



JIMSQL : JIM ISN'T MySQL

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概要

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问题描述

- 来源:POJ (北大ACM月赛) 3699并予以扩充
 - <http://acm.pku.edu.cn/JudgeOnline/problem?id=3699>
- 输入(Input)
- 输出(Output)



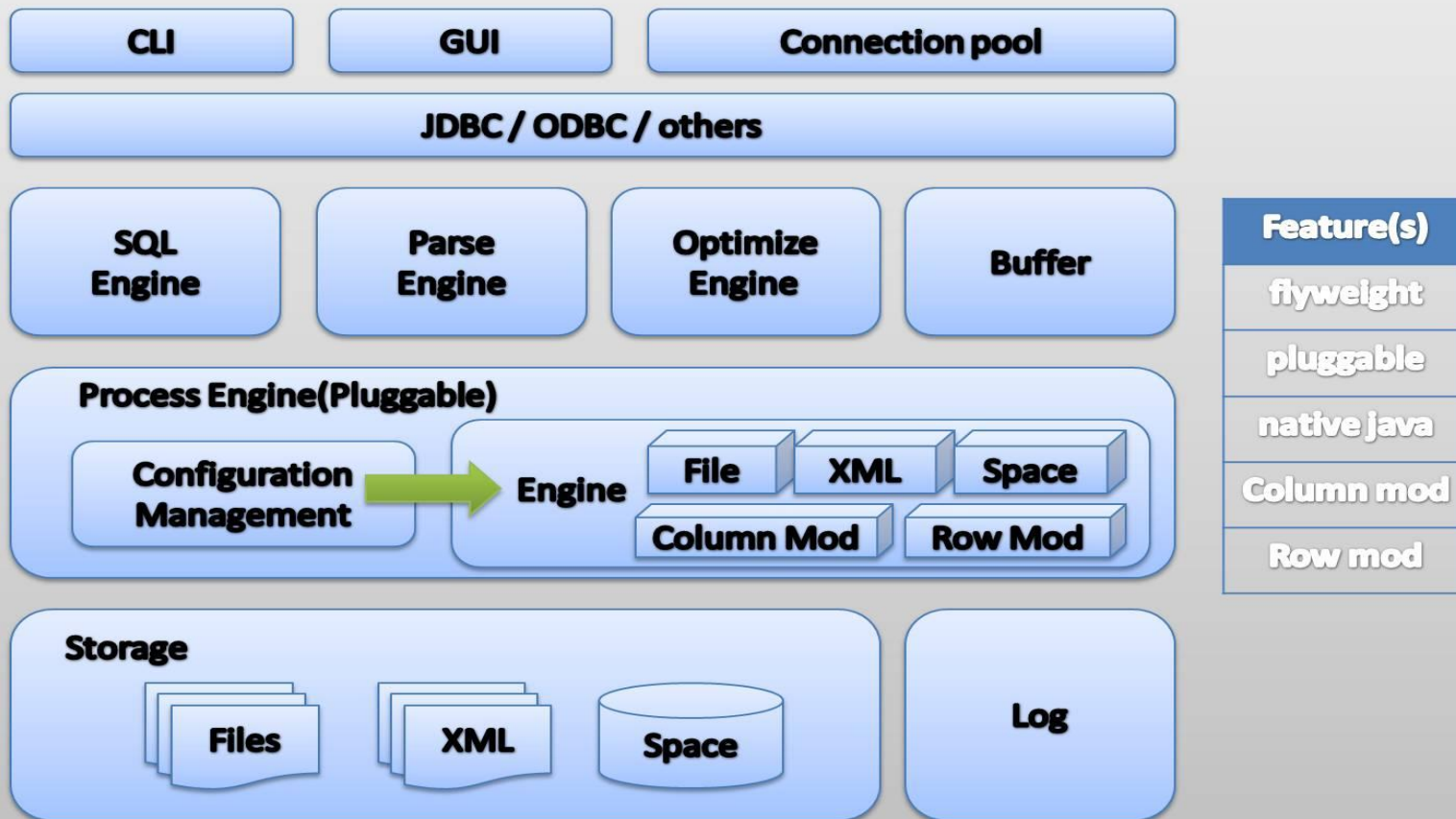
基本概念

- RDBMS(Relational Database Management System)
- DML(Data Manipulation Language)
- DDL(Data Definition Language)
- Syntax Analysis
- Regular Expression



架构图

JimSQL architecture diagram



存储方式（目前文本存储，没实现索引）

存储目录结构

```
storage
|
|
+---db1
|   |
|   +---table1
|   |
|   +---table2
|
+---db2
|   |
|   +table3
|
+---db3
```

```
private File databasefile ; //数据库目录
private File storge;      //存储引擎目录
private File currenttable; //当前表文件
private static Connection connection; //连接
```

//单例模式保存数据库连接

```
public static Connection getInstance() throws
InstantiationException, IllegalAccessException,
ClassNotFoundException{
if(connection==null){
connection = new Connection();
}
return connection;
}
```



支持数据类型

- net.fly78.miniSQL.datatype.DataType接口
 - INT
 - STR
 - DATE
 - FLOAT
- **public interface DataType {**
 - **public String getStringValue();**
 - **public int getLength();**
 - **public Class<?> getType();**
 - **public DataType getValue();**
 - **public int compare(String r);**
- **}**



命令集（模拟MySQL命令行风格）

- use \$db
- create database \$name
- show database
- show tables
- create table \$name (\$field \$type \$length , \$field \$type \$length)
- select * from \$table where \$field=\$cond
- describe \$table;
- insert into \$table value(\$value);



