

同济大学计算机系

软件开发方法综合实验报告



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一、数据库设计

1、创建数据库

```
mysql> create database exp1;  
Query OK, 1 row affected (0.06 sec)  
  
mysql> use exp1;  
Database changed
```

2、创建 students 数据表

```
mysql> create table students(  
    -> No int not null,  
    -> Name varchar(20) not null,  
    -> Gender varchar(6) not null,  
    -> check(Gender='male' or Gender='female'),  
    -> Age int not null,  
    -> primary key(No));  
Query OK, 0 rows affected (0.08 sec)
```

```
mysql> desc students;  
+-----+-----+-----+-----+-----+-----+  
| Field | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| No    | int           | NO   | PRI | NULL    |       |  
| Name  | varchar(20)   | NO   |     | NULL    |       |  
| Gender | varchar(6)    | NO   |     | NULL    |       |  
| Age   | int           | NO   |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
4 rows in set (0.01 sec)
```

3、创建 teachers 数据表

```
mysql> create table teachers(  
    -> No int not null,  
    -> Name varchar(20) not null,  
    -> Gender varchar(6) not null,  
    -> check(Gender='male' or Gender='female'),  
    -> Age int not null,  
    -> primary key(No));  
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> desc teachers;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| No    | int           | NO   | PRI | NULL    |       |
| Name  | varchar(20)   | NO   |     | NULL    |       |
| Gender | varchar(6)    | NO   |     | NULL    |       |
| Age   | int           | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

4、创建 courses 数据表

```
mysql> create table courses(
  -> No int not null,
  -> Name varchar(20) not null,
  -> Credit int not null,
  -> primary key(No));
Query OK, 0 rows affected (0.04 sec)
```

```
mysql> desc courses;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| No    | int           | NO   | PRI | NULL    |       |
| Name  | varchar(20)   | NO   |     | NULL    |       |
| Credit | int           | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

5、创建 curricula_variable 数据表

```
mysql> create table curricula_variable(
  -> S_no int not null,
  -> T_no int not null,
  -> Cr_no int not null,
  -> Cs_no int not null);
Query OK, 0 rows affected (0.03 sec)
```

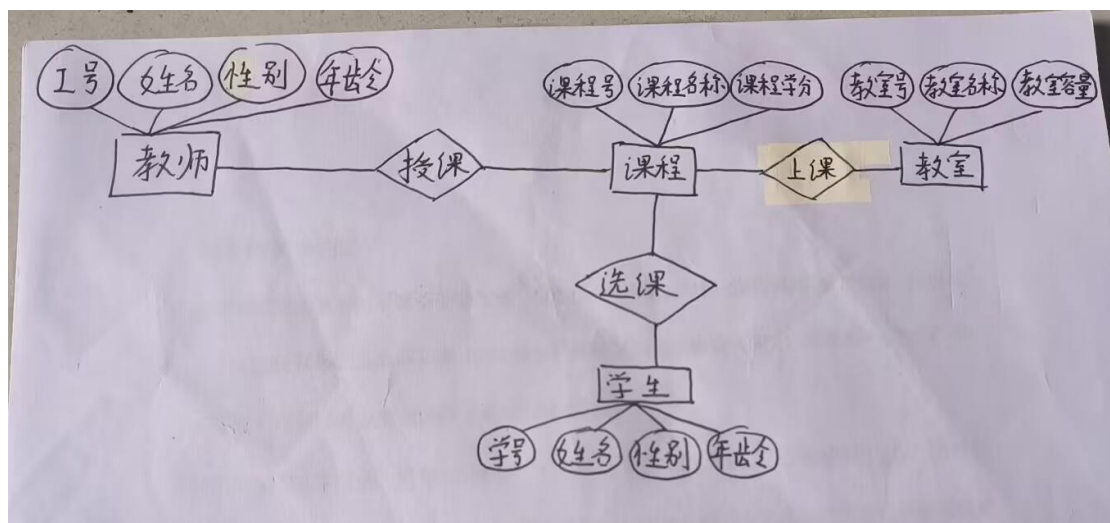
```
mysql> desc curricula_variable;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| S_no  | int  | NO   |     | NULL    |       |
| T_no  | int  | NO   |     | NULL    |       |
| Cr_no | int  | NO   |     | NULL    |       |
| Cs_no | int  | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

6、创建 classrooms 数据表

