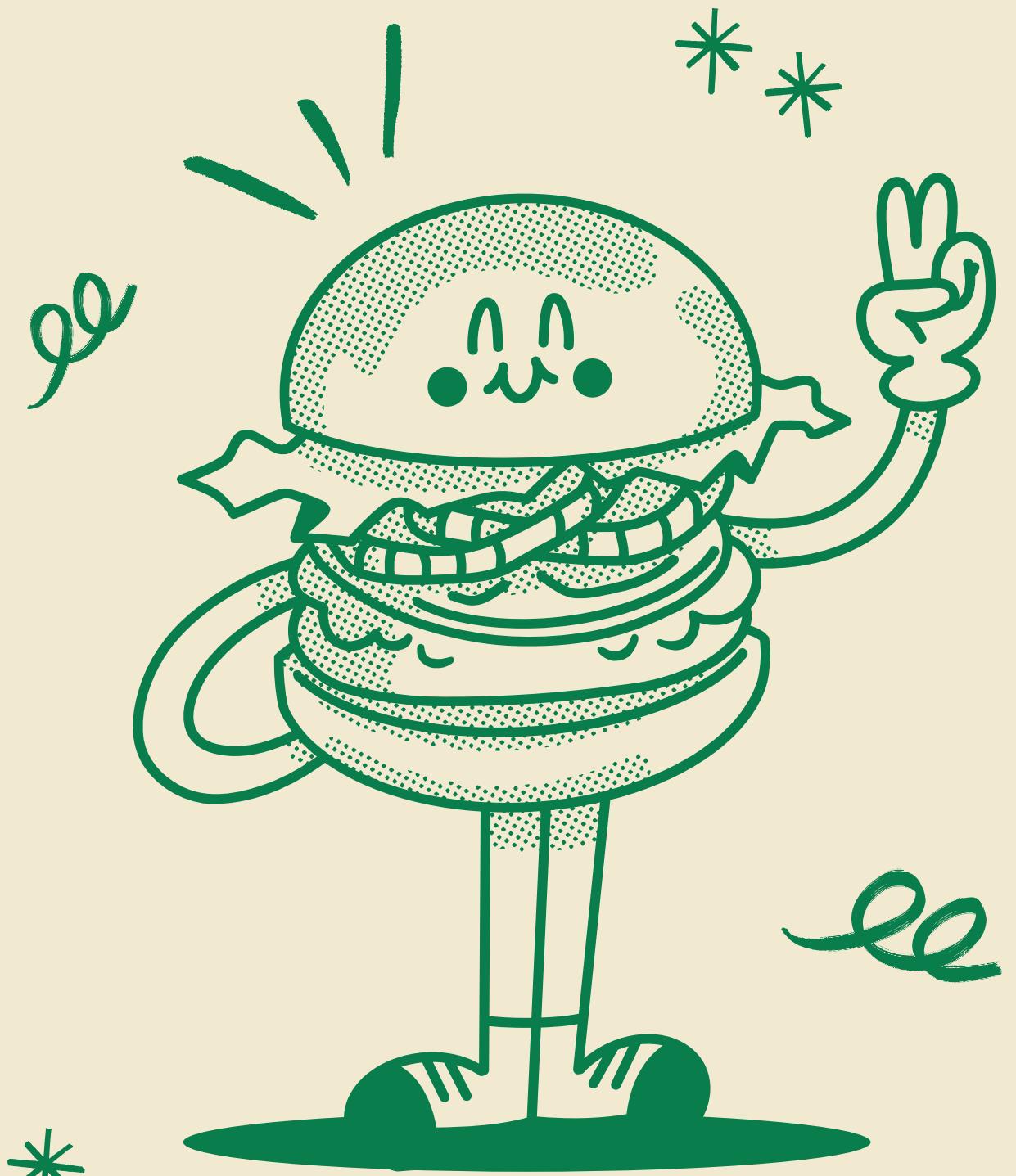
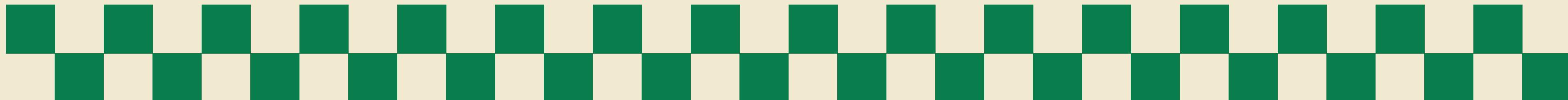
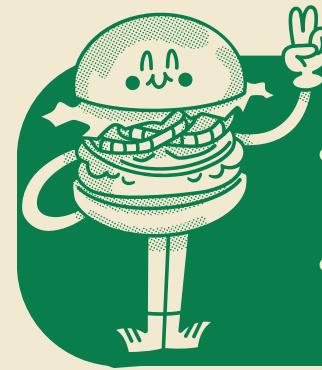


