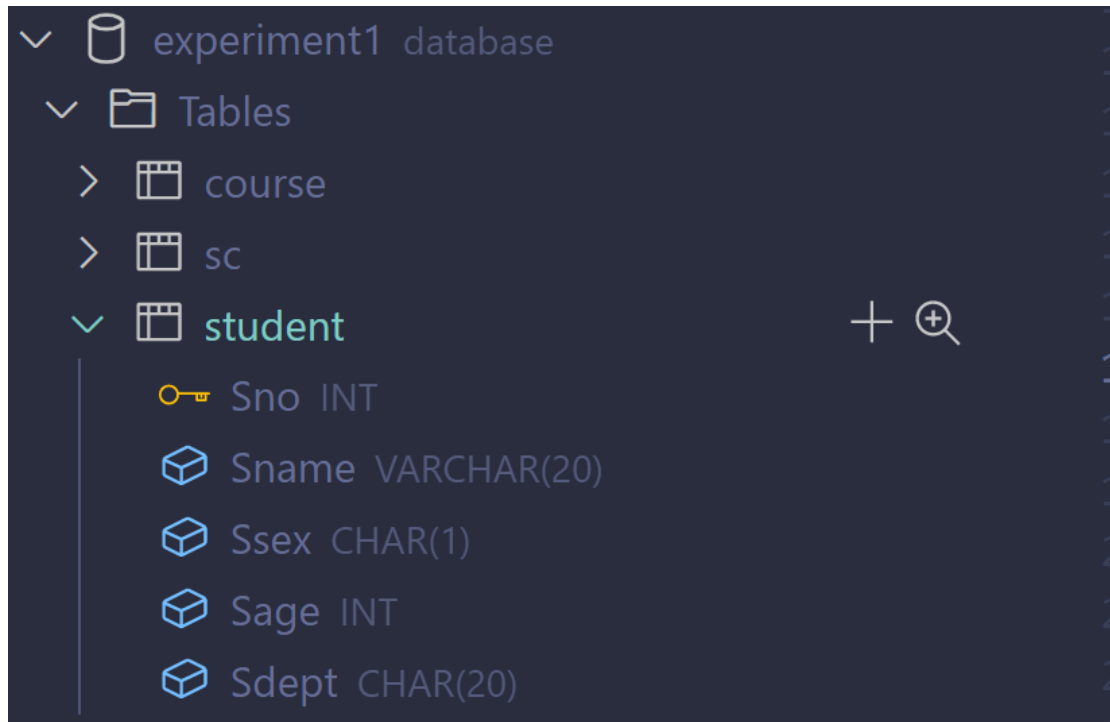


# 实验三

## 1. 数据库

数据库和表如下所示



## 2. 连接数据库及查询

### 2.1. 运行结果如下图所示

```
PS D:\2023stuffs\database\sql_c++\build> . "D:/2023stuffs/database/sql_c++/build/sql_c++.exe"
connect succeed
no:1    name:gogegogegoge    sex:m    age:18    department:CS

no:2    name:Liu              sex:m    age:19    department:CS
no:3    name:Wang                sex:m    age:20    department:MA
no:5    name:big world            sex:m    age:20    department:MA
disconnect
```

## 2.2. 代码如下所示

### 连接代码

```
StudentDAO::StudentDAO() : host("root"), password("520711YY"),
database("experiment1")
{
    mysql_init(&mysql);
    if (!mysql_real_connect(&mysql, "localhost", host, password,
database, 3306, nullptr, 0))
    {
        std::cout << "connect failed" << mysql_errno(&mysql) <<
std::endl;
    }
    else
        std::cout << "connect succeed" << std::endl;
}
StudentDAO::~StudentDAO()
{
    mysql_close(&mysql);
    printf("disconnect\n");
}
```

