SEMESTER I 2024/2025

CSEB3213 DATA STRUCTURES AND

RESTAURANT SYSTEM

Project Members:

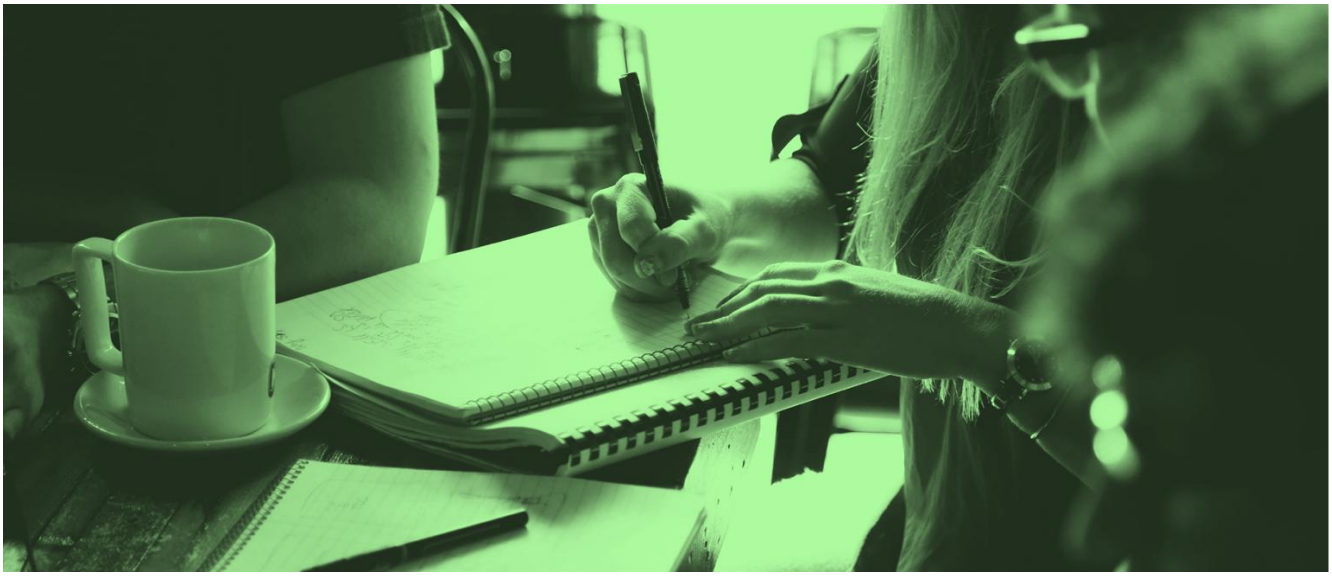
1. **HAMDAN MOHAMMAD (SW01083425)**
2. **OMRAN NAIF (SW01083445)**
3. **MAHDI HANI (SW01083390)**
4. **ADHAM AHMAD ALI (CS01083426)**
5. **Hamze Mustefa Hassen (SW0105285)**
6. **Danial Ashraff Bin Mohd Afifi (SW01083331)**

Lecturer: Ts. Naziffa Raha Binti Md Nasir

CONTENTS

1.0 Executive Summary

This project is a Restaurant Menu and Order Management System, developed in C++, aimed to optimize restaurant operations by efficiently managing menu items and customer orders. It features a basic interface that is easy to use, enabling restaurant administrators to handle menu updates and process customer orders effectively.



2.0 Objective

The objective of this project is to develop a comprehensive Restaurant Menu and Order Management System that provides a complete software solution for managing restaurant operations, with a focus on menu and order handling. It enables restaurant staff to perform essential tasks, such as managing the menu (adding, editing, and removing items), processing customer orders, and maintaining an organized view of both ongoing and completed orders.

3.0 Scope / Modules

For this project, we use STL vector and queue implementations due to their ability to handle dynamic data and efficient operations such as sorting, searching, and managing orders in a FIFO manner. For searching we use Binary search algorithm due to its low complexity O(log n), and for sorting we use selection sort.