SC2002 Object
Oriented Programming

Fastfood Ordering & Management System (FOMS)

by FDDA Group 1





Introduction to FOMS



1. Main Features

- Order Processing & Management
- Account Management
- Menu Management
- Branch Management
- Staff Management
- Admin Management

2. Security Features

- Passwords are only stored after hashing, using SHA-256.
- Users are prompted to change default password upon login.

3. Data Initialisation & Storage

- Data is first initialised with **csv files** that contains: staff list, menu list and branch list.
- InMemoryDatabase class is used, which utilizes hash maps to manage and store instances of different classes.
- **Serialization** is employed to persist the current state to a file upon the conclusion of a session.
- Admin will also have the authority to **export current list** into a local **csv file**.



Abstraction

In this project, abstraction is realized through the use of interfaces to define what operations can be performed, without specifying how these operations are internally carried out.



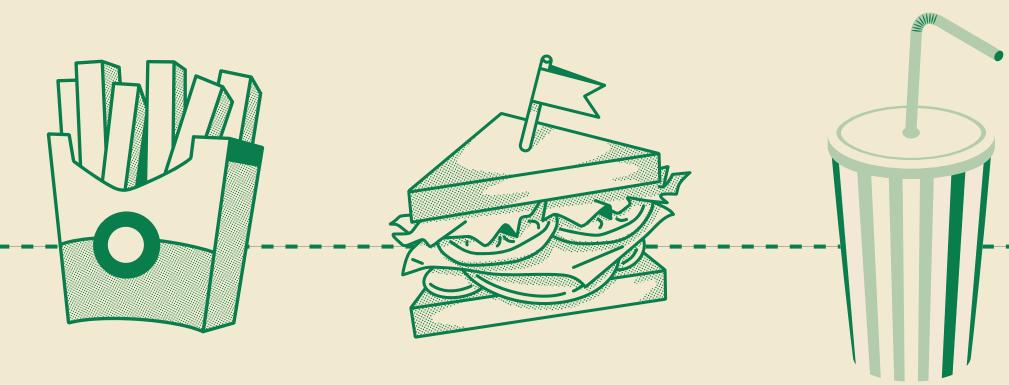
OOP Concepts

Encapsulation

In this project, classes are declared with private attributes and public getters and setters, to ensure that the state of these objects can only be changed in controlled ways.

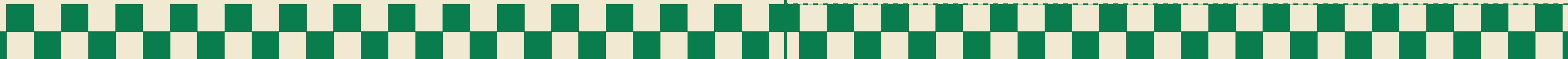
Polymorphism

This is done with different types of employees (i.e. Staff, Branch Manager, Admin) that can be managed through common interface or superclass method calls.



Inheritance

In this project, a common parent class like Employee can pass on its attributes and methods to child classes like Staff, BranchManager, and Admin.



Design Principles

Single Responsibility Principle

In our project, Account class only handles attributes and behaviours related to user's account, adhering to SRP.

Open-Closed Principle

In our project, Payment system is designed for extension because new payment methods can be added. We defined a common interface ('Payment') such that any new payment method must adhere to.

Liskov Substitution Principle

Anywhere an Employee is expected, a Staff, BranchManager, or Admin can be used without issue, which means they adhere to LSP.

