



Kelly's Library Management System Test Case Result

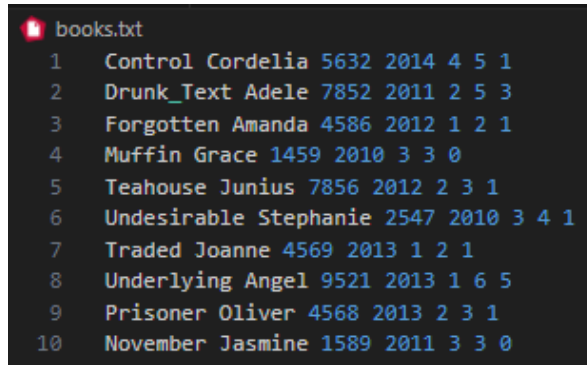
Prepared By:
20511424

TABLE OF CONTENTS

1.0 GETTING STARTED	3
2.0 LIBRARIAN LOGIN	5
3.0 LIBRARIAN MENU: Search Book	7
4.0 LIBRARIAN MENU: Borrow and Return Book	11
4.1 Borrow Book	12
4.2 Return Book	21
5.0 LIBRARIAN MENU: Display Book List	32
6.0 LIBRARIAN MENU: Penalty Management for Late Return	34
7.0 LIBRARIAN MENU: Generate Monthly Report	39
8.0 LIBRARIAN MENU: Exit	46
9.0 STUDENT LOGIN.....	47
10.0 STUDENT MENU: Search Book	50
11.0 STUDENT MENU: Display Book List	54
12.0 STUDENT MENU: Penalty Management for Late Return	56
13.0 STUDENT MENU: Exit	59

1.0 GETTING STARTED

Ensure you have the necessary text files ("books.txt", "students.txt" and "dates.txt") and familiarize yourself with contents of the files.

A screenshot of a text editor showing the contents of a file named 'books.txt'. The file contains 10 lines of data, each representing a book with its title, author, ISBN, year of publication, available copies, total copies, and borrowed copies.

```
books.txt
1 Control Cordelia 5632 2014 4 5 1
2 Drunk_Text Adele 7852 2011 2 5 3
3 Forgotten Amanda 4586 2012 1 2 1
4 Muffin Grace 1459 2010 3 3 0
5 Teahouse Junius 7856 2012 2 3 1
6 Undesirable Stephanie 2547 2010 3 4 1
7 Traded Joanne 4569 2013 1 2 1
8 Underlying Angel 9521 2013 1 6 5
9 Prisoner Oliver 4568 2013 2 3 1
10 November Jasmine 1589 2011 3 3 0
```

Figure 1: books.txt

Column 1: Book's Title.

Column 2: Book's Author.

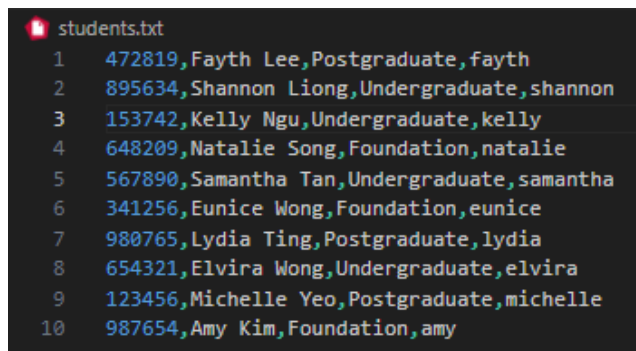
Column 3: Book's ISBN.

Column 4: Year of Publication.

Column 5: Available Copies of Book.

Column 6: Total Copies of Book.

Column 7: Number of Borrowed Copies.

A screenshot of a text editor showing the contents of a file named 'students.txt'. The file contains 10 lines of data, each representing a student with their ID, name, academic program, and password.

```
students.txt
1 472819,Fayth Lee,Postgraduate,fayth
2 895634,Shannon Liong,Undergraduate,shannon
3 153742,Kelly Ngu,Undergraduate,kelly
4 648209,Natalie Song,Foundation,natalie
5 567890,Samantha Tan,Undergraduate,samantha
6 341256,Eunice Wong,Foundation,eunice
7 980765,Lydia Ting,Postgraduate,lydia
8 654321,Elvira Wong,Undergraduate,elvira
9 123456,Michelle Yeo,Postgraduate,michelle
10 987654,Amy Kim,Foundation,amy
```

Figure 2: students.txt

Column 1: Student ID.

Column 2: Student's Name.

Column 3: Academic program enrolled in (e.g., Postgraduate, Undergraduate, Foundation).

Column 4: **Student's Password (student's first name in "lowercase").**

```

dates.txt
1 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
2 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
3 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
4 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
5 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
6 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
7 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
8 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
9 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
10 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
11 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
12 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
13 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
14 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
15 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
16 1459,Shannon Liong,Muffin,20-07-2023,30-07-2023,11-08-2023
17 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
18 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
19 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
20 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
21 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
22 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
23 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
24 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
25 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
26 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
27 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
28 5632,Shannon Liong,Control,20-08-2023,27-08-2023,28-09-2023
29 7856,Shannon Liong,Teahouse,05-10-2023,15-10-2023,(null)
30 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
31 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
32 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
33 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
34 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
35 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
36 9521,Shannon Liong,Underlying,20-07-2023,30-07-2023,(null)

```

Figure 3: dates.txt

Column 1: Book's ISBN.

Column 2: Student's Name.

Column 3: Book's Title.

Column 4: Borrow Date of the Book.

Column 5: Due Date of the Book Borrowed.

Column 6: Return Date of the Book Borrowed.

2.0 LIBRARIAN LOGIN

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM

=====

Login as:
1. Librarian
2. Student

=====

Enter Choice: 1
Enter Librarian Password: *****
```

(IF PASSWORD IS CORRECT)

Login successful message and librarian menu will be displayed.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM

=====

Login as:
1. Librarian
2. Student

=====

Enter Choice: 1
Enter Librarian Password: *****

LOGIN SUCCESSFUL !!

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit

=====

Enter choice: 
```

(IF PASSWORD IS INCORRECT)

Librarians have **3 attempts** in total to enter correct password, if librarians reach **maximum (3) attempts**, **program will be exited**.

```
=====
                        WELCOME TO KELLY'S
                        LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 1
Enter Librarian Password: ****

Invalid password. 2 attempts remaining.
Enter Librarian Password: ****

Invalid password. 1 attempts remaining.
Enter Librarian Password: ****

Invalid password. 0 attempts remaining.
Maximum login attempts reached. Exiting...
```

(IF LOG IN OPTION IS INVALID, NEITHER 1 NOR 2)

```
=====
                        WELCOME TO KELLY'S
                        LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 3
Invalid choice. Please run the program again and enter either 1 or 2.
```

3.0 LIBRARIAN MENU: Search Book

Upon successful login to librarian menu, enter **choice 1** and the program will prompt librarian to enter desired book's ISBN.

```
LOGIN SUCCESSFUL !!

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit
=====

Enter choice: 1

=====
SEARCH BOOK
=====

Enter ISBN to search for a book: 
```

(IF ISBN ENTERED IS "INVALID")

Error message will be displayed, and user will be prompted whether they want to continue searching their desired book.

```
Enter ISBN to search for a book: 9525

Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 
```

(IF CHOICE IS 1, WHICH IS CONTINUE SEARCHING THE BOOK)

User will be prompted to enter ISBN again.

```
Enter ISBN to search for a book: 9525

Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 1

Enter ISBN again: 
```

(IF CHOICE IS 0, WHICH IS TO STOP SEARCHING THE BOOK)

