

# SLMS

A Simple Library Management System for DataBase Course 2020, Fudan

项目地址 <https://github.com/codeplay0314/SLMS>

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## 安装配置

- MySQL
- Go

## 用户手册

### 简介

这是一个简单的图书馆管理程序，您可以借助它进行借书、还书、查询书籍等操作。

使用该系统，您需要一个学生账号。如果没有，请联系图书馆管理员注册。

你可以同时借阅任意本书，从借阅当天开始，每本书默认须在 21 天内归还。超过三本书逾期您的账号将会被封锁，此时您需要联系管理员才能还书和重新激活账号。每本书有三次延期（每次一周）的机会。

请注意使用本系统时，书籍 ID 均为图书馆唯一指定的数字，并非ISBN码。

若书籍遗失，请联系管理员。

### 启动程序

1. 完成安装配置
2. 保证 MySQL 账户及密码与文件 library.go 中 User 和 Password 保持一致，使得程序能顺利链接数据库
3. 进入SLMS文件夹，运行终端
4. 键入 `go run library.go`
5. 程序运行成功，则显示

```
Welcome to the Library Management System!
Please choose login mode:
1. student
2. admin
3. root
0. exit
Please select a number(0-3):
```

## 登陆账号

### 1. 键入 1 进入学生登陆界面

Please log in to a student account  
Student ID:

### 2. 输入账号和密码

Please log in to a student account  
Student ID: 18307130163  
Password: \*\*\*\*\*

### 3. 登录状态

- 失败

Please log in to a student account  
Student ID: 18307130163  
Password: \*\*\*\*\*  
  
Login Failed!  
Please enter correct ID and password...

- 成功: 进入功能界面

Welcome Codeplay!  
What do you want to do?  
1: Borrow a book  
2: Return a book  
3: Search books in library  
4: Query borrow histroy info of a student  
5: Query all overdue books a student has borrowed  
6: Query all books a student has borrowed and not returned yet  
7: Check the deadline of a borrowed book  
8: Extend the deadline of returning a book  
0: Log out  
You need to do(0-8):

## 选择功能

### 1. 键入相应数字选择功能

- 1: 借阅一本书
- 2: 退还一本书
- 3: 查询书籍的信息
- 4: 查询此账户的借书信息
- 5: 查询此账户过期的借阅书籍
- 6: 查询此账户未退还的借阅书籍
- 7: 查询此账户借阅书籍的应还日期
- 8: 延长此账户借阅书籍的退还日期
- 0: 登出

### 2. 键入 1 选择开始; 键入 0 选择退出

[(function)]  
1. Begin  
0. Exit  
You want to(1/0):

## 功能介绍

1 借阅一本书

1. 键入书籍唯一识别号 ID 号

[Borrow a book]  
Please enter ID number of the book: 2

2. 查看信息并确认

[Borrow a book]  
  
Please check  
-----  
[ID] 2  
[ISBN] 9780739360392  
[Title] Harry Potter and the Deathly Hallows  
[Author] J. K. Rowling  
[Status] available  
[Info] borrowed by student 233  
-----  
Are you sure to borrow this book? (y/N)

3. 键入 y 确认， N 取消， 区分大小写

2 退还一本书

1. 查看所有已借阅书籍

[Return a book]  
  
Please check the book you have borrowed:  
  
NO.1  
-----  
[Record ID] 11  
[Book ID] 1  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2019-01-08  
[Expected Return Time] 2019-01-29  
[Delayed Times] 0  
[Status] being used  
[Info]  
-----  
  
NO.2  
-----  
[Record ID] 13  
[Book ID] 3  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2018-05-08  
[Expected Return Time] 2018-05-29  
[Delayed Times] 0  
[Status] being used  
[Info]  
-----  
  
NO.3  
-----  
[Record ID] 14  
[Book ID] 4  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2020-03-18  
[Expected Return Time] 2020-04-08  
[Delayed Times] 0  
[Status] being used  
[Info]

-----  
You want to return book NO.

