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FACULTY OF ENGINEERING
UNIVERSITY TECHNOLOGY MALAYSIA
DATA STRUCTURE & ALGORITHM
(SCSJ2013)

SEMESTER 1 2018/2019
MINI PROJECT DOCUMENTATION
TITLE: BOOK SHOP MANAGEMENT SYSTEM

By

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SECTION 09
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1.0 INTRODUCTION

1.1 Project Synopsis

The topic for our Data Structure is about the Book Shop management system. This project is purposely for book shop which provide convenient for both customer and owner. This system stored book title, book author and price of the book alphabetically according to the book title.

This system enable customer to view the book list, search the desired book by insert the book title or author, add the desired book to the cart and buy the book. This system will display the whole book list once the customer chose “Booklist” option. Besides, customers can check if the desired book available in this book shop, which can save their time from searching the book one by one. Our system can also calculate and display the total amount for customer. Once the total amount more than RM 200.00, this system will discount 20% from the total amount automatically.

On the other hand, this system also enable the staffs to update the book list from time to time, for example adding new book to or removing book from the list, check the sale and print out the sale report. This features also enable the staff to check and record what book is needed to order from the publisher. By using this system, the staffs no need to record the sales manually which can decrease mistakes. In checking the sale of the business, the staffs can still modify it by deleting the earliest sale.

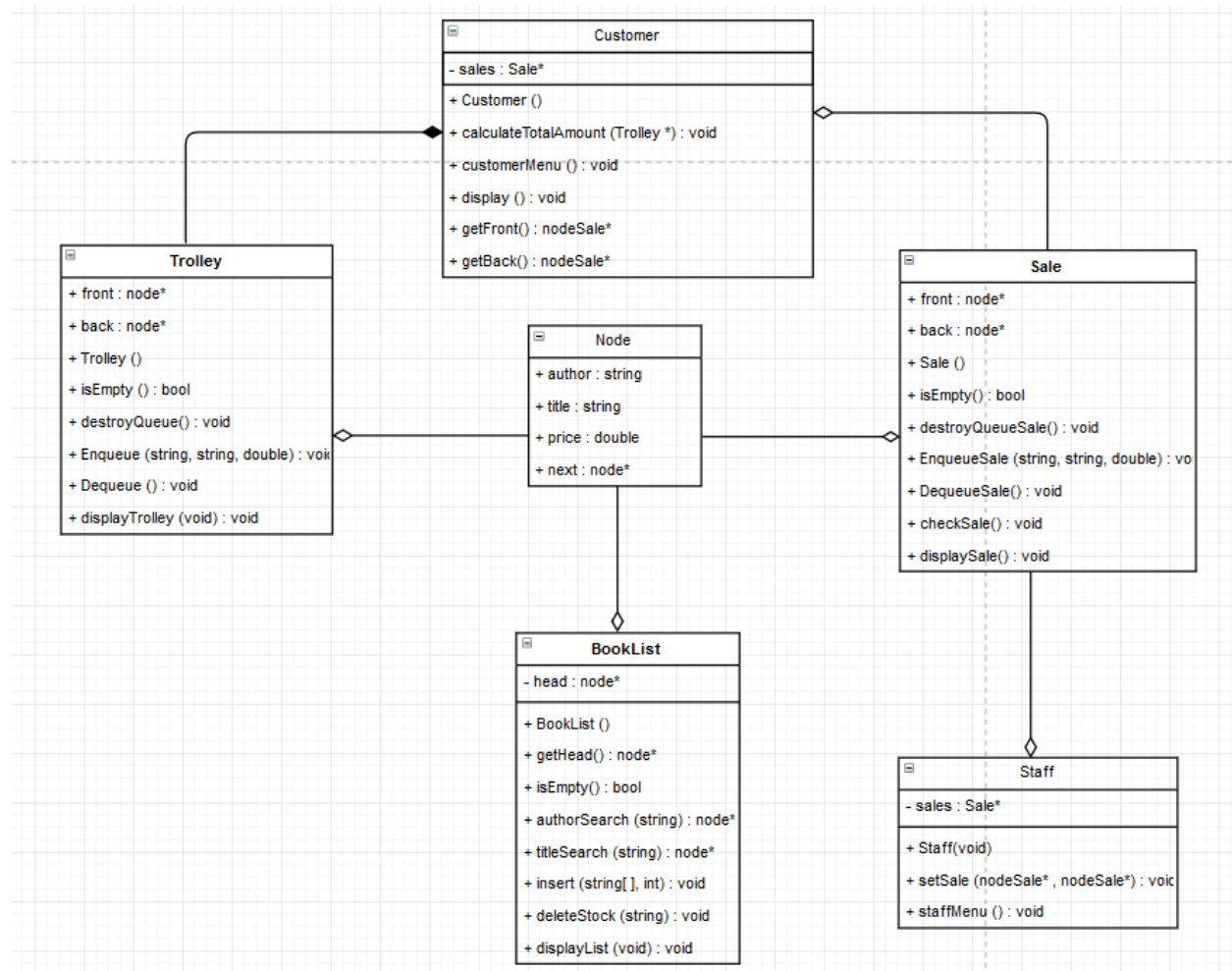
Type of data structure we implemented in this project included linked list based queue. Besides, we also applied linked list, sorting and searching concept in this project. Concept queue we had been applied in class “Trolley” and class “Sale”. By implement linked list based queue concept in class “Sale”, the sale record is recorded in order, which is first in first out (FIFO) and staffs can only delete the earliest record if they required. Class “Trolley” also same as well.