This system consists of eight (8) modules as follows:

1.Display Menu

- Display all menu items, either sorted by ID or price, using the STL vector.
- Allows staff to view item details such as ID, name, and price.

2. Add Menu Item

- Enables staff to add new menu items with a unique ID, name, and price.
- The data is stored dynamically in a vector.

3. Delete Menu Item
   - Allows staff to remove menu items by specifying the item's unique ID.
   - Utilizes binary search for efficient item location.

4. Edit Menu Item
   - Staff can update the name or price of an existing menu item.
   - Menu data is dynamically updated in the vector.

5. Create Order
   - Enables staff to create a new order by selecting items from the menu.
   - Each order is represented as a vector of menu items, which is added to a queue.

6. View Orders
   - Displays all orders in the queue, showing the item details and the total price for each order.
   - Utilizes a queue for FIFO order processing.

7. Delete Order
   - Allows staff to delete the first order in the queue, maintaining FIFO order management.

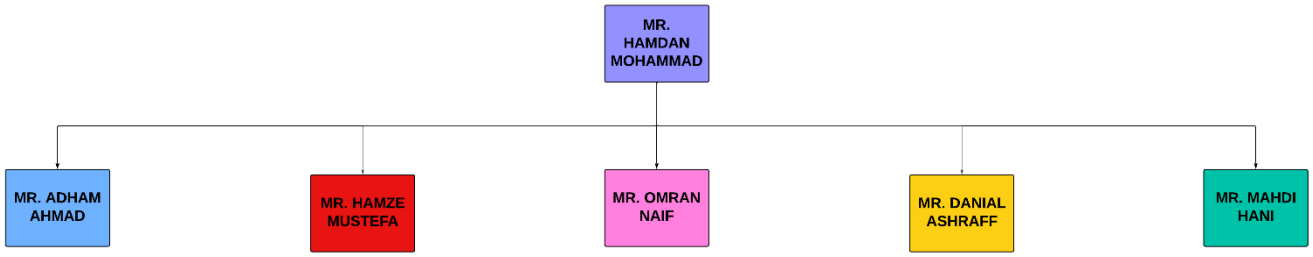
8.Edit Order
   - Provides functionality to modify the first order in the queue by replacing it with a new selection of menu items.

4.0 System design

See Appendix A

5.0 Project Organization

Organization Chart



Roles and Responsibility

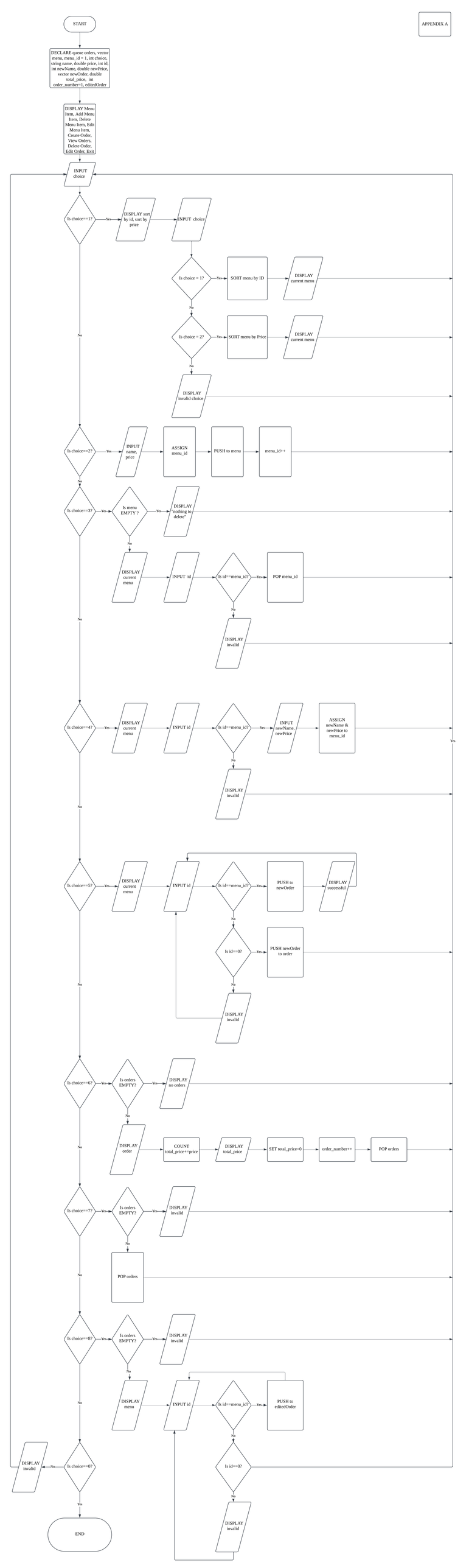
Table 1: Team Members' Role and Responsibilities

