

Oracle课程设计-教务爬虫

一、数据库构建

创建表空间

```
# 创建一个名叫
create tablespace data01 datafile '/home/oracle/data/data01.dbf' size 10m
extent management local uniform size 1m
segment space management manual;
```

查看表空间

参考文献: [查看表空间](#)

```
select *
  from (select a.tablespace_name,
               to_char(a.bytes / 1024 / 1024, '99,999.999') total_bytes,
               to_char(b.bytes / 1024 / 1024, '99,999.999') free_bytes,
               to_char(a.bytes / 1024 / 1024 - b.bytes / 1024 / 1024,
                       '99,999.999') use_bytes,
               to_char((1 - b.bytes / a.bytes) * 100, '99.99') || '%' use
  from (select tablespace_name, sum(bytes) bytes
        from dba_data_files
        group by tablespace_name) a,
        (select tablespace_name, sum(bytes) bytes
        from dba_free_space
        group by tablespace_name) b
  where a.tablespace_name = b.tablespace_name
 union all
 select c.tablespace_name,
        to_char(c.bytes / 1024 / 1024, '99,999.999') total_bytes,
        to_char((c.bytes - d.bytes_used) / 1024 / 1024, '99,999.999')
free_bytes,
        to_char(d.bytes_used / 1024 / 1024, '99,999.999') use_bytes,
        to_char(d.bytes_used * 100 / c.bytes, '99.99') || '%' use
  from (select tablespace_name, sum(bytes) bytes
        from dba_temp_files
        group by tablespace_name) c,
        (select tablespace_name, sum(bytes_cached) bytes_used
        from v$temp_extent_pool
        group by tablespace_name) d
  where c.tablespace_name = d.tablespace_name)
 order by tablespace_name ;
```

| TABLESPACE_NAME | TOTAL_BYTES | FREE_BYTES | USE_BYTES | USE |
|-----------------|-------------|------------|-----------|--------|
| DATA01 | 10.000 | 9.000 | 1.000 | 10.00% |
| EXAMPLE | 100.000 | 21.250 | 78.750 | 78.75% |
| SYSAUX | 510.000 | 31.000 | 479.000 | 93.92% |
| SYSTEM | 680.000 | 5.875 | 674.125 | 99.14% |
| TEMP | 29.000 | 29.000 | .000 | .00% |
| UNDOTBS1 | 95.000 | 74.500 | 20.500 | 21.58% |
| USERS | 5.000 | .938 | 4.063 | 81.25% |

