long" resultType="user">  
2     select * from gxa_user where id=#{id}  
3 </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

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

xml

```

1      <insert id="insertUser" useGeneratedKeys="true" keyProperty="id" parameterType="com.gxa.pojo.User">
2          insert into gxa_user(username,password,salt,phone,created,last_login_time,`status`) VALUES
3              (#{username},#{password},#{salt},#{phone},#{created},#{lastLoginTime},#{status})
4      </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

```

1  /**
2   * Created by zxd on 2022/10/19 10:35
3   */
4  public class UserDto {
5
6      private User user;
7
8      //其它条件
9
10     public User getUser() {
11         return user;
12     }
13
14     public void setUser(User user) {
15         this.user = user;
16     }
17 }
18

```

6.4.2 编写接口

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

6.4.3 编写xml

```
1 <select id="findUserByUserDto" parameterType="userDto" resultType="com.g  
xa.pojo.User">  
2     select * from gxa_user where username like #{user.username}  
3 </select>  
4
```

6.4.4 测试

Java

```
1     @Test
2     public void testFindUserDto(){
3
4         SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8
9         UserDto userDto=new UserDto();
10        User user=new User();
11        user.setUsername("%哥%");
12        userDto.setUser(user);
13
14        List<User> userList = userMapper.findUserByUserDto(userDto);
15
16        System.out.println(userList);
17
18    }
```

6.5 传递map集合

Java

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

6.5.2 编写xml

Java

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

6.5.3 测试

Java

```
1      @Test
2      public void testInsert(){
3
4          SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6          UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8          Map map=new HashMap<>();
9          map.put("username","banban");
10         map.put("password","xxx");
11         map.put("phone","xxx");
12
13         userMapper.insertUser2(map);
14
15         sqlSession.commit();
16
17     }
```

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

```
1 //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
2 User findUserByUsernameAndPassword(@Param("username") String username,@
3 Param("password") String password);
```

编写xml

Java

```
1 <select id="findUserByUsernameAndPassword" parameterType="map" resultTyp
e="user">
2     select * from gxa_user where username =#{username} and password=#
{password}
3 </select>
```

测试

Java

```
1 @Test
2 public void testFindUsername(){
3
4     SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6     UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8     User user = userMapper.findUserByUsernameAndPassword("强哥", "RbWE
EsXVVxiR765qwus0DQ==");
9
10    System.out.println(user);
11
12 }
```

7.输出映射

7.1 输出简单类型

7.1.1 编写接口

```
1 Long findUserCount();
```

Java |

7.1.2 编写xml

```
1 <select id="findUserCount" resultType="long">
2     select count(*) from gxa_user
3 </select>
4
```

Java |

7.1.3 测试

```

1     @Test
2     public void testCount(){
3
4         SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8         Long count = userMapper.findUserCount();
9
10        System.out.println(count);
11
12    }

```

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。

```

1     <select id="findUserByUsername" parameterType="string" resultType="co
m.gxa.pojo.User">
2         select * from gxa_user where username like '%${value}%'
3     </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

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

编写xml

Java

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

测试

Java

```
1 @Test
2 public void testFind2(){
3
4     SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6     UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8
9     Map map = userMapper.findUserById2(3L);
10
11    Object username = map.get("username");
12
13    System.out.println(username);
14
15    System.out.println(map);
16
17 }
```

7.4 resultMap

7.4.1 订单表结构

订单列表:

订单号	下单时间	商品数量	总金额	用户id	详细信息	订单状态	操作
000000000001	2015年12月12日	2	3210.00	123	查看	待付款	删除
000000000001	2015年12月12日	2	3210.00	123	查看	待收货	删除

订单详情:

基本信息

订单号	000000000001	商品数量	2	总金额	12390.00
用户id	000000000001	订单状态	未付款	下单时间	2015-12-12 13:00

商品信息

商品id	商品名称	绝当价	缩略图	商家	发货人	发货时间	物流公司	物流单号	发货	收货
000000000001	小蛮腰珠宝 韩版时尚小天鹅单钻吊坠项链女款意大利9K玫瑰金白金短款锁骨链	6000.00		鑫鑫珠宝行	关羽	2015-12-12 14:00	顺丰快递	123456789012345678	修改	已收货
000000000001	小蛮腰珠宝 韩版时尚小天鹅单钻吊坠项链女款意大利9K玫瑰金白金短款锁骨链	6000.00		鑫鑫珠宝行	关羽	2015-12-12 14:00	顺丰快递	123456789012345678	修改	收货
000000000001	小蛮腰珠宝 韩版时尚小天鹅单钻吊坠项链女款意大利9K玫瑰金白金短款锁骨链	6000.00		鑫鑫珠宝行	关羽	2015-12-12 14:00	顺丰快递	123456789012345678	发货	收货

