

**INFO6002 - 2025 - T2**

**Assignment 2**

***PROJECT: DATA MARTS AND BUSINESS  
INTELLIGENCE***



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# Task 1 – Datamart Design

## a) Bus Matrix

Table 1: Data Matrix

Business Process	Date	Customer	Loyalty Tier	Vehicle	Vehicle Category	Employee	Branch	Service	Extra Service	Priced Service
Vehicle Booking	✓	✓	✓	✓	✓	✓	✓	✓		✓
Vehicle Pickup	✓			✓		✓	✓			
Vehicle Return	✓	✓		✓		✓	✓		✓	
Invoicing & Payment	✓	✓	✓	✓		✓	✓	✓	✓	
Pricing Service	✓				✓	✓	✓	✓		✓
Customer Support	✓	✓				✓				

## b) Star Schema for “Vehicle Booking” Process

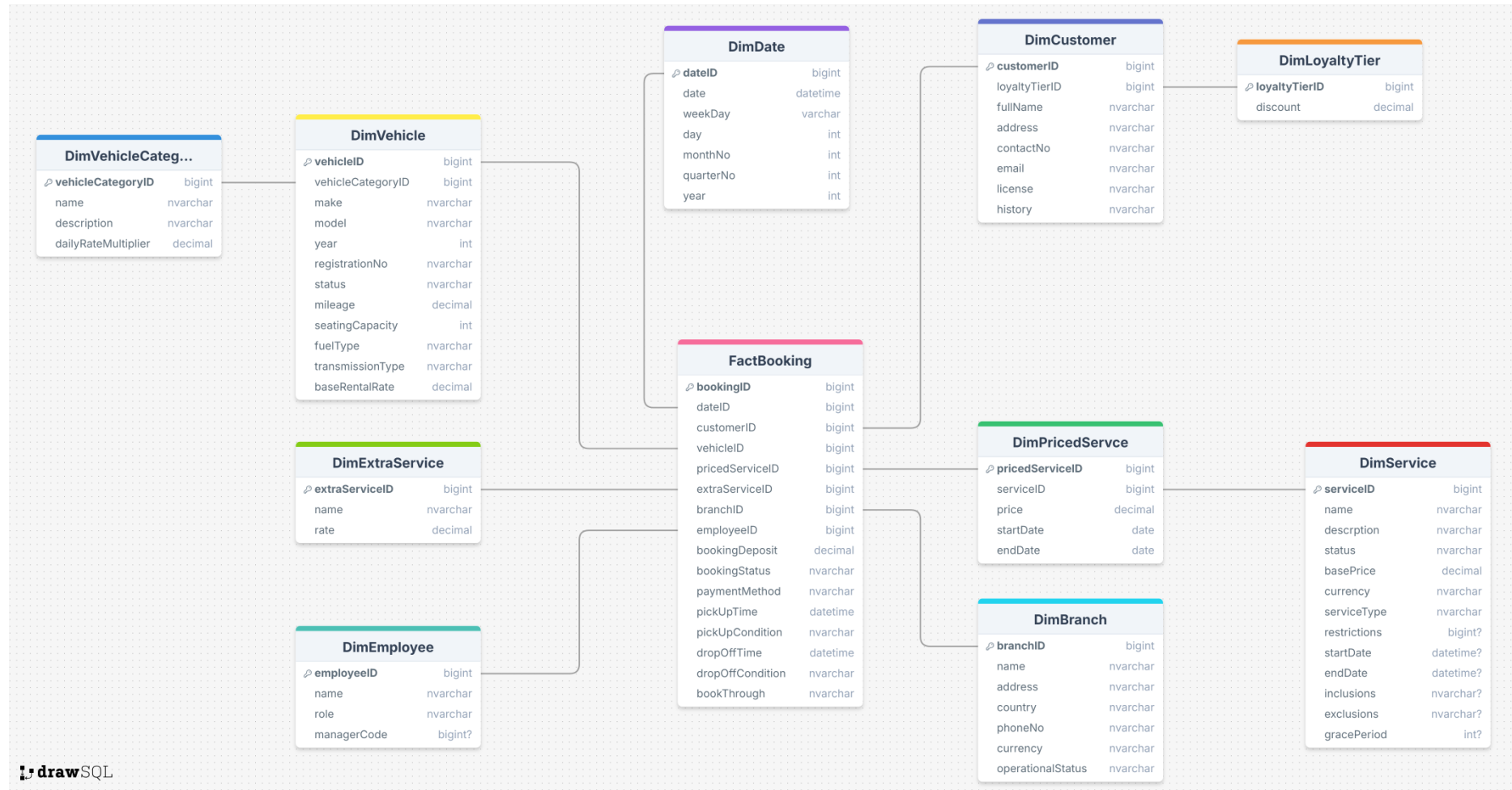


Figure 1: Star Schema for Booking Vehicle Process

## c) Analysis Queries

### Query 1: Quarterly total sales by vehicle category and branch

This query aims to provide a high-level overview of sales performance across different vehicle categories and individual branches on a quarterly basis. This information is crucial for understanding which segments and locations are performing well and which may require attention.

#### Key Insights:

- Identify top/low-performing branches and categories
- Guide resource allocation (staffing, inventory, marketing)
- Detect seasonal trends

### Query 2: What is the service type performance over the last 3 months? How do different services lead to different booking trends and revenue?

This query aims to analyze and compare the performance of each service type over the recent 3-month period, focusing on both booking trends and revenue contribution. This helps evaluate short-term operational success and customer preferences for services like Self-Drive, Chauffeur-Driven, Airport Shuttle, and Fleet Leasing. The goal is to inform tactical decisions such as resource allocation, pricing adjustments, and targeted promotions

#### Key Insights:

- Understand which service types drive the most bookings and revenue recently
- Identify emerging or declining trends in customer demand across service types
- Compare revenue-per-booking to evaluate service profitability
- Support branch-level planning (e.g., staffing, vehicle stock adjustments)
- Pinpoint high-performing services for continued investment or marketing focus

- Detect underperforming services that may need improvement or reevaluation

### **Query 3: Which branches are generating the most bookings and total sales from loyalty customers over the last 12 months?**

This query is designed to identify the top-performing branches in terms of loyalty customer engagement, measured by both bookings and total sales. Understanding which branches excel in retaining and generating business from loyalty customers is vital for replicating success across the organization and refining loyalty programs.

