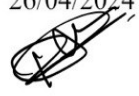# Declaration of Original Work for
SC/CE/CZ2002 Assignment

We hereby declare that the attached group assignment has been researched, undertaken, completed, and submitted as a collective effort by the group members listed below. We have honoured the principles of academic integrity and have upheld Student Code of Academic Conduct in the completion of this work. We understand that if plagiarism is found in the assignment, then lower marks or no marks will be awarded for the assessed work. In addition, disciplinary actions may be taken.

Name	Course	LAB GROUP	SIGNATURE
Yalamanchili Sanjana	SC2002	FDAA	26/04/2024
Fatima Nowshad	SC2002	FDAA	26/04/2024
Mehta Rishika	SC2002	FDAA	26/04/2024
Mahi Pandey	SC2002	FDAA	26/04/2024
Nguyen Hoang Minh Ngoc	SC2002	FDAA	26/04/2024

1. DESIGN CONSIDERATIONS:

While designing our code for this FOMS project, we kept in mind the OOP design concepts that we'd learned over the course of the semester.

1.1 ENCAPSULATION / INFORMATION HIDING

In our program, we prioritised encapsulation to safeguard sensitive data from unauthorised access or manipulation. Users are granted access only to their relevant data. Examples such as the implementations for generating the Order ID and changing the password of the Staff, along with their corresponding login details, demonstrate adherence to encapsulation and information hiding. We enforce data privacy by restricting access to passwords and only controlled access is provided to minimise unprecedented modifications thus reducing the possibility of data leaks and enhancing the user's privacy.

1.2 SINGLE RESPONSIBILITY PRINCIPLE

Our classes were developed with adherence to the Single Responsibility Principle. Each of the User, Admin, Staff, Manager, and Customer has unique classes specific to their functionalities. For instance, the staff package consists of classes made to implement the functionalities of Manager only. The methods are specific to the responsibilities of the Manager. It exhibits high cohesion as these responsibilities are inherently linked and contribute to the overall role of a manager in the system. Therefore, the Manager is one of the classes that follows the Single Responsibility Principle as changes to its responsibilities don't change other classes or their responsibilities. This makes our class simpler and increases its maintainability.

1.3 OPEN- CLOSE PRINCIPLE

The IPayment interface defines a contract for payment processing, specifying methods such as processPayment, setAvailability, and isAvailable. This interface serves as a blueprint for implementing different payment modes, making it open for the extension to add other payment modes. CardPayment and OnlinePayment are concrete classes implementing the IPayment interface. They follow the Open-Closed Principle by allowing extension without modifying the source. The payment modes are closed for modification. The design promotes flexibility, scalability and maintainability.

1.4 LISKOV SUBSTITUTION PRINCIPLE

The Liskov Substitution Principle states that subclass objects should be able to replace superclass objects without breaking the application, essentially ensuring that they are able to replicate similar styles of behaviour.

In our program, we have been deliberate in ensuring that superclasses include only methods that are used by all its subclasses and conversely, specialised methods are only contained within their subclasses. For example, in the User class, we choose to include only generic methods such as the accessor and mutator methods to access the different attributes of a generic person. We left the Admin and Staff-specific methods like displayStaffAccounts and processOrder to the Admin and Staff branch respectively. This is because Admin and Staff will use similar

methods to log in to the FOMS application but will have different methods they can perform afterward. This can also be seen in the Manager and Staff classes, as the Staff includes generic methods like getBranch, while the Manager has more specialised methods like displayStaffList. Since the assignment specified that the Manager must be able to do all Staff actions, while having more specialised features, we have implemented it as such.

