



Tunku Abdul Rahman University of Management & Technology

AACS2204

Object-Oriented Programming Techniques

**Assignment
2023/2024**

Programme : Diploma In Computer Science

Tutorial Group : Group 6

Date Submitted to Tutor : 28/9/2023

Team Members:

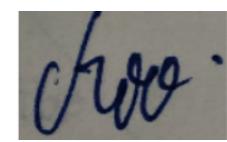
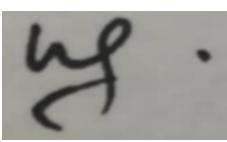
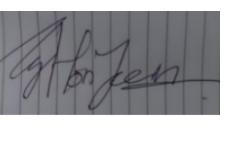
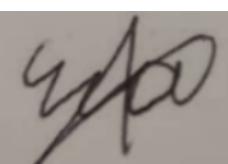
No	Student Name	Student ID
1.	CHOO ZHEN HAO	22WMD07217
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3.	LEONG HON YAN	22WMD07184
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No.	Team Member	Task(s) Allocated
1.	Choo Zhen Hao	UML diagram Login module Member module (&implementing member points in order module)
2.	Wong Kai Chen	Report Module
3.	Leong Hon Yan	Staff Module
4.	Ernest Sua Yii Shien	Order (checkout) Module Book Module

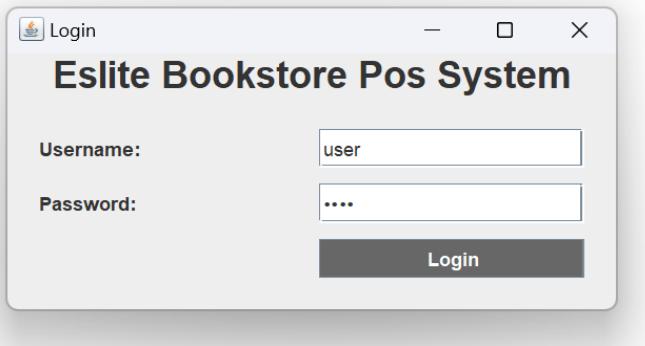
Coursework Declaration

We confirm that we have read and shall comply with all the terms and conditions of TAR University College's plagiarism policy.

We declare that this assignment is free from all forms of plagiarism and for all intents and purposes is our own properly derived work.

Signature :				
Name :	CHOO ZHEN HAO	WONG KAI CHEN	LEONG HON YAN	ERNEST SUA YII SHIEN
Date :	28/9/2023	28/9/2023	28/9/2023	28/9/2023

1.Login Module & Ending Screen



The login screen will prompt after running the java file.

Username : user

Password: 1234

```
WELCOME TO ESLITE BOOKSTORE POS SYSTEM
=====
-----ESLITE BOOKSTORE POS MENU-----
=====
1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system
Your Selection:
```

if the credentials are correct it will go into the POS main menu.



After exiting the POS system a Thank you window will be prompted.

2. Member Module

```
Your Selection: 5
=====
        Member Management
=====
1. Add Member
2. Modify Member
3. List Members
4. Delete Member
5. Redeem Member exclusive Gifts
0. Exit
=====
Enter your choice: 1
```

After typing 5 in the main menu , it will bring the user into the Member menu.

```
Enter member name: Choo Zhen Hao
Enter IC number (5 digits): 22333
Enter age: 19
Enter gender (M/F): M
Enter email: hao@student.tarc.edu.my
Enter phone number: 0123456789
Member added successfully.
```

If you choose 1 to add a member , it will ask you to key in all information.

```
Enter member name: Choo Zhen Hao
Enter IC number (5 digits): 21323123
Invalid IC number format. Please enter 5 digits.
Enter IC number (5 digits): 12345
IC number is not unique. Please enter a unique IC number.
```

For the IC number , it must be unique , else it will not be recorded into the system

```
=====
```

Member Management

```
=====
```

- 1. Add Member
 - 2. Modify Member
 - 3. List Members
 - 4. Delete Member
 - 5. Redeem Member exclusive Gifts
 - 0. Exit
- ```
=====
```

Enter your choice: 2

Enter IC number of the member to modify: 22333

```
=====
```

### Modify Member Options

```
=====
```

- 1. Modify Name
  - 2. Modify Age
  - 3. Modify Gender
  - 4. Modify Email
  - 5. Modify Phone Number
  - 0. ? Go Back
- ```
=====
```

Enter your choice: 1

Enter new name: Choo Hao Yen

Member information modified successfully.

Do you want to change other details? (Press 1 to continue changing,0 to exit) >0

After you choose to modify a member , it will ask the user to enter the IC number of the member the user wants to modify.

```
=====
        Member Management
=====
1. Add Member
2. Modify Member
3. List Members
4. Delete Member
5. Redeem Member exclusive Gifts
0. Exit
=====
Enter your choice: 3
=====
        List of Members
=====
Member 1:
-----
| Name: Hao
| IC Number: 12745
| Age: 19
| Gender: M
| Email: hao@gmail.com
| Phone Number: 01234567890
| Member Points: 60
-----
Member 2:
-----
| Name: Alpha
| IC Number: 12345
| Age: 29
| Gender: M
| Email: a@gmail.com
| Phone Number: 01234567890
```

It will list out all the members currently registered in the system if the user chooses to list out all the members.

Member's information will be deleted from the system in the delete member function.

```
=====
        Member Management
=====
1. Add Member
2. Modify Member
3. List Members
4. Delete Member
5. Redeem Member exclusive Gifts
0. Exit
=====
Enter your choice: 4
Enter IC number of the member to delete: 22333
Member with IC number 22333 deleted successfully.
```

```
=====
Member Management
=====
1. Add Member
2. Modify Member
3. List Members
4. Delete Member
5. Redeem Member exclusive Gifts
0. Exit
=====
Enter your choice: 5
Enter member IC number to redeem: 12345
Member Alpha is redeeming!
You have 100 points!
== Points Redemption Menu ==
1. Redeem 100 points for a booklet
2. Redeem 200 points for an A4 file case
3. Redeem 500 points for a pencil case
4. Redeem 800 points for a reusable bag
5. Redeem 2000 points for a personalized stamp
0. Exit
Enter your choice (1-5, or 0 to exit):
```

