MybatisPlus学习

官方地址：https://baomidou.com/guide/

1. 简介

MyBatis-Plus（简称 MP）是一个MyBatis的增强工具，在 MyBatis 的基础上只做增强不做改变，为简化开发、提高效率而生。

JPA、tk-mapper、mybatis-plus

特性：

- **无侵入**：只做增强不做改变，引入它不会对现有工程产生影响，如丝般顺滑
- **损耗小**：启动即会自动注入基本 CURD，性能基本无损耗，直接面向对象操作
- **强大的 CRUD 操作**：内置通用 Mapper、通用 Service，仅仅通过少量配置即可实现单表大部分 CRUD 操作，更有强大的条件构造器，满足各类使用需求
- **支持 Lambda 形式调用**：通过 Lambda 表达式，方便的编写各类查询条件，无需再担心字段写错
- **支持主键自动生成**：支持多达 4 种主键策略（内含分布式唯一 ID 生成器 - Sequence），可自由配置，完美解决主键问题
- **支持 ActiveRecord 模式**：支持 ActiveRecord 形式调用，实体类只需继承 Model 类即可进行强大的 CRUD 操作
- **支持自定义全局通用操作**：支持全局通用方法注入（ Write once, use anywhere ）
- **内置代码生成器**：采用代码或者 Maven 插件可快速生成 Mapper 、 Model 、 Service 、 Controller 层代码，支持模板引擎，更有超多自定义配置等您来使用
- **内置分页插件**：基于 MyBatis 物理分页，开发者无需关心具体操作，配置好插件之后，写分页等同于普通 List 查询
- **分页插件支持多种数据库**：支持 MySQL、MariaDB、Oracle、DB2、H2、HSQL、SQLite、Postgre、SQLServer 等多种数据库
- **内置性能分析插件**：可输出 Sql 语句以及其执行时间，建议开发测试时启用该功能，能快速揪出慢查询
- **内置全局拦截插件**：提供全表 delete 、 update 操作智能分析阻断，也可自定义拦截规则，预防误操作

2. 快速开始

> 步骤

1. 创建数据库·mybatis_plus`，创建user表

```
DROP TABLE IF EXISTS user;

CREATE TABLE user
(
    id BIGINT(20) NOT NULL COMMENT '主键ID',
    name VARCHAR(30) NULL DEFAULT NULL COMMENT '姓名',
```

```
    age INT(11) NULL DEFAULT NULL COMMENT '年龄',
    email VARCHAR(50) NULL DEFAULT NULL COMMENT '邮箱',
    PRIMARY KEY (id)
);
-- 真实开发中，version（乐观锁）、deleted（逻辑删除）、gmt_create、gmt_modified

INSERT INTO user (id, name, age, email) VALUES
(1, 'Jone', 18, 'test1@baomidou.com'),
(2, 'Jack', 20, 'test2@baomidou.com'),
(3, 'Tom', 28, 'test3@baomidou.com'),
(4, 'Sandy', 21, 'test4@baomidou.com'),
(5, 'Billie', 24, 'test5@baomidou.com');
```

2. 编写项目，初始化springboot项目，导入依赖

```
<dependencies>
    <!--数据库驱动-->
    <dependency>
        <groupId>mysql</groupId>
        <artifactId>mysql-connector-java</artifactId>
    </dependency>
    <!--Lombok-->
    <dependency>
        <groupId>org.projectlombok</groupId>
        <artifactId>lombok</artifactId>
    </dependency>
    <!--mybatisplus-->
    <dependency>
        <groupId>com.baomidou</groupId>
        <artifactId>mybatis-plus-boot-starter</artifactId>
        <version>3.0.5</version>
    </dependency>

    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-web</artifactId>
    </dependency>

    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-test</artifactId>
        <scope>test</scope>
    </dependency>
</dependencies>
```

说明：使用mybatis-plus能节省大量的代码。尽量**不要同时**导入mybatis-plus和mybatis，会有版本差异。

3. 连接数据库

```
spring.datasource.username=root
spring.datasource.password=1234567
spring.datasource.url=jdbc.mysql://localhost:3306/mybatis_plus?
useSSL=true&useUnicode=true&characterEncoding=utf-8&serverTimezone=GMT%2B8
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
```

4. 使用

- pojo

```
@Data
@AllArgsConstructor
@NoArgsConstructor
public class User {
    private Long id;
    private String name;
    private Integer age;
    private String email;
}
```

- mapper接口

```
//只要继承BaseMapper，所有简单的CRUD操作都已经自动编写完成了
@Repository //代表持久层
public interface UserMapper extends BaseMapper<User> {
}
```

- 启动类

```
//扫描mapper文件夹
@MapperScan("com.ctstudy.mybatis_plus.mapper")
@SpringBootApplication
public class MybatisPlusApplication {

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

}
```

- 测试使用

```
@SpringBootTest
class MybatisPlusApplicationTests {

    //继承了BaseMapper，所有方法都来自父类（后面也会编写自己的方法）
    @Autowired
    private UserMapper userMapper;

    @Test
    void contextLoads() {
        //查询所有用户，参数类型为Wrapper，条件构造器，这里先不用（null）
        List<User> users = userMapper.selectList(null);
        users.forEach(System.out::println);
    }

}
```

```
2020-12-08 15:46:37.227  INFO 2456 --- [           main] com.zaxxer.hikari.HikariDataSource       : HikariPool-1 - Star
2020-12-08 15:46:37.604  INFO 2456 --- [           main] com.zaxxer.hikari.HikariDataSource       : HikariPool-1 - Star
2020-12-08 15:46:38.407  INFO 2456 --- [           main] o.s.s.concurrent.ThreadPoolTaskExecutor  : Initializing Execut
2020-12-08 15:46:38.865  INFO 2456 --- [           main] c.c.m.MybatisPlusApplicationTests        : Started MybatisPlus

User(id=1, name=Jone, age=18, email=test1@baomidou.com)
User(id=2, name=Jack, age=20, email=test2@baomidou.com)
User(id=3, name=Tom, age=28, email=test3@baomidou.com)
User(id=4, name=Sandy, age=21, email=test4@baomidou.com)
User(id=5, name=Billie, age=24, email=test5@baomidou.com)

2020-12-08 15:46:39.280  INFO 2456 --- [extShutdownHook] o.s.s.concurrent.ThreadPoolTaskExecutor  : Shutting down Execu
2020-12-08 15:46:39.281  INFO 2456 --- [extShutdownHook] com.zaxxer.hikari.HikariDataSource       : HikariPool-1 - Shut
```