2. CLASS DIAGRAM:

We included the .jpg and .vpp files of this UML diagram in our submission folder.
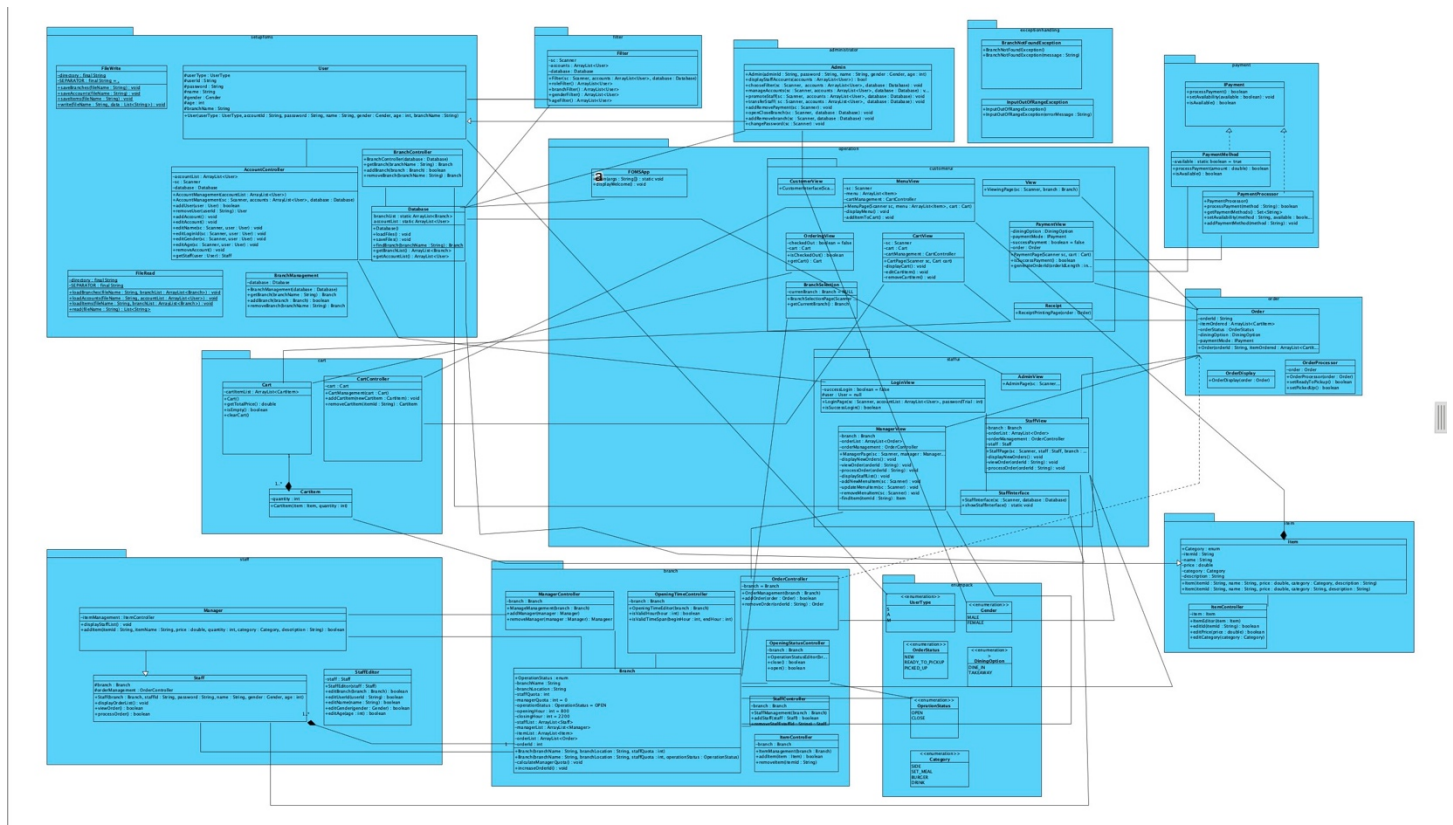
3. TEST CASES AND RESULTS:

- Test case 1: Add a new (unique) menu item and verify that it is successfully added


```
————————————————————————————————
  WELCOME TO THE FOMS APPLICATION
————————————————————————————————
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: Alexei
Enter Password: password
Login successful.

————————————————
MANAGER LOGIN
————————————————
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 6
Enter the new item in the following format:
ItemId,Name,Price,Category,Description
fanta, Fanta, 2.4, drink, orange drink
fanta has been successfully added to the menu
```