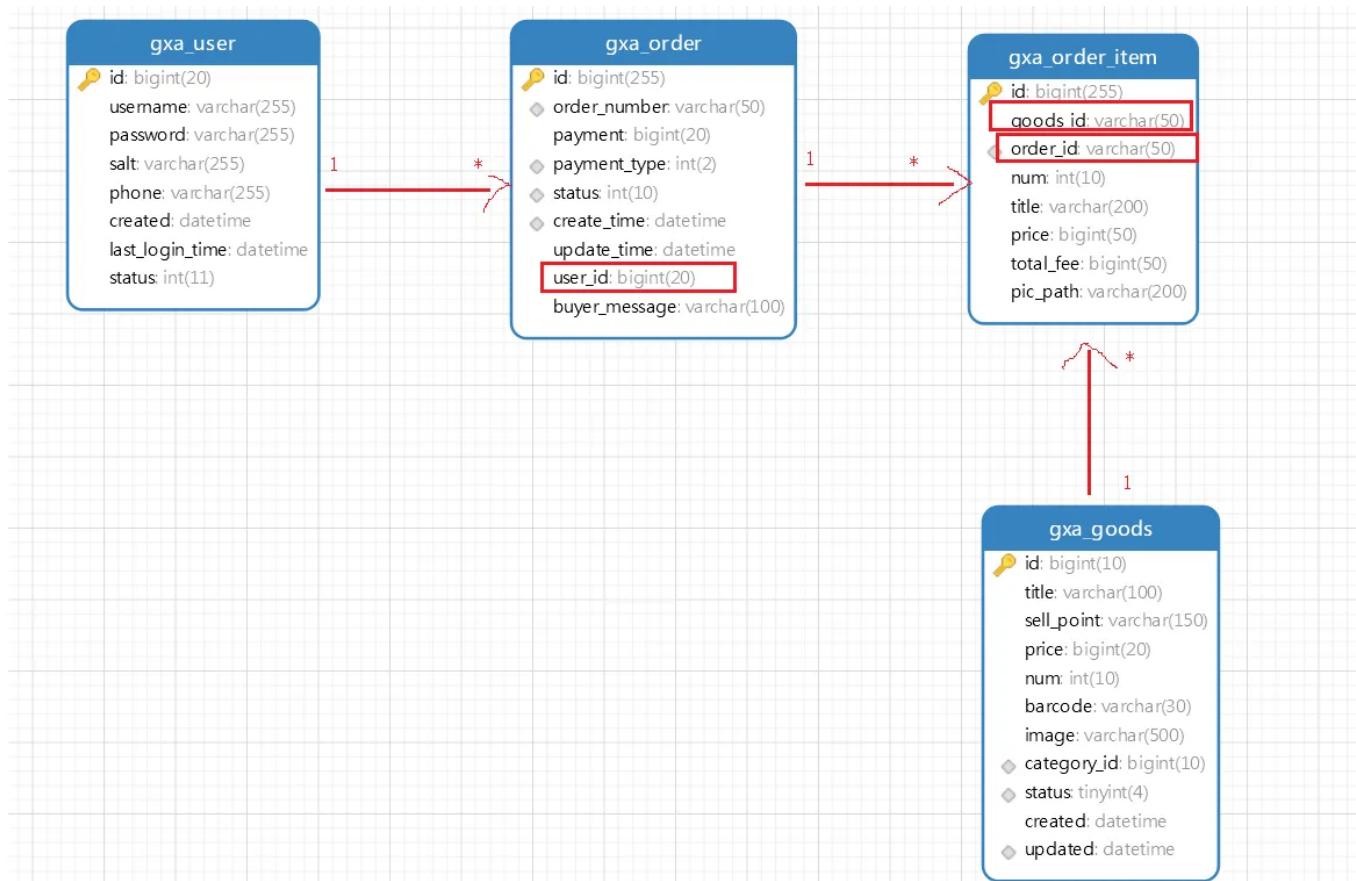
如何存储下单的商品信息?

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

```

1  /**
2   * Created by zxd on 2022/10/19 14:14
3   */
4  public interface OrderMapper {
5
6      /**
7       * 查询所有的订单
8       * @return
9       */
10     List<Order> findOrderAll();
11
12 }

```

7.4.2.2 编写xml

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!DOCTYPE mapper
3      PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
4      "http://mybatis.org/dtd/mybatis-3-mapper.dtd">
5  <!-- 命名空间, 用于隔离sql, 后面还有一个很重要的作用 -->
6  <mapper namespace="com.gxa.mapper.OrderMapper">
7
8
9      <select id="findOrderAll" resultType="order">
10         select * from gxa_order
11     </select>
12
13
14
15
16  </mapper>

```

7.4.2.3 测试

```

1     @Test
2     public void testFind(){
3
4         SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6         OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);
7
8
9         List<Order> orderList = orderMapper.findOrderAll();
10
11        System.out.println(orderList);
12
13    }

```

```

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, orderNumber='xxx001', payment=1, paymentType=null, status=1, createTime='2020-11-11 14:20:03', updateTime='2020-11-11 14:20:03', userId=1, buyerMessage='null'}, Order{id=3, orderNumber='xxx002', payment=1, paymentType=null, status=1, createTime='2020-11-11 14:20:03', updateTime='2020-11-11 14:20:03', userId=1, buyerMessage='null'}]
Process finished with exit code 0

```

<u>id</u>	<u>order_number</u>	<u>payment</u>	<u>payment_type</u>	<u>status</u>	<u>create_</u>
1	xxx001	1	1	1	2020-11-11 14:20:03
2	xxx002	1	1	1	2020-11-11 14:20:03
3	xxx003	1	1	1	2020-11-11 14:20:03

```

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, orderNumber='xxx001', payment=1, paymentType=null, status=1, createTime='2020-11-11 14:20:03', updateTime='2020-11-11 14:20:03', userId=1, buyerMessage='null'}, Order{id=3, orderNumber='xxx002', payment=1, paymentType=null, status=1, createTime='2020-11-11 14:20:03', updateTime='2020-11-11 14:20:03', userId=1, buyerMessage='null'}]
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 |

```
1      <select id="findOrderAll" resultType="order">
2          select id,order_number as orderNumber,payment,payment_type as pa
ymentType,status,create_time
3              as createTime,update_time as updateTime,user_id as userId,buyer_
message as buyerMessage from gxa_order
4      </select>
5
```

7.4.4 resultMap(方式二)

resultMap手动处理字段和属性的关系

```
1      <!--定义自定义的结果集映射-->
2      <resultMap id="orderResultMap" type="com.gxa.pojo.Order">
3
4          <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
5          <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
6      >
7          <id column="id" property="id"/>
8
9          <!--映射普通属性-->
10         <result column="order_number" property="orderNumber" />
11         <result column="payment" property="payment" />
12         <result column="payment_type" property="paymentType" />
13         <result column="status" property="status" />
14         <result column="create_time" property="createTime" />
15         <result column="update_time" property="updateTime" />
16         <result column="user_id" property="userId" />
17         <result column="buyer_message" property="buyerMessage" />
18
19
20
21     <select id="findOrderAll" resultMap="orderResultMap">
22         select * from gxa_order
23     </select>
24
25
```

7.4.5 配置自动转换（下划线自动转驼峰）方式三

```
1 <!--加载外部的properties文件-->
2   <properties resource="jdbc.properties">
3     <!--如果外部也有该属性外部的覆盖内部的-->
4       <property name="jdbc.username" value="xxx"/>
5   </properties>
6
7
8   <!--配置下划线自动转换驼峰-->
9   <settings>
10     <setting name="mapUnderscoreToCamelCase" value="true"/>
11   </settings>
12
13   <!--自定义别名-->
14   <typeAliases>
15
16     <!--配置单个别名 忽略大小写-->
17     <!--      <typeAlias type="com.gxa.pojo.User" alias="user"/>-->
18
19     <!--批量定义别名-->
20     <package name="com.gxa.pojo"/>
21
22   </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

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

编写DTO

