

NANYANG TECHNOLOGICAL UNIVERSITY







SINGAPORE

Declaration of Original Work for 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 honored 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.

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Design Considerations

Overview

We took a straightforward approach when it came to designing the application. We first broke down the application in terms of the classes we need (requirements that are specified in the Assignment Manual). They are mainly:

1. System Manager

The System Manager class handles all the input from the other classes and outputs them, depending on what the user (restaurant staff) needs. It acts as the driver for the whole application.

2. Menu

The Menu class handles the menu that would be displayed to the customer. The class allows the items in the menu (menu items and promotion) to be created, updated, and removed during the application's run time.

3. Menu item

This Menu Item class handles the individual menu items that would be added in the menu.

4. Promotion

This Promotion class handles the promotional set items of the menu. These promotional sets are a collection of various menu items specified by the user.

5. Order

The Order class handles the creation and update of orders records in the application. This class also stores a collection of Menu Items and Promotional Set Items and allows the user to update that collection, like how an order is taken in a restaurant.

6. Reservation

The Reservation class handles the creation of a reservation record in the application.

7. Staff

The Staff class handles the creation of a staff record in the application.

8. Customer

The Customer class handles the creation of a staff record in the application.

9. Tables

The Table class handles the creation of a table record in the application.

Next, we built the application's functionality in the System Manager Class, such as how the reservation might function in real life and how the system allocates customers to tables according to their group size. Since it takes all the user inputs and passes them to the respective class for creation, the System Manager simply stores the records of all the other class and outputs what the user wants.

Here is a quick explanation of how the System Manger class handles the inputs:

1. A menu is created in the System Manager class and the user can create update or remove menu items into it. The system Manager simply calls the functions, and their respective classes handles them.
2. The System Manger contains several Array List that keeps the record of each class instance that will be needed. (These class instances are created by the individual classes themselves)
3. Customers will be assigned to tables (assignment handled by System Manager Class), and orders can then be taken from those tables (Order creation handle by order class). These order records will be stored in its own Array List.
4. Reservations can also be created for customers that wish to reserve a table early. The system Manager handles the reservation functionality, but the record of the reservation is created by the reservation class.
5. Payment can then be made after the customer has eaten (payment handle by the System Manager Class, but the attributes of the payment are taken from the Order, Menu Item and Promotion class).
6. The System Manager then moves the paid order record into another array list to be kept for future reference.