Users can redeem exclusive gifts using their member points. There are 5 items to redeem.

```
Enter your choice: 5
Enter member IC number to redeem: 12345
Member Alpha is redeeming!
You have 100 points!
== Points Redemption Menu ==
1. Redeem 100 points for a booklet
2. Redeem 200 points for an A4 file case
3. Redeem 500 points for a pencil case
4. Redeem 800 points for a reusable bag
5. Redeem 2000 points for a personalized stamp
0. Exit
=====
Enter your choice (1-5, or 0 to exit): 2
Insufficient points to redeem this item.
=====
```

If the member doesn't have sufficient points , it will not be redeemed.

```

Enter member IC number to redeem: 12345
Member Alpha is redeeming!
You have 100 points!
==== Points Redemption Menu ====
1. Redeem 100 points for a booklet
2. Redeem 200 points for an A4 file case
3. Redeem 500 points for a pencil case
4. Redeem 800 points for a reusable bag
5. Redeem 2000 points for a personalized stamp
0. Exit
=====
Enter your choice (1-5, or 0 to exit): 1
Redeemed 100 points for a booklet.
You have left 0 points left!

```

It will show the user how many points the member had , and how many points the member has after redeeming gifts.

```

=====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Farmer and Carrot |    10 | RM236.25 |
=====
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart           |
| [3.] Clear Cart          |
| [4.] Confirm Order        |
| [5.] Exit                |
=====
Please Enter Your Choice> 4
=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Farmer and Carrot |    10 | RM236.25 |
=====
|                               | Total : RM236.25 |
=====
Are you a member? (1 for Yes, 2 for No) > 1
Enter your member IC number: 12345
Member Alpha is checking out!
Are you confirm your order? (1 for continue, 2 for Back to Menu) > 1
Order Successfully! Earned 23 points.

```

The points are earned when a member buys books from us , with the rate of 10% of total purchase amount (decimals are ignored).

3. Staff Module

3.1 Staff Confirmation Page

```
WELCOME TO ESLITE BOOKSTORE POS SYSTEM
=====
-----ESLITE BOOKSTORE POS MENU-----
=====

1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system
Your Selection: 3
=====Confirmation=====
Please select your choice
1. Continue to next page
2. Return
=====Your Selection=====
2
Are you sure back to POS Menu page (Y/N) ?
Y
Back to POS Menu page .....
WELCOME TO ESLITE BOOKSTORE POS SYSTEM
=====
-----ESLITE BOOKSTORE POS MENU-----
=====

1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system
Your Selection:
```

After the user chooses the Staff Management, it will show the confirmation page, if the user chooses "2", then the system will go back to the main POS Menu. Else, if the user chooses "1", then it will show the Staff Main Menu.

3.2 Staff Main Menu Page

```
=====
-----ESLITE BOOKSTORE POS MENU-----
=====
```

1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system

Your Selection: 3

```
=====Confirmation=====
```

Please select your choice

1. Continue to next page
2. Return

```
=====Your Selection=====
```

1

```
=====Staff Menu=====
```

- ****1. Insert new staff****
- **2. Display current staff**
- ***3. Remove current staff**
- ****4. List current staff***
- ****5. Edit current staff***
- ***6. Return to main menu***

```
=====Your Selection=====
```

|

Staff Module provides 5 main functions, which are insert new staff, display, remove, list and edit current staff. There is an extra selection which is "6", returning to the Staff Main Menu.

3.3 Insert New Staff Function

```
-----  
=====Your Selection=====  
1  
Enter name:  
Ali  
Enter identity card number:  
040728101029  
Enter phone number:  
0123456789  
Enter email:  
ali@gmail.com  
Enter gender:  
M  
Enter address:  
Nol, Jalan 2, Taman Tiga, Bandar Empat, 56789, Selangor  
New Information Entered Sucessfully!!  
9-----  
| Name: Ali  
| IC Number: 040728101029  
| Gender: M  
| Email: ali@gmail.com  
| Adress: Nol, Jalan 2, Taman Tiga, Bandar Empat, 56789, Selangor  
-----
```

This function requires the user to insert the new staff's personal information. Information such as name, ic number, gender, email and address is basic information that will be stored by the bookstore. After that, it will show the information that the user entered.

3.4 Display a Current Staff Function

```
=====Your Selection=====
2
Staff ID    NAME          IC      PHONE NUMBER
ST01 | JooHong | 040304103937 | 0139373299 |
ST02 | JiaXi   | 04073110290 | 0129439322 |
ST03 | WaiMing | 040731142933 | 0163939228 |
ST04 | Wenlynn | 040914143048 | 0193487392 |
ST05 | YongZhen | 040928104839 | 0140283922 |
ST06 | JingWen | 040430103848 | 0120483932 |
ST07 | ZhiHan  | 040228149371 | 0183630222 |
ST08 | JiaYee  | 040920141438 | 0119372929 |

Enter Staff ID:
ST07
-----
| Name: ZhiHan
| IC Number: 040228149371
| Gender: M
| Email: limzhihan@gmail.com
| Address: No.1B, Level 2, Block 1, Worldwide Business Centre, Jalan Tinju 13/50, Seksyen 13, 400000, Shah Alam, Selangor Darul Ehsan
=====Staff's Personal Information=====
```

This function acts to show a staff member's personal information. It will require the user to enter a Staff ID. After the user enters the Staff ID, then it will display the personal information.

3.5 Remove a Current Staff Function

```
=====Your Selection=====
3
Staff ID    NAME          IC      PHONE NUMBER
ST01 | HauKang | 040304103937 | 0139373299 |
ST02 | JiaXi   | 04073110290 | 0129439322 |
ST03 | WaiMing | 040731142933 | 0163939228 |
ST04 | Wenlynn | 040914143048 | 0193487392 |
ST05 | YongZhen | 040928104839 | 0140283922 |
ST06 | JingWen | 040430103848 | 0120483932 |
ST07 | ZhiHan  | 040228149371 | 0183630222 |
ST08 | JiaYee  | 040920141438 | 0119372929 |

Enter Staff ID:
ST04
-----
| Name: Wenlynn
| IC Number: 040914143048
| Gender: F
| Email: wenlynn@gmail.com
| Address: No.1B, Level 2, Block 1, Worldwide Business Centre, Jalan Tinju 13/50, Seksyen 13, 400000, Shah Alam, Selangor Darul Ehsan
Delete Staff?
Y
Sucessful removed the staff!!
```

This function acts to remove a current staff member. Same as 3.4, it will show the personal information first. After that, it will display a confirmation page. If the user types "Y", then it will remove the staff member, else it won't remove the selected staff member.

