Department of Computer Science and Engineering
Green University of Bangladesh
CSE 205 - Data Structure
Homework 4 Marks: 10
Due: November 27, 2024
Note: Late projects will be assessed a 20% penalty for each day past the due date. Projects will not be accepted more than four days past the due date.

Problem: Queue Management System for Accounts Office at Green University of Bangladesh

The Accounts Office of Green University of Bangladesh serves students for various purposes, such as tuition fee payments, certificate verification, and other account-related inquiries. To ensure an orderly and efficient service process, the office uses a **queue system** where students are served in the order they arrive (FIFO – First In, First Out).

Problem Statement:

Write a program to simulate the queue management system for the Accounts Office. The program should:

1. **Add Students to the Queue**: Add a student to the back of the line with their name and purpose (e.g., "Tuition Payment," "Certificate Verification").
2. **Serve Students**: Remove a student from the front of the queue when their turn comes.
3. **View Current Queue**: Display the list of students in the queue, along with their names and purposes.
4. **Count Students in Line**: Provide the total number of students waiting in the queue.

Example:

Input:

1. Add Student: Name = "Alice", Purpose = "Tuition Payment"
2. Add Student: Name = "Bob", Purpose = "Certificate Verification"
3. Add Student: Name = "Charlie", Purpose = "Account Inquiry"
4. Serve Student
5. View Queue
6. Count Students

Output:

1. Alice is added to the queue for Tuition Payment.
2. Bob is added to the queue for Certificate Verification.
3. Charlie is added to the queue for Account Inquiry.
4. Served: Alice (Tuition Payment).
5. Queue:
    - Bob (Certificate Verification)
    - Charlie (Account Inquiry)
6. Total Students in Line: 2

Rubrics

- **60% Execution**: Partial credit will be granted depending on how many of your methods work correctly.
- **30% Design**: The design score is based on how easy it is to follow the logic of your code, how well you avoided repetitive code, and how easy it would be to modify the code if certain specifications change.
- **10% Style**: Style includes comments, indentation, and the choice of variable and method names.

Substantial progress must be made towards correct execution to earn points for design and style.