

选课系统实验报告

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1. 需求分析

对不同的用户主体，有着不同的需求

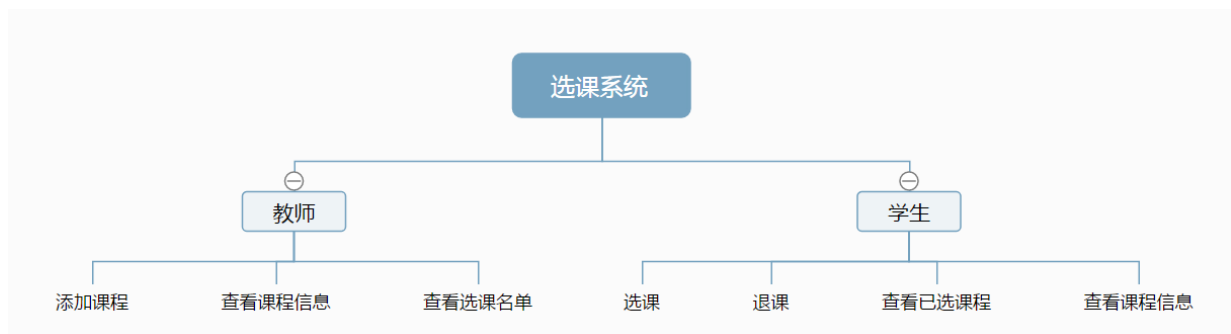
1. 教师

1. 添加课程
2. 查看所有课程信息
3. 查看某课程及选该课程的同学的名单

2. 学生

1. 选择课程
2. 退出课程
3. 查看所有课程信息（无法查看选课名单）
4. 查看某课程信息（同样无法查看选课名单）
5. 查看自己的选课列表

2. 实现思路



3. 数据设计

在程序开始运行时，会自动载入 `./bin/data/` 下的数据文件
并将数据放到map中以待使用

在程序结束时，会从map中取出数据存放回原目录下的数据文件

数据主要以维护三个map为主

```
map<string, Student> student_data;  
map<string, Teacher> teacher_data;  
map<string, Lesson> lesson_data;
```

而在Lesson类

使用一个vector存放选择该课的学生

```
vector<string> stud_selected;
```

在Student类中

使用一个vector存放选择选课列表

```
vector<string> selected_lesson;
```

4. 函数设计

Database类

该类主要提供对数据的操作的相关函数，是系统核心

1. 文件操作

```
bool load(const string& studfile_name = "./data/student",  
          const string& teachfile_name = "./data/teacher",  
          const string& lessonfile_name = "./data/lesson");  
bool save(const string& studfile_name = "./data/student",  
          const string& teachfile_name = "./data/teacher",  
          const string& lessonfile_name = "./data/lesson");
```

2. 寻找类

```
bool find_lesson(const string & lesson_name) const;  
int find_username(const string & user_name) const;
```

3. 添加项目类

```
bool add_student(const string& stud_name,
                 const string & stud_password);
bool add_teacher(const string & teach_name,
                 const string & teach_password);
bool add_lesson(const string & lesson_name,
                 const int max_num);
```

4. 修改类

```
bool lesson_add_stud(const string& lesson_name,
                     const string & stud_name);
bool lesson_delete_stud(const string& lesson_name,
                        const string & stud_name);
```

5. 打印信息类

```
void print_student_public(const string & user_name) const;

void print_student() const;
void print_teacher() const;
void print_lesson() const;
void print_lesson(const string & lesson_name) const;
void print_lesson_public(const string & lesson_name) const;
void print_lesson_public() const;
```

Lesson类

1. 修改Lesson内数据的函数

```
bool add_student(const string & stud_name);
bool delete_student(const string & stud_name);
```

2. 得到lesson状态的函数

```
inline const string get_name() const;
inline bool is_empty() const;
inline bool is_full() const;
```

3. 辅助输出函数

```
inline void print() const;
const string to_string() const;
const string to_string_public() const;
```