User will be **prompted** on **whether they want return to the librarian menu**.

```
Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 0

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1

===== LIBRARIAN MENU =====
|
| 1. Search Book
| 2. Borrow and Return Book
| 3. Display Book List
| 4. Penalty Management for Late Return
| 5. Generate Monthly Report
| 0. Exit
|
|=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
|
| THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
|
|=====
```


(IF ISBN ENTERED FOR SEARCH BOOK IS “VALID”)

Searched book’s title, author, ISBN, year of publication, number of copies available, total copies and borrowed copies of the book are **displayed** in tabular format. After **information** of the selected book is **displayed**, librarians will be **prompted to either continue or discontinue searching** the book.

```
Enter ISBN again: 9525
Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 1
Enter ISBN again: 5632

DISPLAYING INFORMATION OF THE BOOK WITH ISBN 5632

|-----|-----|-----|-----|-----|-----|-----|
| Title   | Author | ISBN  | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|-----|
| Control | Cordelia | 5632 | 2014 | 4 | 5 | 1 |
|-----|-----|-----|-----|-----|-----|-----|

Do you want to continue searching? (1 for Yes / 0 for No):
```

(IF USER ENTERS 1, MEANING TO CONTINUE SEARCHING “AGAIN”)

Librarian will be prompted to **enter ISBN again**.

```
Do you want to continue searching? (1 for Yes / 0 for No): 1
Enter ISBN again:
```

(IF USER ENTERS 0, MEANING TO STOP SEARCHING)

Librarian will then be prompted on whether they want to return to the librarian menu.

```
Do you want to continue searching? (1 for Yes / 0 for No): 0
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1

===== LIBRARIAN MENU =====
|
| 1. Search Book
| 2. Borrow and Return Book
| 3. Display Book List
| 4. Penalty Management for Late Return
| 5. Generate Monthly Report
| 0. Exit
|
=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you** message will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
|
| THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
|
=====
```

4.0 LIBRARIAN MENU: Borrow and Return Book

Upon successful login to librarian menu, enter **Choice 2** and the program will prompt librarians to choose an option to either borrow a book or return a book.

```
===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit

Enter choice: 2

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2):
```

(if **chosen option is invalid**, which means **neither option 1 nor 2**, error message will be displayed, and the program will prompt librarian to **re-enter their choice** until they choose either option 1 or 2)

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 3
Invalid choice. Please enter 1 or 2.

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 4
Invalid choice. Please enter 1 or 2.

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2):
```

4.1 Borrow Book

If librarian chooses **option 1**, borrow a book, librarian will be prompted to enter the student's student ID who wish to borrow a book and enter ISBN for the book to be borrowed.

```

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit

Enter choice: 2

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 1

=====
|
| Borrow Book
|
=====

Enter Student ID to borrow the book:

```

(IF STUDENT ID IS “INVALID”)

Error message will be displayed, and user will be prompted to **re-enter valid Student ID**.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 1

Enter Student ID to borrow the book: 795696
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 479654
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 789548
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 
```

(IF STUDENT ID IS “VALID”)

Librarian will only then be prompted to **enter book ISBN**.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 1

Enter Student ID to borrow the book: 795696
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 479654
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 789548
Invalid student ID. Please try again.

Enter Student ID to borrow the book: 472819
Enter ISBN of the book to borrow: 
```

(IF STUDENT ID IS VALID BUT BOOK ISBN IS INVALID)

Error message will be displayed, and user will be prompted to **re-enter valid book ISBN**.

```
Enter Student ID to borrow the book: 472819
Enter ISBN of the book to borrow: 7896

Book not found with ISBN: 7896. Please try again.
Enter ISBN of the book to borrow: 7743

Book not found with ISBN: 7743. Please try again.
Enter ISBN of the book to borrow: 9632

Book not found with ISBN: 9632. Please try again.
Enter ISBN of the book to borrow: 
```

(IF BOTH STUDENT ID AND BOOK ISBN ARE VALID)

The **information of the selected book** (in this case, book with ISBN 7852) will be displayed in tabular format. It will then inform librarians **whether the selected book is available** and show the **number of available copies** of the book. Librarian is then prompted to **enter borrow date**.

```
===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit

Enter choice: 2

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 1

=====
Borrow Book
=====

Enter Student ID to borrow the book: 472819
Enter ISBN of the book to be borrowed: 7852

Displaying Selected Book:
|-----|-----|-----|-----|-----|-----|-----|
| Title | Author | ISBN | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|-----|
| Drunk_Text | Adele | 7852 | 2011 | 2 | 5 | 3 |
|-----|-----|-----|-----|-----|-----|-----|

This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY):
```

(IF THE DATE IS “INVALID” OR IN THE “WRONG FORMAT”)

Error message is displayed. Librarians will be prompted to **re-enter the borrow date and due date** until the date is valid and in the correct format.

```
This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 40-11-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.
Enter Borrow Date (DD-MM-YYYY):
```

```
This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 40-11-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-13-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.
Enter Borrow Date (DD-MM-YYYY):
```

```
This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 40-11-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-13-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-11-2025
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.
Enter Borrow Date (DD-MM-YYYY):
```

```
This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 40-11-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-13-2023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-11-2025
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11112023
Invalid date format or range. Please re-enter valid date in DD-MM-YYYY format.
Enter Borrow Date (DD-MM-YYYY):
```

(IF THE BORROW DATE IS VALID AND IS IN THE CORRECT FORMAT “DD-MM-YYYY”)

If librarian entered the correct borrow date format and is valid, librarians will only then be prompted to **enter due date** for the borrowed book.

```
This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 40-11-2023
Invalid date format or range. Please re-enter the date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-13-2023
Invalid date format or range. Please re-enter the date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-11-2025
Invalid date format or range. Please re-enter the date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11112023
Invalid date format or range. Please re-enter the date in DD-MM-YYYY format.

Enter Borrow Date (DD-MM-YYYY): 11-11-2023
Enter Due Date (DD-MM-YYYY):
```

(IF THE ENTERED “DUE DATE” IS BEFORE THE “BORROW DATE”)

Librarian will be prompted to enter valid due date. In this case here, the due date is 07-11-2023, which is **4 days earlier** than the borrow date, which **does not make sense** at all, hence, **error message** is displayed, and librarian is prompted to **re-enter valid due date**.

```
Enter Borrow Date (DD-MM-YYYY): 11-11-2023
Enter Due Date (DD-MM-YYYY): 07-11-2023

Invalid due date. Please enter a valid date later than the borrow date (11-11-2023).

Enter Due Date (DD-MM-YYYY):
```

#note that for “due date” must be in the **correct format** and **after the borrow date**

(AFTER SUCCESSFULLY ENTERING STUDENT ID, ISBN, BORROW DATE AND DUE DATE)

Student receipt is displayed.

```
Enter Borrow Date (DD-MM-YYYY): 11-11-2023
Enter Due Date (DD-MM-YYYY): 07-11-2023

Invalid due date. Please enter a valid date later than the borrow date (11-11-2023).
Enter Due Date (DD-MM-YYYY): 18-11-2023

Fayth Lee (Student ID: 472819) has successfully borrowed the book "Drunk_Text"!

