Project Phase 1 – Problem Statement – Final Revised

BMTC - Bengaluru Metropolitan Transport Corporation service operates citywide in Bengaluru, which is widely used as a means of daily transportation throughout the Bengaluru Metropolitan Area. These buses provide a transportation option on fixed routes with intermediate stops. As it is a thriving business, to further improve it, we will maintain a database that captures the details of bus, ticket, route, intermediate stop and bus depot.

Limitations in the system:

1. Every route has at least one bus running on it.
2. We are considering only two types of buses: General non-AC bus and Vajra AC bus.
3. Given a bus, it runs on at least one route and in some cases it can run on up to two routes.
4. Operational hours of the buses are between 5am to 11:30pm.

Data Description

Bus:

1. Every bus has a unique Bus ID.
2. Types of buses include Vajra AC buses and General non-AC buses.
3. Number of seats reserved for senior citizens, physically challenged, and female and regular passengers.
4. Each bus is allocated to a single bus depot.
5. There can be a rare situation where a bus runs without any tickets issued on it.
6. Given a bus, it runs on at least one route and in some cases it can run on up to two routes.

Ticket:

1. Each ticket issued on a bus, will have a unique Ticket ID.
2. Each ticket stores the issued date, which captures the TIMESTAMP, which provides the day, month, and year, as well as the hours in 24 hour format, minutes, and seconds.
3. Each issued ticket has a source stop and a destination stop.
4. Any one of the following categories describes a sold ticket: General/Regular, senior citizens, physically challenged passengers, Students and the gender of the passenger.
5. The cost of the ticket is captured.

Route:

1. Each route has a unique Route name and a unique Route ID.
2. Each Route connects two Bus Depots – a source Bus Depot and a destination Bus Depot, hence each route has minimum 2 stops.
3. Each Route has at least one Bus running on it.

Stop:

1. Each Stop has a unique name and a unique Stop ID.
2. Given a Stop, it belongs to at least one Route.

Bus Depot:

1. Every Bus Depot is also a stop.
2. Number of Buses for a bus depot is a derived attribute.
3. Given any Bus Depot it is a source Depot or a Destination depot for at least one Route.

Business Goals

1. Which route was most popular among students, and what type of bus was preferred on that route? To increase the student targeted marketing on the buses, routes, and the intermediate stops. To plan and schedule buses for that route. To give discounted rides for students.

2. What are the top revenue-generating routes for a given time period? To make strategic decisions to allocate and optimize the operations and to make more profit.

3. What are the most frequently traveled routes for a given period of time? More buses and resources should be allocated to those routes. To increase the promotional campaigns for those routes.

4. What are the peak hours in a day for a given time period? To optimize the available resources for these peak hours. Schedule more number of buses for the peak hours to help passengers which improves the efficiency of the service and cut down the allocated buses for least travelled hours.

5. What are the busiest days for each route? To plan and schedule buses to optimize the available resources. Use this to do more advertisements and promotional campaigns on bus, stops, bus depots, etc on those busiest days.

6. What are the most popular route for each type of passenger? To increase the reserved seats for those passengers like physically handicapped and senior citizen passengers and also offer them discounted rides.

7. What Bus Depots have all types of Buses available on them? To improve the customer service and experience. Also give competitive advantage. Better utilization of resources and cost savings, by offer all types of buses at one Bus depot.

8. Which types of buses are more popular on specific routes? To plan and schedule different types of buses on different routes.

9. How many number of tickets sold for each stop in a particular route and also for each stop alone irrespective of how many stops it belonged to? To make decisions about the placement of bus depots or the addition of new stops to existing routes.

10. How many number of tickets sold for each route, for each passenger type, and for each gender? To offer discounted rides for the type of passengers for the route where a higher proportion of tickets are sold out to those passengers.

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