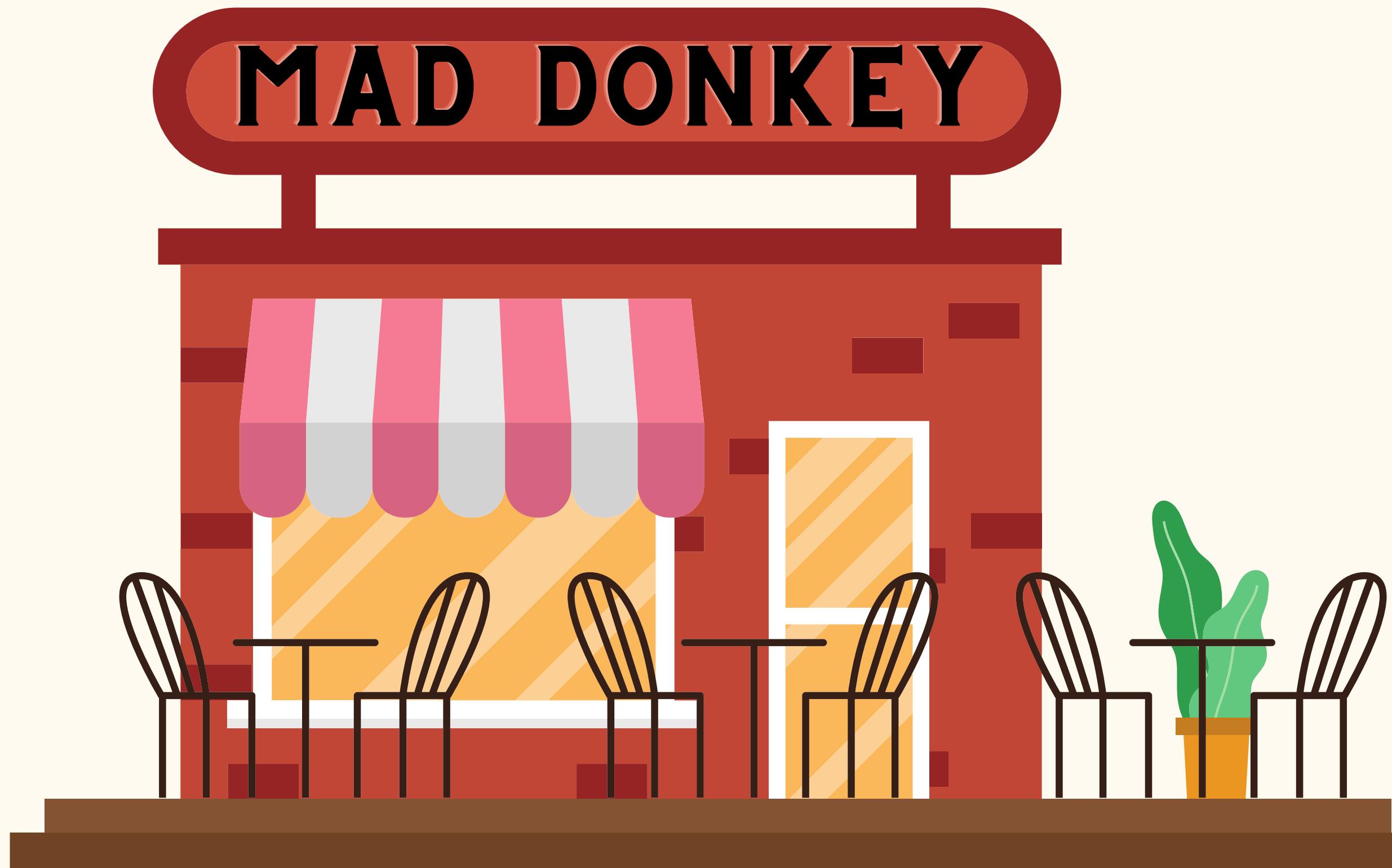
Interface Segregation Principle

Interfaces like IAdminManagement and IStaffManagement provides specific methods for different user types,

Dependency Inversion Principle

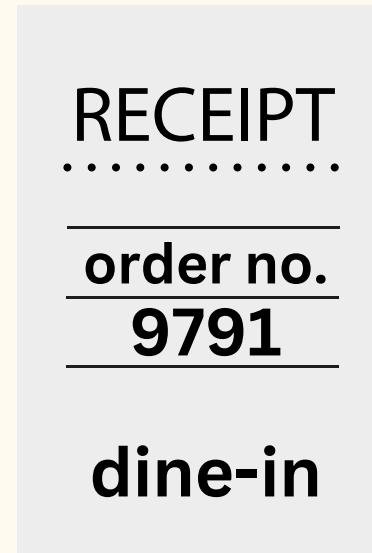
In our project, we have abstractions that allows both high-level and low-level modules to depend on.