```
1 /**
2  * Created by zxd on 2022/10/19 15:20
3 */
4 public class UserQueryDto implements Serializable {
5
6     private String username;
7
8     private Integer status;
9
10    public String getUsername() {
11        return username;
12    }
13
14    public void setUsername(String username) {
15        this.username = username;
16    }
17
18    public Integer getStatus() {
19        return status;
20    }
21
22    public void setStatus(Integer status) {
23        this.status = status;
24    }
25}
26
```

编写接口

Java

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

编写xml

Java

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

测试

Java

```
1 @Test
2 public void testFind(){
3
4     SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6     UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8
9     UserQueryDto userQueryDto=new UserQueryDto();
10    userQueryDto.setUsername("强");
11    userQueryDto.setStatus(1);
12
13    List<User> userList = userMapper.findUserByQueryDto(userQueryDto);
14
15
16    System.out.println(userList);
17
18
19 }
20
```

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

```
1      <select id="findUserByQueryDto" parameterType="userQueryDto" result
2          Type="user">
3
4          select * from gxa_user
5          where 1=1
6          <if test="status !=null ">
7              and `status`=#{status}
8          </if>
9          <if test="username !=null and username !='"'>
10             and username like '%${username}%'>
11         </if>
12     </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

```
1      <select id="findUserByQueryDto" parameterType="userQueryDto" result
2          Type="user">
3
4          select * from gxa_user
5          <where>
6              <if test="status !=null ">
7                  and `status`=#{status}
8              </if>
9              <if test="username !=null and username !='"'>
10                 and username like '%${username}%''
11             </if>
12         </where>
13     </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

```
1 <sql id="selectUserFrom">
2     select * from gxa_user
3 </sql>
4
5     <!--查询标签-->
6     <!--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-->
7     <!--parameterType: 输入参数类型-->
8     <select id="findUserById" parameterType="long" resultType="user">
9         <include refid="selectUserFrom"/>
10        where id=#{id}
11    </select>
```

8.4 foreach标签

准备sql

Java

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

改造dto

```
1  /**
2   * Created by zxd on 2022/10/19 15:20
3   */
4  public class UserQueryDto implements Serializable {
5
6      private String username;
7
8      private Integer status;
9
10     private List<Long> ids;
11
12    public List<Long> getIds() {
13        return ids;
14    }
15
16    public void setIds(List<Long> ids) {
17        this.ids = ids;
18    }
19
20    public String getUsername() {
21        return username;
22    }
23
24    public void setUsername(String username) {
25        this.username = username;
26    }
27
28    public Integer getStatus() {
29        return status;
30    }
31
32    public void setStatus(Integer status) {
33        this.status = status;
34    }
35}
36
```

编写接口

Java

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

编写xml

Java

```
1         <select id="findUserByIds" parameterType="UserQueryDto" resultType
2             ="user">
3             select * from gxa_user
4             <!-- where id in(1,2,3) -->
5             <where>
6                 <!--collection: 需要跌到集合-->
7                 <!--item: 代表迭代出来的每一项-->
8                 <!--open 在迭代之前添加的sql-->
9                 <!--separator 指定分隔符-->
10                <!--close在迭代后添加的sql-->
11                <foreach collection="ids" item="id" open="id in(" separat
12                    or="," close="")">
13                        #{id}
14                    </foreach>
15                </where>
16            </select>
```

测试

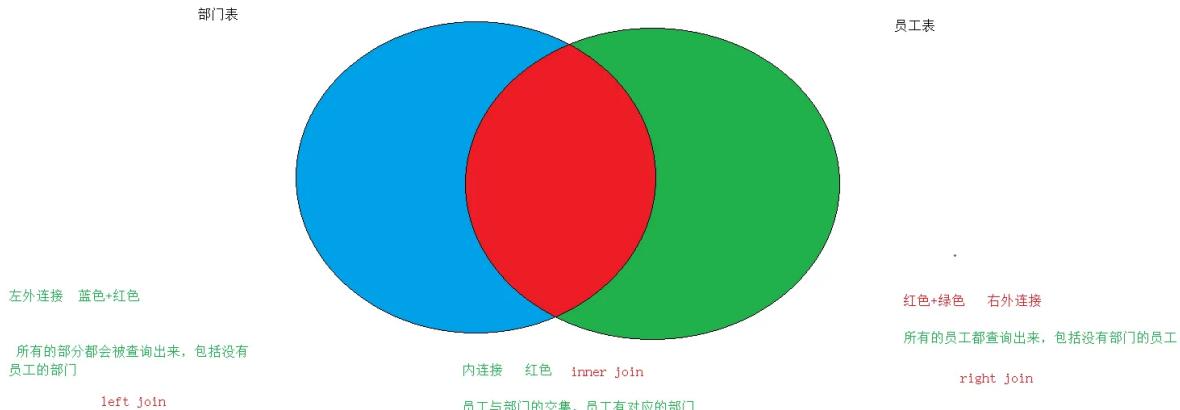
```
1  @Test
2  public void testFind(){
3
4      SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6      UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8
9      UserQueryDto userQueryDto=new UserQueryDto();
10     userQueryDto.setIds(Arrays.asList(1L,2L,3L));
11
12
13     List<User> userList = userMapper.findUserByIds(userQueryDto);
14
15     System.out.println(userList);
16
17
18 }
19
```

9.关联查询

9.1 一对多查询

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

```

1
2   SELECT
3     o.id,
4     o.order_number,
5     o.payment,
6     u.username,
7     u.phone
8   FROM
9     gxa_order o,
10    gxa_user u
11 WHERE
12     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

```
1  /**
2   * Created by zxd on 2022/10/19 16:52
3   *
4  public class OrderUserVo implements Serializable {
5
6
7      private Integer id;
8
9      private String orderNumber;
10
11     private Integer payment;
12
13     private String username;
14
15     private String phone;
16
17     public Integer getId() {
18         return id;
19     }
20
21     public void setId(Integer id) {
22         this.id = id;
23     }
24
25     public String getOrderNumber() {
26         return orderNumber;
27     }
28
29     public void setOrderNumber(String orderNumber) {
30         this.orderNumber = orderNumber;
31     }
32
33     public Integer getPayment() {
34         return payment;
35     }
36
37     public void setPayment(Integer payment) {
38         this.payment = payment;
39     }
40
41     public String getUsername() {
42         return username;
43     }
44
45     public void setUsername(String username) {
```

```
46         this.username = username;
47     }
48
49     public String getPhone() {
50         return phone;
51     }
52
53     public void setPhone(String phone) {
54         this.phone = phone;
55     }
56
57     @Override
58     public String toString() {
59         return "OrderUserVo{" +
60             "id=" + id +
61             ", orderNumber='" + orderNumber + '\'' +
62             ", payment=" + payment +
63             ", username='" + username + '\'' +
64             ", phone='" + phone + '\'' +
65             '}';
66     }
67 }
```