方法和SQL语句，mybatis-plus都帮我们写好了！

3. 配置日志

是为了查看sql是如何执行的。

在开发的时候使用日志，上线运行是不使用，因为耗时间。

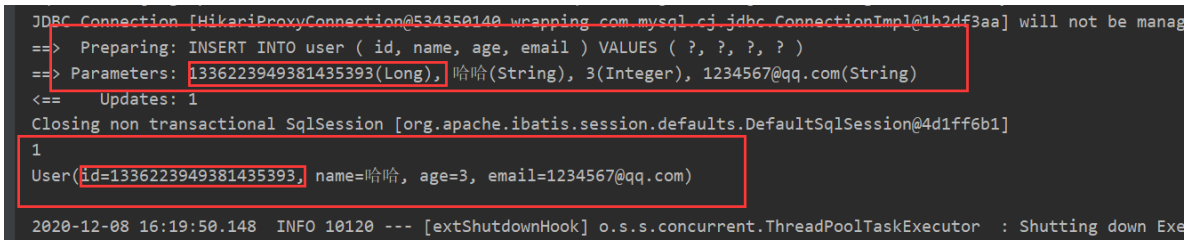
```
# 数据库连接配置
spring.datasource.username=root
spring.datasource.password=1234567
spring.datasource.url=jdbc:mysql://localhost:3306/mybatis_plus?
useSSL=true&useUnicode=true&characterEncoding=utf-8&serverTimezone=GMT%2B8
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver

#配置日志
mybatis-plus.configuration.log-impl=org.apache.ibatis.logging.stdout.StdOutImpl
```

```
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@45e9b12d] was not registered for synchronizatio
JDBC Connection [HikariProxyConnection@1902499120 wrapping com.mysql.cj.jdbc.ConnectionImpl@12f49ca8] will not b
==>  Preparing: SELECT id,name,age,email FROM user
==> Parameters:
<==    Columns: id, name, age, email
<==        Row: 1, Jone, 18, test1@baomidou.com
<==        Row: 2, Jack, 20, test2@baomidou.com
<==        Row: 3, Tom, 28, test3@baomidou.com
<==        Row: 4, Sandy, 21, test4@baomidou.com
<==        Row: 5, Billie, 24, test5@baomidou.com
<==      Total: 5
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@45e9b12d]
User(id=1, name=Jone, age=18, email=test1@baomidou.com)
User(id=2, name=Jack, age=20, email=test2@baomidou.com)
User(id=3, name=Tom, age=28, email=test3@baomidou.com)
User(id=4, name=Sandy, age=21, email=test4@baomidou.com)
User(id=5, name=Billie, age=24, email=test5@baomidou.com)

2020-12-08 16:10:28.081  INFO 6284 --- [extShutdownHook] o.s.s.concurrent.ThreadPoolTaskExecutor  : Shutting dow
```

4. CRUD扩展

插入操作

```
//测试插入
@Test
void testInsert() {
    User user = new User(null, "哈哈", 3, "1234567@qq.com");

    int result = userMapper.insert(user);//帮我们自动生成了id
    System.out.println(result);//受影响的行数
    System.out.println(user);//id会回填入user
}
```



- 这里id原本为null，id是主键，不能为空，所有自动生成了一个全局唯一的id。
- 当id有具体值时，就不会自己去生成id了

主键生成策略

分布式系统唯一id生成：https://www.cnblogs.com/haoxinyue/p/5208136.html

1. 自增
2. uuid
3. redis生成id
4. snowflake雪花算法
5. 利用zookeeper生成唯一ID

> 默认：ID_WORKER 全局唯一id，使用雪花算法

```
@Data
@AllArgsConstructor
@NoArgsConstructor
public class User {
    //对应数据库中的主键（uuid、自增id 、雪花算法、redis、zookeeper）
    @TableId(type = IdType.ID_WORKER)
    private Long id;
    private String name;
    private Integer age;
    private String email;
}
```

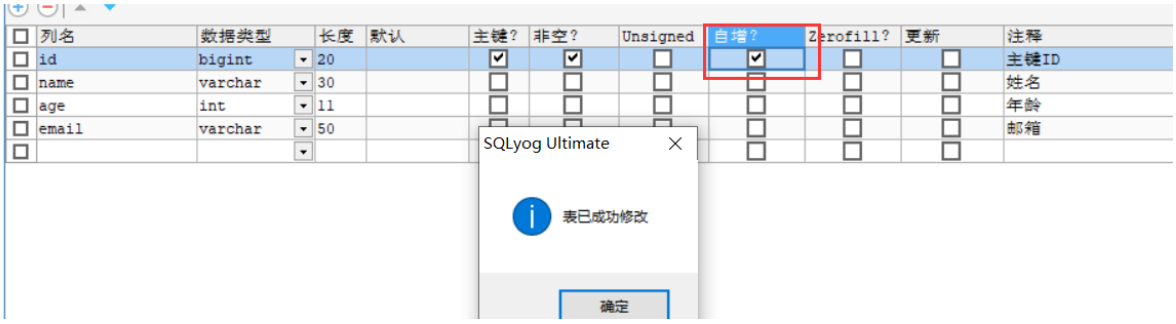
雪花算法：

snowflake是Twitter开源的**分布式ID生成算法**，结果是一个long型的ID。其核心思想是：使用41bit作为毫秒数，10bit作为机器的ID（5个bit是数据中心，5个bit的机器ID），12bit作为毫秒内的流水号（意味着每个节点在每毫秒可以产生 4096 个 ID），最后还有一个符号位，永远是0。

> AUTO 主键自增

我们需要配置主键自增:

1. 实体类字段上**@TableId(type = IdType.AUTO)**
2. 数据库主键字段一定要自增



> 其余的源码解释

```
public enum IdType {
    AUTO(0), //数据库id自增
    NONE(1),//未设置主键
    INPUT(2),//手动输入，如果主键为空，就报错
    ID_WORKER(3),//默认的全局唯一id
    UUID(4), //全局唯一id
    ID_WORKER_STR(5); //ID_WORKER的字符串表示法
}
```

更新操作

```
@Test
void testUpdate() {
    User user = new User();
    user.setId(100L);
    user.setName("aaaaa");
    int i = userMapper.updateById(user);
    System.out.println(i);
}
```

```
Creating a new SqlSession
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@5a8c93] was not registered for synchronization because sy
JDBC Connection [HikariProxyConnection@1914285129 wrapping com.mysql.cj.jdbc.ConnectionImpl@21da4b5f] will not be managed
==>  Preparing: UPDATE user SET name=? WHERE id=?
==> Parameters: aaaaa(String), 100(Long)
<==    Updates: 1
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@5a8c93]
1

2020-12-08 21:15:11.325  INFO 21500 --- [extShutdownHook] o.s.s.concurrent.ThreadPoolTaskExecutor  : Shutting down Executo
```

```java
@Test
void testUpdate() {
    User user = new User();
    user.setId(100L);
    user.setName("aaaaa");
    user.setAge(100); //多设置一个age
    int i = userMapper.updateById(user);
    System.out.println(i);
}
```

```
Creating a new SqlSession
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@7d247660] was not registered for synchron
JDBC Connection [HikariProxyConnection@1505474932 wrapping com.mysql.cj.jdbc.ConnectionImpl@7165d530] will
==>  Preparing: UPDATE user SET name=?, age=? WHERE id=?
==> Parameters: aaaaa(String), 100(Integer), 100(Long)
<==    Updates: 1
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@7d247660]
1
```

- 从上面的SQL语句可以看出，mybatis-plus可以通过条件（属性是否为null）**自动拼接动态sql**!

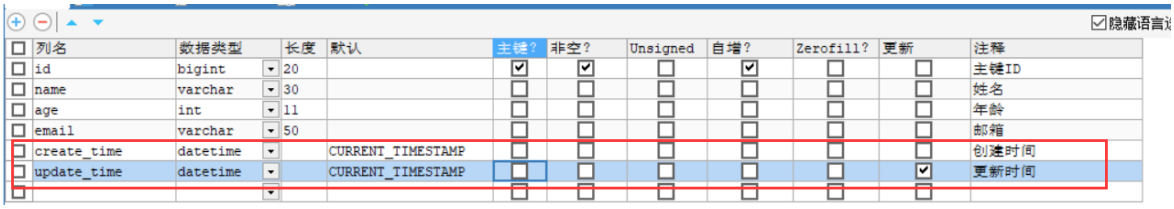
自动填充

像创建时间、修改时间这种，我们希望是自动化设置的，而不是手动完成更新。

阿里巴巴开发手册：gmt_create、gmt_modified，几乎所有的表都要拥有，而且需要自动化。

> 方式一：数据库级别完成（工作中不建议）

1.在表中新增字段create_time、update_time



列名	数据类型	长度	默认	主键?	非空?	Unsigned	自增?	Zerofill?	更新	注释
id	bigint	20		☑	☑	☐	☑	☐	☐	主键ID
name	varchar	30		☐	☐	☐	☐	☐	☐	姓名
age	int	11		☐	☐	☐	☐	☐	☐	年龄
email	varchar	50		☐	☐	☐	☐	☐	☐	邮箱
create_time	datetime		CURRENT_TIMESTAMP	☐	☐	☐	☐	☐	☐	创建时间
update_time	datetime		CURRENT_TIMESTAMP	☐	☐	☐	☐	☐	☑	更新时间

2.再次测试前，先把实体类User同步

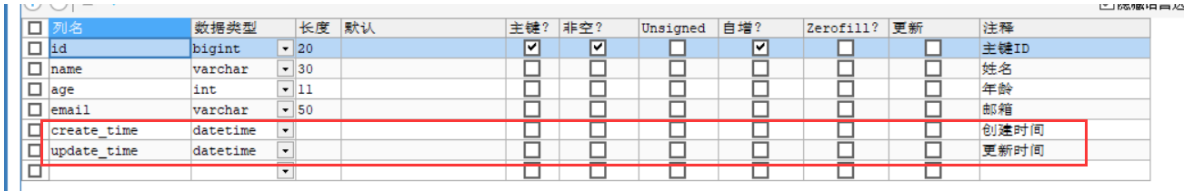
```java
private Date createTime; //采用驼峰命名法
private Date updateTime;
```

3.再次查看更新结果

1	Jone	18	test1@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
2	Jack	20	test2@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
3	Tom	28	test3@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
4	Sandy	21	test4@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
5	Billie	24	test5@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
100	aaaaa	66	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:46:09
1336223949381435393	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233211872735234	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621250	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57

> 方式二：代码级别完成

1.删除数据库的默认值、更新操作



列名	数据类型	长度	默认	主键?	非空?	Unsigned	自增?	Zerofill?	更新	注释
id	bigint	20		☑	☑	☐	☑	☐	☐	主键ID
name	varchar	30		☐	☐	☐	☐	☐	☐	姓名
age	int	11		☐	☐	☐	☐	☐	☐	年龄
email	varchar	50		☐	☐	☐	☐	☐	☐	邮箱
create_time	datetime			☐	☐	☐	☐	☐	☐	创建时间
update_time	datetime			☐	☐	☐	☐	☐	☐	更新时间
				☐	☐	☐	☐	☐	☐	

2.实体类的字段属性上加注解

```
@Data
@AllArgsConstructor
@NoArgsConstructor
public class User {
    //对应数据库中的主键（uuid、自增id 、雪花算法、redis、zookeeper）
    @TableId(type = IdType.AUTO)
    private Long id;
    private String name;
    private Integer age;
    private String email;

    //字段添加填充内容
    @TableField(fill = FieldFill.INSERT)
    private Date createTime;
    @TableField(fill = FieldFill.INSERT_UPDATE)
    private Date updateTime;
}
```