创建用户

```
CREATE USER chang IDENTIFIED BY **** DEFAULT TABLESPACE data01;
```

用户授权-->授权角色

参考文献: [Oracle用户授权](#)

```
grant create session, connect, resource to chang;
```

使用新用户登录

```
[oracle@6e82ac0dbf1a ~]$ sqlplus

SQL*Plus: Release 11.2.0.1.0 Production on Fri Jun 26 16:41:13 2020

Copyright (c) 1982, 2009, Oracle. All rights reserved.

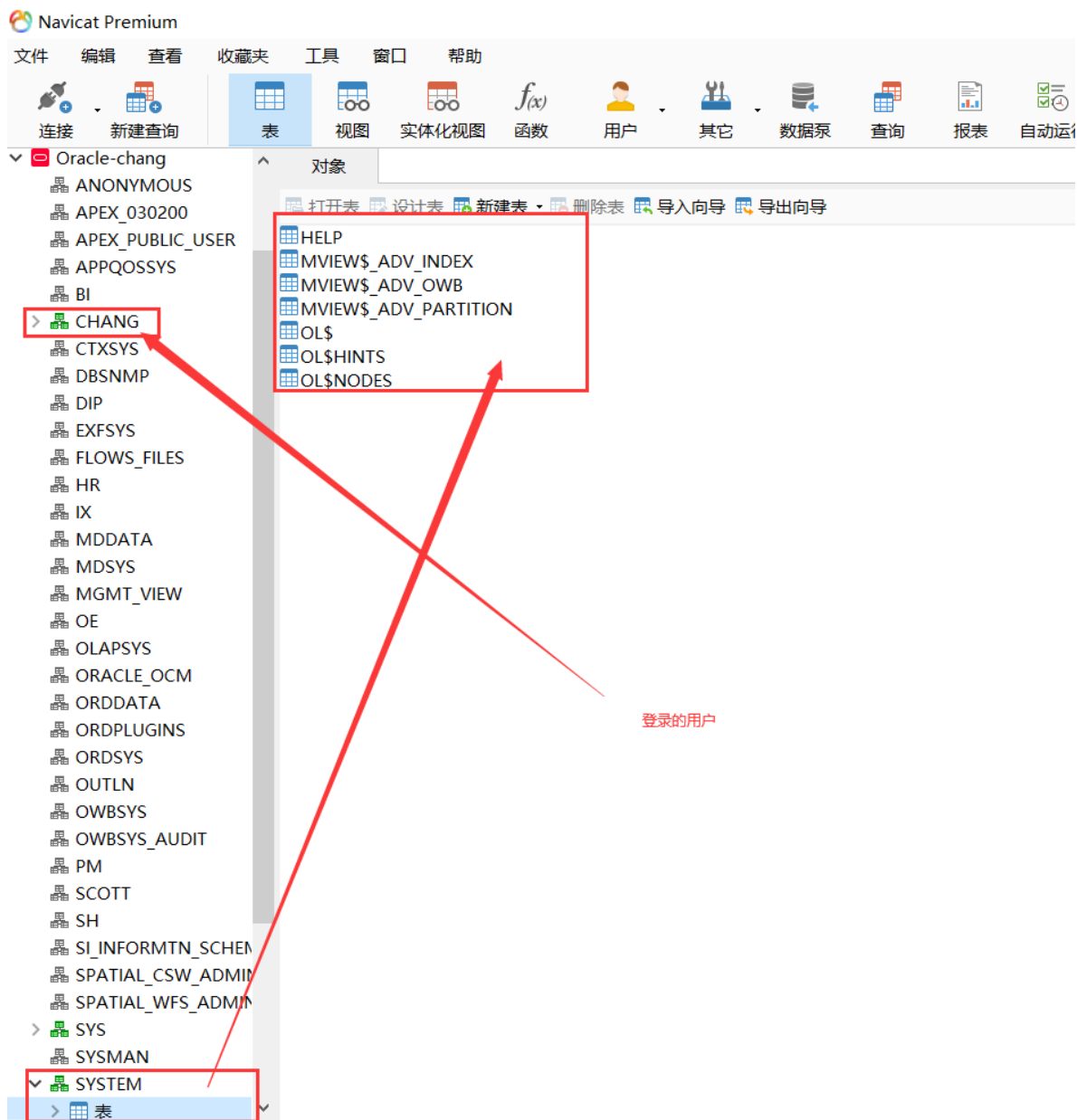
Enter user-name: chang
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> |
```

可视化工具连接

我这里使用的是 [Navicat Premium](#)，使用 [chang](#) 用户连接后，只能看到部分 [system](#) 用户的表，代表连接成功



创建表格

根据教务系统返回 json 数据创建用户表 user 表 与成绩 performance 表

用户 json 数据

```
{
  "fxzy": "无", // 辅修专业
  "xh": "201716xxxx", // 学号
  "xm": "某某某", // 姓名
  "dqszy": "2017", // 未知
  "usertype": "2", // 用户类型
  "yxmc": "信息科学技术学院", // 院系名称
  "xz": 4, // 学制
  "bj": "计算机类2017-10", // 班级
  "dh": "13600000000", // 电话
  "email": "15400000000@qq.com", // 电子邮箱
  "rxnf": "2017", // 入学年份
  "xb": "男", // 性别
  "ksh": "00000000000", // 高考考号
}
```

```

        "nj": "2017",                // 年级
        "qq": null,                 // QQ号码
        "zymc": "计算机类(计算机科学与技术、网络工程、信息安全)" // 专业名称
    }