=====
|                               |
|          STUDENT RECEIPT      |
|                               |
| Student's Name: Fayth Lee     |
| Book Borrowed: Drunk_Text     |
| Author: Adele                 |
| ISBN: 7852                    |
| Year Of Publication: 2011      |
| Borrow Date: 11-11-2023      |
| Due Date: 18-11-2023         |
|                               |
| Happy Reading!!              |
|                               |
|=====
```

Updated Book Information:						
Title	Author	ISBN	Year of Publication	Available Copies	Total Copies	Borrowed Copies
Drunk_Text	Adele	7852	2011	1	5	4

Updated book information is also displayed. (number of available copies for book ISBN 7852 is **decreased by 1**, whereas, the number of borrowed copies is **increased by 1**, since student has **successfully borrowed the book**).

Title	Author	ISBN	Year of Publication	Available Copies	Total Copies	Borrowed Copies
Drunk_Text	Adele	7852	2011	2	5	3

Before borrowing.

Updated Book Information:						
Title	Author	ISBN	Year of Publication	Available Copies	Total Copies	Borrowed Copies
Drunk_Text	Adele	7852	2011	1	5	4

After borrowing.

OVERALL (BORROW BOOK)

```
|=====|
|          Borrow Book          |
|=====|

Enter Student ID to borrow the book: 472819
Enter ISBN of the book to be borrowed: 7852

Displaying Selected Book:
|-----|-----|-----|-----|-----|-----|
| Title      | Author  | ISBN   | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|
| Drunk_Text | Adele   | 7852   | 2011               | 2                | 5            | 3               |
|-----|-----|-----|-----|-----|-----|

This book is AVAILABLE!
Number of copies available: 2

Enter Borrow Date (DD-MM-YYYY): 11-11-2023
Enter Due Date (DD-MM-YYYY): 07-11-2023

Invalid due date. Please enter a valid date later than the borrow date (11-11-2023).

Enter Due Date (DD-MM-YYYY): 18-11-2023

Fayth Lee (Student ID: 472819) has successfully borrowed the book "Drunk_Text"!

|=====|
|          STUDENT RECEIPT          |
|=====|
| Student's Name: Fayth Lee          |
| Book Borrowed: Drunk_Text          |
| Author: Adele                      |
| ISBN: 7852                         |
| Year Of Publication: 2011           |
| Borrow Date: 11-11-2023            |
| Due Date: 18-11-2023               |
|                                     |
| Happy Reading!!                    |
|=====|

Updated Book Information:
|-----|-----|-----|-----|-----|-----|
| Title      | Author  | ISBN   | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|
| Drunk_Text | Adele   | 7852   | 2011               | 1                | 5            | 4               |
|-----|-----|-----|-----|-----|-----|

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): █
```

(AFTER SUCCESSFULLY BORROWED A BOOK)

- i) **books.txt file is updated** (number of available copies is decreased by 1, number of borrowed copies is increased by 1, total copies of book remain the same)

```
books.txt
1 Control Cordelia 5632 2014 4 5 1
2 Drunk_Text Adele 7852 2011 2 5 3
3 Forgotten Amanda 4586 2012 1 2 1
4 Muffin Grace 1459 2010 3 3 0
5 Teahouse Junius 7856 2012 2 3 1
6 Undesirable Stephanie 2547 2010 3 4 1
7 Traded Joanne 4569 2013 1 2 1
8 Underlying Angel 9521 2013 5 6 1
9 Prisoner Oliver 4568 2013 2 3 1
10 November Jasmine 1589 2011 3 3 0
```

Before borrowing.

```
books.txt
1 Control Cordelia 5632 2014 4 5 1
2 Drunk_Text Adele 7852 2011 1 5 4
3 Forgotten Amanda 4586 2012 1 2 1
4 Muffin Grace 1459 2010 3 3 0
5 Teahouse Junius 7856 2012 2 3 1
6 Undesirable Stephanie 2547 2010 3 4 1
7 Traded Joanne 4569 2013 1 2 1
8 Underlying Angel 9521 2013 5 6 1
9 Prisoner Oliver 4568 2013 2 3 1
10 November Jasmine 1589 2011 3 3 0
```

After borrowing.

- ii) **dates.txt file is updated** (new line is added at the end of the file, which includes information such as book ISBN, borrower's name, book's title, borrow date, due date, return date (**null**) because student **has not return the book**)

```
dates.txt
1 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
2 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
3 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
4 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
5 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
6 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
7 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
8 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
9 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
10 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
11 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
12 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
13 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
14 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
15 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
16 1459,Shannon Liang,Muffin,20-07-2023,30-07-2023,11-08-2023
17 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
18 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
19 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
20 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
21 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
22 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
23 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
24 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
25 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
26 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
27 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
28 5632,Shannon Liang,Control,20-08-2023,27-08-2023,28-09-2023
29 7856,Shannon Liang,Teahouse,05-10-2023,15-10-2023,(null)
30 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
31 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
32 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
33 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
34 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
35 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
36 9521,Shannon Liang,Underlying,20-07-2023,30-07-2023,(null)
37
```

Before borrowing.

```
dates.txt
1 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
2 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
3 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
4 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
5 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
6 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
7 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
8 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
9 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
10 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
11 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
12 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
13 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
14 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
15 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
16 1459,Shannon Liang,Muffin,20-07-2023,30-07-2023,11-08-2023
17 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
18 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
19 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
20 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
21 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
22 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
23 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
24 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
25 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
26 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
27 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
28 5632,Shannon Liang,Control,20-08-2023,27-08-2023,28-09-2023
29 7856,Shannon Liang,Teahouse,05-10-2023,15-10-2023,(null)
30 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
31 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
32 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
33 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
34 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
35 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
36 9521,Shannon Liang,Underlying,20-07-2023,30-07-2023,(null)
37 7852,Fayth Lee,Drunk_Text,11-11-2023,18-11-2023,(null)
```

After borrowing.

(IF THE SELECTED BOOK IS “NOT AVAILABLE”)

```
Enter Student ID to borrow the book: 987654
Enter ISBN of the book to borrow: 4569

Displaying Selected Book:
|-----|-----|-----|-----|-----|-----|-----|
| Title      | Author  | ISBN   | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|-----|
| Traded     | Joanne  | 4569   | 2013               | 0               | 2           | 1               |
|-----|-----|-----|-----|-----|-----|-----|

No available copies of the book with ISBN: 4569.

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

Librarian is then **prompted** on whether they wish to return to the librarian menu.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit
=====

Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
=====
```

4.2 Return Book

```
===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit

Enter choice: 2

Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

Enter Student ID to return book: 
```

If librarian chooses **option 2**, return a book, librarian will be prompted to enter the student's student ID who wish to return a book and ISBN for the book to be returned.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

=====
|                                     |
|                               Return Book                               |
|                                     |
=====

Enter Student ID: 
```

(IF STUDENT ID ENTERED IS "INVALID")

Librarian will be asked to **re-enter the student ID** until it matches with any student ID in the students.txt file.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

=====
|                                     |
|                               Return Book                               |
|                                     |
=====

Enter Student ID: 963258
Invalid student ID. Please try again.