Customer



Customer's Journey

- 1. Browse Menu.**
- 2. Adding to Cart.**
 - a. Select an item with no customisation.
 - b. Select another item with customisation.
 - c. Select the same item with no customisation.
- 3. Viewing Cart.**
 - a. Ensure that there are 3 items in the cart.
- 4. Deleting Cart Item.**
 - a. Delete the first item in the list.
 - b. Ensure that item has been deleted by viewing cart again.
- 5. Placing Order.**
 - a. Select Dine-In
 - b. Select Payment Method to be Bank Card.
- 6. Tracking Order.**
 - a. Ensure that order is created, and status is NEW.
- 7. Check receipt for order No.**

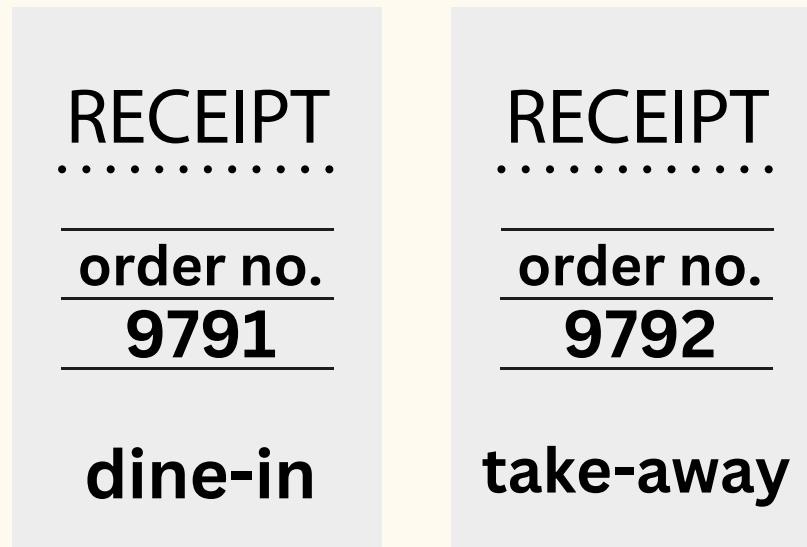


Customer's Journey

1. Placing another order.

- a. Attempt to place order with empty cart.
- b. Place order, with any items.
- c. Select for takeaway.
- d. Payment will be done using PayPal.

2. Check receipt for order No.



3. Log Out

- a. Serialization occurs and database stored into .ser file



Staff



NEW ORDER



1. Log In.

- a. Ensure that prompt to change password appears.
- b. Ensure system does not allow for setting of the same password as previous.
- c. Ensure that both new password entries must match.

2. View New Orders.

3. Process the orders.

- a. Order status changes from NEW to PROCESSED.

4. View Current Orders.

- a. Ensure that status has been changed to processed.
- b. Ensure that orders do not appear in 'New Orders'.

5. Update Pick-Up Status

- a. Update the first order to pick-up, and wait 15 secs.
- b. Update the second order to pick-up.

6. Log Out

- a. Serialization occurs and database stored into .ser file.