3.6 List Current Staff Function

=====Your Selection=====

4

Staff ID	NAME	IC	PHONE NUMBER
ST01	JooHong	040304103937	0139373299
ST02	JiaXi	04073110290	0129439322
ST03	WaiMing	040731142933	0163939228
ST04	Wenlynn	040914143048	0193487392
ST05	YongZhen	040928104839	0140283922
ST06	JingWen	040430103848	0120483932
ST07	ZhiHan	040228149371	0183630222
ST08	JiaYee	040920141438	0119372929

This function acts to show the full staff members and their own personal information. It will display the Staff ID, Name, IC and Phone Number.

3.7 Edit Current Staff Function

=====Your Selection=====

taff ID	NAME	IC	PHONE NUMBER
T01	JooHong	040304103937	0139373299
T02	JiaXi	04073110290	0129439322
T03	WaiMing	040731142933	0163939228
T04	Wenlynn	040914143048	0193487392
T05	YongZhen	040928104839	0140283922
T06	JingWen	040430103848	0120483932
T07	ZhiHan	040228149371	0183630222
T08	JiaYee	040920141438	0119372929

nter Staff ID:

T01

Name: JooHong
IC Number: 040304103937

Gender: M

Email: joohong@gmail.com

Address: No.1B, Level 2, Block 1, Worldwide Business Centre, Jalan Tinju 13/50, Seksyen 13, 400000, Shah Alam, Selangor Darul Ehsan

=====Edit Menu=====

lease choose your selection

*****1. Name*****

*****2. IC Number*****

*****3. Phone Number*****

*****4. Email Address*****

*****5. Gender*****

*****6. Address*****

*-1. Return To Main Menu**

=====Your Selection=====

|

=====Your Selection=====

1

Enter your new name. (-1 for cancel)

HauKang

Sucessfully entered your new name! Your new name is HauKang

- - - - -

This function acts to edit a current staff member's personal information. After that, it will show the edit menu. There are 6 selections that user's can choose to edit such as name, ic number, phone number, email address, gender and address. Once the user chooses their selection, then it will require the user to input the new information. Then, it will show the successful message and show the updated information.

3.8 Return Main Menu Function

```
=====Staff Menu=====
****1. Insert new staff****
**2. Display current staff**
***3. Remove current staff**
****4. List current staff***
****5. Edit current staff***
***6. Return to main menu***
=====Your Selection=====
6
=====Confirmation=====
Please select your choice
1. Continue to next page
2. Return
=====Your Selection=====
1
```

Same as 3.1, once the user selects "6", which is "Return to main menu", it will go back to the Confirmation Page. Choose "2" to back to POS Main Menu and "1" to continue in Staff Module.

4.Order Module

4.1 Order Menu

```
Your Selection: 1
=====Order Cart=====
| 
|      Shopping Cart Are Empty Now
| 
=====

| Action Choices:
| [1.] Add Book
| [2.] Edit Cart
| [3.] Clear Cart
| [4.] Confirm Order
| [5.] Exit
=====

Please Enter Your Choice>
```

```
Please Enter Your Choice> 7
Invalid Choice!Please Enter (1-5) only
```

For order function,it is more likely like a cart for book ordering.After press '1'to enter order function,this order cart menu page will be displayed.As there are nothing been adding to the cart yet,so the shopping cart is empty now.There 5 action can be taken in this menu.If user no inputted selection between(1-5),error message will be displayed.Selection '5' for exit the order page and return to the main menu page.

4.2 Add Book

```
=====Order Menu=====
| No. | Book Name           | Price | Status |
=====

| 1  |The Lion and Tiger   | RM13.13 | Limited |
| 2  |The Fish and Net     | RM23.63 | Limited |
| 3  |The Girl              | RM12.60 | Limited |
| 4  |The Farmer and Carrot| RM23.63 | Sufficient |
| 5  |The Boy                | RM17.85 | Limited |
=====

Please Enter Book you wish to order (-1 for exit) > 1

| 1  |The Lion and Tiger   | RM13.13 | Limited |
| 2  |The Fish and Net     | RM23.63 | Limited |
| 3  |The Girl              | RM12.60 | Limited |
| 4  |The Farmer and Carrot| RM23.63 | Sufficient |
| 5  |The Boy                | RM17.85 | Limited |
=====

Please Enter Book you wish to order (-1 for exit) > 1
Please Enter Quantity > 9
Added Successfully!

Please Enter Book you wish to order (-1 for exit) > 2
Please Enter Quantity > 9
Added Successfully!

Please Enter Book you wish to order (-1 for exit) > 3
Please Enter Quantity > 9
Added Successfully!
```

```

Please Enter Book you wish to order (-1 for exit) > -1
=====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Lion and Tiger |    9   | RM118.13 |
| 2   | The Fish and Net   |    9   | RM212.63 |
| 3   | The Girl            |    9   | RM113.40 |
=====
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====
Please Enter Your Choice> 1

```

After pressing '1',the order menu page will be shown.Book name,price and status for each book will be shown.For price,the order price will have 5% increasing from the actual price.For book status,its will evaluate from the stock available,if the book quantity is more than 50,the status is sufficient,the quantity is lower than 50 and more than 0,the status is limited while when the stock quantity is 0,the status is out of stock.Then,user can input the no. of book and enter quantity for each book to add that particular number of book into order cart.The successful message will be shown also after the user add item into cart.User need to enter('-1') to exit the adding cart function and back to the order menu.Now,in the order menu,ordered book's name,quantity and price will be displayed in the order cart.

4.3 Edit Cart

```

=====Order Cart=====
|                                         |
|      Shopping Cart Are Empty Now       |
|                                         |
=====

| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====

Please Enter Your Choice> 2
Your cart is empty. Nothing to edit or delete.