Enter Student ID: 
```

Librarian will only then be prompted to **enter book ISBN**.

(in this case here, both student ID and book ISBN are valid, however, **student ID 987654 (valid) DID NOT BORROW / ALREADY RETURNED the book with ISBN 7856 (valid), an error message** “No matching entry found for return. Please double-check the information” will be displayed)

(in this case here, both student ID and book ISBN are valid, however, **student ID 472819 (valid) DID NOT BORROW / ALREADY RETURNED the book with ISBN 9521 (valid)**, an error message “No matching entry found for return. Please double-check the information” will be displayed)

22

(in this case here, both student ID and book ISBN are valid & the student with **student ID 472819 (valid) DID BORROW the book with ISBN 7852 (valid)**, book to be returned receipt will be displayed and librarian will then be prompted to **enter the return date**)

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

=====
|                                     |
|                               Return Book                               |
|                                     |
=====

Enter Student ID: 472819
Enter ISBN of the book to be returned: 7852

=====
|                                     |
|                               BOOK TO BE RETURNED                       |
|                                     |
| Book ISBN:      7852               |
| Book Title:     Drunk_Text         |
| Borrower Name:  Fayth Lee          |
| Borrow Date:    11-11-2023         |
| Due Date:       18-11-2023         |
|                                     |
=====

Enter Return Date (DD-MM-YYYY):
```

(IF THE RETURN DATE IS “INVALID”)

In this case here, the entered year is 2025 but we are still in 2023. Can try more on your own. (e.g. invalid year/month/day or invalid format). User will then be prompted to re-enter valid return date.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

=====
|                                     |
|                               Return Book                               |
|                                     |
=====

Enter Student ID: 472819
Enter ISBN of the book to be returned: 7852

=====
|                                     |
|                               BOOK TO BE RETURNED                       |
|                                     |
| Book ISBN:      7852               |
| Book Title:     Drunk_Text         |
| Borrower Name:  Fayth Lee          |
| Borrow Date:    11-11-2023         |
| Due Date:       18-11-2023         |
|                                     |
=====

Enter Return Date (DD-MM-YYYY): 12-12-2025
Invalid date format or range. Please enter the date in DD-MM-YYYY format.

Enter Return Date (DD-MM-YYYY):
```

In this case here, the return date is 09-11-2023, which is earlier than borrow date, which obviously is an error since it does not make sense at all, a different **error message** “Invalid return date. Please enter a valid date later than or equal to the borrow date (DD-MM-YYYY).” will be displayed. User is then prompted to **re-enter valid return date**.

Enter Return Date (DD-MM-YYYY): 09-11-2023
Invalid return date. Please enter a valid date later than or equal to the borrow date (11-11-2023).
Enter Return Date (DD-MM-YYYY):

(IF RETURN DATE IS VALID & BOOK IS RETURNED LATE)

After the librarian has entered the valid return date, **updated book return receipt** will be displayed (return date & fine to be collected are added).

Choose an option:

1. Borrow a book
2. Return a book

Enter your choice (1 or 2): 2

```
=====
|                                     |
|                               Return Book                               |
|                                     |
|=====
```

Enter Student ID: 472819

Enter ISBN of the book to be returned: 7852

```
=====
|                                     |
|                               BOOK TO BE RETURNED                       |
|                                     |
| Book ISBN:      7852              |
| Book Title:     Drunk_Text        |
| Borrower Name:  Fayth Lee        |
| Borrow Date:    11-11-2023       |
| Due Date:       18-11-2023       |
|                                     |
|=====
```

Enter Return Date (DD-MM-YYYY): 28-11-2023

```
=====
|                                     |
|                               BOOK RETURN RECEIPT                       |
|                                     |
| Borrower Name :Fayth Lee        |
| Book ISBN      :7852             |
| Book Title     :Drunk_Text       |
| Borrow Date    :11-11-2023      |
| Due Date       :18-11-2023      |
|                                     |
| Return Date    :28-11-2023      |
| Fine          :RM 10.00         |
|                                     |
|=====
```

Fayth Lee has returned the book "Drunk_Text" late.
BOOK RETURNED SUCCESSFULLY!!

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): █

(IF BOOK IS RETURNED SUCCESSFULLY)

1. return date is updated in dates.txt file.

```
1 dates.txt
2 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
3 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
4 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
5 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
6 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
7 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
8 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
9 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
10 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
11 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
12 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
13 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
14 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
15 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
16 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
17 1459,Shannon Liang,Muffin,20-07-2023,30-07-2023,11-08-2023
18 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
19 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
20 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
21 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
22 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
23 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
24 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
25 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
26 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
27 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
28 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
29 5632,Shannon Liang,Control,20-08-2023,27-08-2023,28-09-2023
30 7856,Shannon Liang,Teahouse,05-10-2023,15-10-2023,(null)
31 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
32 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
33 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
34 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
35 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
36 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
37 9521,Shannon Liang,Underlying,20-07-2023,30-07-2023,(null)
38 7852,Fayth Lee,Drunk_Text,11-11-2023,18-11-2023,(null)
```

Before returning.

```
1 dates.txt
2 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
3 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
4 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
5 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
6 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
7 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
8 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
9 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
10 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
11 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
12 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
13 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
14 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
15 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
16 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
17 1459,Shannon Liang,Muffin,20-07-2023,30-07-2023,11-08-2023
18 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
19 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
20 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
21 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
22 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
23 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
24 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
25 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
26 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
27 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
28 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
29 5632,Shannon Liang,Control,20-08-2023,27-08-2023,28-09-2023
30 7856,Shannon Liang,Teahouse,05-10-2023,15-10-2023,(null)
31 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
32 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
33 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
34 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
35 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
36 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
37 9521,Shannon Liang,Underlying,20-07-2023,30-07-2023,(null)
38 7852,Fayth Lee,Drunk_Text,11-11-2023,18-11-2023,28-11-2023
```

After returning.

2. books.txt file is updated.

- number of available copies of the book is increased by 1.
- number of borrowed of copies is decreased by 1.

```
1 books.txt
2 Control Cordelia 5632 2014 4 5 1
3 Drunk Text Adele 7852 2011 1 5 4
4 Forgotten Amanda 4586 2012 1 2 1
5 Muffin Grace 1459 2010 3 3 0
6 Teahouse Junius 7856 2012 2 3 1
7 Undesirable Stephanie 2547 2010 3 4 1
8 Traded Joanne 4569 2013 1 2 1
9 Underlying Angel 9521 2013 5 6 1
10 Prisoner Oliver 4568 2013 2 3 1
11 November Jasmine 1589 2011 3 3 0
```

Before returning.

```
1 books.txt
2 Control Cordelia 5632 2014 4 5 1
3 Drunk Text Adele 7852 2011 2 5 3
4 Forgotten Amanda 4586 2012 1 2 1
5 Muffin Grace 1459 2010 3 3 0
6 Teahouse Junius 7856 2012 2 3 1
7 Undesirable Stephanie 2547 2010 3 4 1
8 Traded Joanne 4569 2013 1 2 1
9 Underlying Angel 9521 2013 5 6 1
10 Prisoner Oliver 4568 2013 2 3 1
11 November Jasmine 1589 2011 3 3 0
```

After returning.

3. Penalty records are updated.

- you are able to view/check the table below when you run the penalty management function under librarian menu.
- (null) for return date is updated with the entered return date (28-11-2023).
- penalty (initially RM 0.00) is updated to RM10.00 for late return of book.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	17-10-2023	2.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	(null)	0.00

Before returning.

LIBRARY BORROWING AND PENALTY RECORDS

Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	17-10-2023	2.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

After returning.

(IF THE BOOK IS RETURNED EARLIER THAN THE DUE DATE)

Program will display updated book return receipt and the **fine** to be collected is **RM0.00**.

```
Choose an option:
1. Borrow a book
2. Return a book
Enter your choice (1 or 2): 2

=====
|                               |
|               Return Book    |
|                               |
=====

Enter Student ID: 895634
Enter ISBN of the book to be returned: 9521

=====
|                               |
|               BOOK TO BE RETURNED               |
|=====|
| Book ISBN:      9521          |
| Book Title:     Underlying    |
| Borrower Name:  Shannon Liong |
| Borrow Date:    20-07-2023    |
| Due Date:       30-07-2023    |
|=====|

Enter Return Date (DD-MM-YYYY): 25-07-2023

=====
|                               |
|               UPDATED BOOK RETURN RECEIPT        |
|=====|
| Borrower Name:  Shannon Liong |
| Book ISBN:      9521          |
| Book Title:     Underlying    |
| Borrow Date:    20-07-2023    |
| Due Date:       30-07-2023    |
| Return Date:    25-07-2023    |
| Fine:           RM0.00        |
|=====|

Shannon Liong has returned the book "Underlying" prior to the due date.
No fines will be incurred.