3.编写处理器处理注解

```
package com.ctstudy.mybatis_plus.handler;

import com.baomidou.mybatisplus.core.handlers.MetaObjectHandler;
import lombok.extern.slf4j.Slf4j;
import org.apache.ibatis.reflection.MetaObject;
import org.springframework.stereotype.Component;

import java.util.Date;

@Slf4j
@Component  //一定要注入到ioc容器中
public class MyMetaObjectHandler implements MetaObjectHandler {
    //插入时的填充策略
    @Override
    public void insertFill(MetaObject metaObject) {
        log.info("start insert");
        //setFieldValByName(String fieldName, Object fieldVal, MetaObject
metaObject)
        this.setFieldValByName("createTime",new Date(),metaObject);
        this.setFieldValByName("updateTime",new Date(),metaObject);

    }

    //更新时的填充策略
    @Override
    public void updateFill(MetaObject metaObject) {
        log.info("start update");
        this.setFieldValByName("updateTime",new Date(),metaObject);
```

```
    }
}
```

4.测试插入

3	Tom	28	test3@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
4	Sandy	21	test4@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
5	Billie	24	test5@baomidou.com	2020-12-08 21:36:57	2020-12-08 21:36:57
100	aaaaa	66	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:46:09
1336223949381435393	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233211872735234	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621250	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621251	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621252	ct	5	11@qq.com	2020-12-08 22:08:58	2020-12-08 22:08:58

5.测试更新

100	aaaaa	66	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:46:09
1336223949381435393	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233211872735234	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621250	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621251	哈哈	3	1234567@qq.com	2020-12-08 21:36:57	2020-12-08 21:36:57
1336233444333621252	ct	66	11@qq.com	2020-12-08 22:08:58	2020-12-08 22:12:22

乐观锁

- 乐观锁：十分乐观，无论干什么都不去上锁；如果出现问题，再次更新值测试（CAS）
- 悲观锁：十分悲观，无论干什么都去上锁，lock、synchronized

乐观锁实现方式：

- 取出记录时，获取当前的version
- 更新时，带上这个version
- 执行更新时，set version = newVersion where version = oldVersion
- 如果version不对，就更新失败

> 测试MP中的乐观锁插件

1.给数据库增加version字段

列名	数据类型	长度	默认	主键?	非空?	Unsigned	自增?	Zerofill?	更新	注释
id	bigint	20		☑	☑	☐	☑	☐	☐	主键ID
name	varchar	30		☐	☐	☐	☐	☐	☐	姓名
age	int	11		☐	☐	☐	☐	☐	☐	年龄
email	varchar	50		☐	☐	☐	☐	☐	☐	邮箱
version	int	10	1	☐	☐	☐	☐	☐	☐	乐观锁
create_time	datetime			☐	☐	☐	☐	☐	☐	创建时间
update_time	datetime			☐	☐	☐	☐	☐	☐	更新时间
				☐	☐	☐	☐	☐	☐	

	id	name	age	email	version	create_time	update_time
1	1	Jone	18	test1@baomidou.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
2	2	Jack	20	test2@baomidou.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
3	3	Tom	28	test3@baomidou.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
4	4	Sandy	21	test4@baomidou.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
5	5	Billie	24	test5@baomidou.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
6	100	aaaaa	66	1234567@qq.com	1	2020-12-08 21:36:57	2020-12-08 21:46:09
7	1336223949381435393	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
8	1336233211872735234	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
9	1336233444333621250	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
10	1336233444333621251	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57	2020-12-08 21:36:57
11	1336233444333621252	ct	66	11@qq.com	1	2020-12-08 22:08:58	2020-12-08 22:12:22

2.同步实体类

```
@Version //乐观锁version注解
private Integer version;
```

3.注册组件

```
//扫描mapper文件夹，原本在启动类上的，因为是MP的操作，所有移到了这里
@MapperScan("com.ctstudy.mybatis_plus.mapper")
@Configuration
@EnableTransactionManagement //开启事务管理（默认就是开启的）
public class MybatisPlusConfig {
    //注册乐观锁插件
    @Bean
    public OptimisticLockerInterceptor optimisticLockerInterceptor() {
        return new OptimisticLockerInterceptor();
    }
}
```

4.测试

> 成功的测试：

```
//测试乐观锁成功
@Test
void testOptimisticLocker() {
    User user = userMapper.selectById(1L);
    System.out.println(user);//User(id=1, name=Jone, age=18,
email=test1@baomidou.com, version=1,
//createTime=Tue Dec 08 21:36:57 CST 2020, updateTime=Tue Dec 08 21:36:57 CST
2020)
    user.setEmail("111@qq.com");
    user.setAge(1);
    userMapper.updateById(user);
}
//Preparing: UPDATE user SET name=?, age=?, email=?, version=?, create_time=?,
update_time=? WHERE id=? AND version=?
//Parameters: Jone(String), 1(Integer), 111@qq.com(String), 2(Integer), 2020-12-
08 21:36:57.0(Timestamp), 2020-12-08 22:49:51.138(Timestamp), 1(Long),
1(Integer)
```

> 失败的测试：

```
//测试乐观锁失败 模拟多线程下
@Test
void testOptimisticLocker2() {
    User user = userMapper.selectById(1L);
    System.out.println(user);
    user.setEmail("222@qq.com");
    user.setAge(10);

    //模拟另一个线程执行了插队操作
    //---------------------------------
    User user2 = userMapper.selectById(1L);
    System.out.println(user2);
    user2.setEmail("333@qq.com");
    user2.setAge(20);
```

```
        userMapper.updateById(user2);
        //-------------------------------

        userMapper.updateById(user);//如果没有乐观锁就会覆盖
    }
```