9.1.3 编写接口

```

1  /**
2   * Created by zxd on 2022/10/19 14:14
3   */
4  public interface OrderMapper {
5
6      /**
7       * 查询所有的订单
8       * @return
9       */
10     List<Order> findOrderAll();
11
12
13     /**
14      * 查询所有订单关联查询用户信息
15      * @return
16      */
17     List<OrderUserVo> findOrderUserAll();
18
19 }
20

```

9.1.4 编写xml

```

1
2      <select id="findOrderUserAll" resultType="orderUserVo">
3          SELECT
4              o.id,
5              o.order_number,
6              o.payment,
7              u.username,
8              u.phone
9          FROM
10             gxa_order o,
11             gxa_user u
12          WHERE
13              o.user_id = u.id
14      </select>
15
16

```

9.1.5 测试

```
1  /**
2   * Created by zxd on 2022/10/18 16:49
3   */
4  public class TestOrderMapper {
5
6
7
8      @Test
9      public void testFind(){
10
11         SqlSession sqlSession = MybatisUtils.getSqlSession();
12
13         OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);
14
15
16         List<OrderUserVo> orderUserAll = orderMapper.findOrderUserAll();
17
18         System.out.println(orderUserAll);
19
20     }
21
22
23
24 }
```

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

```
1  /**
2   * Created by zxd on 2022/10/19 14:18
3   */
4  public class Order implements Serializable {
5
6
7      private Long id;
8
9      //...
10
11
12      //记住用户信息
13      private User user;
14
15      //get set
16
17  }
```

9.2.2 编写xml

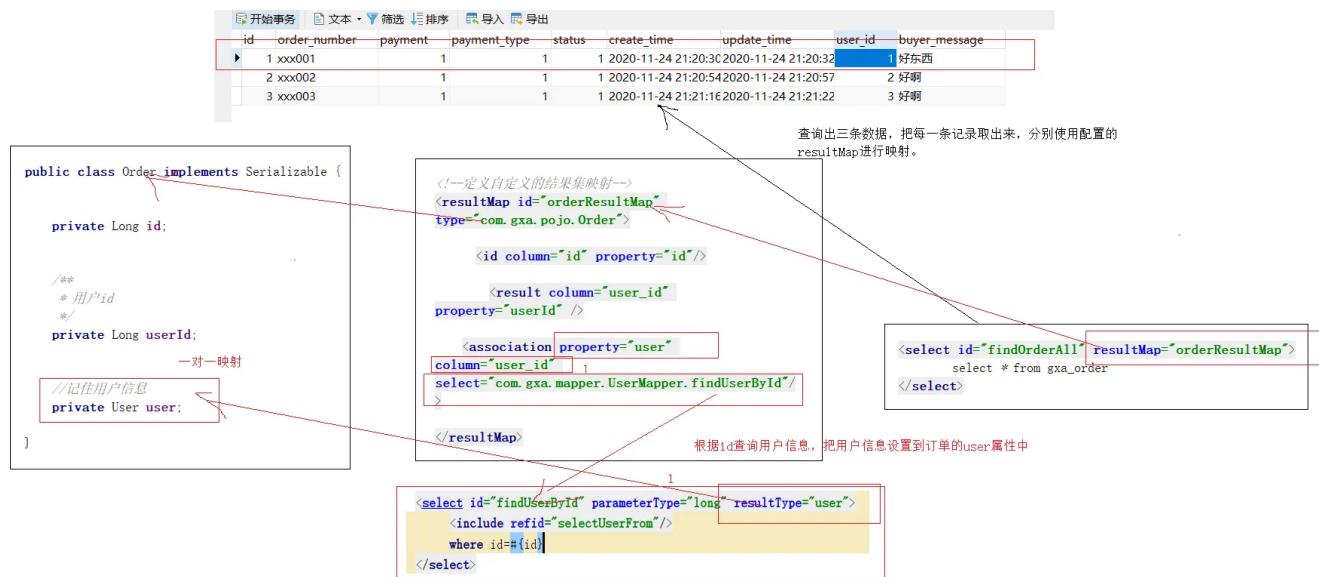
```
1      <!--定义自定义的结果集映射-->
2      <resultMap id="orderResultMap" type="com.gxa.pojo.Order">
3
4          <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
5          <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
6      >
7          <id column="id" property="id"/>
8
9          <!--映射普通属性-->
10         <result column="order_number" property="orderNumber" />
11         <result column="payment" property="payment" />
12         <result column="payment_type" property="paymentType" />
13         <result column="status" property="status" />
14         <result column="create_time" property="createTime" />
15         <result column="update_time" property="updateTime" />
16         <result column="user_id" property="userId" />
17         <result column="buyer_message" property="buyerMessage" />
18
19         <!--一对一的关系映射 一个订单只有一个用户信息-->
20         <!--property: 需要映射的属性-->
21         <!--column: 根据当前表的哪一列作为查询条件-->
22         <!--select找对应的sql来执行-->
23         <association property="user" column="user_id" select="com.gxa.mapper.UserMapper.findUserById"/>
24
25
26
27     <select id="findOrderAll" resultMap="orderResultMap">
28         select * from gxa_order
29     </select>
```

```
1
2     @Test
3     public void testFind(){
4
5         SqlSession sqlSession = MybatisUtils.getSqlSession();
6
7         OrderMapper orderMapper = sqlSession.getMapper(OrderMapper.class);
8
9         List<Order> orderList = orderMapper.findOrderAll();
10
11        System.out.println(orderList);
12
13    }
14
15
```

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。

```
1     <select id="findOrderById" resultMap="orderResultMap">
2         select * from gxa_order where id=#{id}
3     </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pojo

```

1  public class User implements Serializable {
2
3     private Long id;
4
5     //...
6
7     //封装订单信息
8     private List<Order> orders;
9
10 }

```

9.3.2 编写xml