```

```

=====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Lion and Tiger |    9   | RM118.13 |
| 2   | The Fish and Net   |    9   | RM212.63 |
| 3   | The Girl            |    9   | RM113.40 |
=====
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====

Please Enter Your Choice> 2
Which No. of book you wish to edit? (-1 for exit)> 1

```

```
Please Enter Book you wish to order (-1 for exit) > -1
=====
====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Lion and Tiger |    9   | RM118.13 |
| 2   | The Fish and Net   |    9   | RM212.63 |
| 3   | The Girl            |    9   | RM113.40 |
=====
```

```
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====
```

```
Please Enter Your Choice> 2
Which No. of book you wish to edit? (-1 for exit)> 4
Invalid choice! Please enter an existing order number.
```

```
Are you want to edit or delete the order?
(1 for delete,2 for edit)>3
Invalid choice! Please enter 1 for delete or 2 for edit.
```

```
=====
|Remainder:Edit only for quantity for selected book      |
|           Delete for remove selected book from order cart|
=====
```

```
Are you want to edit or delete the order?
(1 for delete,2 for edit)>1
Order item removed.
```

```
=====
====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
```

```
| 1   | The Fish and Net   |    9   | RM212.63 |
| 2   | The Girl            |    9   | RM113.40 |
=====
```

```
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====
```

```
Please Enter Your Choice> 1
```

```
=====
|Remainder:Edit only for quantity for selected book      |
|           Delete for remove selected book from order cart|
=====
```

```
Are you want to edit or delete the order?
(1 for delete,2 for edit)>2
Enter new Quantity> 5
Order item quantity updated.
```

```
=====
====Order Cart=====
| No. | Book Name           |Quantity| Price   |
=====
```

```
| 1   | The Fish and Net   |    5   | RM118.13 |
| 2   | The Girl            |    9   | RM113.40 |
=====
```

```
| Action Choices:          |
| [1.] Add Book           |
| [2.] Edit Cart          |
| [3.] Clear Cart         |
| [4.] Confirm Order      |
| [5.] Exit               |
=====
```

```
Please Enter Your Choice> 1
```

After pressing ‘2’, it is an edit function for the order cart. When the order cart is empty, its will display error message to the user mentioned that the cart is empty. This function only applicable when the cart have items. When the cart have items, its will prompt message and let user to select which no. of book that user want to edit and (-1) to return back to order menu. If user input the no. book that no in the order cart, its will prompt error message and return back to the order menu. After user input valid no. of book, there are only 2 actions can be taken, 1 for delete the items from the cart, 2 for edit the quantity of that particular book. If user input selection other than these 2 options, error message will be prompt and return to order menu. When user enter 1, successful message will be displayed and that book will me removed from the order cart. After user entered ‘2’, its will prompt message and ask user to enter new quantity for that book as only quantity can be edit. After edited, successful message will be displayed and the quantity of that book will be updated in the order cart also.

4.4 Clear Cart

```
=====Order Cart=====
| |
|     Shopping Cart Are Empty Now
| |
=====

| Action Choices:
| [1.] Add Book
| [2.] Edit Cart
| [3.] Clear Cart
| [4.] Confirm Order
| [5.] Exit
=====

Please Enter Your Choice> 3
Your Order Cart has been successfully clear!
```

When the user enters ‘3’ in the order menu, this will clear the whole details in the order cart. After clear the whole cart, successful message will be displayed.

4.5 Confirm Order

```
Action Choices:
[1.] Add Book
[2.] Edit Cart
[3.] Clear Cart
[4.] Confirm Order
[5.] Exit
=====

Please Enter Your Choice> 4
=====
| No. | Book Name           |Quantity| Price   |
=====
| 1  | The Lion and Tiger | 9    | RM118.13 |
| 2  | The Fish and Net   | 9    | RM212.63 |
=====
|                               | Total : RM330.75 |

Are you a member? (1 for Yes, 2 for No) > 2
Are you confirm your order? (1 for continue, 2 for Back to Menu) > 1
Order Successfully!
```

```
=====Order Cart=====
| |
|     Shopping Cart Are Empty Now
| |
=====

| Action Choices:
| [1.] Add Book
| [2.] Edit Cart
| [3.] Clear Cart
| [4.] Confirm Order
| [5.] Exit
=====

Please Enter Your Choice>
```

As the items in the order cart are not finalized, its can still be customized and adjustable. When user enter ‘4’ in the order menu, its will show all the details in the order cart and sum up all the price and display the total price for the whole order. Then, a message will been prompt that ask user whether is a member or not as member points part will been integrated here. After that, a message will prompt and ask user want to continue or back to menu. If continue, means that user confirm their order details and submit the order, then successful message will be shown. This part will be integrated in the book management part also. The original stock quantity will be reduced.

Initial details:

====Book List=====						
BookID	Book Name	Price	Quantity	PublishYear	Publisher	
B001	The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD	
B002	The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD	
B003	The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD	
B004	The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD	
B005	The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD	

After order:

No.	Book Name	Quantity	Price	
1	The Lion and Tiger	9	RM118.13	
2	The Fish and Net	9	RM212.63	
3	The Girl	9	RM113.40	
4	The Farmer and Carrot	9	RM212.63	
5	The Boy	9	RM160.65	
Total : RM817.43				

Are you a member? (1 for Yes, 2 for No) > 2

Are you confirm your order? (1 for continue, 2 for Back to Menu) > 1

Order Successfully!

====Book List=====						
BookID	Book Name	Price	Quantity	PublishYear	Publisher	
B001	The Lion and Tiger	RM12.50	16	2000	Rainbow1 SDN.BHD	
B002	The Fish and Net	RM22.50	36	2001	Rainbow2 SDN.BHD	
B003	The Girl	RM12.00	2	2002	Rainbow3 SDN.BHD	
B004	The Farmer and Carrot	RM22.50	90	2003	Rainbow4 SDN.BHD	
B005	The Boy	RM17.00	34	2004	Rainbow5 SDN.BHD	

Press any key to continue...

5.Book Management Module

5.1 Book Management Menu

```
| [1.] Display |  
| [2.] Add |  
| [3.] Modify |  
| [4.] Delete |  
| [5.] Exit |  
=====
```

```
Please Enter Your Choice >
```

```
Please Enter Your Choice > 9  
Invalid Choice!Please Enter (1-5) only
```

After the user enters '2' in the main menu, then the book management menu will be displayed. There are 5 selections for user's selection. If user enters a selection other than this, error message will prompt. '5' for users to return to the main menu.