1.2 Project Objective

- ✓ To create the prototype of the book shop management system by using C++
- ✓ To design the prototype of the book shop management system by using C++
- ✓ To implement the concept of the linked list and queue when creating the prototype of the book shop management system.

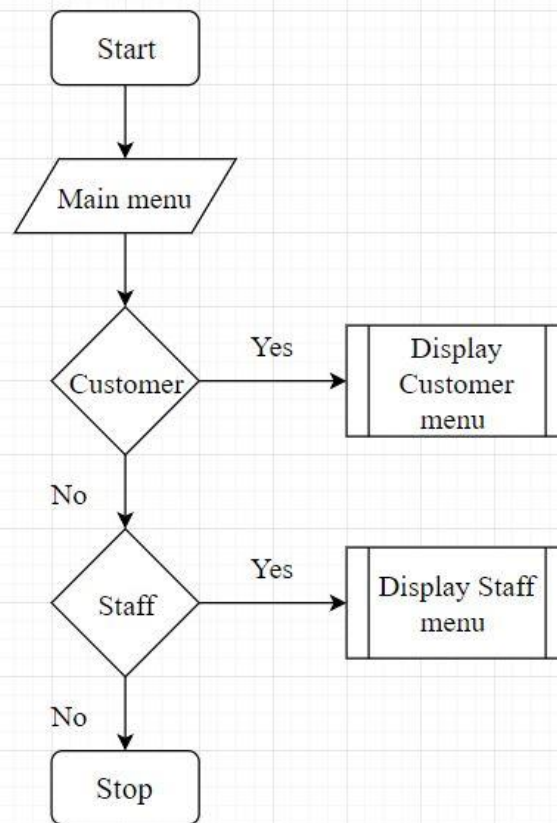
2.0 SYSTEM ANALYSIS AND DESIGN

2.1 Unified Modelling Language UML

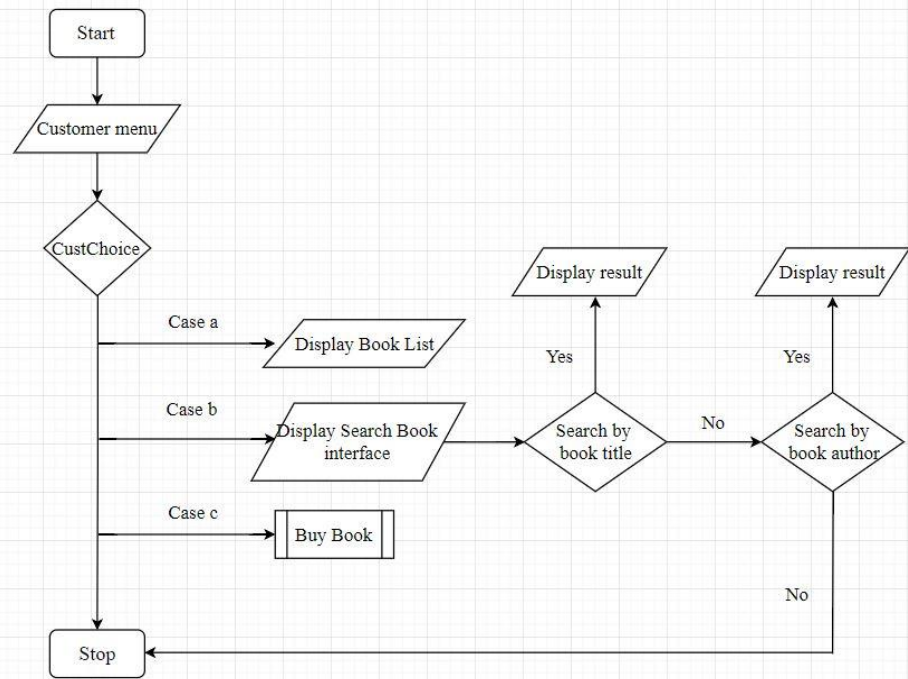


2.2 Flow Chart

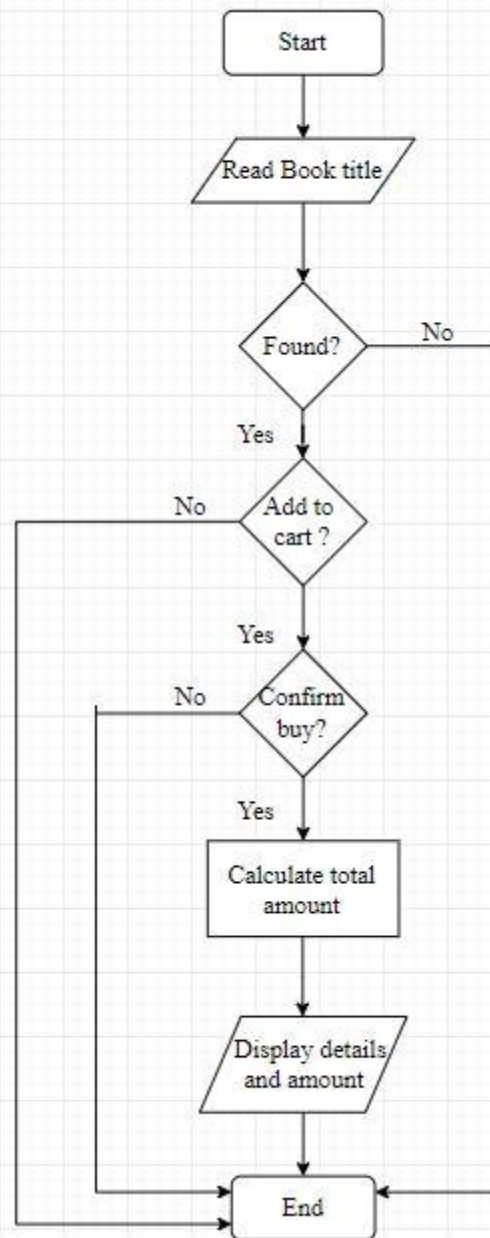
1.0 Main Menu



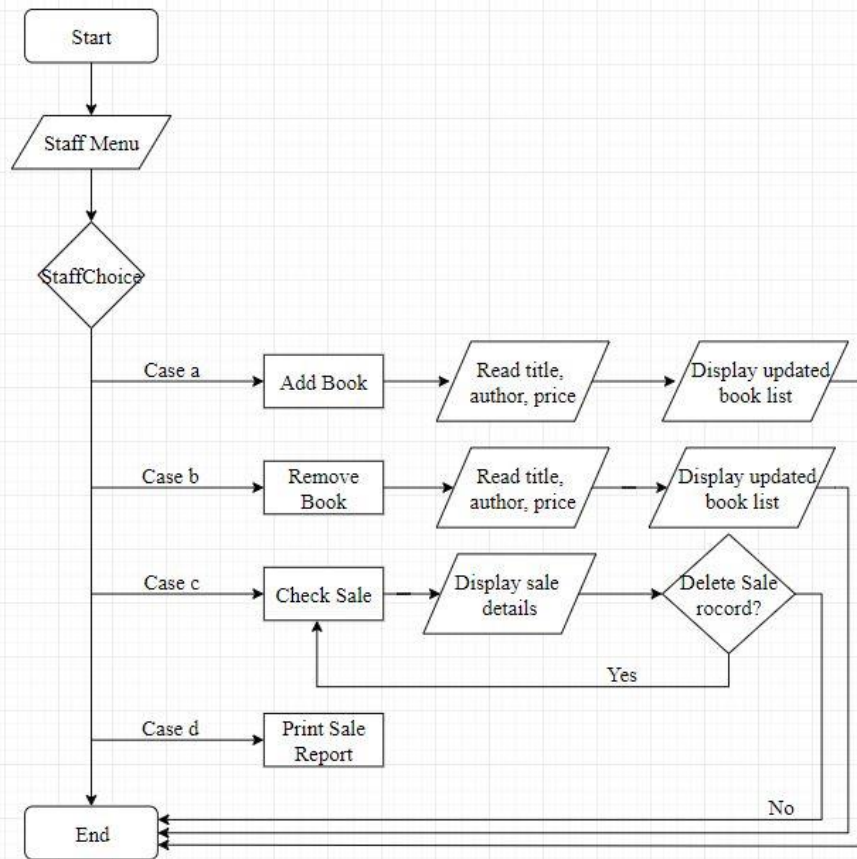
2.0 Customer Menu



2.1 Buy Book Menu



3.0 Staff Menu



3.0 SYSTEM PROTOTYPE

The following figures show interfaces for UTM BOOK SHOP.

```
U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

Are you a customer or staff ?
a. Customer
b. Staff
c. Exit
Please enter your choice :
```

Screen 1: Main menu

Screen: This interface prompt user to choose his/her position, either customer or staff. In this interface, user must insert a, b, and c only.

```
U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

Are you a customer or staff ?
a. Customer
b. Staff
c. Exit
Please enter your choice : 1
Invalid input! Please enter a, b, or c :s