## 2. 选择并键入要退还的书籍的号码 (以NO.2) 为例

You want to return book NO.2  
Are you sure to return the book NO.2? (y/N)

## 3. 键入 y 确认, N 取消, 区分大小写

### 3 查询书籍的信息

#### 1. 选择查询模式并键入相应号码

[Query info of a book in library]  
1. Search by book ID  
2. Search by book ISBN  
3. Search by book title  
4. Search by author  
0. Exit  
You want to(1/0):

#### 2. 输入查询信息 (以按作者查询为例)

Please enter author name:  
J. K. Rowling

#### 3. 查看所有书籍信息

[Query info of a book in library]

All books found:

-----  
[ID] 1  
[ISBN] 9780739360385  
[Title] Harry Potter and the Deathly Hallows  
[Author] J. K. Rowling  
[Status] borrowed  
[Info] borrowed by student 233  
-----

-----  
[ID] 2  
[ISBN] 9780739360392  
[Title] Harry Potter and the Deathly Hallows  
[Author] J. K. Rowling  
[Status] borrowed  
[Info] borrowed by student 18307130163  
-----

-----  
[ID] 3  
[ISBN] 9780747532743  
[Title] Harry Potter and the Sorcerer's Stone  
[Author] J. K. Rowling  
[Status] available  
[Info] borrowed by student 233  
-----

-----  
[ID] 4  
[ISBN] 9780439064866  
[Title] Harry Potter and the Chamber of Secrets  
[Author] J. K. Rowling  
[Status] borrowed  
[Info] borrowed by student 233  
-----

Type enter to conitnue...

#### 4 查询此账户的借书信息

##### 1. 查看

[Query borrow histroy info of a student]

Your borrow history:

```
-----  
[Record ID]  6  
[Book ID]   2  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2020-05-07  
[Returned Time] 2020-05-07  
[Expected Return Time] 2020-05-28  
[Delayed Times] 0  
[Status]    returned  
[Info]  
-----
```

```
-----  
[Record ID]  8  
[Book ID]   2  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2020-04-18  
[Returned Time] 2020-05-08  
[Expected Return Time] 2020-05-09  
[Delayed Times] 0  
[Status]    returned  
[Info]  
-----
```

```
-----  
[Record ID] 11  
[Book ID]   1  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2019-01-08  
[Expected Return Time] 2019-01-29  
[Delayed Times] 0  
[Status]    being used  
[Info]  
-----
```

```
-----  
[Record ID] 13  
[Book ID]   3  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2018-05-08  
[Returned Time] 2020-05-08  
[Expected Return Time] 2018-05-29  
[Delayed Times] 0  
[Status]    returned  
[Info]  
-----
```

```
-----  
[Record ID] 14  
[Book ID]   4  
[Borrowed By] 233 (Student ID)  
[Borrowed Time] 2020-03-18  
[Expected Return Time] 2020-04-08  
[Delayed Times] 0  
[Status]    being used  
[Info]  
-----
```

Type enter to conitnue...

#### 5 查询此账户过期的借阅书籍

[Query all overdue books a student has borrowed]

Your overdue borrowing:

```
-----
[Record ID]  11
[Book ID]    1
[Borrowed By] 233 (Student ID)
[Borrowed Time] 2019-01-08
[Expected Return Time] 2019-01-29
[Delayed Times] 0
[Status]     being used
[Info]
-----
```

```
-----
[Record ID]  14
[Book ID]    4
[Borrowed By] 233 (Student ID)
[Borrowed Time] 2020-03-18
[Expected Return Time] 2020-04-08
[Delayed Times] 0
[Status]     being used
[Info]
-----
```

Type enter to conitnue...

## 6 查询此账户未退还的借阅书籍

[Query all books a student has borrowed and not returned yet]

All your borrowed books:

```
-----
[Record ID]  15
[Book ID]    2
[Borrowed By] 18307130163 (Student ID)
[Borrowed Time] 2020-05-08
[Expected Return Time] 2020-05-29
[Delayed Times] 0
[Status]     being used
[Info]
-----
```

Type enter to conitnue...

## 7 查询此账户借阅书籍的应还日期

### 1. 键入书籍 ID

[Check the deadline of a borrowed book]  
Book ID:

### 2. 查看

[Check the deadline of a borrowed book]  
Book ID: 2  
The book is expected to be return on 2020-05-29

Type enter to conitnue...