#### **Key Insights:**

- Evaluate loyalty program impact
- Recognize successful branches and practices
- Tailor the Customer Relationship Management strategies and incentives

### **d) Explanation**

By organizing booking data into a star schema, the datamart enables managers to access fast, multidimensional insights. A central Booking\_Fact table records measures such as deposits collected, rental days, and service fees while linked dimension such as Time, Customer, Vehicle, Branch, Employee, or Service allow users to filter and pivot data according to any business aspects.

Drill-downs become just as powerful:

- Date Dimension lets us compare daily, weekly, or monthly total sales/revenue and utilization trends. We can spot seasonal peaks or dips and align resources allocations and promotions accordingly.
- Customer Dimension supports loyalty-tier analysis (e.g., bronze/silver/gold), highlighting which segments book longest, spend most on extras, or incur the fewest penalties, which fuels targeted loyalty program tweaks.
- Vehicle Dimension surfaces the highest and lowest performing models or categories by branch or time window

- Branch Dimension highlight geographic performance variances; underperforming locations can be slated for operational reviews or tailored marketing investments.
- Employee Dimension enables evaluation of staff-level metrics (on-time returns, upsell success rates, or penalty recoveries) informing training and incentive plans.

Because the design adheres to Kimball's lifecycle, we load new booking records incrementally. Pre-aggregated cubes or materialized views (e.g., YTD revenue by branch, avg. deposit per customer tier) deliver near-instant query responses. The clear fact-vs-dimension separation keeps queries simple, empowering business users to self-serve dashboards and ad-hoc reports.

To sum up, this datamart acts as a reliable source for analysing data as it provides real-time visibility into key metrics (utilization rates, deposit recovery, service uptake, on-time returns) so GlobalCarHire can make data-driven decisions on fleet deployment, dynamic pricing, branch expansions, and loyalty program refinements.

## Task 2 – Business Intelligence

*(Attach a separate file including SISS project, Database Diagram, SSAS project, PowerBI and recorded video)*