```

```

# 创建表格
CREATE TABLE "CHANG"."user" (
    "fxzy" VARCHAR2(10 CHAR) ,
    "xh" VARCHAR2(8 CHAR) NOT NULL ,
    "xm" VARCHAR2(6 CHAR) ,
    "dqszy" VARCHAR2(4 CHAR) ,
    "usertype" VARCHAR2(1 CHAR) ,
    "yxmc" VARCHAR2(10 CHAR) ,
    "xz" VARCHAR2(1 CHAR) ,
    "bj" VARCHAR2(20 CHAR) ,
    "dh" VARCHAR2(20 CHAR) ,
    "email" VARCHAR2(30 CHAR) ,
    "rxnf" VARCHAR2(4 CHAR) ,
    "xb" VARCHAR2(1 CHAR) ,
    "ksh" VARCHAR2(20 CHAR) ,
    "nj" VARCHAR2(4 CHAR) ,
    "qq" VARCHAR2(12 CHAR) ,
    "zymc" VARCHAR2(20 CHAR) ,
    CONSTRAINT "SYS_C0011103" PRIMARY KEY ("xh"),
    CONSTRAINT "SYS_C0011088" CHECK ("xh" IS NOT NULL) NOT DEFERRABLE INITIALLY
IMMEDIATE NORELY VALIDATE
)
TABLESPACE "DATA01"
LOGGING
NOCOMPRESS
PCTFREE 10
INITRANS 1
STORAGE (
    INITIAL 1048576
    NEXT 1048576
    MINEXTENTS 1
    MAXEXTENTS 2147483645
    FREELISTS 1
    FREELIST GROUPS 1
    BUFFER_POOL DEFAULT
)
PARALLEL 1
NOCACHE
DISABLE ROW MOVEMENT

```

成绩 json 数据

```

{
    "bz": null, //未知
    "cjbsmc": null, //特殊情况通报, 例如“作弊”“缺考”
    "kclbmc": "必修", //课程类别名称
    "zcyj": "88", //总成绩
    "xm": "某某某", //学生姓名
    "xqmc": "2017-2018-2", //学期名称
    "kcxzmc": "公共基础课", //课程性质名称, 根据此项不同值可判断该科成绩是否计入GPA
    "kcywmc": "College students career development and guidance", //课程英文名称
    "ksxzmc": "正常考试", //考试性质名称, 目前遇见的情况有正常考试, 补考(x), 重修(x), 分别意为补考第x次和重修第x次, 若补考未通过, 正常考试条目和补考条目将同时存在, 若补考通过, 则只存在补考条目

    "kcmc": "大学生职业发展与就业指导", //课程名称
    "xf": 1 //学分
}