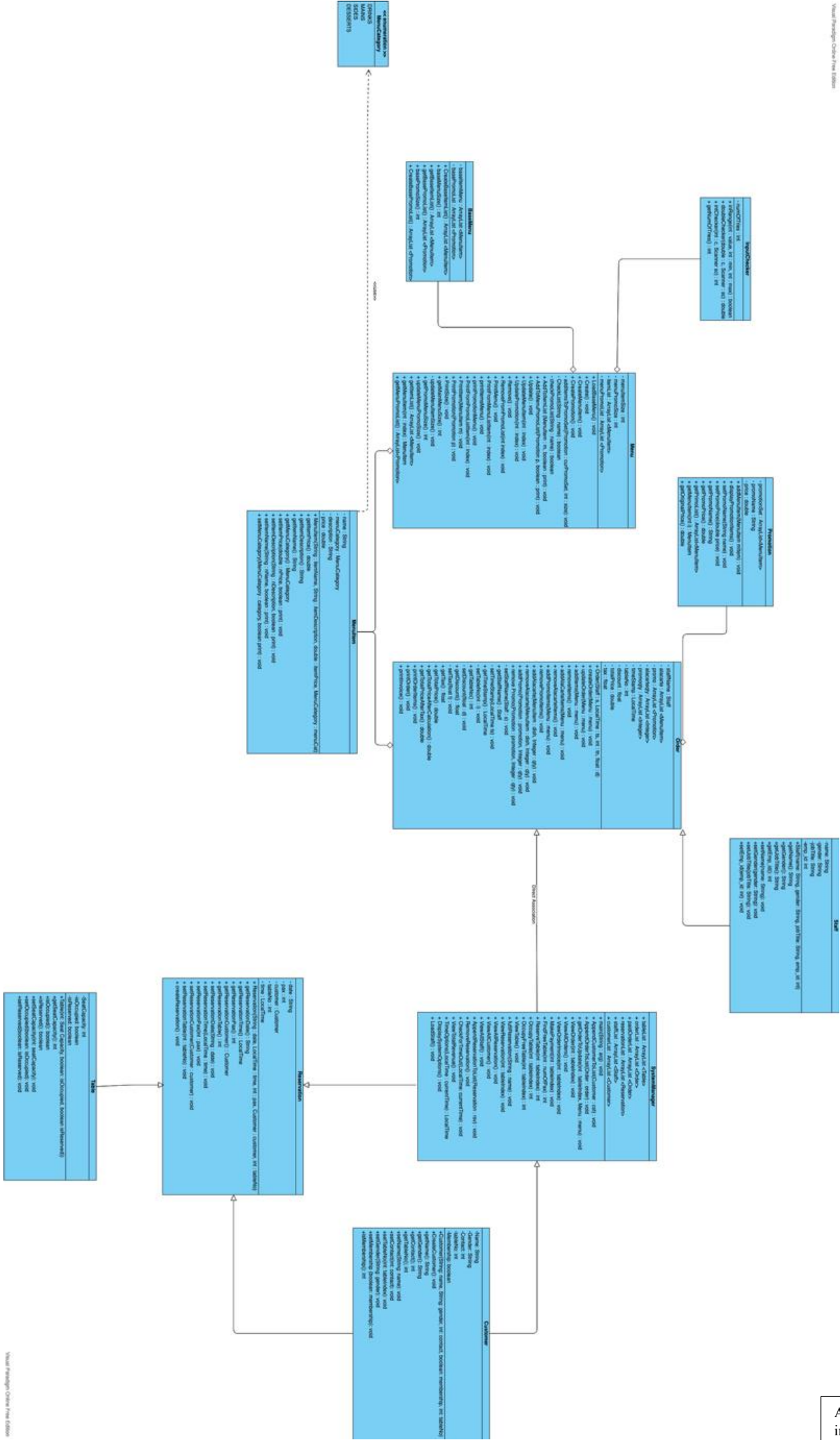
Design Principles

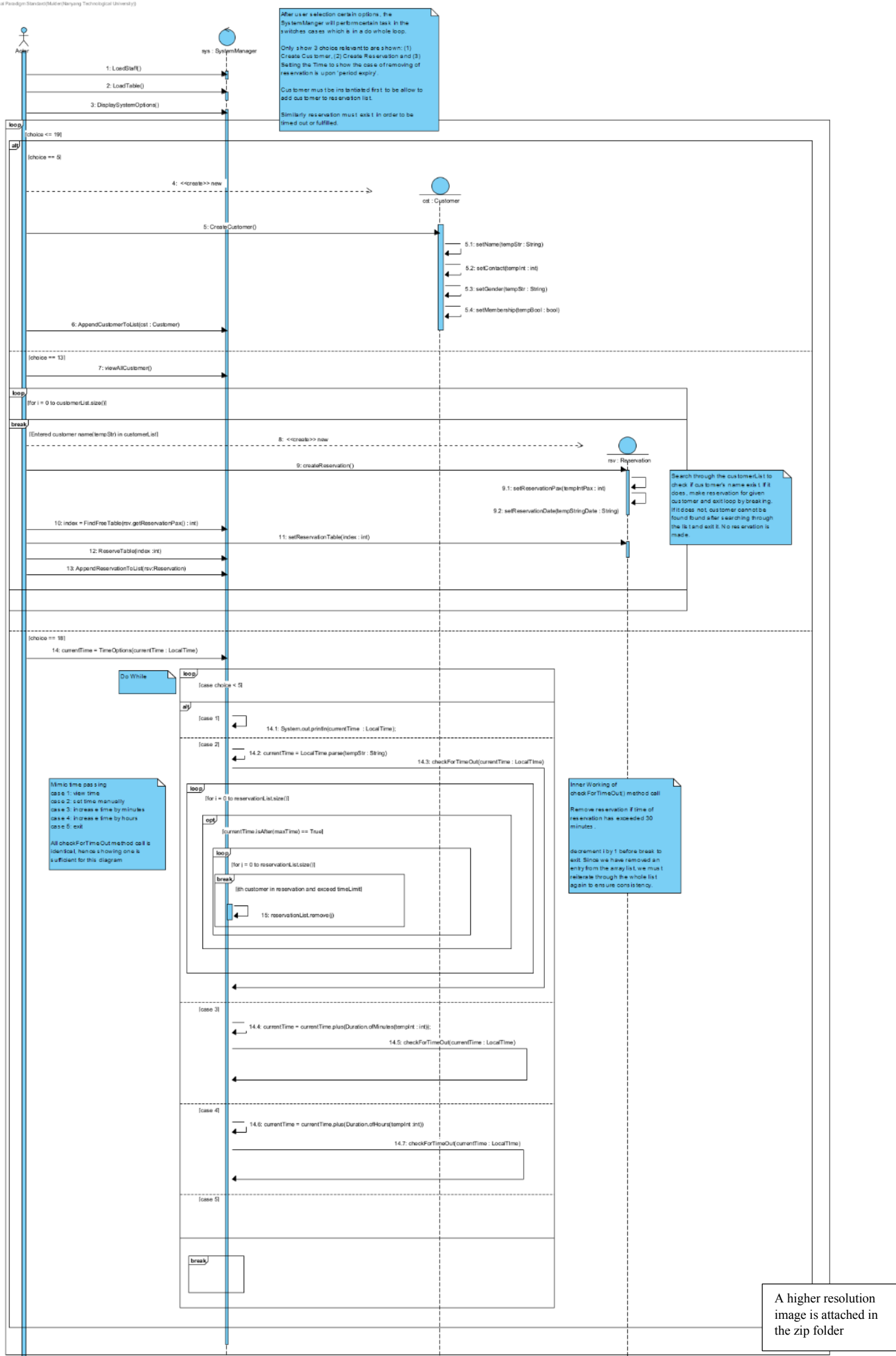
We adhered to most of the design principles as covered in the lectures. We ensured that:

