Research Proposal – Final Project

Solving the shortest path problem using Dijkstra's algorithm

Proposal by Group 4
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Problem
In my applications, such as GPS navigation, network routing, and transportation systems, it's important to find the shortest or most efficient path between two points in a graph. The challenge lies in minimizing total distance or cost while efficiently handling large numbers of nodes and edges.

Solution
We want to implement Dijkstra's algorithm to compute the shortest path between nodes in the graph. This solution might need to use a priority queue and a graph data structure to start.

Abstract
This project simulates GPS's core algorithm to find the shortest path problem, which is one of the most fundamental graph problems in computer science. We will study and implement Dijkstra's Algorithm in Java. Our research will focus on the algorithm's greedy approach, its time complexity, and the role of the Priority Queue in its performance.

In simple words, we find the fastest or cheapest route between two or more points using Dijkstra's algorithm. We are showing how GPS (Dijkstra's algorithm) works.