```

```

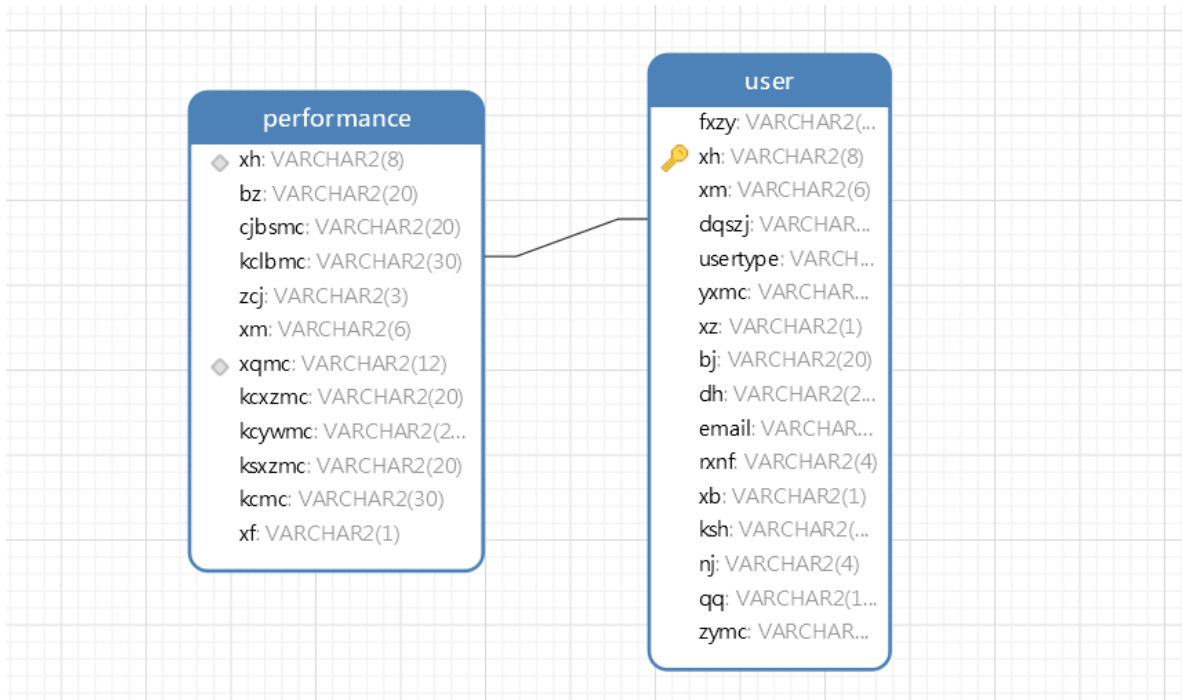
# 创建表格
CREATE TABLE "CHANG"."`performance" (
    "xh" VARCHAR2(8 CHAR) NOT NULL ,
    "bz" VARCHAR2(20 CHAR) ,
    "cjbsmc" VARCHAR2(20 CHAR) ,
    "kclbmc" VARCHAR2(30 CHAR) ,
    "zcyj" VARCHAR2(6 CHAR) ,
    "xm" VARCHAR2(6 CHAR) NOT NULL ,
    "xqmc" VARCHAR2(12 CHAR) ,
    "kcxzmc" VARCHAR2(20 CHAR) ,
    "kcywmc" VARCHAR2(255 CHAR) ,
    "ksxzmc" VARCHAR2(20 CHAR) ,
    "kcmc" VARCHAR2(30 CHAR) NOT NULL ,
    "xf" VARCHAR2(4 CHAR) ,
    CONSTRAINT "SYS_C0011116" FOREIGN KEY ("xh") REFERENCES "CHANG"."swxy_user" ("xh")
    NOT DEFERRABLE INITIALLY IMMEDIATE NORELY VALIDATE,
    CONSTRAINT "SYS_C0011104" CHECK ("xh" IS NOT NULL) NOT DEFERRABLE INITIALLY
    IMMEDIATE NORELY VALIDATE,
    CONSTRAINT "SYS_C0011109" CHECK ("xm" IS NOT NULL) NOT DEFERRABLE INITIALLY
    IMMEDIATE NORELY VALIDATE,
    CONSTRAINT "SYS_C0011114" CHECK ("kcmc" IS NOT NULL) NOT DEFERRABLE INITIALLY
    IMMEDIATE NORELY VALIDATE
)
TABLESPACE "DATA01"
LOGGING
NOCOMPRESS
PCTFREE 10
INITRANS 1
STORAGE (
    INITIAL 1048576
    NEXT 1048576
    MINEXTENTS 1
    MAXEXTENTS 2147483645
    FREELISTS 1
    FREELIST GROUPS 1
    BUFFER_POOL DEFAULT
)
PARALLEL 1
NOCACHE
DISABLE ROW MOVEMENT
;

```

```
CREATE INDEX
ON "CHANG"."Untitled" ("xh");

CREATE INDEX
ON "CHANG"."Untitled" ("kcmc")
```

创建成功



二、项目搭建

maven依赖

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

```

<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-devtools</artifactId>
  <scope>runtime</scope>
  <optional>true</optional>
</dependency>
<dependency>
  <groupId>com.oracle.jdbc</groupId>
  <artifactId>ojdbc8</artifactId>
  <scope>runtime</scope>
</dependency>
<dependency>
  <groupId>org.projectlombok</groupId>
  <artifactId>lombok</artifactId>
  <optional>true</optional>
</dependency>
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-test</artifactId>
  <scope>test</scope>
</dependency>

<dependency>
  <groupId>com.alibaba</groupId>
  <artifactId>druid</artifactId>
  <version>1.1.22</version>
</dependency>

<dependency>
  <groupId>us.codecraft</groupId>
  <artifactId>webmagic-core</artifactId>
  <version>0.7.3</version>
</dependency>
<dependency>
  <groupId>us.codecraft</groupId>
  <artifactId>webmagic-extension</artifactId>
  <version>0.7.3</version>
</dependency>
<dependency>
  <groupId>com.alibaba</groupId>
  <artifactId>fastjson</artifactId>
  <version>1.2.62</version>
</dependency>

```

yaml配置

```

server:
  port: 7878

```

```

spring:
  datasource:
    type: com.alibaba.druid.pool.DruidDataSource
    driver-class-name: oracle.jdbc.driver.OracleDriver
    url: jdbc:oracle:thin:@106.13.168.109:1521:helowin
    username: chang

