## **User Guide**

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## **Project running environment configuration:**

The following is about the operation of this project. Since the code volume of the project file is a bit large and the JAVA part contains many classes, it may be difficult to compile using the command line. Therefore, we strongly recommend that you use a compiler to run.

Next, we'll give you detailed instructions for running the project with the IntelliJ IDEA compiler step by step.

NOTE: Please confirm that you have a valid Oracle account and password and have uploaded the data provided by us.

(1) Document Preparation

Make sure you have the correct project ZIP file and the IntelliJ IDEA compiler.





The ZIP file is the one we submit, and you can also download the compiler from website.

## (2) Extract the file

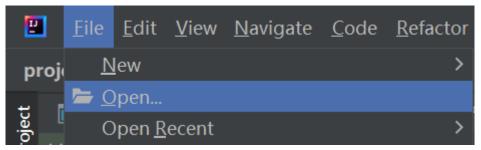
To run the code, you need to first extract the ZIP file to a location where it is easy to find. For example, Unzip the files to disk D.



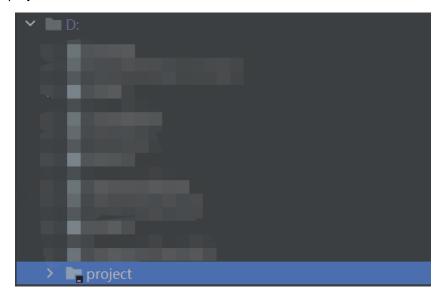
Make sure that you can find the file folder in the place you choose to extract.

## (3) Use compiler to open the file.

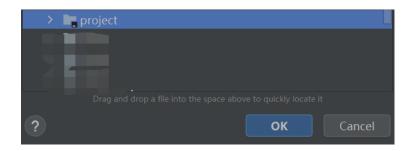
Run your compiler and fine the "file" in the top left corner, click it and then click "Open" to open file choose list.



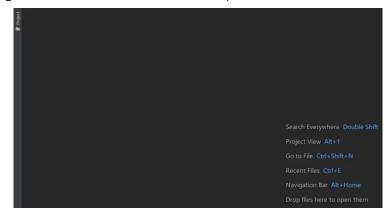
Find the project in the list.



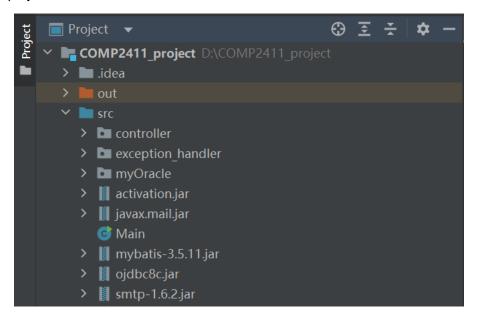
Click "OK" to open the file.



(4) Find the main class and run the program (Please configure the JAVA environment in advance)

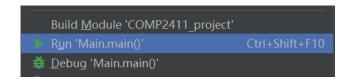


The first time you open the file, you will meet the screen showed above, here, you need to click "project"  $\rightarrow$  "file name"  $\rightarrow$  "src"  $\rightarrow$  "Main".

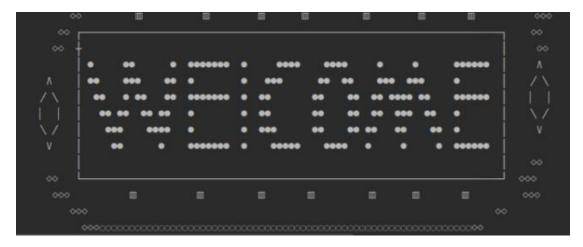


## (5) Execute the code

After you find the "Main" class, there are many methods to execute the program, for example, Right click "Main" and click "run Main.main()". Wait a few moments, and after the program connects to the database, then the system will require you to input the Oracle account ID and the password. After the right input, the Welcome Page is displayed.



# **Welcome Page:**



In this page, there are three functions, the user may choose the function by input the No. before it. (This is a user manual for patron, so it will display an example for log in as a patron)

- 0 --- quit the system
- 1 --- log in as a patron
- 2 --- sign up a patron account
- 3 --- log in as a staff

After inputting 1, the patron needs to input the patron ID, and the password.

```
Please input your PATRON_ID such as 123456789p(input * to quit)
64273878p
Please input your USER_PASSWORD (6 to 15 digits) such as 123456789(input * to quit)
8216YK7501
```

Correct log in sample

Noticed that each time the system only gives the patron 3 attempt times to input the correct password, otherwise the user will quit the system automatically.

After the patron inputs the correct ID and password, he or she will enter the patron page.

After inputting 2, the patron needs to use the patron-id that the system has already given and create his/her own password, name, his or her gender, age, and the location.