### 查询代码:

```
bool StudentDAO::loadStudents(std::vector<Student> &students)
{
    return queryStudents(students, "select * from student");
}

bool StudentDAO::queryStudents(std::vector<Student> &students, const
char *query)
{
    if (exec(query))
    {
        res = mysql_store_result(&mysql);
        if (res == nullptr)
        {
            std::cout << "store failed: " << mysql_errno(&mysql) <<
std::endl;
            return false;
        }
        else
```

```

        while (row = mysql_fetch_row(res))
            students.emplace_back(Student(row));
    }
    mysql_free_result(res);
    return true;
}

```

在主函数中：

```

StudentDAO dao;
std::vector<Student> students;
dao.loadStudents(students);
for (auto s : students)
{
    std::cout << s;
}

```

### 3. 更新数据

#### 3.1. 运行结果如下图所示

```

connect succeed
no:1    name:gogegogegoge    sex:m    age:18    department:CS
no:2    name:Liu             sex:m    age:19    department:CS
no:3    name:Wang            sex:m    age:20    department:MA
no:5    name:new name       sex:m    age:20    department:MA
disconnect

```

#### 3.2. 代码如下所示

更新代码

```

bool StudentDAO::updateStudent(const Student &val)
{
    std::stringstream builder;
    builder << "update student set Sname = '" << val.name << "', Ssex = '"
    << val.sex << "', Sage = '" << val.age
    << "', Sdept = '" << val.dept << "' where Sno = '" << val.no;
    const string &str = builder.str();
    const char *query = str.c_str();
    return exec(query);
}

```

```

}
bool StudentDAO::exec(const char *query)
{
    if (mysql_real_query(&(this->mysql), query, (unsigned
int)strlen(query)))
    {
        std::cout << "exec failed: " << mysql_errno(&mysql) << '\n'
            << "sql: " << query << std::endl;
        return false;
    }
    return true;
}

```

## 主函数

```

// update
temp.name = "new name";
dao.updateStudent(temp);

```

## 4. 插入数据

### 4.1. 运行结果如下图所示

```

PS D:\2023stuffs\database\sql_c++\build> . "D:/2023stuffs/database/sql_c++/build/sql_c++.exe"
connect succeed
no:1   name:gogegogegoge      sex:m   age:18  department:CS
no:2   name:Liu               sex:m   age:19  department:CS
no:3   name:Wang              sex:m   age:20  department:MA
no:5   name:new name          sex:m   age:20  department:MA
no:6   name:new student       sex:m   age:20  department:MA
disconnect

```

### 4.2. 代码如下所示

#### 插入代码

```

bool StudentDAO::updateStudent(const Student &val)
{
    std::stringstream builder;
    builder << "update student set Sname = '" << val.name << "', Ssex = '"
    << val.sex << "', Sage = " << val.age
        << "', Sdept = '" << val.dept << "' where Sno = " << val.no;
    const string &str = builder.str();
}

```

```

    const char *query = str.c_str();
    return exec(query);
}

```

## 主函数

```

StudentDAO dao;
std::vector<Student> students;
dao.loadStudents(students);
for (auto s : students)
{
    std::cout << s;
}
auto &temp = students.back();
// insert
auto newStudent = temp;
newStudent.name = "new student";
dao.insertStudent(newStudent);

```

## 5. 删除数据

### 5.1. 运行结果如下图所示

```

PS D:\2023stuffs\database\sql_c++\build> . "D:/2023stuffs/database/sql_c++/build/sql_c++.exe"
connect succeed
no:1   name:gogegogegoge    sex:m   age:18  department:CS
no:2   name:Liu             sex:m   age:19  department:CS
no:3   name:Wang            sex:m   age:20  department:MA
no:5   name:new name        sex:m   age:20  department:MA
disconnect

```

### 5.2. 代码如下所示

#### 删除代码

```

bool StudentDAO::deleteStudent(const Student &student)
{
    char query[] = "delete from student where Sno = ";
    strcat(query, std::to_string(student.no).c_str());
    return exec(query);
}

```

## 主函数

```
StudentDAO dao;
std::vector<Student> students;
dao.loadStudents(students);
for (auto s : students)
{
    std::cout << s;
}
auto &temp = students.back();
// delete
dao.deleteStudent(temp);
```