```

```

password: root
initialSize: 5
minIdle: 10
maxActive: 20
maxWait: 60000
timeBetweenEvictionRunsMillis: 60000
minEvictableIdleTimeMillis: 300000
validationQuery: SELECT 1 FROM DUAL
testWhileIdle: true
testOnBorrow: false
testOnReturn: false
poolPreparedStatements: true
filters: stat,wall
maxPoolPreparedStatementPerConnectionSize: 20
useGlobalDataSourceStat: true
connectionProperties: druid.stat.mergeSql=true;druid.stat.slowSqlMillis=500

```

```

mybatis:
  typeAliasesPackage: chang.pojo
  mapperLocations: classpath:mapper/*.xml
logging:
  level:
    chang:
      mapper: debug

```

数据库映射文件

```

<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
"http://mybatis.org/dtd/mybatis-3-mapper.dtd" >
<mapper namespace="chang.dao.UserMapper">

  <select id="getUserCount" resultType="int">
    SELECT count(*) FROM "swxy_user"
  </select>

  <insert id="addUser" parameterType="User">
    INSERT INTO "swxy_user"
      ("fxzy", "xh", "xm", "dqszej", "usertype", "yxmc", "xz", "bj", "dh", "email",
      "rxnf", "xb", "ksh", "nj", "qq", "zymc") VALUES
      ({fxzy,jdbcType=VARCHAR}, #{xh,jdbcType=VARCHAR}, #{xm,jdbcType=VARCHAR}, #
      {dqszej,jdbcType=VARCHAR}, #{usertype,jdbcType=VARCHAR}, #{yxmc,jdbcType=VARCHAR}, #
      {xz,jdbcType=VARCHAR}, #{bj,jdbcType=VARCHAR}, #{dh,jdbcType=VARCHAR}, #
      {email,jdbcType=VARCHAR},
      #{rxnf,jdbcType=VARCHAR}, #{xb,jdbcType=VARCHAR}, #{ksh,jdbcType=VARCHAR}, #
      {nj,jdbcType=VARCHAR}, #{qq,jdbcType=VARCHAR}, #{zymc,jdbcType=VARCHAR})
  </insert>

</mapper>

```

```

<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE mapper PUBLIC "-//mybatis.org//DTD Mapper 3.0//EN"
"http://mybatis.org/dtd/mybatis-3-mapper.dtd" >
<mapper namespace="chang.dao.PerformanceMapper">

  <select id="getPerformanceCount" resultType="int">

```



```

        select count(*) from "performance"
    </select>

    <insert id="addPerformance" parameterType="performance">
        INSERT INTO "CHANG"."performance"
        ("xh", "bz", "cjbsmc", "kclbmc", "zcj", "xm", "xqmc", "kcxzmc",
        "kcywmc", "ksxzm", "kcmc", "xf")
        VALUES
        ({xh,jdbcType=VARCHAR}, #{bz,jdbcType=VARCHAR}, #{cjbsmc,jdbcType=VARCHAR}, #
        {kclbmc,jdbcType=VARCHAR}, #{zcj,jdbcType=VARCHAR}, #{xm,jdbcType=VARCHAR}, #
        {xqmc,jdbcType=VARCHAR}, #{kcxzmc,jdbcType=VARCHAR},
        #{kcywmc,jdbcType=VARCHAR}, #{ksxzm,jdbcType=VARCHAR}, #
        {kcmc,jdbcType=VARCHAR}, #{xf,jdbcType=VARCHAR})
    </insert>

    <insert id="addPerformanceList" parameterType="performance">
        INSERT INTO "CHANG"."performance"
        ("xh", "bz", "cjbsmc", "kclbmc", "zcj", "xm", "xqmc", "kcxzmc",
        "kcywmc", "ksxzm", "kcmc", "xf")
        <foreach collection="list" item="item" separator="union all">
            (SELECT
                #{item.xh,jdbcType=VARCHAR},
                #{item.bz,jdbcType=VARCHAR},
                #{item.cjbsmc,jdbcType=VARCHAR},
                #{item.kclbmc,jdbcType=VARCHAR},
                #{item.zcj,jdbcType=VARCHAR},
                #{item.xm,jdbcType=VARCHAR},
                #{item.xqmc,jdbcType=VARCHAR},
                #{item.kcxzmc,jdbcType=VARCHAR},
                #{item.kcywmc,jdbcType=VARCHAR},
                #{item.ksxzm,jdbcType=VARCHAR},
                #{item.kcmc,jdbcType=VARCHAR},
                #{item.xf,jdbcType=VARCHAR}
            from dual)
        </foreach>
    </insert>

</mapper>