The *Manager* added a new item

```
_____
 WELCOME TO THE FOMS APPLICATION
 _____
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 1
_____
CUSTOMER LOGIN
_____
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1

WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 2

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 1

----MENU----
ID         Name              Price      Category          Description
fries      FRIES             3.20       SIDE              Cut Potato
set        3PC set meal      9.90       SET_MEAL          3 pieces of chicken
nugget     chicken nugget    6.60       SIDE              Some pieces of mashed chicken
coke       coke              2.50       DRINK             black water
pepsi      pepsi             2.10       DRINK             brown water with gas
fanta      Fanta             2.40       DRINK             orange drink

Please choose your action:
1. Add item to the cart
2. Go back
Enter your choice: ■
```

The added item is reflected in the menu for the ***Customer***

- Test case 2: Update the price and description of an existing menu item

```
_____
MANAGER LOGIN
_____
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 7
----MENU----
ID              Name           Price        Category         Description
fries           FRIES          3.2          SIDE             Cut Potato
set             3PC set meal        9.9          SET_MEAL           3 pieces of chicken
nugget          chicken nugget      6.6          SIDE               Some pieces of mashed chicken
coke            coke           2.5          DRINK            black water
pepsi           pepsi          2.1          DRINK            brown water with gas

Select Item ID: fries
What do you want to update regarding the item ?
1. ID
2. Name
3. Price
4. Description
5. Cancel
3
Enter a new Price:
4
Price has been updated
```

Manager updated the ***price*** for ***fries***

```
----MENU----
ID              Name           Price        Category         Description
fries           FRIES          4.0          SIDE             Cut Potato
set             3PC set meal        9.9          SET_MEAL           3 pieces of chicken
nugget          chicken nugget      6.6          SIDE               Some pieces of mashed chicken
coke            coke           2.5          DRINK            black water
pepsi           pepsi          2.1          DRINK            brown water with gas

Select Item ID: fries
What do you want to update regarding the item ?
1. ID
2. Name
3. Price
4. Description
5. Cancel
4
Enter a new Description:
cut potatoes with cheese
Description  has been updated
```

Manager updated the ***description*** for ***fries***

```
_____
CUSTOMER LOGIN
_____
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1

WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 2

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 1

----MENU----
ID         Name              Price      Category          Description
fries      FRIES             4,00       SIDE              cut potatoes with cheese
set        3PC set meal      9,90       SET_MEAL          3 pieces of chicken
nugget     chicken nugget    6,60       SIDE              Some pieces of mashed chicken
coke       coke              2,50       DRINK             black water
pepsi      pepsi             2,10       DRINK             brown water with gas
```

- Test case 3: Remove an existing menu item

```
——————————————
MANAGER LOGIN
——————————————
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 8
----MENU----
ID              Name            Price           Category            Description
fries           FRIES           3.2             SIDE            Cut Potato
set             3PC set meal            9.9         SET_MEAL            3 pieces of chicken
nugget          chicken nugget          6.6         SIDE            Some pieces of mashed chicken
coke            coke            2.5             DRINK           black water
pepsi           pepsi           2.3             DRINK           carbonated drink
fanta           Fanta           2.4             DRINK           orange drink

Select Item ID: fanta
fanta           Fanta           2.4             DRINK           orange drink
Confirm remove?
1. Yes
2. No
1
Item has been removed

——————————————
MANAGER LOGIN
——————————————
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 7
----MENU----
ID              Name            Price           Category            Description
fries           FRIES           3.2             SIDE            Cut Potato
set             3PC set meal            9.9         SET_MEAL            3 pieces of chicken
nugget          chicken nugget          6.6         SIDE            Some pieces of mashed chicken
coke            coke            2.5             DRINK           black water
pepsi           pepsi           2.3             DRINK           carbonated drink
```