命令集(续)

- 接口Command
- Command适配器CommandAdpter
- 实现命令多态
- 通过正则表达式,反射
- **try{**
- `Command rc =
Ref2Class.getCommand(res.toLowerCase().split("")[0]);`
- `res = res.substring(0, res.length()-1);`
- `rc.excuse(res);`
- **}catch(Exception e){**
- `System.out.println("unknow command");`
- **}**



其他特性

- 纯JAVA实现
- 开放架构
 - 支持配置解析器引擎方式
 - 支持配置存储引擎
- 扩展基本数据类型
- 支持日志



Road map

- 改进存储方式
- 增加列存模式
- SQL标准的支持
- 语法解释器优化
- 增加索引
- 增加锁



测试用例

- 4 10
- SID INT 8
- NAME STR 20
- SEX STR 2
- AGE INT 8
- 1000 Potion F 22
- 1001 Phoenix_Down M 34
- 1002 Remedy M 52
- 1003 Dagger F 31
- 1004 Rod M 42
- 1005 Flame_Staff M 72
- 1006 Broad_Sword F 47
- 1007 Fork M 10
- 1008 Javelin M 85
- 1009 Cats_Claws F 37
- 1010 Dafei M 25
- 1011 Maliwen M 25



测试用例

java -jar jim.jar

show database;

use db1;

show tables;

describe info;

select * from info;

Select * from info where sid>1008

```
C:\WINDOWS\system32\cmd.exe - java -jar jim.jar

C:\jim>java -jar jim.jar
Welcome to use jimSQL command line!
author : Jack Li
email : dafei1288@gmail.com
jimSQL>show database;
database
db1
db2
db3
db4
db5
< time: 0.00 sec>
jimSQL>use db1;
database changed
jimSQL>show tablse;
runtime error please retry
jimSQL>show tables;
info
salary
< time: 0.00 sec>
jimSQL>describe info;
SID INT 8
NAME STR 20
SEX STR 2
AGE INT 8
< time: 0.00 sec>
jimSQL>select * from info;
+----+-----+-----+
| sid| name      | sex| age |
+----+-----+-----+
| 1000| Potion    | F| 22  |
| 1001| Phoenix_Down| M| 34  |
| 1002| Remedy     | M| 52  |
| 1003| Dagger    | F| 31  |
| 1004| Rod        | M| 42  |
| 1005| Flame_Staff| M| 72  |
| 1006| Broad_Sword| F| 47  |
| 1007| Fork       | M| 10  |
| 1008| Javelin   | M| 85  |
| 1009| Cats_Claws| F| 37  |
| 1010| Dafei     | M| 25  |
| 1011| Maliwen   | M| 25  |
+----+-----+-----+
12 rows in set< time: 0.02 sec>
jimSQL>select sid,name,age from info where sid>1008;
+----+-----+-----+
| sid| name      | age |
+----+-----+-----+
| 1009| Cats_Claws| 37  |
| 1010| Dafei     | 25  |
| 1011| Maliwen   | 25  |
+----+-----+-----+
3 rows in set< time: 0.00 sec>
jimSQL>
```

测试用例

insert into info values(1012
JackLi M 26);

SQL 语句还不完全支持标准

```
C:\WINDOWS\system32\cmd.exe - java -jar jim.jar
jimSQL>show tablese;
runtime error please retry
jimSQL>show tables;
info
salary
< time: 0.00 sec>
jimSQL>describe info;
SID INT 8
NAME STR 20
SEX STR 2
AGE INT 8
< time: 0.00 sec>
jimSQL>select * from info;
+----+-----+-----+
| sid| name      | sex| age |
+----+-----+-----+
| 1000| Potion     | F| 22  |
| 1001| Phoenix_Dow| M| 34  |
| 1002| Remedy     | M| 52  |
| 1003| Dagger    | F| 31  |
| 1004| Rod        | M| 42  |
| 1005| Flame_Staff| M| 72  |
| 1006| Broad_Sword| F| 47  |
| 1007| Fork       | M| 10  |
| 1008| Javelin    | M| 85  |
| 1009| Cats_Claws | F| 37  |
| 1010| Dafei     | M| 25  |
| 1011| Maliwen   | M| 25  |
+----+-----+-----+
12 rows in set< time: 0.02 sec>
jimSQL>select sid,name,age from info where sid>1008;
+----+-----+-----+
| sid| name      | age |
+----+-----+-----+
| 1009| Cats_Claws | 37  |
| 1010| Dafei     | 25  |
| 1011| Maliwen   | 25  |
+----+-----+-----+
3 rows in set< time: 0.00 sec>
jimSQL>insert into info values ( 1014 , JackLi , M , 26);
< 1 record insert , time: 0.00 sec>
jimSQL>select sid,name,age from info where sid>1008;
+----+-----+-----+
| sid| name      | age |
+----+-----+-----+
| 1009| Cats_Claws | 37  |
| 1010| Dafei     | 25  |
| 1011| Maliwen   | 25  |
+----+-----+-----+
3 rows in set< time: 0.00 sec>
jimSQL>insert into info values ( 1014 JackLi M 26 );
< 1 record insert , time: 0.00 sec>
jimSQL>select sid,name,age from info where sid>1008;
+----+-----+-----+
| sid| name      | age |
+----+-----+-----+
| 1009| Cats_Claws | 37  |
| 1010| Dafei     | 25  |
| 1011| Maliwen   | 25  |
| 1014| JackLi    | 26  |
+----+-----+-----+
4 rows in set< time: 0.02 sec>
jimSQL>_
```



谢谢!