5.2 Display Book

```
Please Enter Your Choice > 1  
Display menu ascending according to:  
1. BookID sequence  
2. Price sequence  
3. Quantity sequence  
4. Publish Year sequence  
Enter your choice: |
```

```
Please Enter Your Choice > 1  
Display menu ascending according to:  
1. BookID sequence  
2. Price sequence  
3. Quantity sequence  
4. Publish Year sequence  
Enter your choice: 1  
=====Book List=====
```

BookID	Book Name	Price	Quantity	PublishYear	Publisher
B001	The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD
B002	The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD
B003	The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD
B004	The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD
B005	The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD

```
=====
```

```
Please Enter Your Choice > 1
Display menu ascending according to:
1. BookID sequence
2. Price sequence
3. Quantity sequence
4. Publish Year sequence
Enter your choice: 2
```

```
=====Book List=====
| BookID | Book Name           | Price   | Quantity | PublishYear | Publisher      |
|-----|-----|-----|-----|-----|-----|
| B003  | The Girl              | RM12.00 | 11       | 2002     | Rainbow3 SDN.BHD |
| B001  | The Lion and Tiger    | RM12.50 | 25       | 2000     | Rainbow1 SDN.BHD |
| B005  | The Boy                | RM17.00 | 43       | 2004     | Rainbow5 SDN.BHD |
| B004  | The Farmer and Carrot | RM22.50 | 99       | 2003     | Rainbow4 SDN.BHD |
| B002  | The Fish and Net       | RM22.50 | 45       | 2001     | Rainbow2 SDN.BHD |
=====
```

```
Please Enter Your Choice > 1
Display menu ascending according to:
1. BookID sequence
2. Price sequence
3. Quantity sequence
4. Publish Year sequence
Enter your choice: 3
```

```
=====Book List=====
| BookID | Book Name           | Price   | Quantity | PublishYear | Publisher      |
|-----|-----|-----|-----|-----|-----|
| B003  | The Girl              | RM12.00 | 11       | 2002     | Rainbow3 SDN.BHD |
| B001  | The Lion and Tiger    | RM12.50 | 25       | 2000     | Rainbow1 SDN.BHD |
| B005  | The Boy                | RM17.00 | 43       | 2004     | Rainbow5 SDN.BHD |
| B002  | The Fish and Net       | RM22.50 | 45       | 2001     | Rainbow2 SDN.BHD |
| B004  | The Farmer and Carrot | RM22.50 | 99       | 2003     | Rainbow4 SDN.BHD |
=====
```

```
Display menu ascending according to:
1. BookID sequence
2. Price sequence
3. Quantity sequence
4. Publish Year sequence
Enter your choice: 4
```

```
=====Book List=====
| BookID | Book Name           | Price   | Quantity | PublishYear | Publisher      |
|-----|-----|-----|-----|-----|-----|
| B001  | The Lion and Tiger    | RM12.50 | 25       | 2000     | Rainbow1 SDN.BHD |
| B002  | The Fish and Net       | RM22.50 | 45       | 2001     | Rainbow2 SDN.BHD |
| B003  | The Girl              | RM12.00 | 11       | 2002     | Rainbow3 SDN.BHD |
| B004  | The Farmer and Carrot | RM22.50 | 99       | 2003     | Rainbow4 SDN.BHD |
| B005  | The Boy                | RM17.00 | 43       | 2004     | Rainbow5 SDN.BHD |
=====
```

```
Please Enter Your Choice > 1
Display menu ascending according to:
1. BookID sequence
2. Price sequence
3. Quantity sequence
4. Publish Year sequence
Enter your choice: 7
```

```
Invalid choice. Please select a valid option(1-4).
```

After the user selects '1' for display function, there will be 4 ascending sequence arrangements for the user to select(bookID, price, quantity, publish year). After selection, the book stock's details will be displayed according to the user's selection sequence. There will be error message prompt if user entered selection out of 1 to 4.

5.3 Add Book

```
Please Enter Your Choice > 2
=====
=====Book List=====
| BookID | Book Name           |
=====
| B001   | The Lion and Tiger    |
| B002   | The Fish and Net       |
| B003   | The Girl               |
| B004   | The Farmer and Carrot  |
| B005   | The Boy                |
=====
This is current book stock list.
Enter new Book ID (Format: Bxxx): 

This is current book stock list.
Enter new Book ID (Format: Bxxx): ffff
Invalid format. Book ID should be in the format Bxxx.

Enter new Book ID (Format: Bxxx): B001
Book ID already exists. Please choose a different one.

Enter new Book ID (Format: Bxxx): B007
Book ID is valid and unique.Enter 1 to proceed,2 to exit>1

Enter new Book Name> Hi
Enter new Book Price: a
Invalid input. Please enter a valid price.

Enter new Book Price: 10
Enter new Book Quantity: 0
Invalid quantity. Quantity should be greater than 0.

Enter new Book Quantity: j
Invalid input. Please enter a valid quantity.

Enter new Book Quantity:
Enter new Book Quantity: 20
Enter new Book Publish Year: 1
Invalid publish year. Year should be in the format YYYY and between year 1000 to 2024.

Enter new Book Publish Year: 3000
Invalid publish year. Year should be in the format YYYY and between year 1000 to 2024.

Enter new Book Publish Year: 2009

Enter new Book Publisher> No
```

This is new book information:

```
=====
BookID> B007
Book Name> Hi
Book Price> 10.0
Book Quantity> 20
Publish Year> 2009
Publisher> No
=====
```

Confirm to add the new book to the book stock list? (Y/N) : Y

New book added to the stock list successfully!

Please Enter Your Choice > 1

Display menu ascending according to:

1. BookID sequence
2. Price sequence
3. Quantity sequence
4. Publish Year sequence

Enter your choice: 1

```
=====Book List=====
| BookID | Book Name           | Price    | Quantity | PublishYear | Publisher      |
|-----|-----|-----|-----|-----|-----|
| B001  | The Lion and Tiger   | RM12.50  | 25       | 2000        | Rainbow1 SDN.BHD |
| B002  | The Fish and Net     | RM22.50  | 45       | 2001        | Rainbow2 SDN.BHD |
| B003  | The Girl              | RM12.00  | 11       | 2002        | Rainbow3 SDN.BHD |
| B004  | The Farmer and Carrot | RM22.50  | 99       | 2003        | Rainbow4 SDN.BHD |
| B005  | The Boy               | RM17.00  | 43       | 2004        | Rainbow5 SDN.BHD |
| B007  | Hi                   | RM10.00  | 20       | 2009        | No             |
=====
```

Enter new Book Publisher> 1

This is new book information:

```
=====
BookID> B008
Book Name> 1
Book Price> 1.0
Book Quantity> 1
Publish Year> 1999
Publisher> 1
=====
```

Confirm to add the new book to the book stock list? (Y/N) : N

New book addition cancelled.

