DSA Project Proposal — Mini Food-Delivery Simulator

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Course: Data Structures
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Overview:
We will build a console-based Mini Food-Delivery Simulator in C++. The simulator supports loading small maps and entity lists (restaurants, users, agents) from CSV, creating orders, searching restaurants by name, dispatching orders to agents, and computing routes using shortest-path algorithms.

Features:
- CSV input for nodes/edges, restaurants, users, agents.
- Dispatcher assigns orders using a **Priority Queue** for urgent requests and a **FIFO Queue** for backlog; unavailable urgent orders move to FIFO.
- Shortest-path routing via Dijkstra Algorithm (**Graph** as adjacency list) to compute ETAs and choose nearest agent.
- Undo of last assignment using a Stack and history of orders stored in a **linked list**.

Data structures we will use:
- Linked List (singly): store users, agents, restaurants and order history.
- Queue (FIFO): backlog for non-urgent or waiting orders.
- Stack: event history for undo functionality (LIFO).
- Binary Search Tree: store restaurants keyed by name for searching (in-order traversal).
- Priority Queue: schedule urgent/VIP orders.
- Graph (adjacency list) + Dijkstra: model road network and compute shortest paths/ETAs.