id	name	age	email	version	create_time
1	Jone	20	333@qq.com	3	2020-12-08 21:36:57
2	Jack	20	test2@baomidou.com	1	2020-12-08 21:36:57
3	Tom	28	test3@baomidou.com	1	2020-12-08 21:36:57
4	Sandy	21	test4@baomidou.com	1	2020-12-08 21:36:57
5	Billie	24	test5@baomidou.com	1	2020-12-08 21:36:57
100	aaaaa	66	1234567@qq.com	1	2020-12-08 21:36:57
1336223949381435393	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57
1336233211872735234	哈哈	3	1234567@qq.com	1	2020-12-08 21:36:57

```
JDBC Connection [HikariProxyConnection@1657920572 wrapping com.mysql.cj.jdbc.ConnectionImpl@727320fa] will not be managed by Spring
==>  Preparing: UPDATE user SET name=?, age=?, email=?, version=?, create_time=?, update_time=? WHERE id=? AND version=?
==> Parameters: Jone(String), 20(Integer), 333@qq.com(String), 3(Integer), 2020-12-08 21:36:57.0(Timestamp), 2020-12-08 23:00:16.246(Timestamp), 1(Long), 2(Int
<==    Updates: 1
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@3e906375]
Creating a new SqlSession
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@748f93bb] was not registered for synchronization because synchronization is not active
2020-12-08 23:00:16.308  INFO 22296 --- [           main] c.c.m.handler.MyMetaObjectHandler        : start update
JDBC Connection [HikariProxyConnection@2133668271 wrapping com.mysql.cj.jdbc.ConnectionImpl@727320fa] will not be managed by Spring
==>  Preparing: UPDATE user SET name=?, age=?, email=?, version=?, create_time=?, update_time=? WHERE id=? AND version=?
==> Parameters: Jone(String), 10(Integer), 222@qq.com(String), 3(Integer), 2020-12-08 21:36:57.0(Timestamp), 2020-12-08 23:00:16.308(Timestamp), 1(Long), 2(Int
<==    Updates: 0
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@748f93bb]
```

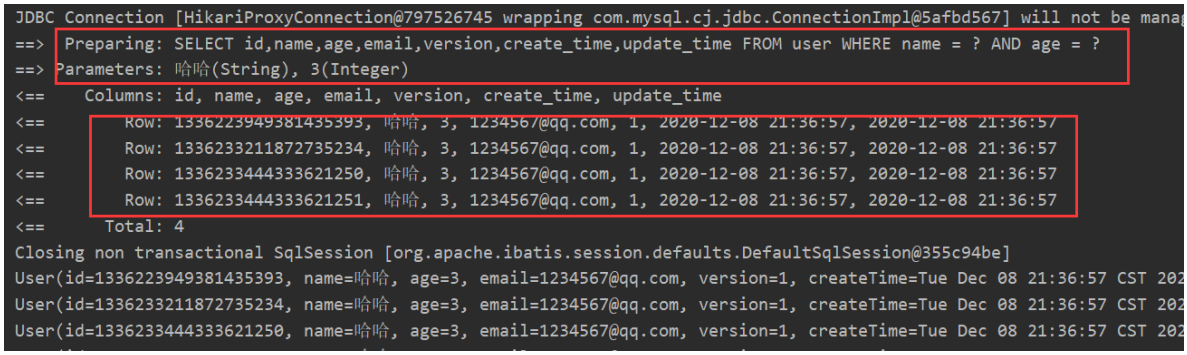
可以看出，`UPDATE user SET name=?, age=?, email=?, version=?1, create_time=?, update_time=? WHERE id=? AND version=?2`中，**?2**表示的是传入的version值(旧值)，**?1**等于?2+1

查询操作

```
    //测试批量查询
    @Test
    void testSelect() {
        List<User> users = userMapper.selectBatchIds(Arrays.asList(1, 2, 3));
        users.forEach(System.out::println);
    }
```

```
<==      Total: 3
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@633fd91]
User(id=1, name=Jone, age=20, email=333@qq.com, version=3, createTime=Tue Dec 08 21:36:57 CST 2020, updateTime=Tue Dec 0
User(id=2, name=Jack, age=20, email=test2@baomidou.com, version=1, createTime=Tue Dec 08 21:36:57 CST 2020, updateTime=T
User(id=3, name=Tom, age=28, email=test3@baomidou.com, version=1, createTime=Tue Dec 08 21:36:57 CST 2020, updateTime=Tu
```

```
    //条件查询之一：map
    @Test
    void testSelect1() {
        HashMap<String, Object> map = new HashMap<>();
        map.put("name", "哈哈"); //查询name='哈哈'的记录
        map.put("age",3); // age=3的记录
        List<User> users = userMapper.selectByMap(map);
        users.forEach(System.out::println);
    }
```



分页查询

1.原始的limit

2.pageHelper等第三方插件

3.MP内置的分页插件

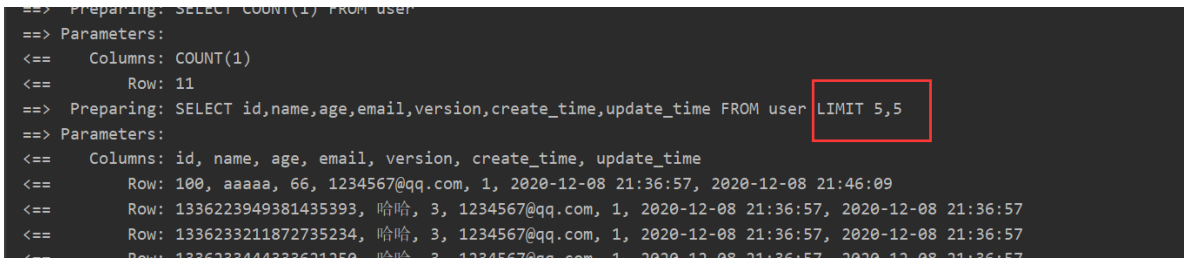
> 如何使用

1.配置拦截器组件

```
//分页插件
@Bean
PaginationInterceptor paginationInterceptor() {
    return new PaginationInterceptor();
}
```