After the user enter '2', current book stock list will be displayed. Then, message will be prompt to ask user to enter new book id with format Bxxx. There will be existence validation and format validation here, if bookID entered is not follow the given format or the bookID are exist in the current book Stock list, error message will be displayed and ask user to enter the Book ID again. After the BookID is checked, if successful message will be displayed and ask user whether want to continue or not, 1 to continue, 2 for return to the book menu. After user enter 1, the program will continue to prompt message to ask user to enter new book name, book price, book quantity, publish year and publisher. There are validation for price, quantity and publish year. When the price are less than 0, or not numeric number, its will prompt error message. When the quantity are less than 0 or not a numeric number, its will prompt error message. When the publish year is not between year 1000-2024, error message will be prompt also and ask user to enter again. After all information have been entered, its will displayed whole details keyed in and ask user whether want to add new book or not. If user entered 'Y', successful message will be displayed and new book will be added to the book stock list. If user entered 'N', then the book addition will be canceled and cancel message will be displayed.

5.4 Modify Book Details

Please Enter Your Choice > 3

Book List						
BookID	Book Name	Price	Quantity	PublishYear	Publisher	
B001	The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD	
B002	The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD	
B003	The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD	
B004	The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD	
B005	The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD	
B007	Hi	RM10.00	20	2009	No	

This is the current book stock list.

Enter the BookID of the book you want to modify: |

This is the current book stock list.

Enter the BookID of the book you want to modify: 1

Book with the specified Book ID not found.

This is the current book stock list.

Enter the BookID of the book you want to modify: B007

Book found. You can modify its properties.

Enter new Book Name (Leave empty to keep current value): New name

Enter new Book Price (Leave empty to keep current value):

Enter new Book Quantity (Leave empty to keep current value):

Enter new Book Publish Year (Leave empty to keep current value):

Enter new Book Publisher (Leave empty to keep current value): New publisher

Book properties updated successfully.

After the user enter '3', it is a modify functions for the existing book stock list. First, current book stock list will be displayed. Then, message prompt will ask user to enter bookID. If the bookID is not found, the error message will be displayed and return to the menu. If the bookID found, successful found message will be displayed and let user to continue to input the new details. Here have same validation with add book functions. If user want to keep the same details for particular data fields, users can just left empty blank. In the end, successful message will be displayed.

Before modified:

Book List						
BookID	Book Name	Price	Quantity	PublishYear	Publisher	
B001	The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD	
B002	The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD	
B003	The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD	
B004	The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD	
B005	The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD	
B007	Hi	RM10.00	20	2009	No	

After modified:

====Book List=====						
BookID Book Name	Price	Quantity	PublishYear	Publisher		
B001 The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD		
B002 The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD		
B003 The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD		
B004 The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD		
B005 The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD		
B007 New name	RM10.00	20	2009	New publisher		

Press any key to continue...

5.5 Delete Book

Please Enter Your Choice > 4

=====Book List=====

No. BookID Book Name		
=====		
1 B001 The Lion and Tiger		
2 B002 The Fish and Net		
3 B003 The Girl		
4 B004 The Farmer and Carrot		
5 B005 The Boy		
6 B007 New name		

This is current book stock list.

Are you want to continue to delete?(1 for continue,2 for exit)1

Enter the index of the book to delete (-1 to cancel): 6

Book deleted successfully!

====

Enter the index of the book to delete (-1 to cancel): 9

Invalid index. Please enter a valid index.

Enter the index of the book to delete (-1 to cancel): |

After a user enters '4',this function is for the user to delete the book from the current book list.A current book stock list will be displayed.A message prompt will ask user whether want to continue for deleting or not,1 for continue,2 for return back to menu.After user enter 1,then will let user to enter no. of book that user want to delete.If the no. of book entered by the user is not in the list,then error message will be displayed and ask user to enter again.When user enter valid no. then successful message will be displayed.

Before delete:

====Book List=====						
BookID Book Name	Price	Quantity	PublishYear	Publisher		
B001 The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD		
B002 The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD		
B003 The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD		
B004 The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD		
B005 The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD		
B007 New name	RM10.00	20	2009	New publisher		

Press any key to continue...

After delete:

Book List						
BookID	Book Name	Price	Quantity	PublishYear	Publisher	
B001	The Lion and Tiger	RM12.50	25	2000	Rainbow1 SDN.BHD	
B002	The Fish and Net	RM22.50	45	2001	Rainbow2 SDN.BHD	
B003	The Girl	RM12.00	11	2002	Rainbow3 SDN.BHD	
B004	The Farmer and Carrot	RM22.50	99	2003	Rainbow4 SDN.BHD	
B005	The Boy	RM17.00	43	2004	Rainbow5 SDN.BHD	

6 Report Module

6.1 Report Selection Menu

WELCOME TO ESLITE BOOKSTORE POS SYSTEM

=====

-----ESLITE BOOKSTORE POS MENU-----

=====

1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system

Your Selection: 4

{_____} {_____} {_____} {_____} {_____} {_____} {_____}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

{_}{_}{_}{_}{_}{_}{_}{_}

1) Book Name

2) Sales

3) Price

4) Revenue

Choose selection to sort by (0 to exit):

After selecting 4 from the main menu it will bring us to the report module. Here we type in which ways we want the report to be sorted and displayed.

6.15 Validations

```

1) Book Name
2) Sales
3) Price
4) Revenue
Choose selection to sort by (0 to exit):
5
Wrong input, please try again
1) Book Name
2) Sales
3) Price
4) Revenue
Choose selection to sort by (0 to exit):
-1
Wrong input, please try again
1) Book Name
2) Sales
3) Price
4) Revenue
Choose selection to sort by (0 to exit):

```

There's validation to ensure the number inputted is in use or not.

```

{_____} {_____}{_____} {_____} {_____} {____} {____}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
{__}{__} {__} {__} {__}{__} {__}{__} {__} {__}
1) Book Name
2) Sales
3) Price
4) Revenue
Choose selection to sort by (0 to exit):
1
There's no order made.
WELCOME TO ESLITE BOOKSTORE POS SYSTEM
=====
-----ESLITE BOOKSTORE POS MENU-----
=====
1. Order Book
2. Book Management
3. Staff Management
4. Generate report
5. Membership management and redemption
0. Exit POS system
Your Selection:

```

Because the report module is reporting on Orders made so if we don't order anything and use the report module there will be feedback about not having any orders being displayed to remind them. It will jump back to the main menu selection screen after feedback is displayed.