Invalid input! Please enter a, b, or c :d
Invalid input! Please enter a, b, or c :
```

Screen 2: Main menu

Screen 2: If user enter the other than that, the system will prompt error message and the screen is displayed again and required user to re-enter.

```
Good day, my dearest customer :
```

```
      U T M BOOK SHOP  
WELCOME TO OUR BOOK SHOP
```

```
      = Main Menu =
```

- a. Book List
- b. Search Book
- c. Buy Book
- d. Return to main menu
- e. Exit

```
Please enter your choice :
```

Screen 3: Customer menu

Screen 3 : When the user choose “ a. Customer”, this customer menu will pop out. The customer must insert a, b, c, d or e. If the user enter other character, the system will prompt invalid choice and the screen is displayed again.

```
      = Main Menu =
```

- a. Book List
- b. Search Book
- c. Buy Book
- d. Return to main menu
- e. Exit

```
Please enter your choice :a
```

TITLE	AUTHOR	PRICES(\$)

		0.00
HOW TO WALK AWAY	KATHERINE	77.77
JANE SEYMOUR	ALISON WEIR	55.55
LOVE AND RUIN	PAULA MCLAIN	80.00
THAT KIND OF MOTHER	RUMMAN ALAM	45.90
THE CROOKED STAIRCASE	DEAN KOONTZ	60.00
THE ENSEMBLE	AJA GABEL	44.00
THE FAVOURITE SISTER	JESSICA KNOLL	56.70
THE PERFECT MOTHER	AIMEE MOLLOY	78.00
WAR STORM	VICTORIA	100.00
WARLIGHT	MICHAEL	56.80

Screen 4: Book List

Screen 4: When the customer chooses “a. Book List”, this book list will show. Customer can know which book is available. This screen does not require customer to key in any data because it will automatic go back to the customer menu.

Good day, my dearest customer :

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

- a. Book List
- b. Search Book
- c. Buy Book
- d. Return to main menu
- e. Exit

Please enter your choice :b

Book Search by ...

- 1. Book Title
- 2. Author's name

Please enter your choice : 1

Please enter the book title : WARLIGHT

*** FOUND!!! ***

Title : WARLIGHT
Author : MICHAEL
Price : \$ 56.80

Screen 5: Search Book

Screen 5: When the customer chooses “b. Search Book”, the system will require customer to choose again “1. Book Title” or “2. Author’s name”. If the customer chooses “1. Book Title”, the customer needs to key in the book title to search for the book. If the book is found, the information of the book will show. If the book not found, “***Book NOT FOUND***” will show. After that, this screen will automatic go back to the customer menu.