```
1 <resultMap id="userResultMap" type="com.gxa.pojo.User">
2     <id column="id" property="id"/>
3
4     <!--映射普通属性-->
5     <result column="username" property="username" />
6     <result column="phone" property="phone" />
7
8     <!--collection 映射一对多的关系-->
9     <!--property 需要映射的集合-->
10    <!--column 查询条件-->
11    <!--select 需要执行的sql 根据id查询这个用户对应的订单信息-->
12    <collection property="orders" column="id" select="com.gxa.mapper.OrderMapper.findOrderByUserId"/>
13
14    </resultMap>
15
16
17
18    <!--查询标签-->
19    <!--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-->
20    <!--parameterType: 输入参数类型-->
21    <select id="findUserById" parameterType="long" resultMap="userResultMap">
22        select * from gxa_user where id=#{id}
23    </select>
24
```

OrderMapper.xml

```

1      <!--定义自定义的结果集映射-->
2      <resultMap id="orderResultMap" type="com.gxa.pojo.Order">
3
4          <!--映射主键 column主键在数据库的列名  property主键在pojo的属性名-->
5          <!--jdbcType jdbc写法字段类型 javaType java写法字段的类型 不写自动识别-->
6      >
7          <id column="id" property="id"/>
8
9          <!--映射普通属性-->
10         <result column="order_number" property="orderNumber" />
11         <result column="payment" property="payment" />
12         <result column="payment_type" property="paymentType" />
13         <result column="status" property="status" />
14         <result column="create_time" property="createTime" />
15         <result column="update_time" property="updateTime" />
16         <result column="user_id" property="userId" />
17         <result column="buyer_message" property="buyerMessage" />
18
19         <!--一对一的关系映射 一个订单只有一个用户信息-->
20         <!--property: 需要映射的属性-->
21         <!--column: 根据当前表的哪一列作为查询条件-->
22         <!--select找对应的sql来执行-->
23         <association property="user" column="user_id" select="com.gxa.mapper.UserMapper.findUserById"/>
24
25
26
27         <!--如果一个sql只是内部使用, 接口可以不写-->
28         <select id="findOrderByUserId" parameterType="long" resultMap="orderResultMap">
29             select * from gxa_order where user_id=#{userId}
30         </select>

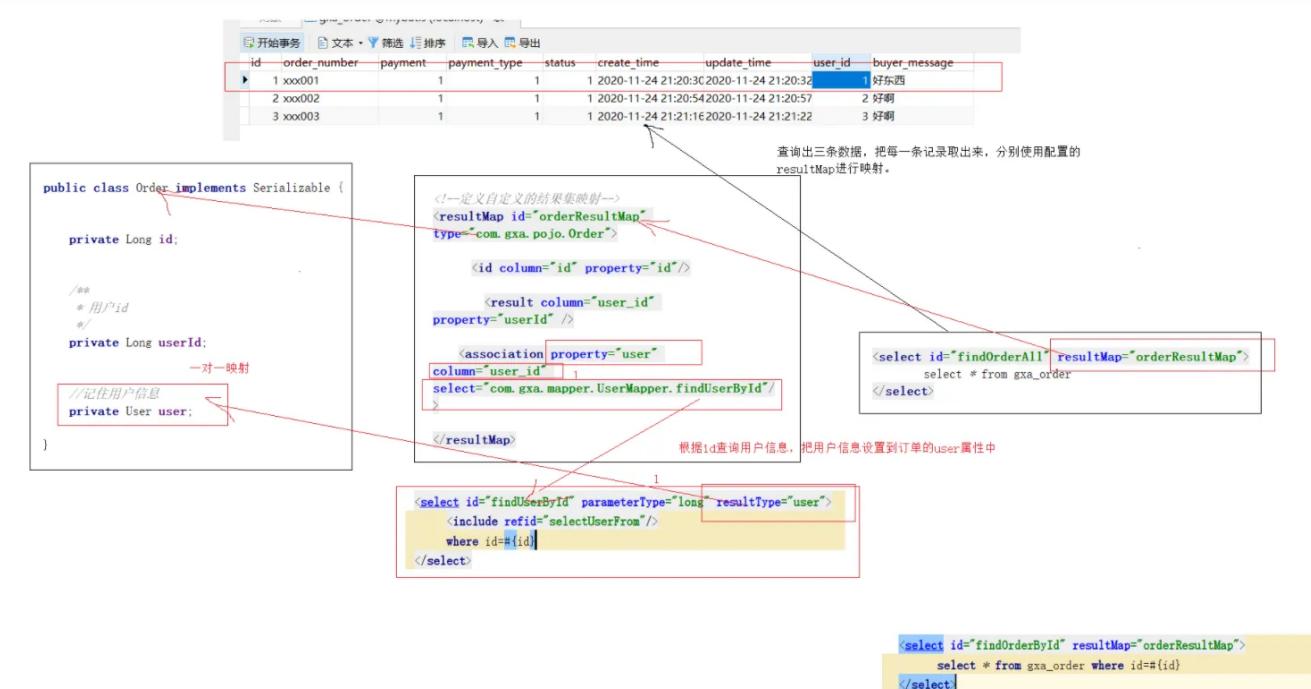
```

9.3.3 测试

```

1     @Test
2     public void testFind(){
3
4         SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8         User user = userMapper.findUserById(1L);
9
10        System.out.println(user);
11
12    }
13