Sample of sign up

## **Patron Page:**

```
---- ⊲□◊∥◊□⊳ Hi, COOK_BUSH. Welcome to library system. ⊲□◊∥◊□⊳ ---
```

#### patron page when log in

This is the patron log in page also the main menu, it will display 4 core functions and the notification list below. These pages will guide patron to do the operation in correct way.

## [Core Function List]

```
Enter an integer to make the choose (enter 0 to quit):

1--search for book information / 2--borrow the book

3--return the book / 4-- reserve a book
```

In this page, patron can choose operation by input the match function No.:

- 0 --- return to log in page
- 1 --- search for book information
- 2 --- borrow the book

- 3 --- return the book
- 4 --- reserve a book

#### 1. Search for book information

Under the search for book information function, there are three different operations. The following is the description of them.

- 0 --- return to function list
- 1 --- search by book name
- 2 --- search by ISBN
- 3 --- search by comprehensive condition

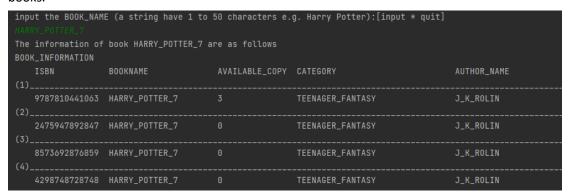
#### 1.1 search by book name

| input the BOOK_NAM | E (a string have 1 to | 50 characters e. | g. Harry Potter):[input * quit] |             |
|--------------------|-----------------------|------------------|---------------------------------|-------------|
| BIG_CUCUMEMBER     |                       |                  |                                 |             |
| The information of | book BIG_CUCUMEMBER a | re as follows    |                                 |             |
| BOOK_INFORMATION   |                       |                  |                                 |             |
| ISBN               | BOOKNAME              | AVAILABLE_COPY   | CATEGORY                        | AUTHOR_NAME |
| (1)                |                       |                  |                                 |             |
| 9365827626587      | BIG_CUCUMEMBER        | 1                | HORROR                          | LILY_BLACK  |

Search sample

In the function, patron can search the book information by input book name. For example, input "BIG\_CUCUMEMBER", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information)

If the system has multiple books with same book name but different ISBN, it will display a list of books.



Search sample

After the search, the patron can directly borrow or reserve the book here:

- 1 --- go to borrow or reserve the book
- 0 --- quit the early stage

Do you want to borrow or reserve a book from these books? 1--yes, 0--no Enter a integer from 0 to 1

prompt message

#### 1.2 search by ISBN

Search sample

In the function, patron can search the book information by input ISBN. For example, input a string with 13 number character "9787810441063", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information)

After the search, the patron can directly borrow or reserve the book here:

- 1 --- go to borrow or reserve the book
- 0 --- quit the early stage

```
Do you want to borrow or reserve a book from these books? 1--yes, θ--no Enter a integer from θ to 1
```

prompt message

## 1.3 search by comprehensive condition

|               | BOOKNAME       |                  | AUTHOR_NAME    | PUBLISHER             | LANGUA |
|---------------|----------------|------------------|----------------|-----------------------|--------|
|               |                | SCIENCE_FICTION  |                | USA_CENTRAL_PUBLISHER | SPANIS |
| 7231648727464 | STAR_WARS      | SCIENCE_FICTION  | BENJAMIN_LUCAS |                       | SPANIS |
|               |                | TEENAGER_FANTASY |                | U_K_PUBLISHER         | ENGLIS |
|               | HARRY_POTTER_7 | TEENAGER_FANTASY | J_K_ROLIN      | U_K_PUBLISHER         | ENGLIS |
|               | HARRY_POTTER_7 | TEENAGER_FANTASY | J_K_ROLIN      | U_K_PUBLISHER         | ENGLIS |
|               | STAR_WARS      |                  | BENJAMIN_LUCAS | USA_CENTRAL_PUBLISHER | SPANIS |
| 2475947892847 | HARRY_POTTER_7 | TEENAGER_FANTASY |                | U_K_PUBLISHER         | ENGLIS |
|               |                |                  | BENJAMIN_LUCAS | USA_CENTRAL_PUBLISHER | SPANIS |

Search sample

(Comprehensive condition: books from J\_K\_ROLIN or BENJAMIN\_LUCAS and time from 1899-09-09 and 2022-11-19)

Like the sample display above, patron can search information by comprehensive condition each link with "and" or "or". The search by comprehensive condition function supports combining 6 different conditions (book name, publisher, language, category, publish time) to find the book. For book name and author name they are special, patron only need to input part of them then it can select those book name/author name, which contains the string that you have input.

After the search, the patron can directly borrow or reserve the book here:

- 1 --- go to borrow or reserve the book
- 0 --- quit the early stage

```
Do you want to borrow or reserve a book from these books? 1--yes, 0--no Enter a integer from 0 to 1
```

prompt message

#### 2. Borrow the book

Under the borrow book function, we have three different operations. The following is the description of them.