Good day, my dearest customer :

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

- a. Book List
- b. Search Book
- c. Buy Book
- d. Return to main menu
- e. Exit

Please enter your choice :c

Please enter the desired book title ...
and the book will be add to trolley.
Book Title : war storm

*** FOUND!!! ***

Title : WAR STORM
Author : VICTORIA
Price : \$ 100.00

Screen 6: Buy Book

Screen 6: When the customer chooses “c. Buy Book”, the system will require customer to key in the book title. If the customer types the correct name, the system will show that the book is found and the information of the book will show. If the customer types the wrong name, the system will show “***Book NOT FOUND***” and automatically return to the customer menu.

```

Book found! Add to trolley ?
Please insert 'Y - yes' and 'N - no'
Y

***** TROLLEY *****
      TITLE                                AUTHOR                                PRICES($)
-----
WAR STORM                                VICTORIA                                100.00

Confirm buy and calculate the total amount?
Please insert 'Y - yes' and 'N - no'
Y

TOTAL AMOUNT      : $ 100.00

Book has been successfully remove.

```

Screen 7: Buy Book

Screen 7: When the book is found, the system will ask the users whether want to add to trolley or not. “Y” for yes and “N” for no. When the customer key in “Y”, a trolley table will show the information of the book and the system will ask customer whether confirm to buy the book or not. If the user inserts “Y”, the total amount of the book will show and the book has been successfully removed. The screen will automatically return to the customer menu.

```

          *** FOUND!!! ***
          Title   : THE PERFECT MOTHER
          Author  : AIMEE MOLLOY
          Price   : $ 78.00
a
Book found! Add to trolley ?
Please insert 'Y - yes' and 'N - no'
Y

***** TROLLEY *****
      TITLE                                AUTHOR                                PRICES($)
-----
WAR STORM                                VICTORIA                                100.00
WARLIGHT                                MICHAEL                                56.80
THE PERFECT MOTHER                        AIMEE MOLLOY                        78.00

Confirm buy and calculate the total amount?
Please insert 'Y - yes' and 'N - no'
Y

TOTAL AMOUNT      : $ 234.80
20 % discount
TOTAL AMOUNT AFTER DISCOUNT      : $ 187.84

Book has been successfully remove.

```

Screen 8: Buy Book

Screen 8: Customer still can continue choose and buy the book. If the customer buy above \$200, 20 % discount will be given to the customer. The total amount after discount will shown on the screen.

```

Good day, my dearest customer :

      U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

      = Main Menu =

      a. Book List
      b. Search Book
      c. Buy Book
      d. Return to main menu
      e. Exit
Please enter your choice :d
      U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

      = Main Menu =

Are you a customer or staff ?
      a. Customer
      b. Staff
      c. Exit
Please enter your choice :

```

Screen 9: Return to main menu

Screen 9: If customer choose “d. Return to main menu”, the customer menu will return back to the main menu.

```

Good day, my dearest customer :

      U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

      = Main Menu =

      a. Book List
      b. Search Book
      c. Buy Book
      d. Return to main menu
      e. Exit
      Please enter your choice :e
Thank You ! Please come again !

-----
Process exited after 149.1 seconds with return value 3221225477
Press any key to continue . . .

```

Screen 10: Exit

Screen 10: If the customer chooses “e. Exit”, the menu will show “Thank You! Please come again!”

```
Good day, my dearest employee :
```

```
U T M BOOK SHOP  
WELCOME TO OUR BOOK SHOP
```

```
= Main Menu =
```

- a. Add Book
- b. Remove Book
- c. Check Sale
- d. Print Sale Report
- e. Return to main menu
- f. exit

```
Please enter your choice :
```

Screen 11: Staff menu

Screen 11: When user chose “Staff” as their position, they encounter this interface. This interface shows all the services that this system can provided for the staff. If the staff enter other than that, the system will prompt error message and the screen is displayed again and required user to re-enter.

```
Good day, my dearest employee :
```

```
U T M BOOK SHOP  
WELCOME TO OUR BOOK SHOP
```

```
= Main Menu =
```

- a. Add Book
- b. Remove Book
- c. Check Sale
- d. Print Sale Report
- e. Return to main menu
- f. exit

```
Please enter your choice :a
```

```
To adding new book to the book list, please insert the following details correctly :
```

```
Book Title    : Hello Kitty  
Author        : Doreen Jones  
Price         : $ 200.00
```

Screen 12: Staff menu

Screen 12: When the staff chose option ‘a’(add book), this system enable the staff to add new book into the book list by insert the book title, book’s author and price correctly.

```
Good day, my dearest employee :

      U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

      = Main Menu =

      a. Add Book
      b. Remove Book
      c. Check Sale
      d. Print Sale Report
      e. Return to main menu
      f. exit
Please enter your choice :b

To remove the book from the book list, please insert the following details correctly :
Book Title : Love and ruin

Book has been successfully remove.
This is the latest book list. Please check the details of the book.
```