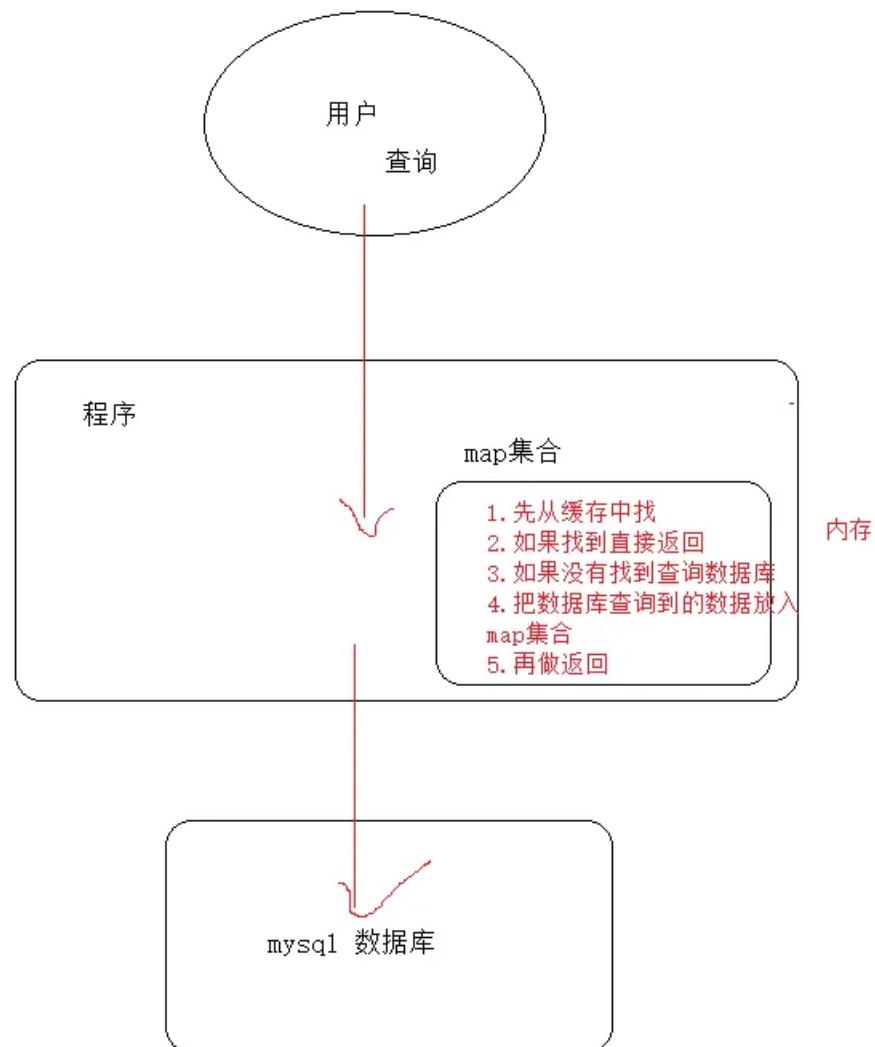
```



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。



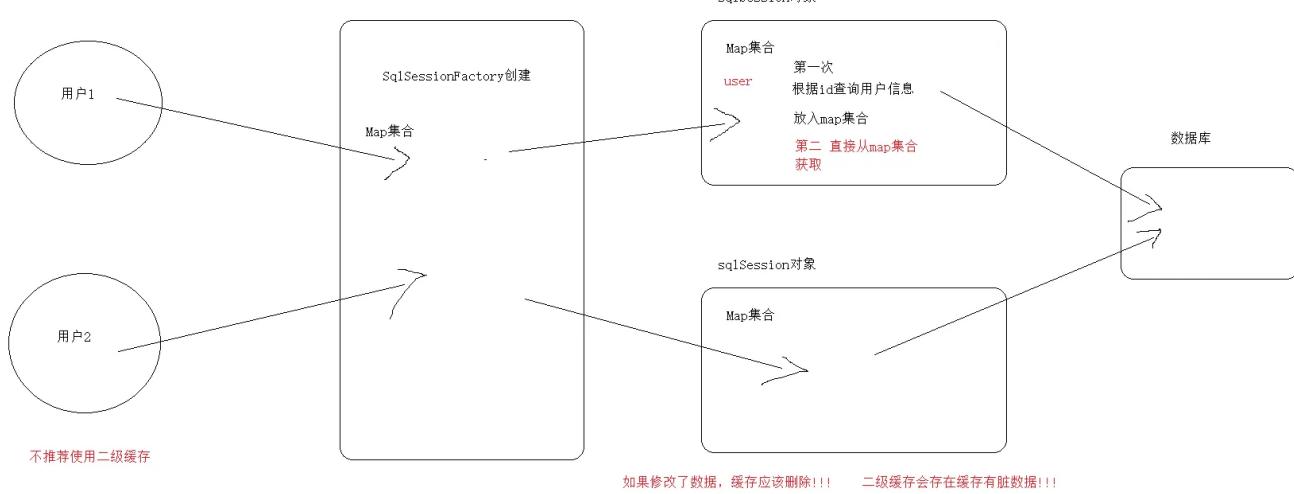
二级缓存是SqlSessionFactory级别的缓，是不同sqlSession共享的缓存，mybatis默认是没有开启的。

一级缓存默认就是开启的

二级缓存

一级缓存

生命周期，在一个sqlSession范围

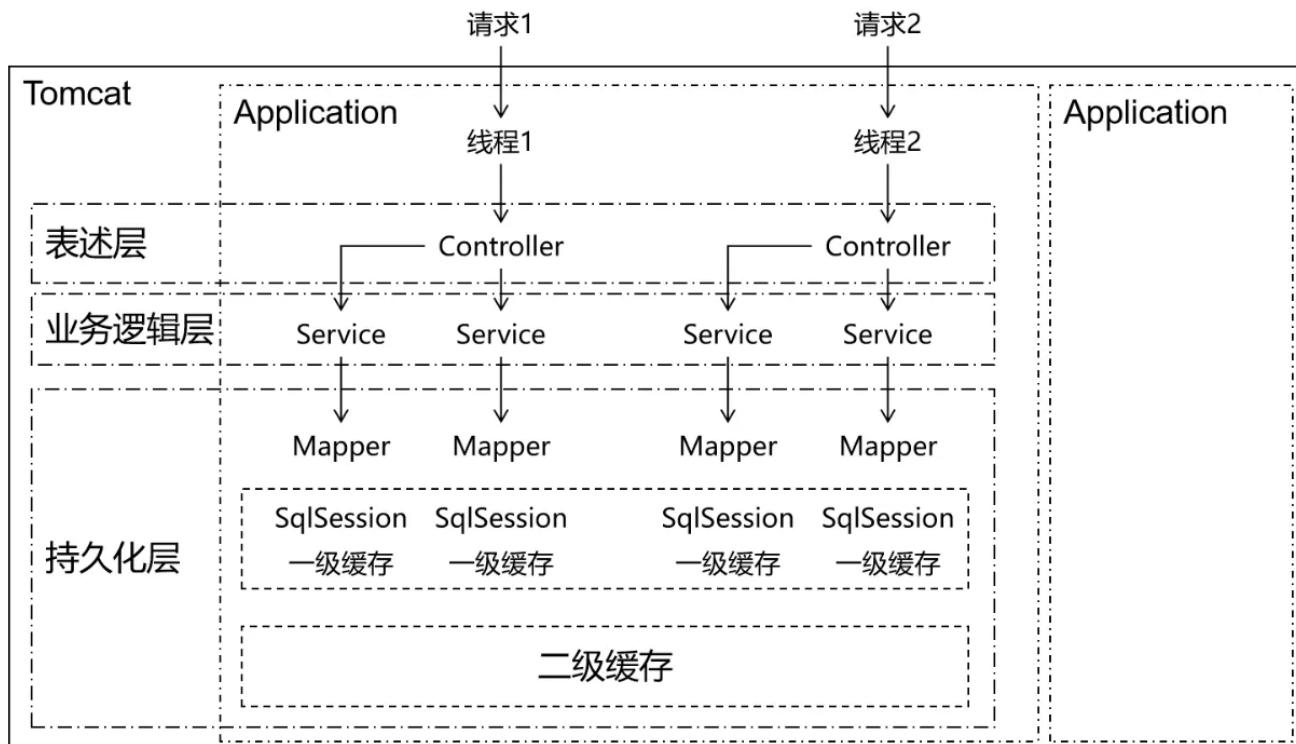