Manager removed the *fanta* item and it cannot be seen anymore

- Test case 4 - 6: Order multiple items

```
——————————————————————————
 WELCOME  TO THE FOMS APPLICATION
——————————————————————————
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 1

——————————————
CUSTOMER LOGIN
——————————————
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1

WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 2

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 1

----MENU----
ID          Name            Price       Category        Description
fries       FRIES           3.20        SIDE            3 pieces of chicken
set         3PC set meal    9.90        SET_MEAL        3 pieces of chicken
nugget      chicken nugget  6.60        SIDE            Some pieces of mashed chicken
coke        coke            2.50        DRINK           black water
pepsi       pepsi           2.10        DRINK           brown water with gas
Please choose your action:
1. Add item to the cart
2. Go back
Enter your choice: 1

----Add item to cart----
Enter Item ID: fries
Enter quantity: 1
Item added successfully!
```

Customer added multiple items to his order

```
Please enter your action:
1. Edit  the item in Cart
2. Remove the item from Cart
3. Clear Cart
4. Go Back
1
---Edit Item from the cart---
Enter Item ID: coke
Enter new Quantity: 2
```

```
Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 3

Please choose your dining option:
1. Dine In
2. Takeaway
Enter your choice: 2
Please proceed to payment:
Available Payment Methods:
online
card
Please enter the method:
card
Payment Successful
Successful payment
Order ID: 02976
——————————
```

Customer edits the item from the order, choose *Takeaway* and pay by *Card*

The order is created successfully and an *OrderID* is generated automatically.

- Test case 5 + 7 + 8 + 9 + 10 + 18: Place an order, online payment integration, track the order using Order ID, Staff processes the order

```
------------------------------------
  WELCOME TO THE FOMS APPLICATION
------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 1
------------------
CUSTOMER LOGIN
------------------
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1
WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 2

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 1
----MENU----
ID          Name                    Price    Category        Description
fries       FRIES                   3.20     SIDE            Cut Potato
set         3PC set meal            9.90     SET_MEAL        3 pieces of chicken
nugget      chicken nugget          6.60     SIDE            Some pieces of mashed chicken
coke        coke                    2.50     DRINK           black water
pepsi       pepsi                   2.10     DRINK           brown water with gas

Please choose your action:
1. Add item to the cart
2. Go back
Enter your choice: 1

----Add item to cart----
Enter Item ID: pepsi
Enter quantity: 2
Item added successfully!

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 3
```

```
Please choose your dining option:
1. Dine In
2. Takeaway
Enter your choice: 1
Please proceed to payment:
Available Payment Methods:
online
card
Please enter the method:
online
Payment Successful
Successful payment
Order ID: 16127
----------------
Item has been successfully Ordered:
pepsi
----------------
Order Status:   NEW
Dining Option:  DINE_IN
Payment Mode:   online
```

Customer chooses to *Dine In* and pay by *Online payment.*

The order is verified with correct references and automatically generated *OrderID*

```
------------------------------------------
  WELCOME TO THE FOMS APPLICATION
------------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: kumarB
Enter Password: password
Login successful.

------------------------
STAFF LOGIN
------------------------
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process an Order
4. Change your Password
5. Return to Start
Enter your choice: 3
---Process Order---
Enter the Order ID: 16127
Order ID 16127 has been processed successfully.
```

Staff log in to process the order using its *OrderID*

```
--------------------
CUSTOMER LOGIN
--------------------
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1

WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 1

List of Orders:
NEW:

READY TO PICK UP:
16127

Do you want to pick up your order?
1. Yes
2. No
Enter your choice: 1

Enter order ID: 16127
Pick up successfully!
```

Customer log in **pick up** the order

```
-----------------------------------------
 WELCOME TO THE FOMS APPLICATION
-----------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: kumarB
Enter Password: password
Login successful.

--------------------
STAFF LOGIN
--------------------
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process an Order
4. Change your Password
5. Return to Start
Enter your choice: 2
---View the details of a particular Order---
Enter the Order ID: 16127
Order ID: 16127
--------------
Item has been successfully Ordered:
pepsi
--------------
Order Status:   PICKED_UP
Dining Option:  DINE_IN
Payment Mode:   online
```

Staff logs in to track the order using *OrderID*. The status of the order is updated to *PICKED UP*.