```
mysql> create table classrooms(  
  -> No int not null,  
  -> Name varchar(20) not null,  
  -> Capacity int not null);  
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> desc classrooms;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| No         | int           | NO   |     | NULL    |       |  
| Name       | varchar(20)   | NO   |     | NULL    |       |  
| Capacity   | int           | NO   |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
3 rows in set (0.00 sec)
```

二、E-R 图



三、Java 代码查询

```
import java.sql.Statement;  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.PreparedStatement;  
import java.sql.ResultSet;  
public class mysql {  
    public static void main(String[] args) {  
        try{
```

```

// 1. 加载驱动程序
Class.forName("com.mysql.cj.jdbc.Driver");
// 2. 建立连接
String url = "jdbc:mysql://172.25.192.1:3306/exp1";
String dbname = "root";
String psword = "123456";
Connection con = DriverManager.getConnection(url, dbname,
psword);

// 3. 创建状态
Statement state = con.createStatement();
// 4. 执行插入操作
String insert_1 = "insert into exp1.students
values(2251745,'Tom','male',19)";
state.executeUpdate(insert_1);
String insert_2 = "insert into exp1.students
values(2217233,'Jerry','female',19)";
state.executeUpdate(insert_2);
String insert_3 = "insert into exp1.students
values(2250280,'John','male',21)";
state.executeUpdate(insert_3);
// 5. 执行删除操作
String delete = "delete from exp1.students where No =
2250280";
state.executeUpdate(delete);
// 6. 执行修改操作
String update = "update exp1.students set gender = 'male'
where No = 2217233";
state.executeUpdate(update);
// 7. 执行查询操作
String query = "select * FROM exp1.students where No =
2217233";
ResultSet resultSet = state.executeQuery(query);

// 处理查询结果
if (resultSet.next()) {
    int no = resultSet.getInt("No");
    String name = resultSet.getString("Name");
    String gender = resultSet.getString("Gender");
    int age = resultSet.getInt("Age");

    // 输出查询结果
    System.out.println("学生信息:");
    System.out.println("学号: " + no);
    System.out.println("姓名: " + name);
}

```

```

        System.out.println("性别: " + gender);
        System.out.println("年龄: " + age);
    } else {
        System.out.println("未找到学生信息");
    }
    // 8. 关闭连接
    state.close();
    con.close();
    System.out.println("Operation completed");
} catch (Exception e) {
    System.out.println(e.getMessage());
}
}
}
}

```

四、操作结果展示

```

PS C:\Users\19232\Desktop\java> docker build -t my-java-app .
[+] Building 1.2s (9/9) FINISHED
=> [internal] load build definition from dockerfile
=> => transferring dockerfile: 176B
=> [internal] load metadata for docker.io/library/openjdk:11
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 138B
=> [1/4] FROM docker.io/library/openjdk:11@sha256:99bac5bf83633e3c7399aed725c8415e7b569b54e03e4599e580fc9cdb7c21ab
=> CACHED [2/4] COPY . /usr/src/myapp
=> CACHED [3/4] WORKDIR /usr/src/myapp
=> CACHED [4/4] RUN javac -cp lib/* mysql.java
=> exporting to image

```

```

=> => naming to docker.io/library/my-java-app

View build details: docker-desktop://dashboard/build/default/default/ojtywrjju8cz4smanodg222rk

What's Next?
  1. Sign in to your Docker account → docker login
  2. View a summary of image vulnerabilities and recommendations → docker scout quickview
PS C:\Users\19232\Desktop\java> docker run -it --rm --name my-running-app my-java-app
学生信息:
学号: 2217233
姓名: Jerry
性别: male
年龄: 19
Operation completed

```

```

mysql> select * from students;
Empty set (0.01 sec)

mysql> select * from students;
+-----+-----+-----+-----+
| No      | Name  | Gender | Age  |
+-----+-----+-----+-----+
| 2217233 | Jerry | male   | 19   |
| 2251745 | Tom   | male   | 19   |
+-----+-----+-----+-----+
2 rows in set (0.01 sec)

```

运行代码前

运行代码后