```

错误解决

```

### The error may exist in file [C:\Users\chang\Desktop\note\work\Oracle\work-
oracle\target\classes\mapper\PerformanceMapper.xml]
### The error may involve chang.dao.PerformanceMapper.addPerformanceList-Inline
### The error occurred while setting parameters
### SQL: INSERT INTO "CHANG"."performance"      ("xh", "bz", "cjbsmc", "kclbmc",
"zcj", "xm", "xqmc", "kcxzmc",      "kcywmc", "ksxzm", "kcmc", "xf").....
### Cause: java.sql.SQLException: ORA-01653: 表 CHANG.performance 无法通过 128 (在表空间
DATA01 中) 扩展

```

解决:

```

alter database datafile '/home/oracle/data/data01.dbf' autoextend on next 50M maxsize
unlimited;

```

测试

1 百度云

2 百度云

+

| CONTAINER ID | NAME | CPU % | MEM USAGE / LIMIT | MEM % | NET I/O | BLOCK I/O | PIDS |
|--------------|-----------|--------|---------------------|-------|-----------------|---------------|------|
| 4c0bad63b10b | tomcat01 | 0.17% | 94.29MiB / 1.952GiB | 4.72% | 37.3kB / 319kB | 10.9GB / 0B | 29 |
| 67207d006819 | redis | 0.17% | 8.223MiB / 1.952GiB | 0.41% | 3.21MB / 2.97MB | 4.97GB / 0B | 4 |
| 6e82ac0dbf1a | oracle11g | 26.21% | 154MiB / 1.952GiB | 7.70% | 58.2MB / 8.6MB | 613MB / 749MB | 59 |

任务管理器

文件(F) 选项(O) 查看(V)

进程 性能 应用历史记录 启动 用户 详细信息 服务

| 名称 | 状态 | CPU | 内存 | 磁盘 | 网络 |
|--------------------|----|-------|-------------|----------|----------|
| IntelliJ IDEA (6) | | 41.4% | 3,070.8 ... | 0.1 MB/秒 | 8.2 Mbps |
| nwjs (5) | | 6.5% | 388.1 MB | 0 MB/秒 | 0 Mbps |
| 桌面窗口管理器 | | 6.4% | 90.5 MB | 0 MB/秒 | 0 Mbps |
| Google Chrome (20) | | 5.8% | 566.9 MB | 0.1 MB/秒 | 0 Mbps |