TITLE	AUTHOR	PRICES(\$)
		0.00
HOW TO WALK AWAY	KATHERINE	77.77
JANE SEYMOUR	ALISON WEIR	55.55
THAT KIND OF MOTHER	RUMMAN ALAM	45.90
THE CROOKED STAIRCASE	DEAN KOONTZ	60.00
THE ENSEMBLE	AJA GABEL	44.00
THE FAVOURITE SISTER	JESSICA KNOLL	56.70
THE PERFECT MOTHER	AIMEE MOLLOY	78.00
WAR STORM	VICTORIA	100.00
WARLIGHT	MICHAEL	56.80

Screen 13: Staff menu

Screen 13: When the staff chose option ‘b’ (remove book), this system enable the staff to remove any book from the book list by inserting the book title. Once there is any book match with the book title, the book can be removed from book list. After that, this system will display the updated book list to enable the staff check again.


```
Good day, my dearest employee :

      U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

      = Main Menu =

      a. Add Book
      b. Remove Book
      c. Check Sale
      d. Print Sale Report
      e. Return to main menu
      f. exit
Please enter your choice :c

SALE      TITLE      AUTHOR      PRICES($)
-----
LOVE AND RUIN      PAULA MCLAIN      80.00
WAR STORM      VICTORIA      100.00
THE FAVOURITE SISTER      JESSICA KNOLL      56.70

Do you want to delete sale record ?
1. Clear all the sale record.
2. Clear the earliest record.
3. No
```

Screen 14: Staff menu

Screen 14: When the staff chose option 'c'(Check Sale), the system allow the staff to check the sale record. Moreover, the system allows the staff to decide whether he/she want to delete the sale record or not? If he wants to delete, is he/she want to delete the whole sale record (option 1.) or only the earliest record.

Good day, my dearest employee :

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

- a. Add Book
- b. Remove Book
- c. Check Sale
- d. Print Sale Report
- e. Return to main menu
- f. exit

Please enter your choice :c

SALE	TITLE	AUTHOR	PRICES(\$)
	LOVE AND RUIN	PAULA MCLAIN	80.00
	WAR STORM	VICTORIA	100.00
	THE FAVOURITE SISTER	JESSICA KNOLL	56.70

Do you want to delete sale record ?

- 1. Clear all the sale record.
- 2. Clear the earliest record.
- 3. No

1

SALE	TITLE	AUTHOR	PRICES(\$)
------	-------	--------	------------

Screen 15: Staff menu

Screen 15: If the staff chose to clear all the sale record(option 1), all of the sale record will be deleted.

Good day, my dearest employee :

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

- a. Add Book
- b. Remove Book
- c. Check Sale
- d. Print Sale Report
- e. Return to main menu
- f. exit

Please enter your choice :c

SALE	TITLE	AUTHOR	PRICES(\$)
LOVE AND RUIN		PAULA MCLAIN	80.00
WAR STORM		VICTORIA	100.00
THE FAVOURITE SISTER		JESSICA KNOLL	56.70

Do you want to delete sale record ?

- 1. Clear all the sale record.
 - 2. Clear the earliest record.
 - 3. No
- 2

SALE	TITLE	AUTHOR	PRICES(\$)
WAR STORM		VICTORIA	100.00
THE FAVOURITE SISTER		JESSICA KNOLL	56.70

Screen 16: Staff menu

Screen 16: If the staff chose to clear the earliest sale record (option 2), only the earliest record will be deleted.

Good day, my dearest employee :

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

- a. Add Book
- b. Remove Book
- c. Check Sale
- d. Print Sale Report
- e. Return to main menu
- f. exit

Please enter your choice :d

SALE	TITLE	AUTHOR	PRICES(\$)
LOVE AND RUIN		PAULA MCLAIN	80.00
WAR STORM		VICTORIA	100.00
JANE SEYMOUR		ALISON WEIR	55.55
THE FAVOURITE SISTER		JESSICA KNOLL	56.70
THAT KIND OF MOTHER		RUMMAN ALAM	45.90

Screen 17: Staff menu

Screen 17: When the staff chose option 'd' (Print Sale Report), this system will print the sale record.

U T M BOOK SHOP
WELCOME TO OUR BOOK SHOP

= Main Menu =

Are you a customer or staff ?