- 0 --- return to function list
- 1 --- borrow by ISBN
- 2 --- borrow by book name

#### 2.1 borrow by ISBN

#### Borrow sample

In the function, patron can search the book information by input ISBN. For example, input a string with 13 number character "9787810441063", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information).

Patron can do the confirm to ensure the borrow operation.

- 1 --- confirm to borrow the book
- 0 --- give up borrowing the book

#### 2.2 borrow by BOOK\_NAME

#### Borrow sample

In the function, patron can search the book information by input book name. For example, input "BIG\_CUCUMEMBER", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information)

After the system list out the books, patron can input "X" to choose the book in the "X" line. For example, in the picture above, input "1" to choose "Star-war" in the first line, input "0" to quit.

#### 3. Return the book

```
1, book name: STAR_WARS book id: 374628376479283 start from 2022-11-19
2, book name: NARNIA_LEGEND_2 book id: 819427981847657 start from 2022-11-19
Please enter the index(start from 1) of book that you want to return. Enter 0 to cancel this operation Enter a integer from 0 to 2
```

This function will first display all the books the patron has borrowed, patron is allowed to input the index to return it. After the return, the patron can still return more books.

For example, in the picture display above, the patron can input:

```
0 --- return to function list1 --- return "star-wars"2 --- return "Narnia-legend-2"
```

After all the book is already return, a reminder sentence will display on the screen.

```
All the books have been returned.

Leave return book
```

Remind sentence

#### 4. Reserve the book

Under function of reserve the book, there are three different operations. The following is the description of them.

- 0 --- return to function list
- 1 --- reserve by ISBN
- 2 --- reserve by book name

#### 4.1 reserve by ISBN

In this function, the patron can input an ISBN to make the reserve, after inputting the ISBN, the function will list out the available reservations, (information contain: ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION.) the patron will see the record when he or she logs in and will create a new record in the system.

For example, in the picture above, input "9787810441063", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information).

Patron can do the confirm to ensure the reserve operation.

- 1 --- confirm to borrow the book
- 0 --- give up borrowing the book

#### matters need attention:

- 1. A patron cannot have more than three in progress reserves.
- 2. A patron cannot reserve a same book twice
- 3. If all the book the patron wants to reserve is now in progress reserves, the system will remind the patron when there are available collections. (The period will last 100 days.)

#### 4.2 reserve by BOOK\_NAME

In this function, the patron can input a BOOK\_NAME to make the reserve, after inputting the BOOK\_NAME, the function will list out all the available reservations.

| input the BOOK_NAME (a strin | ng have 1 to 50 characte | rs e.g. Harry Potter | ):[input * quit]          |
|------------------------------|--------------------------|----------------------|---------------------------|
| STAR_WARS                    |                          |                      |                           |
| The information of book STAF | R_WARS are as follows    |                      |                           |
| BOOK_INFORMATION             |                          |                      |                           |
| ISBN BOOKNAME                | AVAILABLE_               | COPY CATEGORY        | AUTHOR_NAME               |
| (1)                          |                          |                      |                           |
| 57387T5782577 STAR_WARS      |                          | SCIENCE_FICTIO       | N BENJAMIN_LUCAS          |
| (2)                          |                          |                      |                           |
| 7231648727464 STAR_WARS      |                          | SCIENCE_FICTIO       | N BENJAMIN_LUCAS          |
| (3)                          |                          |                      |                           |
| 8723657843675 STAR_WARS      |                          | SCIENCE_FICTIO       | N BENJAMIN_LUCAS          |
| (4)                          |                          |                      |                           |
| 4641233494645 STAR_WARS      |                          | SCIENCE_FICTIO       | N BENJAMIN_LUCAS          |
| Enter the index (start from  | 1)of book that you wan   | t. If you want to ca | ncel the borrow, enter 0. |
| Enter a integer from 0 to 4  |                          |                      |                           |

## List sample

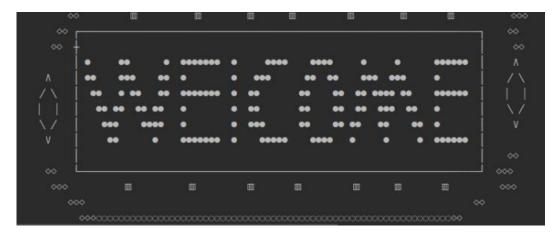
After the system list out the books, patron can input "X" to choose the book in the "X" line. For example, in the picture above, input "1" to choose "Star-war" in the first line, input "0" to quit.

Except the display list, this function has the same idea of the function above.

g the ISBN of the book, for example "9365827626587", the staff can find the book which he or she wants to change the ISBN. Here the original description is shows on the screen("A\_WAST\_OF\_TIME"), then change it to "IT\_IS\_A\_BOOK".