- Test case 11 + 12: Manager's Action

```
-----------------------------------
 WELCOME TO THE FOMS APPLICATION
-----------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: Alexei
Enter Password: password
Login successful.

--------------------
MANAGER LOGIN
--------------------
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 5
Name: Kumar Blackmore, Age 32, Gender: MALE
Name: Elon Musk, Age 55, Gender: MALE
```

```
--------------------
MANAGER LOGIN
--------------------
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 1
---Display new Orders---
Order ID: 02976
--------------
Item has been successfully Ordered:
FRIES
coke
--------------
Order Status:   NEW
Dining Option:  TAKEAWAY
Payment Mode:   card
Order ID: 82575
--------------
Item has been successfully Ordered:
FRIES
--------------
Order Status:   NEW
Dining Option:  DINE_IN
Payment Mode:   card
```

```
----------------------
MANAGER LOGIN
----------------------
Choose your action:
1. Display new Orders
2. View the details of a particular Order
3. Process Order
4. Change Password
5. Display the Staff List
6. Add a new menu item
7. Update a menu item
8. Remove a menu item
9. Return to Start
Enter your choice: 3
---Process Order---
Enter the Order ID: 82575
Order ID 82575 has been processed successfully.
```

- Test case 13: Close a branch and verify that it is not reflected in the Customer Interface

```
----------------------
ADMIN LOGIN
----------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 6
Select branch:
1. NTU
2. JP
3. JE
4. Go Back
1
Branch: NTU is OPEN.
1. Close Branch
2. Go Back
1
Branch: NTU is now CLOSED.
----------------------
ADMIN LOGIN
----------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 9
Returning to the Start page

----------------------------------------
 WELCOME TO THE FOMS APPLICATION
----------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 1

----------------------
CUSTOMER LOGIN
----------------------
Please choose your current branch:
2. JP
3. JE
4. Return to Start
Enter your preferred choice: ☐
```

- Test case 14: Admin views the staff with filters

```
----------------------------------------
 WELCOME TO THE FOMS APPLICATION
----------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: boss
Enter Password: password
Login successful.

----------------------
ADMIN LOGIN
----------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 1
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: S, Branch: NTU
Name: Alexei, Login Id: Alexei, Age: 25, Gender: MALE, Role: M, Branch: NTU
Name: Tom Chan, Login Id: TomC, Age: 56, Gender: MALE, Role: M, Branch: JP
Name: Alica Ang, Login Id: AlicaA, Age: 27, Gender: FEMALE, Role: M, Branch: JE
Name: Mary lee, Login Id: MaryL, Age: 44, Gender: FEMALE, Role: S, Branch: JE
Name: Justin Loh, Login Id: JustinL, Age: 49, Gender: MALE, Role: S, Branch: JP
Name: Boss, Login Id: boss, Age: 62, Gender: FEMALE, Role: A, Branch: boss
Name: Elon Musk, Login Id: ElonM, Age: 55, Gender: MALE, Role: S, Branch: NTU
Choose how you want to filter the staff list:
1. Role
2. Branch
3. Gender
4. Age
5. Go Back
2
Select the branch you wish to categorize by:
1. NTU
2. JP
3. JE
4. Cancel
1
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: S, Branch: NTU
Name: Alexei, Login Id: Alexei, Age: 25, Gender: MALE, Role: M, Branch: NTU
Name: Elon Musk, Login Id: ElonM, Age: 55, Gender: MALE, Role: S, Branch: NTU
```