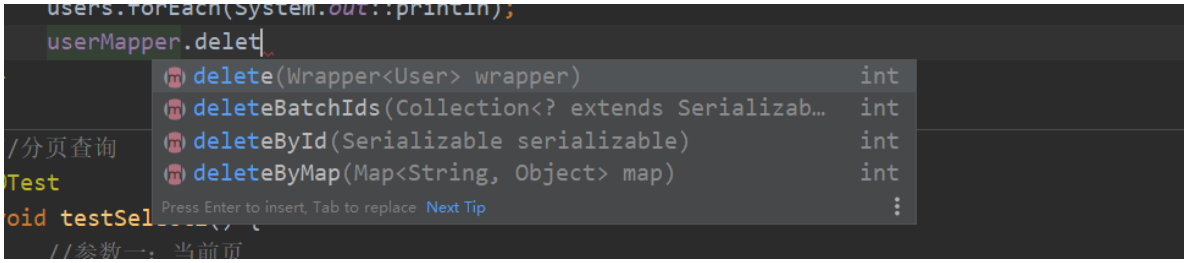
2.直接使用page对象即可

```
//分页查询
@Test
void testSelect2() {
    //参数一：当前页
    //参数二：页面大小
    //Page<User> page = new Page<>(1,5);//查出了第1~5条记录
    Page<User> page = new Page<>(2,5);//查出了第6~10条记录
    userMapper.selectPage(page,null);
    page.getRecords().forEach(System.out::println);
}
```



page对象中还有很多的方法，比如getTotal()可以获得记录总数等。

删除操作



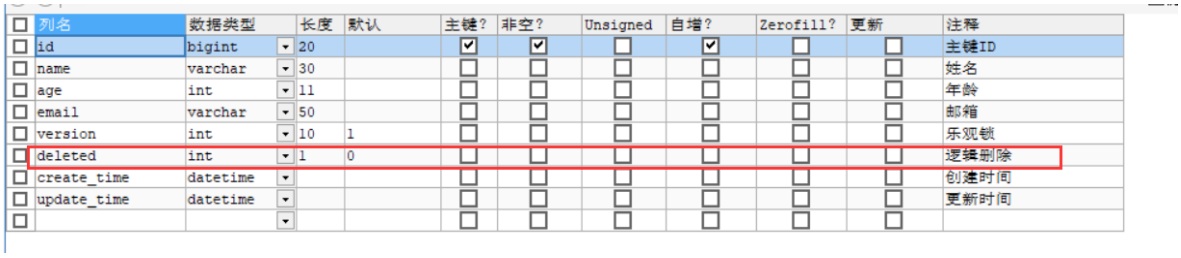
与上面的查询操作是一样的!

逻辑删除

- 物理删除：从数据库中直接移除
- 逻辑删除：数据库中不移除数据，而是通过一个变量使之失效。deleted=0 ------> deleted=1

> 测试以下

1.数据库中增加deleted字段



列名	数据类型	长度	默认	主键?	非空?	Unsigned	自增?	Zerofill?	更新	注释
id	bigint	20		☑	☑	☐	☑	☐	☐	主键ID
name	varchar	30		☐	☐	☐	☐	☐	☐	姓名
age	int	11		☐	☐	☐	☐	☐	☐	年龄
email	varchar	50		☐	☐	☐	☐	☐	☐	邮箱
version	int	10	1	☐	☐	☐	☐	☐	☐	乐观锁
deleted	int	1	0	☐	☐	☐	☐	☐	☐	逻辑删除
create_time	datetime			☐	☐	☐	☐	☐	☐	创建时间
update_time	datetime			☐	☐	☐	☐	☐	☐	更新时间
				☐	☐	☐	☐	☐	☐	

2.实体类

```
@TableLogic //逻辑删除
private Integer deleted;
```

3.注册组件

```
//逻辑删除组件
@Bean
public ISqlInjector sqlInjector() {
    return new LogicSqlInjector();
}
```

4.配置

```
#配置逻辑删除
mybatis-plus.global-config.db-config.logic-delete-value=1
mybatis-plus.global-config.db-config.logic-not-delete-value=0
```

5.测试

执行删除:

```java
@Test
void delete() {
    userMapper.deleteById(1L);
}
```

```
Creating a new SqlSession
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@51a18b21] was not registered for synchronization because
JDBC Connection [HikariProxyConnection@1990282381 wrapping com.mysql.cj.jdbc.ConnectionImpl@17410c07] will not be managed
==>  Preparing: UPDATE user SET deleted=1 WHERE id=? AND deleted=0
==> Parameters: 1(Long)
<==    Updates: 1
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@51a18b21]
```

id	name	age	email	version	deleted	create_time	update_tim
1	Jone	20	333@qq.com	3	1	2020-12-08 21:36:57	2020-12-08 2
2	Jack	20	test2@baomidou.com	1	0	2020-12-08 21:36:57	2020-12-08 2
3	Tom	28	test3@baomidou.com	1	0	2020-12-08 21:36:57	2020-12-08 2
4	Sandy	21	test4@baomidou.com	1	0	2020-12-08 21:36:57	2020-12-08 2
5	Billie	24	test5@baomidou.com	1	0	2020-12-08 21:36:57	2020-12-08 2
100	aaaaa	66	1234567@qq.com	1	0	2020-12-08 21:36:57	2020-12-08 2
1336223949381435393	哈哈	3	1234567@qq.com	1	0	2020-12-08 21:36:57	2020-12-08 2
1336233211872735234	哈哈	3	1234567@qq.com	1	0	2020-12-08 21:36:57	2020-12-08 2

虽然用了删除操作，实质执行的是更新操作。说明进行了逻辑删除！

执行查询：

```java
@Test
void select() {
    User user = userMapper.selectById(1L);
    System.out.println(user);
}
```

```
Creating a new SqlSession
SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@7604198a] was not registered for synchronization because synchroni
JDBC Connection [HikariProxyConnection@1210734791 wrapping com.mysql.cj.jdbc.ConnectionImpl@3e74fd84] will not be managed by Spring
==>  Preparing: SELECT id,name,age,email,version,deleted,create_time,update_time FROM user WHERE id=? AND deleted=0
==> Parameters: 1(Long)
<==      Total: 0
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@7604198a]
null
```

查询的时候会过滤掉已经被逻辑删除了的。

5.性能分析插件

我们平时的开发中，会遇到一些慢sql。需要测试分析！

1.导入插件

```
//sql执行效率分析插件
@Bean
@Profile({"dev", "test"}) //只在测试、开发环境中开启
public PerformanceInterceptor performanceInterceptor() {
    PerformanceInterceptor performanceInterceptor = new
PerformanceInterceptor();
    performanceInterceptor.setMaxTime(100);//ms    设置sql执行的最大时间，如果超过，就
不执行了
    performanceInterceptor.setFormat(true);//方便查看
    return performanceInterceptor;
}
```