查询的顺序是：

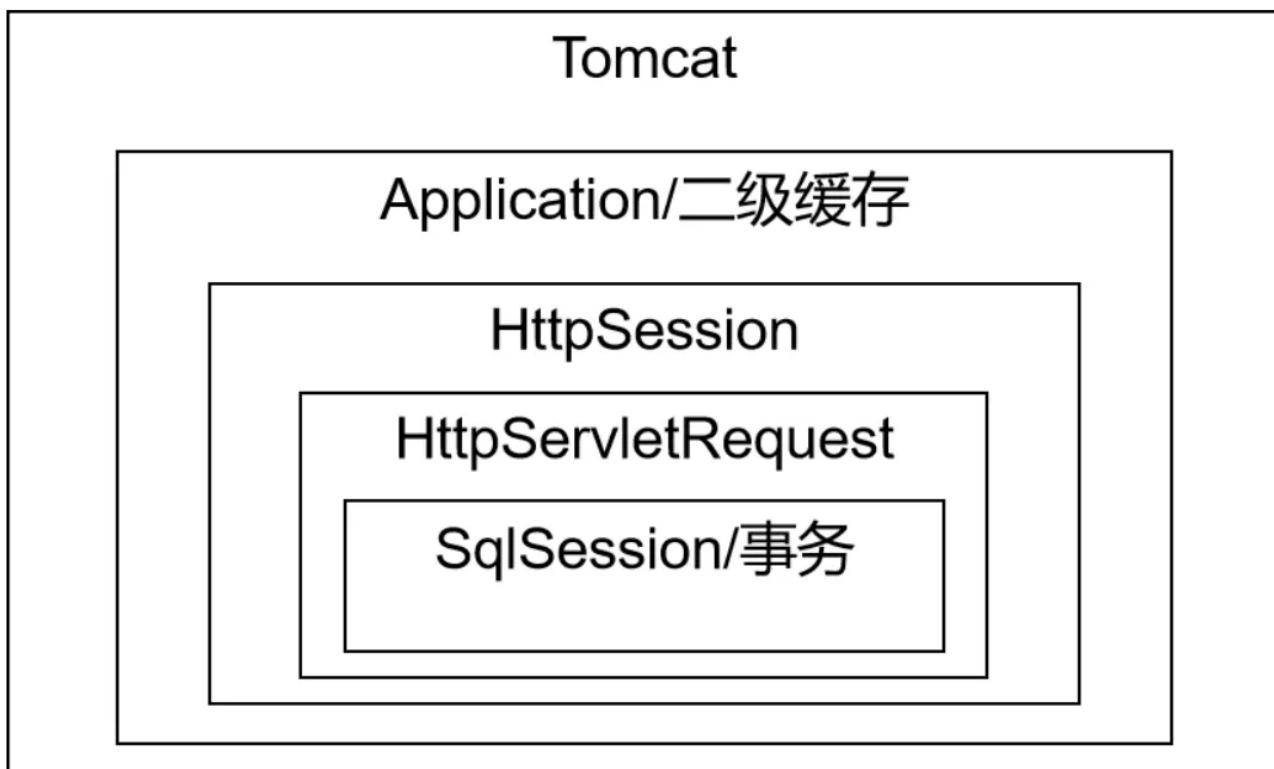
- 先查询二级缓存，因为二级缓存中可能会有其他程序已经查出来的数据，可以拿来直接使用。
- 如果二级缓存没有命中，再查询一级缓存
- 如果一级缓存也没有命中，则查询数据库
- SqlSession关闭之前，一级缓存中的数据会写入二级缓存

②效用范围

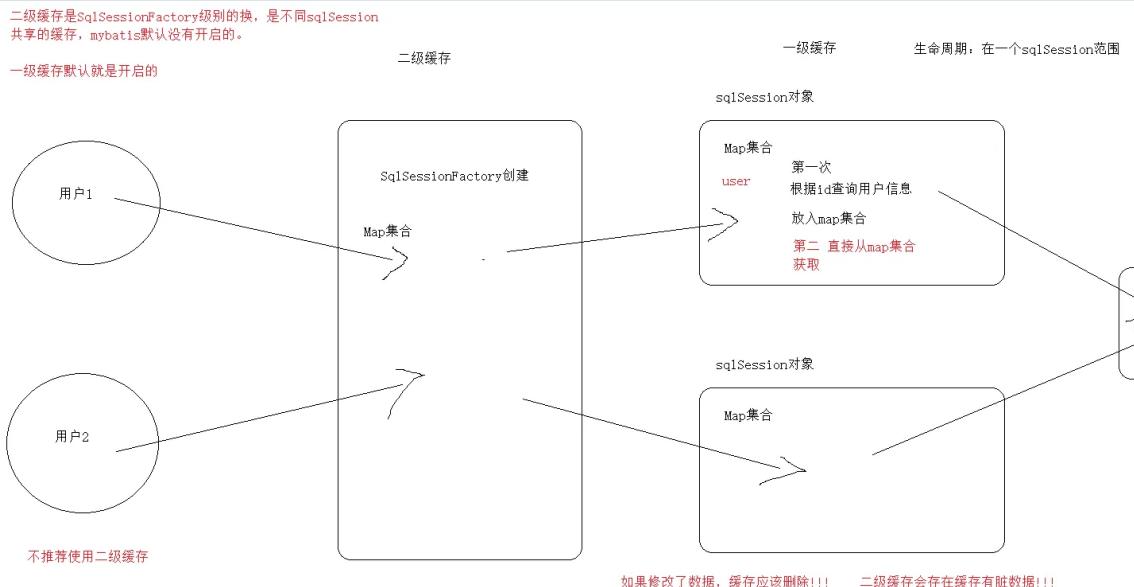
- 一级缓存：SqlSession级别
- 二级缓存：SqlSessionFactory级别



它们之间范围的大小参考下面图：



10.2 一级缓存