Filter by ***Branch***

- Test case 16: Admin promotes a staff to manager

```
--------------------
ADMIN LOGIN
--------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 3
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: S, Branch: NTU
Name: Mary lee, Login Id: MaryL, Age: 44, Gender: FEMALE, Role: S, Branch: JE
Name: Justin Loh, Login Id: JustinL, Age: 49, Gender: MALE, Role: S, Branch: JP
Name: Elon Musk, Login Id: ElonM, Age: 55, Gender: MALE, Role: S, Branch: NTU
Enter Login Id of the Staff you wish to promote: kumarB
Manager has been successfully added: Kumar Blackmore
Kumar Blackmore promoted to Manager
```

```
Select the role you wish to categorize by:
1. Staff
2. Manager
3. Cancel
2
Name: Alexei, Login Id: Alexei, Age: 25, Gender: MALE, Role: M, Branch: NTU
Name: Tom Chan, Login Id: TomC, Age: 56, Gender: MALE, Role: M, Branch: JP
Name: Alica Ang, Login Id: AlicaA, Age: 27, Gender: FEMALE, Role: M, Branch: JE
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: M, Branch: NTU
Choose how you want to filter the staff list:
1. Role
2. Branch
3. Gender
4. Age
5. Go Back
```

- Test case 17: Transfer the manager/ staff

```
--------------------
ADMIN LOGIN
--------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 4
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: S, Branch: NTU
Name: Alexei, Login Id: Alexei, Age: 25, Gender: MALE, Role: M, Branch: NTU
Name: Tom Chan, Login Id: TomC, Age: 56, Gender: MALE, Role: M, Branch: JP
Name: Alica Ang, Login Id: AlicaA, Age: 27, Gender: FEMALE, Role: M, Branch: JE
Name: Mary lee, Login Id: MaryL, Age: 44, Gender: FEMALE, Role: S, Branch: JE
Name: Justin Loh, Login Id: JustinL, Age: 49, Gender: MALE, Role: S, Branch: JP
Name: Boss, Login Id: boss, Age: 62, Gender: FEMALE, Role: A, Branch: boss
Name: Elon Musk, Login Id: ElonM, Age: 55, Gender: MALE, Role: S, Branch: NTU
Enter Login Id of Staff/Manager to transfer: Alexei
Select branch to transfer to:
1. JP
2. JE
3. Go Back
1
Manager has been successfully added: Alexei
Manager has been removed: Alexei
Manager transferred to JP
--------------------
ADMIN LOGIN
--------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 1
Name: Kumar Blackmore, Login Id: kumarB, Age: 32, Gender: MALE, Role: S, Branch: NTU
Name: Alexei, Login Id: Alexei, Age: 25, Gender: MALE, Role: M, Branch: JP
Name: Tom Chan, Login Id: TomC, Age: 56, Gender: MALE, Role: M, Branch: JP
Name: Alica Ang, Login Id: AlicaA, Age: 27, Gender: FEMALE, Role: M, Branch: JE
Name: Mary lee, Login Id: MaryL, Age: 44, Gender: FEMALE, Role: S, Branch: JE
Name: Justin Loh, Login Id: JustinL, Age: 49, Gender: MALE, Role: S, Branch: JP
Name: Boss, Login Id: boss, Age: 62, Gender: FEMALE, Role: A, Branch: boss
Name: Elon Musk, Login Id: ElonM, Age: 55, Gender: MALE, Role: S, Branch: NTU
Choose how you want to filter the staff list:
1. Role
2. Branch
3. Gender
4. Age
5. Go Back
```

- Test 20: Process an order without selecting any items

```
────────────────────
CUSTOMER LOGIN
────────────────────
Please choose your current branch:
1. NTU
2. JP
3. JE
4. Return to Start
Enter your preferred choice: 1

WELCOME TO NTU!

Please choose your option as a customer:
1. View Order Status
2. Make a new Order
3. Go back
Enter your choice: 2

Please choose your action:
1. Go to Menu
2. Go to Cart
3. Checkout to make payment
4. Go Back
Enter your choice: 3

You have no item in your cart! Please try again.
```

- Test 21: Admin adds a new payment method

```
────────────────────
ADMIN LOGIN
────────────────────
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 5
Add/ remove payment:
1. Add
2. Remove
3. Go Back
1
Please input your payment method you want to add:
cash
Payment method added!
```