---end---

# **Welcome Page:**



In this page, there are three functions, the user may choose the function by input the No. before it. (This is a user manual for staff, so it will display an example for log in as a staff)

0 --- quit the system

- 1 --- log in as a patron
- 2 --- sign up a patron account
- 3 --- log in as a staff

After inputting 3, the staff need to input the staff ID, and the user password.

```
input the STAFF_ID (a string with 9 character e.g. 12345678s):[input * quit]
82647821s
input the PASSWORD (a string has 6 to 15 character e.g.abcdefghijk):[input * quit]
1657ANA1657
```

Correct log in sample

Noticed that each time the system only gives the staff 3 attempt time to input the correct password, otherwise the user will quit the system automatically.

After the staff input the correct ID and password, he or she will enter the staff page.

## **Staff Page:**



staff page when log in

This is the patron log in page also the main menu, it will display 6 core functions and the notification list below. These pages will guide patron to do the operation in correct way.

## [Core Function List]

Enter an integer to make the choose (enter 0 to quit):

1--manage book information / 2--manage collections of book

3--manage patrons information / 4--manage borrow records

In this page, staff can choose operation by input the match function No.:

- 0 --- return to log in page
- 1 --- manage book information
- 2 --- manage collections
- 3 --- manage patron's information
- 4 --- manage borrow records

## [manage book information] (input "1" in function list)

Under the manage book information function, we have three different operations. The following is the description of them.

Enter an integer to make the choose (enter 0 to quit):

1--check the book information / 2--update book information

3--add new book information / 4--delete book information

In this page, staff can choose operation by input the match function No.:

- 0 --- return to function list
- 1 --- check book information
- 2 --- update book information
- 3 --- add new book information
- 4 --- delete book information

#### 1. Check book information

Enter an integer to make the choose (enter 0 to quit): 1-- search by book name / 2-- search by ISBN 3-- search by comprehensive condition

Enter a integer from 0 to 3

Under the check for book information function, there are three different operations. The following is the description of them.

- 0 --- return to early stage
- 1 --- search by book name
- 2 --- search by ISBN
- 3 --- search by comprehensive condition

## 1.1 Search by book name.



Input one to enter search by name

In the function, staff can search the book information by input book name. For example, input "San-Lucia", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information)

## 1.2 Search by ISBN



#### Input two to enter search by ISBN

In the function, staff can search the ISBN by input book name. For example, input "San-Lucia", the information incudes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION will display as a list below. (The sample only cover a few of the information)

## 1.3 Search by comprehensive condition



Search Sample

The search by comprehensive condition function supports combining 6 different conditions (book name, publisher, language, category, publish time) to find the book. For book name and author name they are special, staff only need to input part of them then it can select those book name/author name, which contains the string that you have input. After input all the search conditions, input "0" to start the search.

matter need attention: staff cannot quit after starting the search util finish.

## 2. Update book information

```
update the record

Enter an integer to make the choose (enter 0 to quit): 1-- change the description of a book 2--change category name into another 3--update all information of a book
Enter a integer from 0 to 3
```

Under the update book information function, there are three different operations. The following is the description of them.

- 0 --- return to early stage
- 1 --- change the description of a book
- 2 --- change the category of the book
- 3 --- update all the information

## 2.1 Change the description of a book

```
input the ISBN (a string with 13 number character e.g. 1234567890123):[input * quit]
9385827626587

The original description is: A_WASTE_OF_TIME

input the DESCRIPTION(a string have 1 to 500 characters:This is a nice book)(input * quit)

IT_IS_A_BOOK
```

By inputting the ISBN of the book, for example "9365827626587", the staff can find the book which he or she want to change the ISBN. Here the original description is shows on the screen("A\_WAST\_OF\_TIME"), then change it to "IT\_IS\_A\_BOOK".

## 2.2 Change the category of the book and 2.3 update all the information

These two functions are somehow similar to the change description function, so them will not be demonstrate here.

#### 3. Add new book information

For add new books the staff needs to input all the information of that book, include ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH TIME, DESCRIPTION.

These is the input example:

In order, the staff input "2110060212345, MAX, COMP, PELYU, POLYU, ENGLISH, 2021-1-1, NICE" to add a new book information.

## 4. Delete book information

In this function, staff can delete book information by input ISBN or book ID.

```
input the B00K_ID (a string with 15 number character e.g. 123456789054321):[input * quit]
781467813764732

The collection information is as follows:
3698167615698 781467813764732 true KANSARS_STATE_33RD_FL00R

Are you sure to delete the information of this book? 1--yes, 0--no
Enter a integer from 0 to 1

Finish the operation. The information of the book and all its history borrow record have been deleted.
```

For example, the staff input "781467813764732" as a book ID to delete the collections of the book.

