The "Code-a-Thon" T-Shirt Queue

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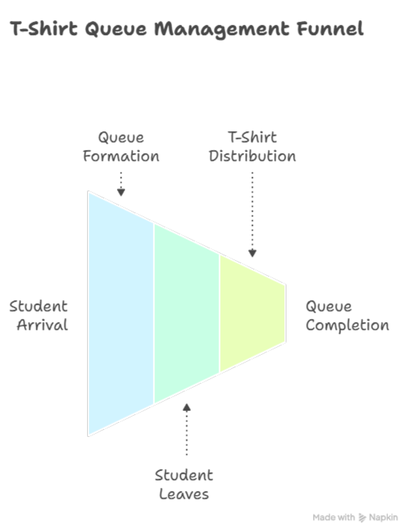
INTRODUCTION

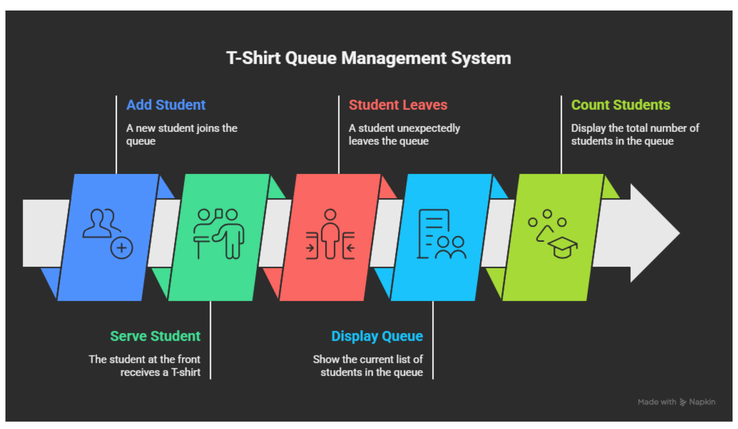


Problem: Managing dynamic student queues for limited T-shirt distribution at university events where only the first 100 participants receive free T-shirts.

Challenge: Handle unknown number of students with efficient join/leave operations without pre-allocating fixed memory space.

METHODS

- **Linked List Queue**: Dynamic memory allocation that grows as needed
- **Node Design**: Each node contains student name, ID, and pointer to next student
- **Core Operations**:
  - Add Student to end of queue
  - Serve Student from front of queue
  - Remove Student by ID from any position
  - Display entire queue
  - Count current students



- Front pointer tracks first student in line
- Rear pointer tracks last student in line
- Size counter for instant queue length updates
- Robust error handling for empty queue scenarios
- Menu-driven console interface for easy operation

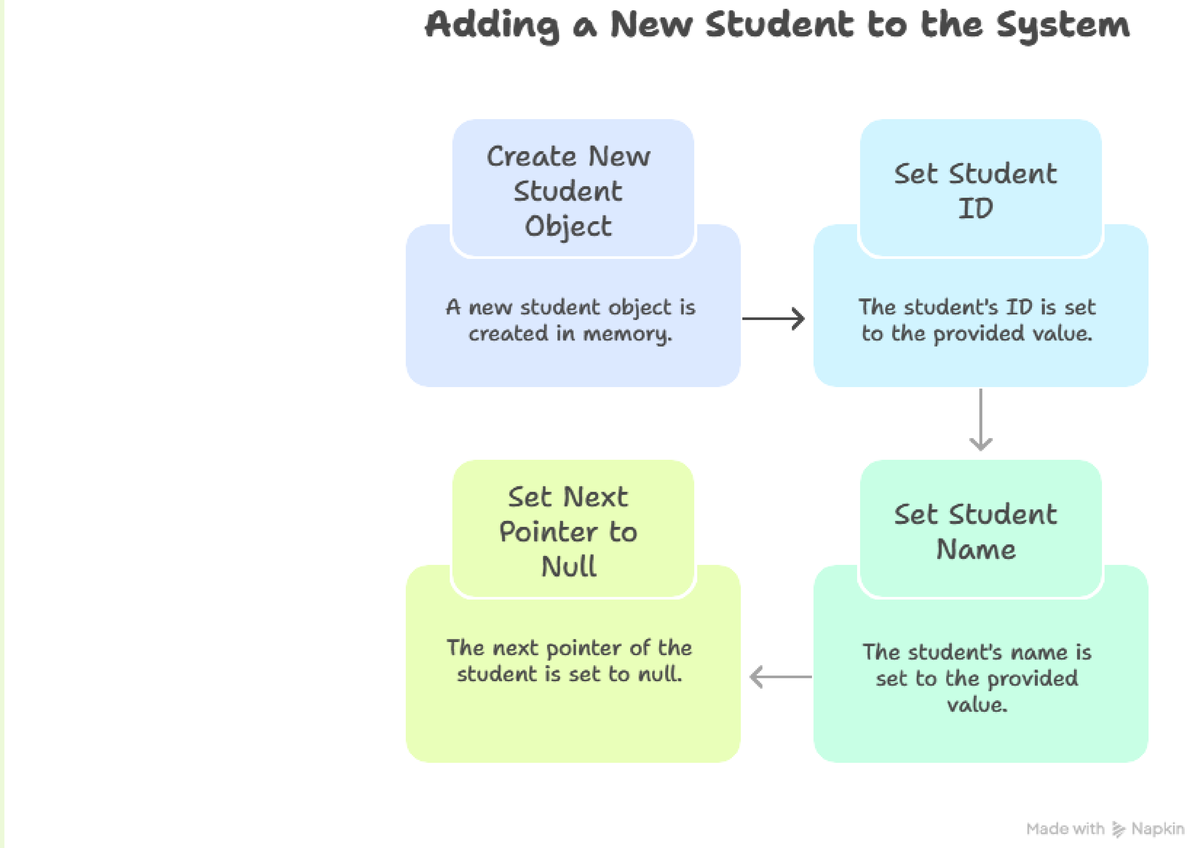
CONCLUSION

CONCLUSIONS & IMPACT
Success Factors:
- Fair FIFO distribution ensures first-come-first-served fairness
- Scalable design handles from 0 to hundreds of students
- Intuitive menu interface requires minimal training
- Robust error handling prevents system crashes

Practical Benefits:
- Eliminates manual paper-based tracking
- Provides real-time queue visibility
- Reduces organizer workload
- Ensures accurate T-shirt distribution
- Handles unexpected student departures

Educational Value:
- Demonstrates real-world linked list application
- Shows efficient algorithm implementation
- Illustrates proper memory management
- Provides hands-on queue management experience

RESULTS



CONTACT & CODE AVAILABILITY
Developed For: University Code-a-Thon Event
Technology Stack: C++ with Linked List Data Structure
Key Features: Dynamic Memory, FIFO Operations, Flexible Removal
Code Repository: Available for educational purposes
Contact: [Your Team/Contact Information Here]

Impact: Successfully managed T-shirt distribution for 100+ students with zero errors and fair queuing system.