要在springboot中配置环境为测试环境或开发环境：

```
#设置开发环境
spring.profiles.active=dev
```

2.测试使用

```
@Test
void contextLoads() {
    //查询所有用户，参数类型为Wrapper，条件构造器，这里先不用（null）
    List<User> users = userMapper.selectList(null);
    users.forEach(System.out::println);
}
```

```
<==        Row: 1336233444333621250, 哈哈, 3, 1234567@qq.com, 1, 0, 2020-12-08 21:36:57, 2020-12-08 21:36:5
<==        Row: 1336233444333621251, 哈哈, 3, 1234567@qq.com, 1, 0, 2020-12-08 21:36:57, 2020-12-08 21:36:5
<==        Row: 1336233444333621252, ct, 66, 11@qq.com, 1, 0, 2020-12-08 22:08:58, 2020-12-08 22:12:22
<==      Total: 10
 Time: 25 ms - ID: com.ctstudy.mybatis_plus.mapper.UserMapper.selectList
Execute SQL:
    SELECT
        id,
        name,
        age,
        email,
        version,
        deleted,
        create_time,
        update_time
```

6.条件构造器 Wrapper

相当于用Java代码来代替了sql语句。

MyBatis-Plus

条件构造器

AbstractWrapper

- allEq
- eq
- ne
- gt
- ge
- lt
- le
- between
- notBetween
- like
- notLike
- likeLeft
- likeRight
- isNull
- isNotNull
- in
- notIn
- inSql
- notInSql
- groupBy
- orderByAsc
- orderByDesc
- orderBy

MyBatis-Plus

- orderByAsc
- orderByDesc
- orderBy
- having
- func
- or
- and
- nested
- apply
- last
- exists
- notExists

QueryWrapper

- select

UpdateWrapper

- set
- setSql
- lambda

使用 Wrapper 自定义SQL

- 用注解
- 用XML
- kotlin使用wrapper

分页插件

> 测试一

```java
@Test
void contextLoads() {
    //查询name不为空的、并且邮箱不为空的、年龄大于等于20的用户
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    wrapper.isNotNull("name")
        .isNotNull("email")
        .ge("age",20);//greater equal
    userMapper.selectList(wrapper).forEach(System.out::println);
}
```

```
 Time: 39 ms - ID: com.ctstudy.mybatis_plus.mapper.UserMapper.selectList
Execute SQL:
    SELECT
        id,
        name,
        age,
        email,
        version,
        deleted,
        create_time,
        update_time
    FROM
        user
    WHERE
        deleted=0
        AND name IS NOT NULL
        AND email IS NOT NULL
        AND age >= 20
```

> 测试二

```java
@Test
void contextLoads2() {
    //查询name=ct的用户
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    wrapper.eq("name","ct");
    System.out.println(  userMapper.selectOne(wrapper)  );
}
```

```
 Time: 30 ms - ID: com.ctstudy.mybatis_plus.mapper.UserMapper.selectOne
Execute SQL:
    SELECT
        id,
        name,
        age,
        email,
        version,
        deleted,
        create_time,
        update_time
    FROM
        user
    WHERE
        deleted=0
        AND name = 'ct'
```

> 测试三

```
@Test
void contextLoads3() {
    //查询年龄在20-30之间的用户
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    wrapper.between("age",20,30);
    Integer count = userMapper.selectCount(wrapper); //查询结果数
    System.out.println(count);
}
```

```
<==      Total: 1
 Time: 85 ms - ID: com.ctstudy.mybatis_plus.mapper.UserMapper.selectCount
Execute SQL:
    SELECT
        COUNT(1)
    FROM
        user
    WHERE
        deleted=0
        AND age BETWEEN 20 AND 30

Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@7978e022]
4
```

> 测试四

```java
@Test
void contextLoads4() {
    //模糊查询
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    //左和右     t%  表示%在左边还是在右边
    wrapper.notLike("name","c")  //名字里不含有c的
    .likeRight("email","t");  //email是以t开头的 t%

    List<Map<String, Object>> maps = userMapper.selectMaps(wrapper);
    maps.forEach(System.out::println);
}
```

```
 Time: 75 ms - ID: com.ctstudy.mybatis_plus.mapper.UserMapper.selectMaps
Execute SQL:
    SELECT
        id,
        name,
        age,
        email,
        version,
        deleted,
        create_time,
        update_time
    FROM
        user
Closing non transactional SqlSession [org.apache.ibatis.session.defaults.DefaultSqlSession@57545c3f]
    WHERE
        deleted=0
        AND name NOT LIKE '%c%'
        AND email LIKE 't%'
```

> 测试五

```java
@Test
void contextLoads5() {
    //内查询
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    //id在子查询中查出来
    wrapper.inSql("id","select id from user where id<3");
    List<Object> objects = userMapper.selectObjs(wrapper);
    objects.forEach(System.out::println);
}
```

```
SELECT
    id,
    name,
    age,
    email,
    version,
    deleted,
    create_time,
    update_time
FROM
    user
WHERE
    deleted=0
    AND id IN (
        select
            id
        from
            user
        where
            id<3
    )
```

> 测试六

```
@Test
void contextLoads6() {
    //通过id进行排序
    QueryWrapper<User> wrapper = new QueryWrapper<>();
    wrapper.orderByDesc("id");
    List<User> users = userMapper.selectList(wrapper);
    users.forEach(System.out::println);
}
```