Student 和 Teacher 类

这两个类继承自User类

User类

```
const string get_name() const {return m_name;};
bool verify(const string & try_password) const;
```

Student类

```
explicit Student(const string& data);
const string to_string() const;
const string to_string_public() const;
bool select_lesson(const string & lesson_name);
bool return_lesson(const string & lesson_name);
```

Teacher类

```
explicit Teacher(const string& data);
const string to_string() const ;
```

5. 输入输出

1. bin/test.in

```
admin
admin
a
math
45
a
java
23
a
c++
66
q
q
```

(此时数据库中仅有一名老师账户，且没有课程数据，学生数据)

```
walker@ubuntu:~/myGithub/Select/bin$ ./main.out
-----
Welcome to the course select system
Copyright by Walker
-----

loading the database.....
load the data successfully!
Do you have an account?[y/n] [default:y]
Now you can enter your username and password to sign up this system
Please enter your username.
admin
Please enter your password.
admin
-----
Welcome to the teacher client
Your are admin
w : watch a course
a : add a course
p : print all course
q : quit the client
-----
Please enter your choice.
a
Please write down the name of the course you want to add.
```

```
java
And ths max number of students.
23
You have add this lesson successfully
Pleash continue to enter your choice
a
Please write down the name of the course you want to add.
math
And ths max number of students.
45
You have add this lesson successfully
Pleash continue to enter your choice
a
Please write down the name of the course you want to add.
c++
And ths max number of students.
66
You have add this lesson successfully
Pleash continue to enter your choice
p
```

```
-----
lesson name  max  now
      c++    66   0
      java   23   0
      math   45   0
-----
That's all
Pleash continue to enter your choice
q
saving.....
save the data successfully
Now you can sign up again.[s]
Or enter 'q' to quit [q]
enter[s/q]q
Please enter any key to quit.
```

2. bin/test2.in

```
n
y
16337237
password
16337237
password
a
s
java
a
s
math
a
w
r
java
a
p
math
w
q
q
```

(输入test.in后，课程数据内有三门课程)

c++	66	0
java	23	0
math	45	0

(此后使用test2.in，注册一个学生并选课)

```
-----  
Welcome to the course select system  
Copyright by Walker  
-----
```

```
loading the database.....  
load the data successfully!  
Do you have an account?[y/n] [default:y]n  
Do you want to create an account to select lessons?[y/n] [default:y]  
y  
please enter your username(maybe your id number)  
16337237  
please enter your password.  
password  
create an account successfully  
Now you can enter your username and password to sign up this system  
Please enter your username.  
16337237  
Please enter your password.  
password
```

```
-----  
Welcome to the student client  
Your are 16337237  
s : select a course  
r : return a course  
w : watch your classes  
p : print a course  
a : print all course  
q : quit the client  
-----
```

```
Please enter your choice.  
a
```

```
-----  
lesson name  max  now  
    c++      66   0  
    java     23   0  
    math     45   0  
-----
```

```
That's all  
Please continue to enter your choice  
s  
Please write down the name of the course you want.  
java  
Select this course successfully
```



```

Pleash continue to enter your choice
s
Please write down the name of the course you want.
math
Select this course successfully
Pleash continue to enter your choice
a
-----
lesson name  max  now
      c++    66   0
      java   23   1
      math   45   1
-----
That's all
Pleash continue to enter your choice
w
-----
name          courses
16337237      java      math
-----
Pleash continue to enter your choice
r
Please write down the name of the course you want to return.
java
Return this course successfully
Pleash continue to enter your choice
a
-----
lesson name  max  now
      c++    66   0
      java   23   0
      math   45   1
-----
That's all

```

```

Pleash continue to enter your choice
p
Please write down the name of the course you want to see.
math
-----
lesson name  max  now
      math   45   1
-----
That's all
Pleash continue to enter your choice
w
-----
name          courses
16337237      math
-----
Pleash continue to enter your choice
q
saving.....
save the data successfully
Now you can sign up again.[s]
Or enter 'q' to quit [q]
enter[s/q]q
Please enter any key to quit.

```