BOOK RETURNED SUCCESSFULLY!!
```

PENALTY RECORDS

- return date is updated and penalty is still RM0.00 because book is returned early.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	17-10-2023	2.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

before returning.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	17-10-2023	2.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	25-07-2023	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

after returning.

Librarian is then **prompted** on **whether they wish to return to the librarian menu**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1
```

```
===== LIBRARIAN MENU =====  
1. Search Book  
2. Borrow and Return Book  
3. Display Book List  
4. Penalty Management for Late Return  
5. Generate Monthly Report  
0. Exit  
=====
```

```
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0
```

```
EXITING....
```

```
=====
```

```
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
```

```
=====
```

5.0 LIBRARIAN MENU: Display Book List

Do you want to continue? (1 for Yes / 0 for No): 1

```
===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit
=====

Enter choice: 3
```

The books in the library are displayed according to **ascending alphabetical order of the books' titles. (from A to Z)**

DISPLAYING LIST OF BOOKS IN ASCENDING ORDER ACCORDING TO BOOKS' TITLES ...						
Title	Author	ISBN	Year of Publication	Available Copies	Total Copies	Borrowed Copies
Control	Cordelia	5632	2014	4	5	1
Drunk_Text	Adele	7852	2011	2	5	3
Forgotten	Amanda	4586	2012	1	2	1
Muffin	Grace	1459	2010	3	3	0
November	Jasmine	1589	2011	3	3	0
Prisoner	Oliver	4568	2013	2	3	1
Teahouse	Junius	7856	2012	2	3	1
Traded	Joanne	4569	2013	1	2	1
Underlying	Angel	9521	2013	3	6	3
Undesirable	Stephanie	2547	2010	3	4	1

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):

Librarian is then **prompted** on **whether they wish to return to the librarian menu**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1
```

```
===== LIBRARIAN MENU =====  
1. Search Book  
2. Borrow and Return Book  
3. Display Book List  
4. Penalty Management for Late Return  
5. Generate Monthly Report  
0. Exit  
=====
```

```
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0
```

```
EXITING....
```

```
=====
```

```
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
```

```
=====
```

6.0 LIBRARIAN MENU: Penalty Management for Late Return

Do you want to continue? (1 for Yes / 0 for No): 1

```

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit
=====

Enter choice: 4
  
```

Library borrowing and penalty records for **each book** is displayed when option 4 is chosen.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	(null)	0.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

Librarian is then given **2 options** to choose from. They can either **view the total fine for all students (option 1)** or just find the **total fine for specific student (option 2)** using student ID.

```

Enter 1 to view total fine for every student.
Enter 2 to find total fine for specific student using student ID.
Enter Choice (1 or 2): █
  
```

IF LIBRARIANS ENTER “INVALID INPUT” (OTHER THAN OPTION 1 AND 2)

Error message is displayed and librarian is prompted to re-enter valid option.

```
Enter 1 to view total fine for every student.  
Enter 2 to find total fine for a specific student using student ID.  
Enter Choice (1 or 2): 3  
Invalid choice. Please enter 1 or 2.  
  
Enter 1 to view total fine for every student.  
Enter 2 to find total fine for a specific student using student ID.  
Enter Choice (1 or 2): 4  
Invalid choice. Please enter 1 or 2.  
  
Enter 1 to view total fine for every student.  
Enter 2 to find total fine for a specific student using student ID.  
Enter Choice (1 or 2):
```

(IF LIBRARIANS ENTER “OPTION 1”)

A table showing the total penalty for all students will be displayed.

```
Enter 1 to view the total fine for every student.  
Enter 2 to find the total fine for a specific student using student ID.  
Enter Choice (1 or 2): 1  
  
Displaying Total Penalty for All Students...  
-----  
| Student | Total Penalty (RM) |  
-----  
| Fayth Lee | 30.00 |  
| Shannon Liong | 44.00 |  
| Kelly Ngu | 80.00 |  
| Natalie Song | 64.00 |  
| Samantha Tan | 24.00 |  
| Eunice Wong | 13.00 |  
| Lydia Ting | 106.00 |  
| Elvira Wong | 24.00 |  
| Michelle Yeo | 5.00 |  
| Amy Kim | 5.00 |  
-----  
  
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF LIBRARIANS ENTER OPTION 2)

Librarians will be prompted to enter the student ID.

```
Enter 1 to view total fine for every student.  
Enter 2 to find total fine for a specific student using student ID.  
Enter Choice (1 or 2): 2  
Enter Student ID:
```

(IF STUDENT ID ENTERED IS “INVALID”)

Librarians will be prompted to **re-enter student ID** until the student ID matches with any of the student ID in students.txt file.

```
Enter 1 to view total fine for every student.
Enter 2 to find total fine for a specific student using student ID.
Enter Choice (1 or 2): 2

Enter Student ID: 798565
Invalid student ID. Please enter a valid student ID.

Enter Student ID: 978654
Invalid student ID. Please enter a valid student ID.

Enter Student ID: 
```

(WHEN STUDENT ID ENTERED IS “VALID”)

The program will **display total fine** for that particular student and **book(s) that is/are being returned late** by that particular student.

```
Enter 1 to view the total fine for every student.
Enter 2 to find the total fine for a specific student using student ID.
Enter Choice (1 or 2): 2

Enter Student ID: 472819
Total Fine for Fayth Lee is RM 30.00
```

Book Returned Late	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 
```

Proof for above table results.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	14-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	(null)	0.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

Librarian is then **prompted** on **whether they wish to return to the librarian menu**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1
```

```
===== LIBRARIAN MENU =====  
1. Search Book  
2. Borrow and Return Book  
3. Display Book List  
4. Penalty Management for Late Return  
5. Generate Monthly Report  
0. Exit  
=====
```

```
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0
```

```
EXITING....
```

```
=====
```

```
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
```

```
=====
```

7.0 LIBRARIAN MENU: Generate Monthly Report

```
Do you want to continue? (1 for Yes / 0 for No): 1

===== LIBRARIAN MENU =====
1. Search Book
2. Borrow and Return Book
3. Display Book List
4. Penalty Management for Late Return
5. Generate Monthly Report
0. Exit
=====

Enter choice: 5
```

Librarian is prompted to enter **COMPLETE NAME OF THE DESIRED MONTH** and **THE FIRST LETTER MUST BE CAPITALISED**

```
===== MONTHLY REPORT =====

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : 
```

WHEN THE MONTH IS VALID BUT FIRST LETTER OF THE MONTH IS NOT CAPITALISED

Error message is displayed, and librarian is prompted to re-enter valid month in the correct format.

```
Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : june
Invalid Input. Please try again.

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : 
```

FIRST LETTER IS CAPITALISED BUT INVALID MONTH (ONLY JUNE TILL DECEMBER ARE ACCEPTED)

```
Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : june
Invalid Input. Please try again.

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : March
Invalid Input. Please try again.

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : 
```

(ENTERED MONTH IS VALID AND FIRST LETTER IS CAPITALIZED)

MONTHLY REPORT FOR DECEMBER 2023

MONTHLY REPORT

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : December

Monthly Report for December 2023

Category	Count
Total Books Borrowed	1
Total Books Returned	2
Total Books to be Returned	1
Total Fines Collected	RM 167.00