Staff can do the confirm to ensure the reserve operation.

1 --- confirm to delete the book

## [manage collections] (input "2" in function list)

Under this function, it has four main functions to manage the collections:

Enter an integer to make the choose (enter 0 to quit):

1--check the information of collections / 2-- update the information of collections 3--add new collection / 4-- delete the collection information.

In this page, staff can choose operation by input the match function No.:

- 0 --- return to function list
- 1 --- check the information of collections
- 2 --- update the information of collections
- 3 --- add new collection
- 4 --- delete the collection information

#### 1. Check information of collections

Here, staff can also choose options through input:

- 0 --- return to early stage
- 1 --- check information of a collection by book ID
- 2 --- check information of a collection by ISBN
- 3 --- check information of a collection by location
- 4 --- check unavailable collections

#### 1.1 Check information of a collection by BOOK ID

Search sample

This function requires the staff to input the BOOK\_ID to track a unique book and will display the collection information and Book information about it. For example, input "716481174119742" as a book ID to check the information includes ISBN, BOOK\_NAME, AVAILABLE\_COPY, CATEGORY, AUTHOR\_NAME, PUBLISHETR, LANGUAGE, PUBLISH\_TIME, DESCRIPTION.

#### 1.2 Check information of a collection by ISBN

```
input the ISBN (a string with 13 number character e.g. 1234567890123):[input * quit]

5788775782577

The book with ISBN 57387T5782577 have 6 copies.

COLLECTION

ISBN BOOK_ID STATE LOCATION

(1)

57387T5782577 673647739963676 false CITYULIBRARY_12ND_FLOOR

(2)

57387T5782577 273487236476219 false KANGTERROOM_15TH_FLOOR

(3)

57387T5782577 374628376479283 false PKULIBRARY_13RD_FLOOR

(4)

57387T5782577 421756784675923 false LONGLIBRARY_BASEMENT

(5)

57387T5782577 716481174119742 true POLYULIBRARY_2ND_FLOOR

(6)

57387T5782577 843175265783746 true MYTH_LIBRARY_12ND_FLOOR
```

#### Search sample

In this function, its quire the user to input the ISBN to search all the fit collections store in the library, it will display as a list after the correct input which contains ISBN, BOOK\_ID, STATE and LOCATION information. (Multiple books can have same ISBN)

## 1.3 Check information of a collection by LOCATION

#### Search sample

In this function, it requires staff to input the BOOK\_ID to search for a specific collection (BOOK\_ID is unique to every book). It will display after the correct input which conations ISBN, BOOK\_ID, STATE and LOCATION information.

## 1.4 Check unavailable collections

```
There are 5 unavailable books now.

COLLECTION

ISBN BOOK_ID STATE LOCATION

(1)

57387T5782577 673647739963676 false CITYULIBRARY_12ND_FLOOR

(2)

57387T5782577 273487236476219 false KANGTERROOM_15TH_FLOOR

(3)

57387T5782577 374628376479283 false PKULIBRARY_13RD_FLOOR

(4)

57387T5782577 421756784675923 false LONGLIBRARY_BASEMENT

(5)

9787810441063 127346723876762 false TSINGHUALIBRARY_28TH_FLOOR
```

#### Search sample

Due to this page is only used for staff, to simplify the operation, after they input "4" to call this function, it will directly display all the unavailable collections. The information shown contains ISBN, BOOK\_ID, STATE and LOCATION. (Staff no need to do any input here)

## 2. Update the information of collections

Here, staff can also choose options through input:

- 0 --- return to early stage
- 1 --- change the location of a book
- 2 --- active the stage of a book
- 3 --- inactive the stage of a book

## 2.1 Change the location of a book

```
input the BOOK_ID (a string with 15 number character e.g. 123456789054321):[input * quit]
673647739903076
The original location of the book is: CITYULIBRARY_7ND_FLOOR
input the LOCATION (a string has 1 to 30 characters e.g. A part 11 line):[input * quit]
CITYULIBRARY_12ND_FLOOR
Successfully change the location of the book
```

#### Sample

This function requires the staff input the BOOK\_ID to track a unique book and will display the original location of it, the operation finish after inputting a new location.

## 2.2 Active the stage of a book

```
input the B00K_ID (a string with 15 number character e.g. 123456789054321):[input * quit] 673647739963676 Successfully update the state of book.
```

Sample

This function requires the staff to input the BOOK\_ID to track a unique book and will activate the available stage of it (from 0 to 1).

## 2.3 Inactive the stage of a book

```
input the B00K_ID (a string with 15 number character e.g. 123456789054321):[input * quit] 673647739963676
Successfully update the state of book.
```

#### Sample

This function requires the staff to input the BOOK\_ID to track a unique book and will inactivate the available stage of it (from 1 to 0).

