

# A library management system

In ass3, we are required to build a library management system according to the library system in Fudan. The system contains 4 tables:

**BOOKS(title, author, ISBN, status)**  
**ACCOUNTS(priority, accID, pwd, overdue\_records)**  
**Borrow\_records(ISBN, accID, DDL, extend, status)**  
**REMOVAL(title, author, original\_ISBN, remove\_date, explanation)**

BOOKS.ISBN is a 13 digit string, ACCOUNT.accID is varchar with max length 11 digit, match with student ID in Fudan, ACCOUNT.pwd is a 6 digit string

BOOKS.status is an integer refers to the status of the book in library. BOOKS.status = 1 means book is available, BOOKS.status = 0 means book was borrowed.

ACCOUNTS.priority is used to distinguish student account and administrator. 0 means administrator, 1 means student account and if ACCOUNTS.priority = -1, means this student has more than 3 overdue records (recorded as integer in overdue\_records) and this account is restricted from borrowing books until he/she returns overdue books.

Borrow\_records.status is similar with BOOKS.status, but it has 3 possible values, 0 means not returned and not overdue; 1 means returned; -1 means overdue(this is useful for finding overdue books). Every time the system is started, we use function "AccountUpdate" to detect if any new overdue record is created (DDL < time now) and update ACCOUNTS.overdue\_records..

Borrow\_records.extend is an integer recording extend time, if more than 3 times, refuse new deadline extend requires.

Run library.go, we start library management system. After connecting to a local database, the program detect the number of tables in database (We assume that the maintainer will connect to the correct database) so we could either got 4 (already have values in DB) or 0 (empty database, we use “InitializeDB” to initialize, add 20 books and create administrator account. The initialization data is as follows)

title	author	ISBN	status
Constitution_of_FDU	FudanUniversity	0000000000001	1
FOOD_BIO-CHEMISTRY	Ning_Zhengxiang	1713267825040	1
Computer_age_statistical	Efron	2642176672401	1
A_history_of_god	Armstrong	3178651024459	1
Financial_mathematics	Bai_Dongjie	4087013757311	1
Essentials_of_computer_architecture	Comer	4690135027004	1
Epidemic_and_civilization	Xin_Zhengren	5006868242797	1
How_to_hear_classical_music	Caddy	5340531960820	1
A_global_history: from_prehistory_to_the_21st_century	Stavrianos	6037958370961	1
Bio-inspired_artificial_intelligence	Floreano	6849222079941	1
Natural_histories	Baione	7050747211446	1
The_essential_canon_of_classical_music	Dubal	7209576214405	1
Affluenza: the_all-consuming_epidemic	Graaf	7530544598350	1
The_foundations_of_mathematics	Bradley	7803189487455	1
Mathematics_for_computer_science	Lehman	8264711307003	1
Discrete_mathematics_and_its_applications	Fu_yan	8894393285891	1
Recent_Advances_in_NLP: The_Case_of_Arabic_Language	Abd_Elaziz	8975051686568	1
The_gunpowder_age	Andrade	9509479575053	1
The_complete_classical_music_guide	Burrows	9625788155322	1
Technopoly: the_surrender_of_culture_to_technology	Postman	9791776101900	1

P.S. We use ‘\_’ in place of ‘space’ in this system

In this system, all the target functions have been achieved, and meanwhile, we use user interface to restrict students’ access, see administrator menu and student menu as follow;

```
Welcome, administrator!
--1.Add a book to library.
--2.Remove a book from library with explanation.
--3.Add student account.
--4.Query a book from library.
--5.Query borrow history of a student account.
--6.Query books a student has borrowed and not returned yet.
--7.Check the deadline of returning a borrowed book.
--8.Check if a student has any overdue books.
--9.Log out.
```

```
Welcome, 18307130071!
--1.Borrow book.
--2.Return book.
--3.Query books you have borrowed but not returned yet.
--4.Check the deadline of returning a borrowed book.
--5.Extend your deadline of returning a book.
--6.Check if you have any overdue books
--7.Query a book from library.
--8.Query borrow history of your account.
--9.Log out.
```

You can query any students’ borrow history or books not returned or overdue books as an administrator ,however, a student can only see his/her own information. But only a student account can operate borrow, return or extend in this system. Originally, the deadline to return a book is 14 days after borrowing it. However, you are permitted to extend deadline for at most 3 times before deadline (each extend offers you 7 extra days), but you can’t extend the deadline for a book already overdue.

For more information please reference code and annotation.