Do you want to generate a report for another month? (1 for Yes / 0 for No):

PROOF (DECEMBER – BOOKS BORROWED, RETURNED, TO BE RETURNED)

```
dates.txt
1 5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
2 7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
3 4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
4 1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
5 7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
6 2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
7 4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
8 1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
9 9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
10 4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
11 5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
12 1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
13 9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
14 4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
15 7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
16 1459,Shannon Liong,Muffin,20-07-2023,30-07-2023,11-08-2023
17 5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
18 1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
19 7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
20 9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
21 4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
22 5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
23 2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
24 9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
25 7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
26 1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
27 9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
28 5632,Shannon Liong,Control,20-08-2023,27-08-2023,28-09-2023
29 7856,Shannon Liong,Teahouse,05-10-2023,15-10-2023,(null)
30 2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
31 4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
32 4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
33 7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
34 7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
35 2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
36 9521,Shannon Liong,Underlying,20-07-2023,30-07-2023,25-07-2023
37 7852,Fayth Lee,Drunk_Text,11-11-2023,18-11-2023,28-11-2023
```

1 book was borrowed (yellow), 2 books were returned (light blue), 1 book is yet to be returned (null and the due date is in December) (green)

PROOF (DECEMBER – TOTAL FINES COLLECTED)

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liang	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liang	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liang	Teahouse	7856	05-10-2023	15-10-2023	(null)	0.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liang	Underlying	9521	20-07-2023	30-07-2023	25-07-2023	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

According to the table above, total fines collected in December is RM 61.00 + RM 106.00 = RM 167.00

(USER IS PROMPTED ON WHETHER THEY WISH TO CONTINUE GENERATE A REPORT FOR ANOTHER MONTH)

```
=====
MONTHLY REPORT
=====

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : December

Monthly Report for December 2023
-----
| Category | Count |
-----
| Total Books Borrowed | 1 |
| Total Books Returned | 2 |
| Total Books to be Returned | 1 |
-----
| Total Fines Collected | RM 167.00 |
-----

Do you want to generate a report for another month? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1)

Librarian is prompted to enter the name of another month.

```
Do you want to generate a report for another month? (1 for Yes / 0 for No): 1

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) :
```

MONTHLY REPORT FOR SEPTEMBER 2023

```
=====
MONTHLY REPORT
=====

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : December

Monthly Report for December 2023
-----
| Category | Count |
-----
| Total Books Borrowed | 1 |
| Total Books Returned | 2 |
| Total Books to be Returned | 1 |
-----
| Total Fines Collected | RM 167.00 |
-----

Do you want to generate a report for another month? (1 for Yes / 0 for No): 1

Monthly report is available from June until December 2023 ONLY
Enter the complete name of the month with the first letter capitalized, for instance, (June, July, or August) : September

Monthly Report for September 2023
-----
| Category | Count |
-----
| Total Books Borrowed | 8 |
| Total Books Returned | 8 |
| Total Books to be Returned | 2 |
-----
| Total Fines Collected | RM 90.00 |
-----

Do you want to generate a report for another month? (1 for Yes / 0 for No):
```

Monthly Report for September 2023	
Category	Count
Total Books Borrowed	8
Total Books Returned	8
Total Books to be Returned	2
Total Fines Collected	RM 90.00

PROOF (SEPTEMBER – BOOKS BORROWED, RETURNED, TO BE RETURNED)

1	5632,Samantha Tan,Control,10-09-2023,20-09-2023,28-09-2023
2	7852,Natalie Song,Drunk_Text,15-09-2023,25-09-2023,(null)
3	4586,Elvira Wong,Forgotten,05-07-2023,15-07-2023,25-07-2023
4	1459,Fayth Lee,Muffin,20-08-2023,30-08-2023,10-09-2023
5	7856,Fayth Lee,Teahouse,10-09-2023,20-09-2023,29-09-2023
6	2547,Natalie Song,Undesirable,15-10-2023,25-10-2023,25-12-2023
7	4569,Eunice Wong,Traded,01-06-2023,11-06-2023,(null)
8	1589,Lydia Ting,November,05-09-2023,15-09-2023,30-12-2023
9	9521,Kelly Ngu,Underlying,01-11-2023,10-11-2023,26-11-2023
10	4568,Amy Kim,Prisoner,10-11-2023,20-11-2023,25-11-2023
11	5632,Eunice Wong,Control,04-06-2023,11-06-2023,(null)
12	1589,Fayth Lee,November,05-10-2023,15-10-2023,04-10-2023
13	9521,Samantha Tan,Underlying,01-11-2023,10-11-2023,25-11-2023
14	4568,Elvira Wong,Prisoner,10-10-2023,20-10-2023,(null)
15	7852,Michelle Yeo,Drunk_Text,15-10-2023,25-10-2023,(null)
16	1459,Shannon Liong,Muffin,20-07-2023,30-07-2023,11-08-2023
17	5632,Natalie Song,Control,15-09-2023,25-09-2023,28-09-2023
18	1589,Eunice Wong,November,01-08-2023,10-08-2023,20-08-2023
19	7852,Lydia Ting,Drunk_Text,10-09-2023,20-09-2023,(null)
20	9521,Fayth Lee,Underlying,20-09-2023,30-09-2023,25-09-2023
21	4568,Michelle Yeo,Prisoner,01-06-2023,10-06-2023,15-06-2023
22	5632,Kelly Ngu,Control,15-06-2023,25-06-2023,28-07-2023
23	2547,Elvira Wong,Undesirable,10-10-2023,20-10-2023,25-10-2023
24	9521,Natalie Song,Underlying,20-11-2023,30-11-2023,(null)
25	7852,Kelly Ngu,Drunk_Text,14-08-2023,21-08-2023,20-08-2023
26	1459,Samantha Tan,Muffin,15-09-2023,25-09-2023,26-09-2023
27	9521,Eunice Wong,Underlying,20-12-2023,30-12-2023,(null)
28	5632,Shannon Liong,Control,20-08-2023,27-08-2023,28-09-2023
29	7856,Shannon Liong,Teahouse,05-10-2023,15-10-2023,(null)
30	2547,Kelly Ngu,Undesirable,10-08-2023,20-08-2023,25-08-2023
31	4569,Kelly Ngu,Traded,20-08-2023,30-08-2023,25-09-2023
32	4586,Amy Kim,Forgotten,01-11-2023,10-11-2023,(null)
33	7852,Eunice Wong,Drunk_Text,10-06-2023,17-06-2023,20-06-2023
34	7856,Elvira Wong,Teahouse,10-07-2023,20-07-2023,29-07-2023
35	2547,Samantha Tan,Undesirable,15-08-2023,25-08-2023,(null)
36	9521,Shannon Liong,Underlying,20-07-2023,30-07-2023,25-07-2023
37	7852,Fayth Lee,Drunk_Text,11-11-2023,18-11-2023,28-11-2023

8 books were borrowed (yellow), 8 books were returned (green), 2 books are yet to be returned (null and the due date is in September) (red)

PROOF (SEPTEMBER – TOTAL FINES COLLECTED)

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	(null)	0.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	25-07-2023	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

According to the table above, total fines collected in September is RM8.00 + RM11.00 + RM9.00 + RM3.00 + RM0.00 + RM1.00 + RM32.00 + RM26.00 = RM90.00

(IF CHOICE IS 0, MEANING USER DOES NOT WISH TO GENERATE ANOTHER MONTHLY REPORT)

Librarian is then prompted on whether they wish to continue with the library management system.