- Functions can be reused in other areas
- Class is (for the most part) not dependant on one other. Only the System Manager class requires the rest to function but, in this case for our design, the dependencies is necessary. Other classes like the Menu Items, Reservations and Order can exist and function independently.
- Classes are easy to maintain and modified easily as they are independent from other classes.
- Design with Reusability, Extensibility and Maintainability to achieve loose coupling and high cohesion as much as possible

Assumptions

- We used common logic when creating the restaurant application, these included things such as:
 - The staffs and tables need to exist before the application starts
 - Orders cannot be created when there are no customers
- Time is static, so the application will manually set the time to simulate the real world.
- In our design, the System Manager is the driver class of the whole application. Some level of coupling in this class is necessary for it to carry out its functionality.
- Inputs are almost always correct





Test Cases

Creating Menu Item and Promotion

```
Item 3
Name:
Sundae
Description:
Ice cream with fruits and whip cream
Price:
8
Category:
DESSERTS
|
=====ADDED ITEM=====
Item: 3
Name: Sundae
Price: $8.00
Description: Ice cream with fruits and whip cream
Category: DESSERTS
=====
===== MENU =====
===== ITEMS =====
Item: 1
Name: Chicken
Price: $15.00
Description: Grilled chicken in BBQ Sauce
Category: MAINS
Item: 2
Name: Baked Rice
Price: $14.00
Description: Cheesey rice with pork cubes
Category: MAINS
Item: 3
Name: Sundae
Price: $8.00
Description: Ice cream with fruits and whip cream
Category: DESSERTS
```

```
How many Promotional Sets you wish to add?
2
New Promotion Set 1
Promotion Name:
Mother's Day
Size of new Promotional Set
2
Current Promotion Set item no. 1
Add Menu Item(s) to Promotion Set or Unique Promotional Item(s)
(1) Add Selected Item(s) from menu to Promotion Set
(2) Unique Promotional Item(s)
2
Enter Unique Item
Name:
Cheesecake
Description:
12 Inch Cake with Crushed Oreo
Price:
25
Category (MAINS/ SIDES/ DESSERTS/ DRINKS):
DESSERTS
Current Promotion Set item no. 2
Add Menu Item(s) to Promotion Set or Unique Promotional Item(s)
(1) Add Selected Item(s) from menu to Promotion Set
(2) Unique Promotional Item(s)
2
Enter Unique Item
Name:
Sirloin Steak
Description:
Drizzled with black pepper or mushroom sauce
Price:
20
Category (MAINS/ SIDES/ DESSERTS/ DRINKS):
MAINS
Current promotion set price base on original item price: $45.0
Set current promotion Set price:
40
=====ADDED PROMOTIONAL SET=====
Promotion: 1
Promotion set: Mother's Day
Promotion set price: $%.2f40.0
Ala cart price
item 1: Cheesecake
25.0
12 Inch Cake with Crushed Oreo
item 2: Sirloin Steak
20.0
Drizzled with black pepper or mushroom sauce
```