#### 3. Add new collection

```
input the ISBN (a string with 13 number character e.g. 1234567890123):[input * quit]
2365827626587

Please input COLLECTION information (input nothing to represent the null value):

The BOOK_ID have been generated by the system. which is 666877604086341
input the STATE (true / false):[input * quit]
anue
input the LOCATION (a string has 1 to 30 characters e.g. A part 11 line):[input * quit]
NEW_YORK_LIBRARY_14TH_FLOOR
Do you want to add more collections ? 1--yes 0 -- no
Enter a integer from 0 to 1

Successfully add 1 collections

Leave add collection information
```

Addition sample

This function will receive an ISBN (input by staff) and check whether the ISBN is in the collection, if it does, which means we have copy collections in it, the system will automatically generate a BOOK\_ID for it and let the staff set the other two information (STATE and LOCATION). This function also allows the staff to add multiple copies once he calls the function.

In this stage, the staff can input:

0 --- finish add new collection

1 --- add more collection

## 4. Delete the collection information

## 4.1 Delete by collecting's BOOK\_ID

Delete sample

This function requires the staff to input the BOOK\_ID to track a unique book and will delete it from the database system, but before the deletion, it will display all the information (ISBN, BOOK\_ID, STATE, LOCATION from left to right). After the staff confirms, he can input "1" to delete the book or input "0" to cancel this deletion.

## 4.2 Delete by collections ISBN

This function receives ISBN and will first list all the collections which have the same ISBN with all the information (ISBN, BOOK\_ID, STATE, LOCATION). After the confirmation, the staff can input "1" to delete the list or input "0" to cancel the deletion. (Same with delete by BOOK\_ID)

## [manage patron's information] (input "3" in function list)

In this page, staff can choose operation by input the match function No.:

- 0 --- return to function list
- 1 --- check the patron information
- 2 --- update the patron information

## 1. Check the patron information.

Here we support three ways for searching, we can search by using patron id, name, and check the inactivated patron account.

- 0 --- return to early stage
- 1 --- select by patron information
- 2 --- select by patron name
- 3 --- check the inactivate patron account

## 1.1 select by patron id and 1.2 select by patron name

The usage of these two methods is very similar to previous search function. (Like search by book ID or search by book name)

## 1.3 check the inactivate patron account

The usage of this function is to check the patron whose state is in activate, in our database system, we use 0 to represent the patron's state which is inactivate.

```
check the patron information

Enter an integer to make the choose (enter 0 to quit): 1 -- select by patron id 2 -- select by patron name 3 -- check the inactivated patron account.

Enter a integer from 0 to 3

The inactivated persons are as follows:

PATRON_IO PATRON_NAME ILLEGAL_TYPE

72647867p BEN_JOHN null

83748773p LILY_WHITE null

64273878p PAT_WILL NULL
```

Here these patrons are inactivating because they did not do anything after they created the account. (In this function, the staff no need to input any thing)

## 2. Update patron's information

Here we provide three kinds of updates: record users violation, activate the user account, inactivate borrow records and inactivate all abnormal borrow records and inactivate the patrons making these borrow.

- 0 --- return to early stage
- 1 --- record violation
- 2 --- activate the user account
- 3 --- inactivate all abnormal borrow records and inactivate the patrons making these borrows

#### 2.1 record violation

This function is used for the staff to record those patrons who made some illegal behaviors.

```
Enter a integer from 0 to 3

1

Please input your PATRON_ID such as 123456789p(input * to quit)

21789256p

Please input your ILLEGAL_TYPE such as (destroyed the book)(input * to quit)

Bod_behavior

Finish the update
```

For example, in the picture above, the staff input a patron ID and then input "Bad behavior" as the record violation.

## 2.2 activate the user account

```
Enter an integer to make the choose (enter 0 to quit): 1 -- record use Enter a integer from 0 to 3

Please input your PATRON_ID such as 123456789p(input * to quit)

64273878p

Finish the update.
```

# 2.3 inactivate all abnormal borrow records and inactivate the patrons making these borrows

This function is used for checking those users who made illegal borrow records and inactivate their borrow record.