## 8 延长此账户借阅书籍的退还日期

### 1. 键入书籍 ID

```
[Extend the deadline of returning a book]
Book ID:
```

## 2. 成功

```
[Extend the deadline of returning a book]
Book ID: 2
Successfully extended! Now the book should be returned by 2020-06-05
```

```
Type enter to conitnue...
```

## 0 登出

---

## 管理员手册

### 简介

这是一个简单的图书馆管理程序，您可以借助它进行图书馆管理。

使用该系统，你需要一个管理员账号。如果没有，请联系老板注册。

请注意使用本系统时，书籍 ID 均为图书馆唯一指定的数字，并非ISBN码。

请仔细阅读本手册。

### 启动程序

1. 完成安装配置
2. 保证 MySQL 账户及密码与文件 library.go 中 User 和 Password 保持一致，使得程序能顺利链接数据库
3. 进入SLMS文件夹，运行终端
4. 键入 `go run library.go`
5. 程序运行成功，则显示

```
Welcome to the Library Management System!
Please choose login mode:
1. student
2. admin
3. root
0. exit
Please select a number(0-3):
```

### 登陆账号

1. 键入 2 进入管理员登陆界面

```
Please log in to an admin account
Student ID:
```

2. 输入账号和密码

```
Please log in to an admin account
Admin ID: 1
Password: *****
```

3. 登录状态

- 失败

```
Please log in to an admin account
Admin ID: 1
Password: *****
```

```
Login Failed!
Please enter correct ID and password...
```

- 成功：进入功能界面

```
Welcome Codeplay!
What do you want to do?
1: Add student accounts
2: Change student account status
3: Add book to library
4: Remove book from library
5: Search books in library
6: Query borrow history info of a student
7: Query all overdue books a student has borrowed
8: Query all books a student has borrowed and not returned yet
9: Check the deadline of borrowed books
10: Extend the deadline of returning book
0: Log out
You need to do(0-10):
```

## 选择功能

1. 键入相应数字选择功能
  - 1: 添加学生账户
  - 2: 更改学生账户状态
  - 3: 添加书籍
  - 4: 移除书籍
  - 5: 查询书籍的信息
  - 6: 查询此账户的借书信息
  - 7: 查询此账户过期的借阅书籍
  - 8: 查询此账户未退还的借阅书籍
  - 9: 查询此账户借阅书籍的应还日期
  - 10: 延长此账户借阅书籍的退还日期
  - 0: 登出
2. 键入 1 选择开始；键入 0 选择退出

```
[(function)]
1. Begin
0. Exit
You want to(1/0):
```

## 功能介绍

### 1 添加学生账户

1. 键入信息

```
[Add student accounts]
Student ID: 18307130000
Name: ZHANG San
Password: *****
```

2. 确认

```
[Add student accounts]
```

```
Please check:
[ID]: 18307130000
```



```
[Name]: ZHANG San
[Password]: *****
Are you sure to add this student account? (y/N)y
```

Successfully added!

## 2 更改学生账户状态

### 1. 查看所有学生信息

```
[Change student account status]
```

Account Lists:

```
-----
[ID] 18307130000
[Name] ZHANG San
[Status] active
[info] add by admin 1
-----
```

```
-----
[ID] 18307130163
[Name] Codeplay
[Status] active
[info] active by admin 1 because Revival
-----
```

```
-----
[ID] 233
[Name] 233
[Status] active
[info] active by admin 0 because to return books
-----
```

```
1. Begin
0. Exit
You want to(1/0):
```

### 2. 选择学生

```
[Change student account status]
The ID of the student account that you want to change: 18307130163
```

### 3. 键入信息

```
[Change student account status]
The ID of the student account that you want to change: 18307130163
You want to change the status of this account to: (suspended/active/...) suspended
The reason for changing account status: graduated
```

### 4. 确认

```
[Change student account status]
```

Please check:  
You want to change the student account from

```
-----
[ID] 18307130163
[Name] Codeplay
[Status] active
[info] active by admin 1 because Revival
-----
```

to

```
-----
[ID] 18307130163
[Name] Codeplay
[Status] suspended
```

```
[info] set suspended by admin 1 because graduated
-----
Do you confirm? (y/N)
```

### 3 添加书籍

#### 1. 键入信息

```
[Add book to library]
ISBN: 9780262033848
Title: Introduction to Algorithms
Authour: Thomas H. Cormen
```

#### 2. 确认

```
[Add book to library]
```

```
Please check
-----
[ID] 5
[ISBN] 9780262533058
[Title] Introduction to Algorithms
[Author] Thomas H. Cormen
[Status] available
[Info]
-----
Are you sure to add this book? (y/N)
```