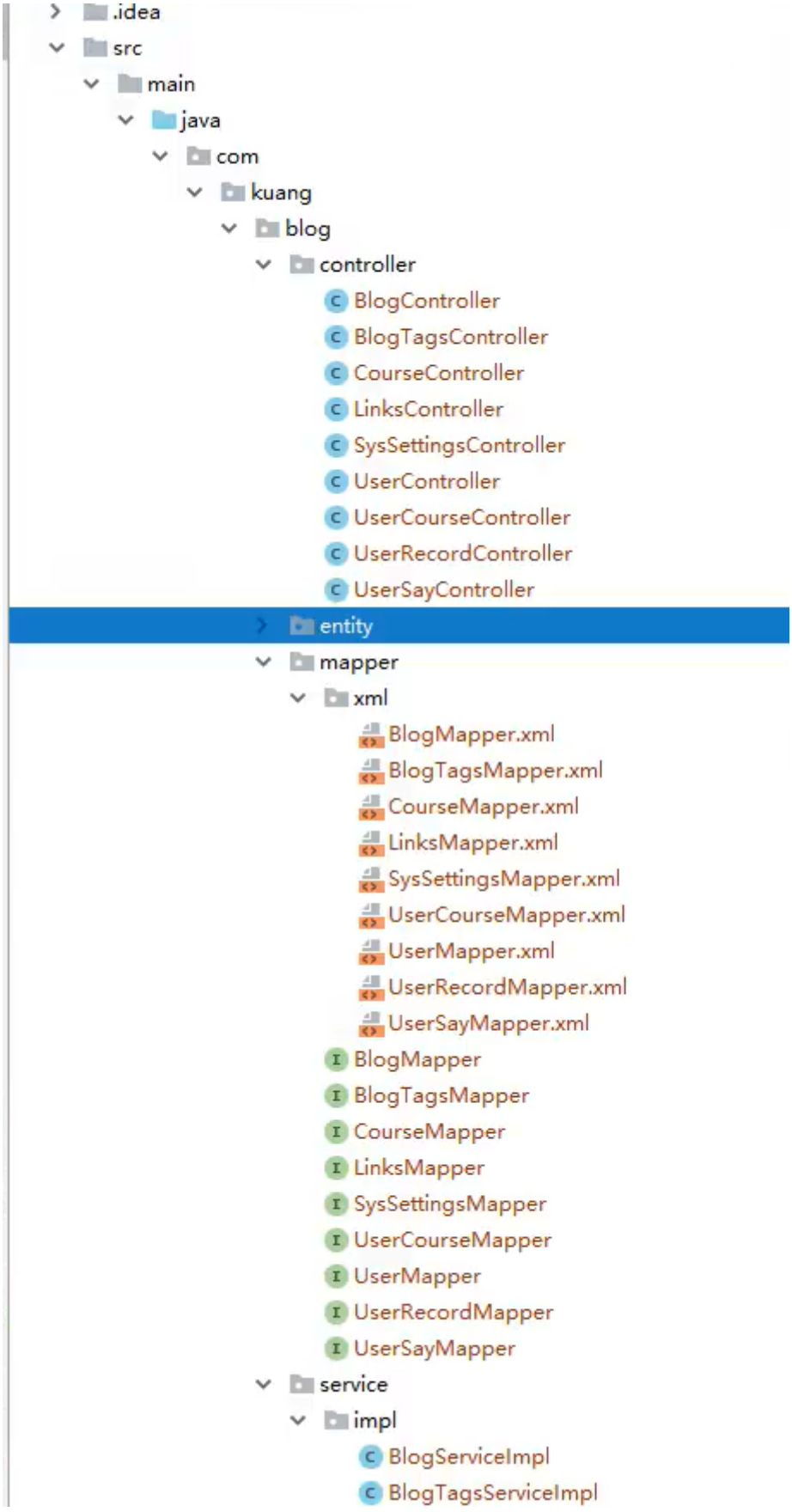
```
Execute SQL:
    SELECT
        id,
        name,
        age,
        email,
        version,
        deleted,
        create_time,
        update_time
    FROM
        user
    WHERE
        deleted=0
    ORDER BY
        id DESC
```

7.代码自动生成器

```
//代码自动生成器
public class AutoCode {
    public static void main(String[] args) {
        //需要构建一个代码自动生成器对象
        AutoGenerator mpg = new AutoGenerator();

        //配置策略
        //1.全局配置
        GlobalConfig gc = new GlobalConfig();
        String projectPath = System.getProperty("user.dir");
        gc.setOutputDir(projectPath + "/src/main/java");
        gc.setAuthor("ct");
        gc.setOpen(false); //是否打开资源管理器
        gc.setFileOverride(false);//是否覆盖
        gc.setServiceName("%sService");//去Service的I前缀
        gc.setIdType(IdType.ID_WORKER);
        gc.setDateType(DateType.ONLY_DATE); //设置日期类型
        gc.setSwagger2(true);
        mpg.setGlobalConfig(gc);

        //2.设置数据源
        DataSourceConfig dsc = new DataSourceConfig();
        dsc.setUrl("jdbc:mysql://localhost:3306/mybatis_plus?
useSSL=true&useUnicode=true&characterEncoding=utf-8&serverTimezone=GMT%2B8");
        dsc.setDriverName("com.mysql.cj.jdbc.Driver");
        dsc.setUsername("root");
        dsc.setPassword("1234567");
        dsc.setDbType(DbType.MYSQL);
```

```
        mpg.setDataSource(dsc);

        //3.包的配置
        PackageConfig pc = new PackageConfig();
        pc.setModuleName("blog");
        pc.setParent("com.ct");
        pc.setEntity("entity");
        pc.setMapper("mapper");
        pc.setService("service");
        pc.setController("controller");
        mpg.setPackageInfo(pc);

        //4.策略配置
        StrategyConfig strategy = new StrategyConfig();
        strategy.setInclude("user"); //设置要映射的表名,可写多个
        strategy.setNaming(NamingStrategy.underline_to_camel);
        strategy.setColumnNaming(NamingStrategy.underline_to_camel);
        strategy.setEntityLombokModel(true); //自动Lombok
        strategy.setLogicDeleteFieldName("deleted"); //逻辑删除
        //自动填充配置
        TableFill gmtCreate = new TableFill("gmt_create", FieldFill.INSERT);
        TableFill gmtModified = new TableFill("gmt_modified",
FieldFill.INSERT_UPDATE);
        ArrayList<TableFill> tableFills = new ArrayList<>();
        tableFills.add(gmtCreate);
        tableFills.add(gmtModified);
        strategy.setTableFillList(tableFills);
        //乐观锁
        strategy.setVersionFieldName("version");

        strategy.setRestControllerStyle(true);
        strategy.setControllerMappingHyphenStyle(true); //localhost:8080?
hello_id_2
        mpg.setStrategy(strategy);

        mpg.execute();//执行

    }
}
```

执行后，一键生成代码！



之后，只需修改**strategy.setInclude("user")**，就可以生成其它表的代码。参数可以传入多个。