```
Do you want to generate a report for another month? (1 for Yes / 0 for No): 0
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning librarians opt to **continue with the library management system**, librarian menu will be shown again.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 1

===== LIBRARIAN MENU =====
|
| 1. Search Book
| 2. Borrow and Return Book
| 3. Display Book List
| 4. Penalty Management for Late Return
| 5. Generate Monthly Report
| 0. Exit
|
|=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
|
| THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
|
|=====
```

8.0 LIBRARIAN MENU: Exit

```
|===== LIBRARIAN MENU =====|
| 1. Search Book                 |
| 2. Borrow and Return Book      |
| 3. Display Book List           |
| 4. Penalty Management for Late |
| 5. Generate Monthly Report     |
| 0. Exit                        |
|=====|

Enter choice: 0

EXITING....

|=====|
| THANK YOU FOR USING OUR LIBRARY |
| MANAGEMENT SYSTEM               |
|=====|
```

(IF CHOICE IS NOT 1,2,3,4,5,0)

```
|===== LIBRARIAN MENU =====|
| 1. Search Book                 |
| 2. Borrow and Return Book      |
| 3. Display Book List           |
| 4. Penalty Management for Late |
| 5. Generate Monthly Report     |
| 0. Exit                        |
|=====|

Enter choice: 6
Invalid choice.

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

9.0 STUDENT LOGIN

(IF LOG IN OPTION IS INVALID)

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student

Enter Choice: 3
Invalid choice. Please run the program again and enter either 1 or 2.
```

(REFER TO STUDENTS.TXT FILE FOR STUDENT ID AND PASSWORD)

Enter option 2 to log in as a student. Student is then prompted to enter their student id. Students have **3 attempts** in total to enter **correct student id and password**, if students **reach maximum 3 attempts**, program will be **exited**.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student

Enter Choice: 2
Enter Student ID: 
```

(STUDENT ID IS CORRECT BUT PASSWORD IS INCORRECT)

Error message is displayed, and student is prompted to **re-enter correct student id AND password**. It will **display the student left 2 attempts** to log in.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 2
Enter Student ID: 987654
Enter Password: *****

Invalid Student ID or Password. 2 attempts remaining.
Enter Student ID: █
```

(IF PASSWORD IS CORRECT BUT STUDENT ID IS INCORRECT)

Error message is displayed, and student is prompted to **re-enter correct student id AND password**. It will **display the student left 1 attempt** to log in.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 2
Enter Student ID: 987654
Enter Password: *****

Invalid Student ID or Password. 2 attempts remaining.
Enter Student ID: 987653
Enter Password: ***

Invalid Student ID or Password. 1 attempts remaining.
Enter Student ID: █
```


(WHEN NO MORE ATTEMPTS LEFT)

Program will be exited.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 2
Enter Student ID: 987654
Enter Password: *****

Invalid Student ID or Password. 2 attempts remaining.
Enter Student ID: 987653
Enter Password: ***

Invalid Student ID or Password. 1 attempts remaining.
Enter Student ID: 48565
Enter Password: *****

Invalid Student ID or Password. 0 attempts remaining.
Maximum login attempts reached. Exiting...
```

(WHEN BOTH STUDENT ID AND PASSWORD ARE CORRECT)

Welcome message and student menu will be displayed.

```
=====
WELCOME TO KELLY'S
LIBRARY MANAGEMENT SYSTEM
=====

Login as:
1. Librarian
2. Student
=====

Enter Choice: 2
Enter Student ID: 987654
Enter Password: ***

LOGIN SUCCESSFUL !!
Welcome, Amy Kim, to the Library Management System!

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====

Enter choice: █
```

10.0 STUDENT MENU: Search Book

Upon successful login to student menu, enter **choice 1** and the program will prompt student to enter their desired book's ISBN.

```
LOGIN SUCCESSFUL !!  
Welcome, Amy Kim, to the Library Management System!  
  
===== STUDENT MENU =====  
1. Search Book  
2. Display Book List  
3. Penalty Management for Late Return  
0. Exit  
=====
```

Enter choice: 1

Enter ISBN to search for a book:

(IF ISBN ENTERED IS "INVALID")

Error message will be displayed, and user will be **prompted whether** they want **to continue searching** their desired book.

```
Enter ISBN to search for a book: 9525  
Book not found with ISBN: 9525  
Do you want to continue searching? (1 for Yes / 0 for No): 
```

(IF CHOICE IS 1, WHICH IS CONTINUE SEARCHING THE BOOK)

User will be prompted to **enter ISBN again**.

```
Enter ISBN to search for a book: 9525  
Book not found with ISBN: 9525  
Do you want to continue searching? (1 for Yes / 0 for No): 1  
Enter ISBN again: 
```

(IF CHOICE IS 0, WHICH IS TO STOP SEARCHING THE BOOK)

User will be **prompted** on **whether they want return to the librarian menu**.

```
Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 0

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE LIBRARIAN MENU)

Meaning student opt to **continue with the library management system**, student menu will be shown again.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No): 1

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
=====
```

(IF ISBN ENTERED FOR SEARCH BOOK IS “VALID”)

Searched book’s title, author, ISBN, year of publication, number of copies available, total copies and borrowed copies of the book are **displayed** in tabular format. After **information** of the selected book is **displayed**, student will be **prompted to either continue or discontinue searching** the book.

```
Enter ISBN again: 9525
Book not found with ISBN: 9525
Do you want to continue searching? (1 for Yes / 0 for No): 1
Enter ISBN again: 5632

DISPLAYING INFORMATION OF THE BOOK WITH ISBN 5632

|-----|-----|-----|-----|-----|-----|-----|
| Title   | Author | ISBN  | Year of Publication | Available Copies | Total Copies | Borrowed Copies |
|-----|-----|-----|-----|-----|-----|-----|
| Control | Cordelia | 5632 | 2014 | 4 | 5 | 1 |
|-----|-----|-----|-----|-----|-----|-----|

Do you want to continue searching? (1 for Yes / 0 for No):
```

(IF USER ENTERS 1, MEANING TO CONTINUE SEARCHING “AGAIN”)

Student will be prompted to enter ISBN again.

```
Do you want to continue searching? (1 for Yes / 0 for No): 1
Enter ISBN again:
```

(IF USER ENTERS 0, MEANING TO STOP SEARCHING)

Student will then be prompted on whether they wish to return to the student menu to continue with the library management system.

```
Do you want to continue searching? (1 for Yes / 0 for No): 0
Do you want to return back to the student main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE STUDENT MENU)

Meaning student opt to **continue with the library management system**, student menu will be shown again.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No): 1

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you** message will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING...

=====
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
=====
```

11.0 STUDENT MENU: Display Book List

```
Do you want to continue? (1 for Yes / 0 for No): 1

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====

Enter choice 2
```

The books in the library are displayed according to **ascending alphabetical order of the books' titles (from A to Z)**.

DISPLAYING LIST OF BOOKS IN ASCENDING ORDER ACCORDING TO BOOKS' TITLES ...						
Title	Author	ISBN	Year of Publication	Available Copies	Total Copies	Borrowed Copies
Control	Cordelia	5632	2014	4	5	1
Drunk_Text	Adele	7852	2011	2	5	3
Forgotten	Amanda	4586	2012	1	2	1
Muffin	Grace	1459	2010	3	3	0
November	Jasmine	1589	2011	3	3	0
Prisoner	Oliver	4568	2013	2	3	1
Teahouse	Junius	7856	2012	2	3	1
Traded	Joanne	4569	2013	1	2	1
Underlying	Angel	9521	2013	3	6	3
Undesirable	Stephanie	2547	2010	3	4	1

Do you want to return back to the librarian main menu? (1 for Yes / 0 for No):

Student will then be prompted on whether they wish to return to the student menu to continue with the library management system.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE STUDENT MENU)

Meaning student opt to **continue with the library management system**, student menu will be shown again.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No): 1

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====
Enter choice:
```

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0

EXITING....