| N | SQL▼ | 执行数 | 执行时间 | 最慢 | 事务执行 | 错误数 | 更新行数 | 读取行数 | 执行中 | 最大并发 | 执行时间分布 [-----] | 执行+R5分布 [-----] | 读取行分布 [-----] | 更新行分布 [-----] |
|----|------------------------------|--------|---------|-------|------|-----|---------|------|-----|------|-------------------------|-------------------------|------------------|-------------------|
| 1 | select count(*) from "per... | 2 | 392 | 331 | | | | 2 | | 1 | [0,0,1,1,0,0,0,0] | [2,0,0,0,0,0,0,0] | [0,0,0,0,0,0] | [2,0,0,0,0,0] |
| 2 | INSERT INTO "CHANG"."perf... | 1 | 82 | 82 | | | 21 | | 1 | 1 | [0,0,1,0,0,0,0,0] | [0,0,1,0,0,0,0,0] | [0,0,0,0,0,0] | [0,0,1,0,0,0] |
| 3 | INSERT INTO "CHANG"."perf... | 3 | 281 | 162 | | | 60 | | 1 | 1 | [0,0,2,1,0,0,0,0] | [0,0,2,1,0,0,0,0] | [0,0,0,0,0,0] | [0,0,3,0,0,0] |
| 4 | INSERT INTO "CHANG"."perf... | 7 | 839 | 298 | | | 133 | | 1 | 1 | [0,0,4,3,0,0,0,0] | [0,0,4,3,0,0,0,0] | [0,0,0,0,0,0] | [0,0,7,0,0,0] |
| 5 | INSERT INTO "CHANG"."perf... | 12 | 1,551 | 486 | | | 216 | | 1 | 1 | [0,0,7,5,0,0,0,0] | [0,0,7,5,0,0,0,0] | [0,0,0,0,0,0] | [0,0,12,0,0,0] |
| 6 | INSERT INTO "CHANG"."perf... | 27 | 2,555 | 493 | | | 459 | | 2 | 2 | [0,0,21,6,0,0,0,0] | [0,0,21,6,0,0,0,0] | [0,0,0,0,0,0] | [0,0,27,0,0,0] |
| 7 | INSERT INTO "CHANG"."perf... | 47 | 3,887 | 265 | | | 752 | | 2 | 2 | [0,0,37,10,0,0,0,0] | [0,0,37,10,0,0,0,0] | [0,0,0,0,0,0] | [0,0,47,0,0,0] |
| 8 | INSERT INTO "CHANG"."perf... | 508 | 45,690 | 745 | | | 7,620 | | 8 | 8 | [0,0,419,89,0,0,0,0] | [0,0,419,89,0,0,0,0] | [0,0,0,0,0,0] | [0,0,508,0,0,0] |
| 9 | INSERT INTO "CHANG"."perf... | 1,002 | 84,763 | 781 | | | 14,028 | | 12 | 12 | [0,0,835,167,0,0,0,0] | [0,0,835,167,0,0,0,0] | [0,0,0,0,0,0] | [0,0,1002,0,0,0] |
| 10 | INSERT INTO "CHANG"."perf... | 1,623 | 161,177 | 1,528 | | | 21,099 | | 15 | 15 | [0,0,1302,317,4,0,0,0] | [0,0,1302,317,4,0,0,0] | [0,0,0,0,0,0] | [0,0,1623,0,0,0] |
| 11 | INSERT INTO "CHANG"."perf... | 6,093 | 630,007 | 929 | | 1 | 80,304 | | 20 | 20 | [0,0,5328,1365,0,0,0,0] | [0,0,5328,1365,0,0,0,0] | [0,0,0,0,0,0] | [0,0,6092,0,0,0] |
| 12 | INSERT INTO "CHANG"."perf... | 6,363 | 580,906 | 1,495 | | | 69,993 | | 20 | 20 | [0,0,5202,1157,4,0,0,0] | [0,0,5202,1157,4,0,0,0] | [0,0,0,0,0,0] | [0,0,6363,0,0,0] |
| 13 | INSERT INTO "CHANG"."perf... | 10,922 | 911,159 | 1,410 | | 4 | 109,180 | | 17 | 17 | [0,0,9322,1594,6,0,0,0] | [0,0,9322,1594,6,0,0,0] | [0,0,0,0,0,0] | [0,0,10918,0,0,0] |
| 14 | INSERT INTO "CHANG"."perf... | 8,715 | 697,957 | 1,200 | | 4 | 78,399 | | 20 | 20 | [0,0,7598,1112,5,0,0,0] | [0,0,7598,1112,5,0,0,0] | [0,0,0,0,0,0] | [0,0,8711,0,0,0] |
| 15 | INSERT INTO "CHANG"."perf... | 9,309 | 720,312 | 4,599 | | 1 | 74,464 | | 14 | 14 | [0,0,8223,1080,6,0,0,0] | [0,0,8223,1080,6,0,0,0] | [0,0,0,0,0,0] | [0,0,9308,0,0,0] |
| 16 | INSERT INTO "CHANG"."perf... | 6,659 | 500,803 | 1,085 | | 1 | 46,606 | | 12 | 12 | [0,0,5882,773,4,0,0,0] | [0,0,5882,773,4,0,0,0] | [0,0,0,0,0,0] | [0,0,6659,0,0,0] |
| 17 | INSERT INTO "CHANG"."perf... | 2,498 | 196,852 | 1,043 | | | 14,988 | | 9 | 9 | [0,0,2178,319,1,0,0,0] | [0,0,2178,319,1,0,0,0] | [0,0,0,0,0,0] | [0,0,2498,0,0,0] |
| 18 | INSFRT INTO "CHANG"."perf | 1,869 | 141,585 | 1,314 | | | 9,345 | | 8 | 8 | [0,0,1657,211,1,0,0,0] | [0,0,1657,211,1,0,0,0] | [0,0,0,0,0,0] | [0,0,1869,0,0,0] |

调优

- 增学号索引，提高查询效率
- 一次插入多行数据，减少连接带来的时间消耗
- 多线程并发

说明

由于这是数据库课程设计，详细项目代码请访问 <https://github.com/changorz/zy-oracle>