- Test 22: Admin adds a new branch

```
────────────────────
ADMIN LOGIN
────────────────────
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 6
Select branch:
1. NTU
2. JP
3. JE
4. Go Back
3
Branch: JE is OPEN.
1. Close Branch
2. Go Back
1
Branch: JE is now CLOSED.
```

- Test 24: Login with wrong credentials

```
---------------------------------------
 WELCOME TO THE FOMS APPLICATION
---------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: boss
Enter Password: passwooo
Incorrect password. 2 trial(s) left.
Enter Password: password
Login successful.
```

- Test 25: Change the password of staffs/ managers/ admins

```
--------------------
ADMIN LOGIN
--------------------
Choose your action:
1. Display the Staff List
2. Add, Edit or Remove Staff Accounts
3. Promote Staff
4. Transfer Staff/Manager
5. Add/Remove Payment Method
6. Open/Close Branch
7. Add/Remove Branch
8. Change Password
9. Return to Start
Enter your choice: 8
 Please Change your Password
Enter Old(previous) Password:
password
Enter New Password:
Newpassword
Confirm New Password:
Newpassword
Password has been successfully changed
```

```
---------------------------------------------
 WELCOME TO THE FOMS APPLICATION
---------------------------------------------
Please choose your login option:
1. Customer
2. Staff
3. Quit
Enter your choice: 2

Enter ID: boss
Enter Password: password
Incorrect password. 2 trial(s) left.
Enter Password: Newpassword
Login successful.
```

4. REFLECTIONS:

As we were working on this project, there were definitely many hurdles that we had to overcome. However, we believe that we've learnt so much more in terms of OOP and designing projects on a large scale.

Among the many challenges we faced, we struggled the most initially. While we were able to apply design concepts and considerations to smaller projects for this course, applying those same concepts on a larger scale was what made us falter initially. Within the assignment, there were several factors we had to incorporate together and make connections between. For example, while the staff and manager had the option to make changes to the menu itself, the customer had similar functions but was only restricted to the items within their order cart. Small details like this had to be considered as well for the proper and smart functioning of our FOMS App. Hence, having to incorporate details that drew connections between different classes was one of the main challenges we faced. The way we decided to tackle this was by mapping out all the stronger connections first, such as Managers can do everything Staff can do, etc. We then built up using this as a starting point. The main reason we decided to do this was that we realised when we were trying to make connections initially, we were trying to map out everything all at once.

Other challenges included implementing new concepts in order to improve the functionality of our project. For example, concepts that dealt with maintaining data persistence and approaching some of the concepts in a way that our programme would be extensible. While it was interesting to gain knowledge on these new concepts, having to figure out the implementation and how to incorporate it with our FOMS design was laborious.

Something really interesting that we took away from the project would have to be the javadoc. While getting started on creating the javadoc was tough – deciding on the IDE we wanted to generate the javadoc with, for which, we used Eclipse IDE and then as we attempted to open up our project, we realised we'd need to clone our GitHub repo and access using the Eclipse IDE because of the CSV flies that needed to be read in order for our code's functionality. In order to understand the working of how to read the csv files in our IDE, we underwent a thorough research, trying to learn it ourselves. Hence, we did find it difficult to set the system up but generating the final readable javadoc of our entire project code base was fulfilling and interesting to us.

In terms of further improvements, we think we could have perhaps implemented more interfaces within our project. While we did implement an interface for the payment methods to allow the admin to add a new payment mode, we think we could have expanded this to other classes as well. For example, we could have added an interface to add new branches to the system rather than just implementing a method for it within the admin class itself. Adding interfaces would have allowed our code to become more extensible and reusable. It would also make the process of editing the classes that are implementing the interfaces easier and flexible. Overall, our Fast-food Ordering and Management System has been designed using the concepts we learnt in SC2002 and considers the test cases and constraints listed by the assignment. However, it's improvable by the addition of more OODP concepts like Interface Segregation Principle from SOLID.