=====
THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM
=====
```

12.0 STUDENT MENU: Penalty Management for Late Return

```
Do you want to continue? (1 for Yes / 0 for No): 1

===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====

Enter choice: 3
```

Student will then be prompted to enter Student ID when option 3 is chosen.

```
===== STUDENT MENU =====
1. Search Book
2. Display Book List
3. Penalty Management for Late Return
0. Exit
=====

Enter choice: 3

Enter your Student ID to view your total fine: |
```

(IF STUDENT ID ENTERED IS “INVALID”)

Students will be prompted to **re-enter student ID** until the student ID matches with any of the student ID in students.txt file.

```
Enter your Student ID to view your total fine: 489566
Invalid student ID. Please enter a valid student ID.

Enter your Student ID to view your total fine: 485485
Invalid student ID. Please enter a valid student ID.

Enter your Student ID to view your total fine: 898562
Invalid student ID. Please enter a valid student ID.

Enter your Student ID to view your total fine: |
```


(WHEN STUDENT ID ENTERED IS “VALID”)

The program will display total fine for that particular student and book/books that is/are being returned late by that particular student).

Enter your Student ID to view your total fine: 472819

Total Fine for Fayth Lee is RM 30.00

DISPLAYING BOOK(S) THAT ARE RETURNED LATE

Book Returned Late	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

Please pay your fine as soon as possible. Thank you for your cooperation.
 **NOTE THAT RM1.00 PER DAY IS CHARGED FOR LATE RETURN.

Do you want to return back to the student main menu? (1 for Yes / 0 for No):

PROOF FOR ABOVE TABLE RESULTS (BOOKS RETURNED LATE)

Books that were returned late (Muffin, Teahouse and Drunk_Text) are shown on the table above together with the penalty for each book. Whereas, for books that were returned earlier than the due date (November and Underlying), are not shown in the table above.

Proof for total fines for late return books for Fayth Lee (student ID 472819), RM11.00 + RM9.00 + RM10.00 = RM30.00.

LIBRARY BORROWING AND PENALTY RECORDS						
Student	Book Title	ISBN	Borrow Date	Due Date	Return Date	Penalty (RM)
Samantha Tan	Control	5632	10-09-2023	20-09-2023	28-09-2023	8.00
Natalie Song	Drunk_Text	7852	15-09-2023	25-09-2023	(null)	0.00
Elvira Wong	Forgotten	4586	05-07-2023	15-07-2023	25-07-2023	10.00
Fayth Lee	Muffin	1459	20-08-2023	30-08-2023	10-09-2023	11.00
Fayth Lee	Teahouse	7856	10-09-2023	20-09-2023	29-09-2023	9.00
Natalie Song	Undesirable	2547	15-10-2023	25-10-2023	25-12-2023	61.00
Eunice Wong	Traded	4569	01-06-2023	11-06-2023	(null)	0.00
Lydia Ting	November	1589	05-09-2023	15-09-2023	30-12-2023	106.00
Kelly Ngu	Underlying	9521	01-11-2023	10-11-2023	26-11-2023	16.00
Amy Kim	Prisoner	4568	10-11-2023	20-11-2023	25-11-2023	5.00
Eunice Wong	Control	5632	04-06-2023	11-06-2023	(null)	0.00
Fayth Lee	November	1589	05-10-2023	15-10-2023	04-10-2023	0.00
Samantha Tan	Underlying	9521	01-11-2023	10-11-2023	25-11-2023	15.00
Elvira Wong	Prisoner	4568	10-10-2023	20-10-2023	(null)	0.00
Michelle Yeo	Drunk_Text	7852	15-10-2023	25-10-2023	(null)	0.00
Shannon Liong	Muffin	1459	20-07-2023	30-07-2023	11-08-2023	12.00
Natalie Song	Control	5632	15-09-2023	25-09-2023	28-09-2023	3.00
Eunice Wong	November	1589	01-08-2023	10-08-2023	20-08-2023	10.00
Lydia Ting	Drunk_Text	7852	10-09-2023	20-09-2023	(null)	0.00
Fayth Lee	Underlying	9521	20-09-2023	30-09-2023	25-09-2023	0.00
Michelle Yeo	Prisoner	4568	01-06-2023	10-06-2023	15-06-2023	5.00
Kelly Ngu	Control	5632	15-06-2023	25-06-2023	28-07-2023	33.00
Elvira Wong	Undesirable	2547	10-10-2023	20-10-2023	25-10-2023	5.00
Natalie Song	Underlying	9521	20-11-2023	30-11-2023	(null)	0.00
Kelly Ngu	Drunk_Text	7852	14-08-2023	21-08-2023	20-08-2023	0.00
Samantha Tan	Muffin	1459	15-09-2023	25-09-2023	26-09-2023	1.00
Eunice Wong	Underlying	9521	20-12-2023	30-12-2023	(null)	0.00
Shannon Liong	Control	5632	20-08-2023	27-08-2023	28-09-2023	32.00
Shannon Liong	Teahouse	7856	05-10-2023	15-10-2023	(null)	0.00
Kelly Ngu	Undesirable	2547	10-08-2023	20-08-2023	25-08-2023	5.00
Kelly Ngu	Traded	4569	20-08-2023	30-08-2023	25-09-2023	26.00
Amy Kim	Forgotten	4586	01-11-2023	10-11-2023	(null)	0.00
Eunice Wong	Drunk_Text	7852	10-06-2023	17-06-2023	20-06-2023	3.00
Elvira Wong	Teahouse	7856	10-07-2023	20-07-2023	29-07-2023	9.00
Samantha Tan	Undesirable	2547	15-08-2023	25-08-2023	(null)	0.00
Shannon Liong	Underlying	9521	20-07-2023	30-07-2023	(null)	0.00
Fayth Lee	Drunk_Text	7852	11-11-2023	18-11-2023	28-11-2023	10.00

Student will then be prompted on whether they wish to return to the student menu to continue with the library management system.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No):
```

(IF CHOICE IS 1, WHICH IS RETURN TO THE STUDENT MENU)

Meaning student opt to **continue with the library management system**, student menu will be shown again.

```
Do you want to return back to the student main menu? (1 for Yes / 0 for No): 1
```

```
===== STUDENT MENU =====  
1. Search Book  
2. Display Book List  
3. Penalty Management for Late Return  
0. Exit  
=====
```

Enter choice:

(IF CHOICE IS 0, WHICH IS DISCONTINUE / EXIT THE PROGRAM)

A **thank you message** will be displayed, and **program is exited**.

```
Do you want to return back to the librarian main menu? (1 for Yes / 0 for No): 0
```

```
EXITING....  
=====
```

THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM

```
=====
```

13.0 STUDENT MENU: Exit

```
|===== STUDENT MENU =====|
| 1. Search Book                |
| 2. Display Book List          |
| 3. Penalty Management for Late Return |
| 0. Exit                      |
|=====|

Enter choice: 0

EXITING....

|=====|
| THANK YOU FOR USING OUR LIBRARY MANAGEMENT SYSTEM |
|=====|
```

(IF CHOICE IS NOT 1,2,3,0)

```
|===== STUDENT MENU =====|
| 1. Search Book                |
| 2. Display Book List          |
| 3. Penalty Management for Late Return |
| 0. Exit                      |
|=====|

Enter choice: 6
Invalid choice.

Do you want to return back to the student main menu? (1 for Yes / 0 for No):
```