Updating Menu Item and Promotion

```
===== SELECTED ITEM =====
Item: 2
Name: Greek Salad
Price: $10.00
Description: parmesan cheese, lemon juice
Category: SIDES
=====
(1)Change Name
(2)Change Price
(3)Change Description
(4)Change Category
3
New Description
Cheese and Red Wine
===== UPDATED =====
Item: 2
Name: Greek Salad
Price: $10.00
Description: Cheese and Red Wine
Category: SIDES
```

```
===== PROMOTIONS SETS =====
Promotion: 1
Promotion set: Promo 1
Promotion set price: 40.0
Ala cart price
item 1: Hand Tossed Salad
5.5
strawberries, dried cranberries, raisins, pineapple
item 2: Roast Beef with Mushroom Sauce
17.0
Beef + Mushroom
=====
Select Promotion Number to update:
1
(1) Change Name
(2) Change Price
(3) Add Item
(4) Remove Item
2
New Price
35
=====UPDATED PROMO=====
Promotion: 1
Promotion set: Promo 1
Promotion set price: 35.0
Ala cart price
item 1: Hand Tossed Salad
5.5
strawberries, dried cranberries, raisins, pineapple
item 2: Roast Beef with Mushroom Sauce
17.0
Beef + Mushroom
=====
```

Removing Menu Item and Promotion

```
Item Number:
2
|
===== REMOVED ITEM =====
Name: Caesar Salad
Price: $8.00
Description: parmesan cheese, lemon juice
Category: SIDES
=====
===== MENU =====
===== ITEMS =====
Item: 1
Name: Hand Tossed Salad
Price: $5.00
Description: strawberries, dried cranberries, raisins, pineapple
Category: SIDES
Item: 2
Name: Fresh Juice
Price: $2.00
Description: orange / apple / watermelon
Category: DRINKS
Item: 3
Name: Roast Beef with Mushroom Sauce
Price: $17.00
Description: Beef + Mushroom
Category: MAINS
```

```
3
(1) Remove a Menu Item
(2) Remove a Promotion
2
===== PROMOTION MENU =====
===== PROMOTIONS SETS =====
Promotion: 1
Promotion set: Promo 2
Promotion set price: 8.0
Ala cart price
item 1: Caesar Salad
8.0
parmesan cheese, lemon juice
=====
Promotion Number:
1
Index: 0
===== REMOVED PROMOTION SET =====
Promotion set: Promo 2
Promotion set price: 8.0
Ala cart price
item 1: Caesar Salad
8.0
parmesan cheese, lemon juice
=====
```

```
===== MENU =====
===== ITEMS =====
Item: 1
Name: Hand Tossed Salad
Price: $5.00
Description: strawberries, dried cranberries, raisins, pineapple
Category: SIDES
Item: 2
Name: Fresh Juice
Price: $2.00
Description: orange / apple / watermelon
Category: DRINKS
Item: 3
Name: Roast Beef with Mushroom Sauce
Price: $17.00
Description: Beef + Mushroom
Category: MAINS
===== PROMOTIONS =====
===== PROMOTION MENU =====
===== PROMOTIONS SETS =====
=====
```

Max Tables

```
Viewing Customer...
James, Joanne,
=====
Creating New Reservation...
Enter Customer Name:
James
Input Reservation Time (XX:XX):
11:00
11:00
Number of Pax (including customer):
10
Date of reservation:
12
Table 9 is free
Table 9 reserved
Reservation for James created!
13
=====
Viewing Customer...
James, Joanne,
=====
Creating New Reservation...
Enter Customer Name:
Joanne
Input Reservation Time (XX:XX):
11:00
11:00
Number of Pax (including customer):
10
Date of reservation:
12
No tables are free.
Reservation failed.
```


