Customer Service Ticketing System Using Queue

1. Introduction

This project implements a Customer Service Ticketing System using the Queue data structure. The system ensures that customer service requests are handled in the order they are received, following the First In, First Out (FIFO) principle.

2. Objective

The objectives of this project are:

- **To manage customer service tickets efficiently**
- **To process tickets in FIFO order**
- **To allow ticket cancellation before processing**
- **To demonstrate the practical application of queues**

3. Data Structure Used

Queue (Array Implementation)

- **Stores ticket descriptions as strings**
- **Uses front and rear pointers**
- **Fixed maximum size**

4. Operations Implemented

1. **Enqueue**
    - **Adds a new ticket to the queue**
2. **Dequeue**
    - **Processes and removes the oldest ticket**
3. **Display**
    - **Shows all pending tickets in order**

4. **Is Empty**
    - **Checks whether the queue has no tickets**
5. **Is Full**
    - **Checks whether the queue has reached maximum capacity**
6. **Cancel Ticket**
    - **Removes a specific ticket from the queue before processing**

5. Algorithm Overview

- **Initialize front and rear to -1**
- **Perform operations based on user-selected menu options**
- **Maintain FIFO order throughout execution**
- **Shift elements when a ticket is cancelled**

6. Test Cases

Test Case	Operation	Input	Expected Output
1	Enqueue	"Internet Issue"	Ticket added
2	Enqueue	"Login Problem"	Ticket added
3	Display	—	Internet Issue, Login Problem
4	Dequeue	—	Internet Issue processed
5	Display	—	Login Problem
6	Cancel Ticket	"Login Problem"	Ticket cancelled
7	Is Empty	—	Queue is empty
8	Dequeue	—	No ticket to process
9	Is Full	—	Queue is not full

7. Conclusion

This system successfully demonstrates the use of a queue data structure to manage customer service tickets. It fulfills all functional requirements, ensures FIFO processing, and supports ticket cancellation, making it suitable for real-world customer support scenarios.