The following image is the usage of it, it will ask you to confirm if you want to inactivate all the user in one go.

```
Enter a integer from 0 to 3

The abnormal in progress records are as follows, which is started 100 days before.

BORROW_RECORD

ISBN BOOK_ID PATRON_ID RECORD_ID START_TIME END_TIME

(1)

7218475981205 716473876473876 64273878p 6718467810 2019-09-22 null

(2)

9787810441063 237468723623678 21789256p 8192347810 2020-04-11 null

(3)

9365827626587 287492874898279 65488722p 8247598432 2022-02-28 null

These borrow is made my following person:

PAT_WILL COOK_BUSH MERGE_HANS Are you sure to inactivate these persons account? 1--yes 0 -- no Enter a integer from 0 to 1

Successfully inactivate these persons account.
```

In this page, the staff can:

- 1 --- inactivate all the account
- 0 --- give up inactivating

# 3. delete the patron information

Here the staff can choose to delete the information of the patron. The following shows the usage of it. First, it will ask the staff to input the patron id to find the one they want to delete. Then in case they mistakenly made any operation, we will ask them to confirm the deletion.

```
Enter an integer to make the choose (enter 0 to quit): 1 -- delete patron by patron_id.

Enter a integer from 0 to 1

Please input your PATRON_ID such as 123456789p(input * to quit)

64273878p

The information of the patron is as follows.

64273878p PAT_WILL 23 true ZHOUZHOU343@163.COM MALE GARDEN_ROAD_14TH

Are you sure to remove it from database ? 1 -- yes 0 --no
Enter a integer from 0 to 1

Successfully perform the deletion. All of the borrow records and in progress reserve has also been cleared from the system.
```

For example, the staff input the patron's ID to check the information of the patron, later, input "1" to delete the information. (Can input "0" to give up this operation)

# [manage borrow records] (input "4" in function list)

In this page, staff can choose operation by input the match function No.:

- 0 --- return to function list
- 1 --- check the record
- 2 --- update the record
- 3 --- delete the record

## 1. Check the record

In this stage, the staff can:

- 0 --- return to early stage
- 1 --- check the records by records ID
- 2 --- check the records made by patron
- 3 --- check in progress record
- 4 --- check the record of a particular time range
- 5 --- check the record about one collection
- 6 --- check the abnormal in process record

## 1.1 Check the records by RECORDS\_ID

```
Please input the record_ID such as 1234567890(input * to quit)
6718467810
7218475981205 716473876473876 64273878p 6718467810 2019-09-22 null
```

#### Search sample

This function requires the staff to input the record\_ID to track a unique record and will display the information about it (RECURD\_ID, BOOK\_ID, PATRON\_ID, ISBN, START\_TIME, END\_TIME from left to right).

#### 1.2 Check the records made by patron

## (1) search by patron name

## (2) search by patron id

```
You can choose to input either the patron id or the patron name: (0 to quit) 1 -- name 2 -- id

Enter a integer from 0 to 2

Please input the PATRON_ID such as 12345678p(input * to quit)

21789256p

The record by patron with id 21789256p is as follows:BORROW_RECORD

ISBN BOOK_ID PATRON_ID RECORD_ID START_TIME END_TIME

(1)

57387T5782577 716481174119742 21789256p 7182461870 2022-09-11 null

(2)

9787810441063 237468723623678 21789256p 8192347810 2020-04-11 null

(3)

7218475981205 716473876473876 21789256p 7164871640 2017-08-13 2017-08-28

(4)

57387T5782577 716481174119742 21789256p 7164871646 2020-08-13 2020-08-28

(5)

57387T5782577 843175265783746 21789256p 7214976574 2021-09-18 2021-11-24
```

This function requires the staff to input the patron information (1. Name 2. ID) to track all the related records and return a list of them. (RECURD\_ID, BOOK\_ID, PATRON\_ID, ISBN, START\_TIME, END\_TIME from left to right).

#### 1.3 Check in progress record

| The in progress borrow records is as follows: BORROW_RECORD |               |                     |           |            |            |          |
|---|---------------|---------------------|-----------|------------|------------|----------|
|   |               | BOOK_ID             |           |            | START_TIME | END_TIME |
|   | 7218475981205 | 716473876473876     | 64273878p | 6718467810 | 2019-09-22 |          |
|   | 9787810441063 | 127346723876762     | 64273878p | 8241578940 |            |          |
|   | 57387T5782577 | 716481174119742     | 21789256p | 7182461870 | 2022-09-11 | null     |
|   | 9787810441063 | 237468723623678     | 21789256p | 8192347810 | 2020-04-11 | null     |
|   | 8296587296274 | 819427981847657<br> | 82647821p | 6234787367 |            |          |
|   | 0764397506748 | 423976982002757     | 82647821p | 1067487146 |            |          |
|   |               | 278676473829763     |           |            | 2022-11-06 | null     |
|   |               | 287492874898279     | 65488722p | 8247598432 | 2022-02-28 | null     |

A simple function returns all the in-progress records when called.

#### 1.4 Check the record of a particular time range

```
Please input the START_TIME such as 2021-1-12(input * to quit) (input # to represent today)
2022-11-18

Please input the END_TIME such as 2021-1-25(input * to quit) (input # to represent today!)

The borrow records range from 2022-11-18 to 2022-11-19 are as follows:

BORROW_RECORD

ISBN BOOK_ID PATRON_ID RECORD_ID START_TIME END_TIME
```

#### Search sample

This function required the staff input two certain times (YYYY-MM-DD, "#" to represented today's time). After two times all past the efficiency test, this function will display all the records in the period.