6.2 Report in single order

```

=====
| No. | Book Name           |Quantity| Price   |
=====
| 1   | The Lion and Tiger |    1   | RM13.13 |
=====
|                               | Total : RM13.13 |
=====

Are you a member? (1 for Yes, 2 for No) > 1
Enter your member IC number: 12345
Member Alpha is checking out!
Are you confirm your order? (1 for continue, 2 for Back to Menu) > 1
Order Successfully! Earned 1 points.

```

Let's start off by only buying one book in order module and see how the report works.

```
Choose selection to sort by (0 to exit):
```

```
1
```

```
REPORT OF BOOKS
```

BOOK NAME	SALES	PRICE	REVENUE
The Lion and Tiger	1	13.13	13.13
Total Books Sold & Total Revenue			
	1		13.13
Most Sold Book			
The Lion and Tiger	1	13.13	13.13
Most Profitable Book			
The Lion and Tiger	1	13.13	13.13

It'll print out the book's name that we ordered, the amount bought, the price as well as how much we get from the book(revenue).

After listing out the books it will display the subtotals of the sales of all books as well as subtotal for revenue. After that it will print out the most sold book that is decided by the sales amount as well as the most profitable book that is decided by the largest revenue.

6.3 Report in multiple orders

No.	Book Name	Quantity	Price
=====			
1	The Lion and Tiger	24	RM315.00
2	The Fish and Net	20	RM472.50
3	The Girl	9	RM113.40
4	The Farmer and Carrot	30	RM708.75
5	The Boy	5	RM89.25
=====			
		Total : RM1698.90	
=====			

```
Are you a member? (1 for Yes, 2 for No) > 2
```

```
Are you confirm your order? (1 for continue, 2 for Back to Menu) > 1
```

```
Order Successfully!
```

This time we will be buying as much as we can in the order module and see how the report module handles this.

```
Choose selection to sort by (0 to exit):
```

```
3
```

```
REPORT OF BOOKS
```

BOOK NAME	SALES	PRICE	REVENUE
The Fish and Net	20	23.63	472.50
The Farmer and Carrot	30	23.63	708.75
The Boy	15	17.85	89.25
The Lion and Tiger	24	13.13	315.00
The Girl	9	12.60	113.40
=====			
Total Books Sold & Total Revenue			
	88		1698.90
=====			
Most Sold Book			
The Farmer and Carrot	30	23.63	708.75
=====			
Most Profitable Book			
The Farmer and Carrot	30	23.63	708.75
=====			

This time I decided to display the report sort by descending order of Price. As we can see the most sold and most profitable book is the same as it is both the most sales and most revenue because of its book price.

6.4 Rest of the sortations

- 1) Book Name
- 2) Sales
- 3) Price
- 4) Revenue

Choose selection to sort by (0 to exit):

2

REPORT OF BOOKS

BOOK NAME	SALES	PRICE	REVENUE
The Farmer and Carrot	30	23.63	708.75
The Lion and Tiger	24	13.13	315.00
The Fish and Net	20	23.63	472.50
The Girl	9	12.60	113.40
The Boy	5	17.85	89.25

Total Books Sold & Total Revenue	
188 1698.90	

Most Sold Book	
The Farmer and Carrot 30 23.63 708.75	

Most Profitable Book	
The Farmer and Carrot 30 23.63 708.75	

This is sorting in Sales descending order.

Choose selection to sort by (0 to exit):

1

REPORT OF BOOKS

BOOK NAME	SALES	PRICE	REVENUE
The Boy	5	17.85	89.25
The Farmer and Carrot	30	23.63	708.75
The Fish and Net	20	23.63	472.50
The Girl	9	12.60	113.40
The Lion and Tiger	24	13.13	315.00

Total Books Sold & Total Revenue	
188 1698.90	

Most Sold Book	
The Farmer and Carrot 30 23.63 708.75	

Most Profitable Book	
The Farmer and Carrot 30 23.63 708.75	

Sort by book name alphabetical order(A-Z).

Choose selection to sort by (0 to exit):

4

REPORT OF BOOKS

BOOK NAME	SALES	PRICE	REVENUE
The Farmer and Carrot	30	23.63	708.75
The Fish and Net	20	23.63	472.50
The Lion and Tiger	24	13.13	315.00
The Girl	9	12.60	113.40
The Boy	5	17.85	89.25

Total Books Sold & Total Revenue	
88	1698.90

Most Sold Book	
The Farmer and Carrot	30

Most Profitable Book	
The Farmer and Carrot	23.63

Sort by revenue amount in descending order.

6.5 Most sold & Most Profitable

3

REPORT OF BOOKS

BOOK NAME	SALES	PRICE	REVENUE
The Fish and Net	2	23.63	47.25
The Lion and Tiger	3	13.13	39.38

Total Books Sold & Total Revenue	
5	86.63

Most Sold Book	
The Lion and Tiger	3

Most Profitable Book	
The Fish and Net	23.63

A more prominent look at the report of how the most sold book and most profitable book is different. Even if the revenue of the book is higher doesn't mean it is the most sold book because it is decided by sales. Vice versa for deciding the most profitable book when the most sales doesn't always mean most profitable.

AACS2204 Object-Oriented Programming Technique – Assignment Feedback Form

	<u>Student Names</u>	<u>Total Marks</u>	<u>Contribution</u>	<u>Final Marks</u>
A	CHOO ZHEN HAO			
B	WONG KAI CHEN			
C	LEONG HON YAN			
D	ERNEST SUA YII SHIEN			

Programme of Study D (CS)

Tutorial Group Group (6)

Note:

- The maximum differences after contribution shall be capped at 10m. Refer to assignment specification for more detail.