Creating and Removing Reservations

```
=====
Viewing Customer...
Jimmy, Marcus, Kathy, Bella,
=====
Creating New Reservation...
Enter Customer Name:
Kathy
Input Reservation Time (XX:XX):
18:30
18:30
Number of Pax (including customer):
7
Date of reservation:
13/11/2021
Table 8 is free
Table 8 reserved
Reservation for Kathy created!
=====
Viewing Customer...
Jimmy, Marcus, Kathy, Bella,
=====
Creating New Reservation...
Enter Customer Name:
Marcus
Input Reservation Time (XX:XX):
20:15
20:15
Number of Pax (including customer):
3
Date of reservation:
14/11/2021
Table 3 is free
Table 3 reserved
Reservation for Marcus created!
=====
Viewing All Reservation...
=====
Table: 3
Reservation Date: 14/11/2021
Reservation Time: 20:15
Customer: Marcus
Num of Pax: 3
=====
Table: 8
Reservation Date: 13/11/2021
Reservation Time: 18:30
Customer: Kathy
Num of Pax: 7
=====
14
=====
Removing Reservation...
Enter Customer Name:
Kathy
Reservation for Kathy Removed
=====
Viewing All Reservation...
=====
Table: 3
Reservation Date: 14/11/2021
Reservation Time: 20:15
Customer: Marcus
Num of Pax: 3
=====
17
=====
Table: 3
Reservation Date: 14/11/2021
Reservation Time: 20:15
Customer: Marcus
Num of Pax: 3
=====
Enter Customer Name:
Marcus
Fulfilled Reservation for Marcus
```

Time Out Reservation

```
Creating New Reservation...
Enter Customer Name:
koko
Input Reservation Time (XX:XX):
12:00
12:00
Number of Pax (including customer):
4
Date of reservation:
12-12-2021
Table 3 is free
Table 3 reserved
Reservation for koko created!
13
=====
Viewing Customer...
Jimmy, koko, Tuan,
=====
Creating New Reservation...
Enter Customer Name:
Tuan
Input Reservation Time (XX:XX):
15:00
15:00
Number of Pax (including customer):
6
Date of reservation:
12-12-2021
Table 7 is free
Table 7 reserved
Reservation for Tuan created!
18
=====
(1) View
(2) Set Time Manually
(3) Advance time by Minutes
(4) Advance time by Hours
(5) Exit
=====
2
Input Time (XX:XX):
13:00
Time: 13:00
Reservation for koko Removed.
=====
0: Display System Options
1: Create Menu
2: Update Menu
3: Remove Menu
4: View Menu
5: Create Customer
6: Create Order
7: Update Order
8: View Order
9: View All Orders
10: Print Order Invoice
11: Make Payment
12: View Tables
13: Create Reservation
14: Remove Reservation
15: View All Reservations
16: Occupy Table (Walk-ins)
17: Occupy Table (Reservations)
18: Time Options
19: View Total Revenue
20: Quit
=====
15
=====
Viewing All Reservation...
=====
Table: 7
Reservation Time: 15:00
Customer: Tuan
Num of Pax: 6
```

Input Error Handling

```
1
(1) Create New Item
(2) Create New Promotion
1
How many items you wish to add?
1
Item 1
Name:
Chicken Rice
Description:
A plate of chicken rice
Price:
y
Invalid input for price, Number of tries: 1
u
Invalid input for price, Number of tries: 2
g
Invalid input for price, Number of tries: 3
c
Invalid input for price, Number of tries: 4
Exceeded number of tries, exiting
```

```
=====
1
(1) Create New Item
(2) Create New Promotion
1
How many items you wish to add?
1
Item 1
Name:
Ham Sandwich
Description:
A sandwich
Price:
y
Invalid input for price, Number of tries: 1
g
Invalid input for price, Number of tries: 2
s
Category:
mains
=====ADDED ITEM=====
Item: 5
Name: Ham Sandwich
Price: $5.00
Description: A sandwich
Category: MAINS
=====
```

Links

YouTube link:

<https://youtu.be/QQSFjDjZ6z8>