- a. Customer
- b. Staff
- c. Exit

Please enter your choice : c

You had choose to quit. Good bye ~

Process exited after 18.57 seconds with return value 3221225477
Press any key to continue . . .

Screen 18: Main menu

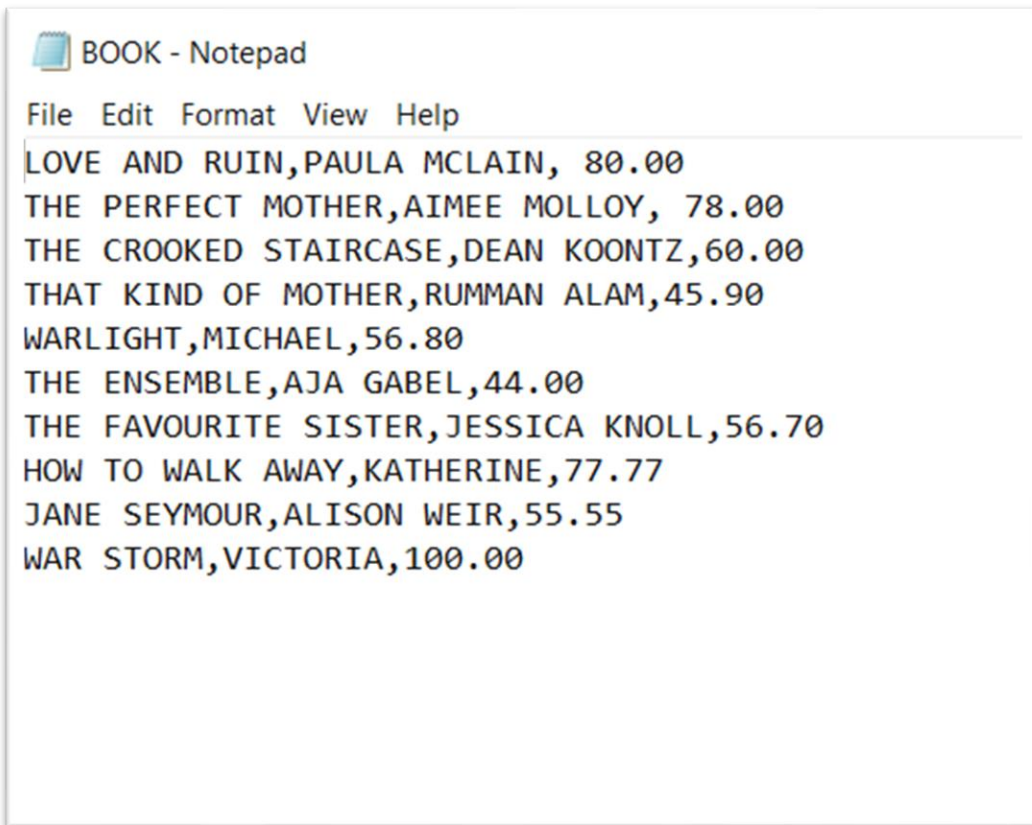
Screen 18: When the staff chose "option c" (Exit), user has chose to exit the whole program.

4.0 DEVELOPMENT ACTIVITIES

Meeting Date	Members Participate in the meeting	Activity	Task for each member	Task Achieved (yes / no)
28/11/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Discuss the topic about what we want to do	All members give suggestion before choose the topic	Yes
30/11/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Discuss how to apply the data structure concept in the topic chosen	All members give own idea and after that discuss together to find a better solution	Yes
2/12/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Design the UML and flow chart before write the program	Tan design the UML Soh and Joe design the flow chart	Yes
4/12/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Do the draft of the program	All members write their own code and after that we discuss together about the problem faced	Yes
7/12/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Improve the draft of the program by implement queue and linked list	All members write their own code and after that we discuss together about the problem faced	Yes
13/12/2018	1. Soh Jia Jun 2. Tan See Jou	Make Sure the program is running	Soh and Jou test the program	Yes

	3. Tan Shi Xuan	well without any error.	Tan debug the error	
15/12/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Complete the final report	Jou and Tan complete the final report Soh arrange all the content accordingly	Yes
17/12/2018	1. Soh Jia Jun 2. Tan See Jou 3. Tan Shi Xuan	Final check and briefing before demo	Soh and Jou final check all the report and program Tan brief us about what we need to do during demo	Yes

5.0 APPENDIX



Text data file