**Group 8 project proposal**

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**MTR Journey Planner with Cashback Incentives**

This project is designed to simulate a smart transit system for the MTR network by integrating several core functionalities within a command-line application. Users first log in through a secure interface, ensuring that only authorized individuals can access the system. The MTR network is modeled using a graph-based data structure, where each station is a node and the connections are weighted edges representing travel cost.

Once authenticated, users can input their starting and ending stations. The system computes the optimal route between these points using Dijkstra’s algorithm, ensuring the most efficient journey is found. Each trip is then logged in a CSV file, capturing critical data such as journey details and cost.

Furthermore, the project incorporates a cashback incentive feature. Under the scheme, citizens spending over HK$400 per month on public transport using Octopus or AlipayHK qualify for a subsidy. One-third of the expenses exceeding HK$400 is reimbursed, with a maximum subsidy of HK$400 per account.

This modular design not only makes the system scalable for future enhancements but also demonstrates a practical application of algorithms, file handling, and business logic in a smart city context.