```
1  @Test
2  public void testFind(){
3
4      SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6      UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8      User user = userMapper.findUserById(1L);
9
10     System.out.println(user);
11
12
13     User user2 = userMapper.findUserById(1L);
14     System.out.println(user2);
15
16
17 }
```

```
22
23
24     @Test
25
26     public void testFind() {
27
28         SqlSession sqlSession = MybatisUtils.getSqlSession();
29
30         UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
31
32         User user = userMapper.findUserById(1L);
33
34         System.out.println(user);
35
36         User user2 = userMapper.findUserById(1L);
37         System.out.println(user2);
38
39     }
40 }
```

Tests passed: 1 of 1 test - 1s 816 ms

```
11:47:32,029 DEBUG JdbcTransaction:132 - Opening JDBC Connection
11:47:32,527 DEBUG PooledDataSource:380 - Created connection 1373810119.
11:47:32,527 DEBUG JdbcTransaction:98 - Setting autocommit to false on JDBC Connection [com.mysql.jdbc.JDBC4Connection@51e2adc7]
11:47:32,531 DEBUG findUserById:139 - ==> Preparing: select * from gxa_user where id=?
11:47:32,609 DEBUG findUserById:139 - ==> Parameters: 1(Long)
11:47:32,667 DEBUG findOrderByUserId:139 - =====> Preparing: select * from gxa_order where user_id=?
```

10.3 二级缓存(了解)

10.3.1 验证二级缓存默认是否存在

```

1  @Test
2  public void testFind(){
3
4      SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6      UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8      User user = userMapper.findUserById(1L);
9
10     System.out.println(user);
11
12     sqlSession.close();
13
14
15     SqlSession sqlSession2 = MybatisUtils.getSqlSession();
16
17     UserMapper userMapper2 = sqlSession2.getMapper(UserMapper.class);
18
19     User user2 = userMapper2.findUserById(1L);
20
21     System.out.println(user2);
22
23     sqlSession.close();
24
25 }
```

10.3.2 开启二级缓存

1.在SqlMapConfig.xml开启二级缓存的总开关

```

1  <!--配置下划线自动转换驼峰-->
2  <settings>
3      <setting name="mapUnderscoreToCamelCase" value="true"/>
4      <!--开启mybatis二级缓存-->
5      <setting name="cacheEnabled" value="true"></setting>
6  </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

The screenshot shows an IDE interface with a code editor and a terminal window. The code editor contains a Java test class:

```
test  
estOrderMapper  
estUserMapper  
per  
rderMapper  
rderMapper.xml  
serMapper  
serMapper.xml  
to  
UserDto  
Mapper.testFind x
```

```
23  
24 @Test  
25  
26 public void testFind(){  
27  
28     SqlSession sqlSession = MybatisUtils.getSqlSession();  
29  
30     UserMapper userMapper = sqlSession.getMapper(UserMapper.class);  
31  
32     User user = userMapper.findUserById(1L);  
System.out.println(user);  
}  
TestUserMapper > testFind()
```

The terminal window shows the test results and the log output:

```
Tests passed: 1 of 1 test - 1 s 43 ms  
✓ 1 s 43 ms  
11:54:08,561 DEBUG PooledDataSource:380 - Created connection 738433734.  
11:54:08,561 DEBUG JdbcTransaction:98 - Setting autocommit to false on JDBC Connection [com.mysql.jdbc.JDBC4Connection@2c039ac6]  
11:54:08,564 DEBUG findUserById:139 - ==> Preparing: select * from gxa_user where id=?  
11:54:08,594 DEBUG findUserById:139 - ==> Parameters: 1(Long)  
11:54:08,620 DEBUG findOrderByUserId:139 - ===> Preparing: select * from gxa_order where user_id=?  
11:54:08,621 DEBUG findOrderByUserId:139 - ===> Parameters: 1(Long)  
11:54:08,624 DEBUG findOrderByUserId:139 - <===== Total: 2  
11:54:08,624 DEBUG findUserById:139 - <== Total: 1  
User{id=1, username='吴优哥雅', password='RbWEEsXVVxiR765qwus0DQ==', salt='e46d82f4-66b1-457d-8e70-36232b0a656e', phone='sada@126.com', created=Tue  
11:54:08,641 DEBUG JdbcTransaction:120 - Resetting autocommit to true on JDBC Connection [com.mysql.jdbc.JDBC4Connection@2c039ac6]  
11:54:08,641 DEBUG JdbcTransaction:88 - Closing JDBC Connection [com.mysql.jdbc.JDBC4Connection@2c039ac6]  
11:54:08,642 DEBUG PooledDataSource:334 - Returned connection 738433734 to pool.  
11:54:08,688 DEBUG UserMapper:62 - Cache Hit Ratio [com.gxa.mapper.UserMapper]: 0.5  
User{id=1, username='吴优哥雅', password='RbWEEsXVVxiR765qwus0DQ==', salt='e46d82f4-66b1-457d-8e70-36232b0a656e', phone='sada@126.com', created=Tue}
```

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/false：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

```
1      <!--配置下划线自动转换驼峰-->
2      <settings>
3          <setting name="mapUnderscoreToCamelCase" value="true"/>
4          <!--开启mybatis二级缓存-->
5          <setting name="cacheEnabled" value="true"></setting>
6
7
8
9          <!--开启懒加载 lazyLoadingEnabled-->
10         <setting name="lazyLoadingEnabled" value="true"/>
11         <setting name="aggressiveLazyLoading" value="false"/>
12         <setting name="lazyLoadTriggerMethods" value="" />
13
14     </settings>
```

Java

```
1  @Test
2  public void testFind(){
3
4      SqlSession sqlSession = MybatisUtils.getSqlSession();
5
6      UserMapper userMapper = sqlSession.getMapper(UserMapper.class);
7
8      User user = userMapper.findUserById(1L);
9
10     System.out.println(user);
11
12     System.out.println(user.getOrders());
13 }
14
```

局部配置

Java

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

mybatis注解