### 4 移除书籍

#### 1. 键入书籍 ID

```
[Remove book from library]
Please enter ID number of the book:
```

#### 2. 确认

```
[Remove book from library]
```

```
Please check
-----
[ID] 4
[ISBN] 9780439064866
[Title] Harry Potter and the Chamber of Secrets
[Author] J. K. Rowling
[Status] borrowed
[Info] borrowed by student 233
-----
Are you sure to remove this book? (y/N)
```

### 5 查询书籍的信息

[ 参见用户手册 功能 3 ]

### 6 查询的借书信息

[ 参见用户手册 功能 4 ]

### 7 查询账户过期的借阅书籍

[ 参见用户手册 功能 5 ]

### 8 查询账户未退还的借阅书籍

[ 参见用户手册 功能 6 ]

## 9 查询账户借阅书籍的应还日期

[ 参见用户手册 功能 7 ]

## 10 延长账户借阅书籍的退还日期

[ 参见用户手册 功能 8 ]

## 0 登出

---

## root手册

### 启动程序

1. 完成安装配置
2. 保证 MySQL 账户及密码与文件 library.go 中 User 和 Password 保持一致, 使得程序能顺利链接数据库
3. 进入SLMS文件夹, 在 config.json 更改账户和密码
4. 运行终端, 键入 go run library.go
5. 程序运行成功, 则显示

```
Welcome to the Library Management System!
Please choose login mode:
1. student
2. admin
3. root
0. exit
Please select a number(0-3):
```

### 登陆账号

1. 键入 3 进入管理员登陆界面

```
Please log in to an admin account
Student ID:
```

2. 输入密码

```
Please log in to root account
Password: *****
```

### 选择功能

```
Successfully log in to root account!

Please select service below:
1: Add admin accounts
2: Add student accounts
3: Change admin account status
4: Change student account status
5: Add book to library
6: Remove book from library
7: Search books in library
8: Query borrow histroy info of a student
9: Query all overdue books a student has borrowed
10: Query all books a student has borrowed and not returned yet
11: Check the deadline of borrowed books
12: Extend the deadline of returning book
0: Log out
You need to do(0-12):
```

## 功能实现和解释

### 数据库

本系统使用四个模式存储所有信息

- admin 管理员账户

#ID	ANAME	PASSWORD	STATUS	INFO
0	root	FudanICS#2020	active	root account
1	Codeplay	8hg*(hfauj	suspended	hello

- students 学生账户

#ID	SNAME	PASSWORD	STATUS	INFO
18307130163	Codeplay	?fad2FSdda	active	me
18307130000	Zhang San	0duf+dhua2	suspended	set suspended by admin 0 because of having 4 books overdue

- books 书籍

#ID	ISBN	TITLE	AUTHOR	STATUS	INFO
1	9780739360385	Harry Potter and the Deathly Hallows	J. K. Rowling	borrowed	borrowed by student 233
2	9787111407010	Introduction to Algorithms	Thomas H. Cormen, Charles E. Leiserson, Ronald Rivest, Clifford Stein	available	
3	9780439064866	Harry Potter and the Chamber of Secrets	removed	J. K. Rowling	lost from student 18307130000

- borrow\_record 借阅记录

#RECORD	#BID	#STU	BORRORDATE	DELAY	RETURENDATE	STATUS	INFO
1	5	18307130163	2018-03-28	1	2018-04-12	avaliable	
2	13	18307130000	2019-08-30	0	/	removed	lost on 2019-09-08
3	234	18307130163	2020-05-08	3	/	borrowed	good book

### 程序流程

参见代码 `library.go` （懒得打了）

### 设计心得

很多想法没及时写下来就忘了 主要将时间花在了交互体验上（虽然这是一个不会有人用的程序），增加了自动跳转、自动检查用户逾期信息并进行封锁等鸡肋功能。为实现一个小功能可能要花几个小时。注重程序的鲁棒性，对于用户的违规操作进行了极大限制，排除有可能导致运行错误的可能。

改进方向：

- 无法避免由直接修改数据库带来的运行错误
- 用户被封锁后无法还书（只能联系管理员还）
- books库和borrow\_record在异常情况下有可能出现冲突
- 测试大规模数据可能造成的后果
- 代码分块

太难码了！第一次写2000多行的程序