CLO 2	Demonstrate an object-oriented program using appropriate programming fundamentals with regards to arrays, methods and exception handling. (P4, PLO3)							
<u>Section A: Program Output & Correctness (25 marks) – Individual Marks</u>								
<u>Criteria</u>	<u>Weight</u>	<u>Max Marks</u>	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>Very Poor</u>	<u>Marks (Point x Weight)</u>
			5	4	3	2	1	

Completeness of the program	2.0	10m	Completed 100% of the functional requirements. All operations are implemented correctly.	Completed all of the functional requirement but implemented with minor errors.	Completed most of the functional requirement but implemented with errors.	Completed < 50% of the functional requirement and < 50% of the operations implemented correctly	Did not complete any of the functional requirement at all	Student	Marks
						A			
						B			
						C			
						D			

Exception Handling	1.0	5m	Output is correct with comprehensive exception handling.	Output is correct with appropriate exception handling.	Output is correct with little exception handling.	Output is somewhat correct with little proper exception handling	Output is totally wrong with no proper exception handling.	Student	Marks
						A			
						B			
						C			
						D			

Program Code Quality & Standard	1.0	5m	All identifiers strictly conform to the standard Java naming convention and all are meaningful Most of the identifiers conform to the standard Java naming convention and are meaningful Some of the identifiers conform to the standard Java naming convention and some are meaningful Limited numbers of the identifiers conform to the standard Java naming convention or barely meaningful All of the identifiers conform to the standard Java naming convention or not meaningful			<table border="1" style="float: right; margin-right: 10px;"> <thead> <tr> <th>Student</th><th>Marks</th></tr> </thead> <tbody> <tr><td>A</td><td></td></tr> <tr><td>B</td><td></td></tr> <tr><td>C</td><td></td></tr> <tr><td>D</td><td></td></tr> <tr><td></td><td></td></tr> </tbody> </table>	Student	Marks	A		B		C		D			
Student	Marks																	
A																		
B																		
C																		
D																		
A																		
B																		
C																		
D																		
Total Marks (25 marks):				A														
				B														
				C														
				D														

CLO 3	Analyse the concepts of encapsulation, inheritance and polymorphism based on programming problems. (C4, PLO2)								
Section B: Object-Oriented Concept (45 marks) – Group Marks									
Criteria	Weight	Max Marks	Excellent	Good	Fair	Poor	Very Poor	Marks (Point x Weight)	Remarks
			5	4	3	2	1		
Class Implementation	1.0	5m	Identified the proper classes, methods and attributes to solve particular problem.	Identified appropriate classes, methods and attributes to solve particular problem with minor errors.	Able to identify only some classes, methods and attributes to solve particular problem.	Inappropriate classes, methods and attributes are used.	Unable to show understanding on the usage of classes, methods and attributes.		
Object Implementation	1.0	5m	Able to create a structure of object collaborating among themselves to carried out task properly.	Able to create a structure of object collaborating among themselves to carried out task properly with little minor mistakes	Structure of collaborating object created with some mistakes	Structure of collaborating object created are barely correct.	Wrong structure of object collaboration like one object doing everything itself.		
Abstraction	1.0	5m	Define the class at the proper level of abstraction (abstract classes and methods).	Define the class at the proper level of abstraction with minor mistake	Classes defined at the proper level of abstractions with some mistakes	< 50% of correct abstraction is used	Lack of abstraction (abstract classes and methods).		
Encapsulation	2.0	10m	Completely correct implementation of encapsulation (private modifier, setter and getter methods).	Correct implementation of encapsulation with only some minor mistakes	Acceptable amount of correct implementation of encapsulation is applied in program	< 50% of correct implementation for encapsulation applied in program	Completely incorrect implementation of encapsulation (private modifier, setter and getter methods)		
Inheritance	2.0	10m	Completely correct use of inheritance (correct use of extends keyword, super & sub class)	Correct implementation of inheritance with only some minor mistakes	Acceptable amount of correct implementation of inheritance is applied in program	< 50% of correct implementation for inheritance applied in program	Completely incorrect use and implementation of inheritance		
Polymorphism	2.0	10m	Completely correct use and implementation of polymorphism. Methods <code>toString()</code> & <code>equals()</code> correctly overridden.	Correct implementation of polymorphism with only some minor mistakes	Acceptable amount of correct implementation of polymorphism is applied in program	< 50% of correct implementation for polymorphism applied in program	Completely incorrect use and implementation of polymorphism.		

	Total Marks (45 marks):	
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CLO 3	Analyse the concepts of encapsulation, inheritance and polymorphism based on programming problems. (C4, PLO2)								
Section C: Object-Oriented Design (30 marks) – Group Marks									
Criteria	Weight	Max Marks	Excellent	Good	Fair	Poor	Very Poor	Marks (Point x Weight)	Remarks
			5	4	3	2	1		
Cohesion	1.0	5m	The code demonstrates exceptional cohesion with all modules, classes, or functions have a clear and single responsibility.	The code demonstrates good cohesion overall where most modules, classes, or functions have a clear and single responsibility	Some modules, classes, or functions have a clear and single responsibility, but others may be slightly ambiguous	Few modules, classes, or functions have a clear and single responsibility.	Modules, classes represent more than one entity and lack of clear responsibility. Poor class cohesion.		
Coupling	1.0	5m	Minimal or no direct dependency between modules, classes, or functions. Coupling is effectively managed, resulting in highly maintainable and modular code	Most modules, classes, or functions have minimal direct dependencies.	Some modules, classes, or functions have moderate direct dependencies.	Many modules, classes, or functions have significant direct dependencies.	Modules, classes, or functions have excessive and tightly coupled dependencies which make module be harder to reuse or test.		
Association, Aggregation and Composition	2.0	10m	Associations between classes are accurately identified and properly established.	Associations between classes are generally identified and properly established.	Some associations between classes may be missing or improperly established.	Several associations between classes are missing or improperly established.	Completely incorrect use and implementation of association, aggregation and composition relationship.		
UML Class Diagram	2.0	10m	The UML class diagram demonstrates excellent understanding and implementation. All classes, attributes, and methods are accurately represented with appropriate visibility, data types, and associations.	Most classes, attributes, and methods are accurately represented with appropriate visibility, data types, and associations.	Some classes, attributes, and methods may be missing or inaccurately represented, with visibility, data types, or associations not fully defined.	Many classes, attributes, and methods are missing or inaccurately represented, with visibility, data types, or associations not adequately defined.	Classes, attributes, and methods are missing or inaccurately represented, with visibility, data types, or associations lacking clarity or definition.		

	Total Marks (30 marks):	
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