CODE-A-THON T-SHIRT QUEUE MANAGEMENT SYSTEM

Report Overview

The system automates the process of handling students waiting in line for Code-a-Thon T-shirts. It maintains order, prevents skipping, and ensures that participants are served on a **first-come, first-served (FIFO)** basis. The queue is implemented using a **linked list**, providing dynamic memory allocation and efficient operations.

System Design

ADD STUDENT	SERVE STUDENT	STUDENTS LEAVES	DISPLAY QUEUE	COUNT STUDENTS
Add new student at the start of the queue.	Serve the first student at the front.	Remove a student by their id.	Display all elements in queue.	Show total number of students waiting.

Program Flow

1. Student enters their **name** and **ID** to join the queue.
2. System adds the record to the **rear** of the linked list.
3. When a T-shirt is distributed, the **front** student is served and removed.
4. A student may leave voluntarily using their **ID**.
5. The queue's status can be displayed at any time, showing real-time updates.

Key Features

- Implements **dynamic memory allocation** using linked list nodes.
- Ensures **FIFO order** without data loss.
- Allows **removal from any position** by ID.
- Includes a **counting mechanism** for total participants.
- Automatically releases memory upon program termination.

Output Example

====== Code-a-Thon T-Shirt Queue ======

1. Add Student

2. Serve Student

3. Student Leaves Queue

4. Display Queue

5. Count Students

6. Exit

Choose an option

Conclusion

The **Code-a-Thon T-Shirt Queue Management System** demonstrates practical application of linked list–based queues for real-world event organization. It ensures fairness, transparency, and efficient data handling, providing a structured model for managing sequential tasks in event operations.