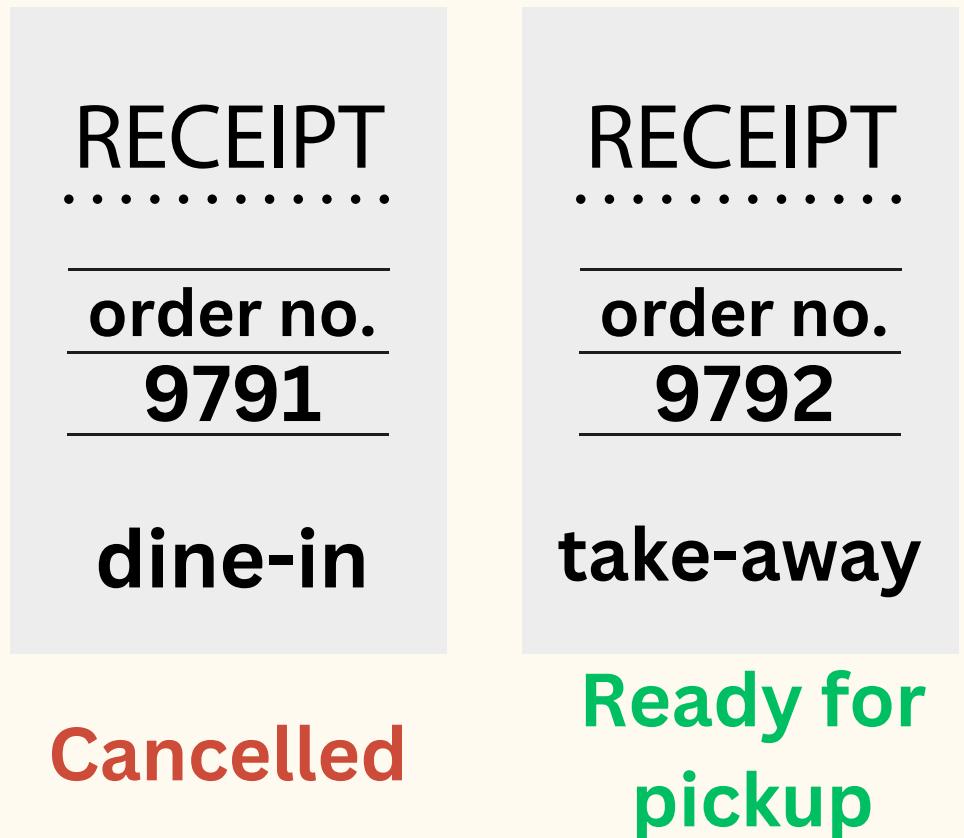
Customer's Journey

1. Tracking Order.

- a. Track the order status.
- b. Note that first order has passed pick-up time and has been updated to cancelled.
- c. The second order is ready for pickup.

2. Collect Order.

- a. Collect the second order.
- b. Ensure that order status changes to 'COMPLETED'.



Branch Manager

1. Starting the Day

- a. Successfully logging into the system as NTU Branch Manager

2. Managing Staff

- a. Log into the system to view the list of staff members working at my Branch. This is to ensure that all Staff members are accounted for.

3. Menu Management

- a. Add Menu Item: “Hash Brown” under Category: “Sides” with Price: “\$2.00”.
- b. Verify that it appears correctly in Menu.
- c. There is a promotion for “Cheeseburger” today, with the price discounted to “\$3.00”.
- d. Received feedback that “Salad” is no longer popular and decided to remove from Menu. Verify that it is not in Menu after removal.
- e. Add duplicate Menu Item: “Hash Brown”.



Admin



1. Add Staff.

- a. JE branch just recruited a new staff member. Add the new staff with Name:
- b. Ensure that staff has been added successfully.

2. Remove Staff.

- a. A staff member has just submitted his resignation.
- b. Locate the staff member from the 'Staff List'.
- c. Remove the staff.
- d. Confirm removal and check that the staff member is no longer listed.

3. Edit Staff

- a. A staff has accidentally keyed in the wrong age, and requires to be edited.
- b. Update the necessary information.
- c. Verify the updates by reviewing the staff member's details on the list.

4. Display Staff List.

- a. Display All
- b. Filter by Branch, Role, Gender, Age
- c. Ensure the staff list is displayed and filtered correctly.

5. Add Manager.

- a. A branch just hired a new Manager. Add him in.
- b. Ensure that the manager is added correctly and adheres to quota constraints.
- c. Verify in the staff list.

Admin



- 6. Promote Staff to Manager.**
 - a. Choose a staff member and select 'Promote to Manager'.
 - b. Confirm promotion and verify the role change in the staff list.
- 7. Transfer Staff/Manager.**
 - a. Click on 'Transfer' for a selected staff or manager.
 - b. Choose the new branch for transfer and confirm.
 - c. Validate that the transfer is reflected in the system correctly.
- 8. Edit Payment Method.**
 - a. Enable or Disable existing Payment Method.
- 9. Open New Branch**
 - a. Open a new branch in Town.
 - b. Ensure that New Branch is visible to Customers.
- 10. Close Branch.**
 - a. Close the branch NTU.
 - b. Ensure that all staff in NTU would be removed from staff list.
 - c. Ensure Customers will not be able to see the branch anymore.
 - d. Choose 'Close Branch' and confirm the action.
- 11. Export Staff List**
 - a. For easier reference and data storage, most updated staff list can be exported into a csv.