#### 1.5 Check the record about one collection

#### (1) Search by Book name

#### (2) Search by Book ID

```
You can choose to input either the BOOK id or the BOOK name: (0 to quit) 1 -- name 2 -- id

Enter a integer from 0 to 2

input the BOOK_ID (a string with 15 number character e.g. 123456789054321):[input * quit]

287492874898279

The borrow record about BOOK with id 287492874898279 is as follows:BORROW_RECORD

ISBN BOOK_ID PATRON_ID RECORD_ID START_TIME END_TIME

(1)

9365827626587 287492874898279 65488722p 7632487628 2018-10-29 2018-11-21

(2)

9365827626587 287492874898279 65488722p 8247598432 2022-02-28 null
```

Like the search for the patron's information, this function allowed the staff to search the record by Book name OR ID (1. BOOK\_NAME 2. BOOK\_ID), After the input, all the related records will be displayed. (RECURD\_ID, BOOK\_ID, PATRON\_ID, ISBN, START\_TIME, END\_TIME from left to right).

#### 1.6 Check the abnormal in process record

```
The overdue in progress borrow record are as follows:

BORROW_RECORD

ISBN BOOK_ID PATRON_ID RECORD_ID START_TIME END_TIME

(1)

7218475981205 716473876473876 64273878p 6718467810 2019-09-22 null

(2)

9787810441063 237468723623678 21789256p 8192347810 2020-04-11 null

(3)

9365827626587 287492874898279 65488722p 8247598432 2022-02-28 null
```

A simple function returns all the abnormal records when called. (The staff no need to input anything here)

# 2. update the record

```
Enter an integer to make the choose (enter 0 to quit): 1 -- end the in progress record.

Enter a integer from 0 to 1

Please input the record_ID such as 1234567890(input * to quit)

6718467810

Successfully end the borrow.
```

This function is used to terminate the in progress borrow record. For example above, the staff input "6718467810" which represented as a record ID to update the record.

## 3. delete the record

3.1 delete record before a particular time

```
Please input the END_TIME such as 2021-1-25(input * to quit) (input # to represent today!)
Successfully perform the deletion.
```

For easy demonstration, the staff just delete the records before today, which means deleting all the records except those in progress.

## 3.2 delete record by record id

```
Please input the record_ID such as 1234567890(input * to quit) 6718467810
Successfully perform the deletion.
```

To delete a particular record, the staff needs to input record id. Because it is somehow like the previous function

3.3 delete records about a collection

```
Please input the BOOK_ID such as 123456789012345(input * to quit)

127346723876762

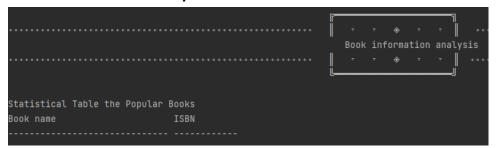
Successfully perform the deletion.
```

To delete the record of a particular collection, the staff needs to input the collection name. Because it is somehow like the previous function

# [Generate analysis report] (input "5" in function list)

In this page, the staff can see the analysis report.

#### 1. Book information analysis



This report shows which books are popular after 2020-01-01 and helps to decide whether our library can buy more of these books or organize some promotions for these books. There are many choices to use these data.

#### 2. Book analysis

i.the percentage of the available and unavailable books will be shown.

ii. Then, the number of copies of books will be printed out.

iii.In the end, the information of the old books which are welcomed will be printed. These data is about the books which are never borrowed after 2020-01-01 and published before 2010-01-01. The staff can update the version or remove these old books.



# 3. patron analysis

i.First, the activation situation of the patrons will be shown ii.The, the staff can see the age groups

## 4. borrow records analysis

- i. This report will show the situation of the overdue records
- ii. Then, the time range of the history records will be shown
- iii. The staff also can see which 5 books are the most popular during the history of the library
- iv. The 3 most popular categories of books will be shown next.

```
According to the borrow records. The most popular 5 books in the library is as follows.

Book Name ISBN number of borrow records

INFORMAL 0764397506748 5

STAR_WARS 57387T5782577 4

BIG_CUCUMEMBER 9365827626587 4

JEEP_IN_DESERT 3698167615698 4

SAN_LUCIA 7218475981205 3

According to the borrow records. The most popular 3 categories of books is as follows.

Category number of borrow records

HORROR 7

STORY 5

SCIENCE_FICTION 4

COURAGE_STORY 4

JOURNAL_FANTASY 3
```

#### 5. In progress reserve analysis

This part will show the situation of the reserve records.

I. How many reserves are in progress will be shown

li.who are waiting for the books are shown,too



---end---