No	Name	Roles and Responsibilities
1	Mr. Hamdan Mohammad	Project Leader • Responsible for managing and coordinating the project • Responsible for writing the code
2.	Mr. Omran Naif	Project Member • Managing the report progress. • Responsible for rules and Responsibilities and conclusion.
3.	Mr. Mahdi Hani	Project Member • Responsible for Executive summary.
4.	Mr. Adham Ahmad	Project Member • Responsible for writing the code. • Responsible for Testing the Code.
5.	Mr. Hamze Mustefa	Project Member • Responsible for Objective and scope models.
6.	Mr. Danial Ashraff	Project Member • Responsible for System design • Responsible for Project organization.

6.0 Conclusion

This project provides a solid framework for a C++ restaurant menu and order management system. It manages the fundamentals effectively, including making and managing orders using a simple queue system and adding, updating, and removing menu items. Sorting and searching are examples of features that increase efficiency and make it simpler to arrange and find menu items.

However, this project presents a solid starting point with significant potential to grow into a completer and more advanced tool for restaurant operations.


APPENDIX A
START
DECLARE queue orders, vector menu, menu_id = 1, int choice, string name, double price, int id, int newName, double newPrice, vector newOrder, double total_price, int order_number=1, editedOrder
DISPLAY Menu Item, Add Menu Item, Delete Menu Item, Edit Menu Item, Create Order, View Orders, Delete Order, Edit Order, Exit
INPUT choice
Is choice==1?
Yes
DISPLAY sort by id, sort by price
INPUT choice
Is choice = 1?
SORT menu by ID
DISPLAY current menu
No
Is choice = 2?
SORT menu by Price
DISPLAY current menu
DISPLAY invalid choice
Is choice==2?
INPUT name, price
ASSIGN menu_id
PUSH to menu
menu_id++
Is choice==3?
Is menu EMPTY ?
DISPLAY "nothing to delete"
DISPLAY current menu
INPUT id
Is id==menu_id?
POP menu_id
DISPLAY invalid
Is choice==4?
DISPLAY current menu
INPUT id
Is id==menu_id?
INPUT newName, newPrice
ASSIGN newName & newPrice to menu_id
DISPLAY invalid
Is choice==5?
DISPLAY current menu
INPUT id
Is id==menu_id?
PUSH to newOrder
DISPLAY successful
Is id==0?
PUSH newOrder to order
DISPLAY invalid
Is choice==6?
Is orders EMPTY?
DISPLAY no orders
DISPLAY order
COUNT total_price+=price
DISPLAY total_price
SET total_price=0
order_number++
POP orders
Is choice==7?
Is orders EMPTY?
DISPLAY invalid
POP orders
Is choice==8?
Is orders EMPTY?
DISPLAY invalid
DISPLAY menu
INPUT id
Is id==menu_id?
PUSH to editedOrder
Is id==0?
DISPLAY invalid
Is choice==0?
DISPLAY invalid
END