

Car Repair database

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TCSS 445: Database Systems Design

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1. Brief description:

Database is a record of service for all customers in a shop. It holds contact information, vehicle information, descriptions of repairs

2. Data entity and its attribute:

- a. Customers (Name, address, phone, email, authorize contact name, vehicles, customer number)
- b. Employees (Name, address, phone, email, job title, hire date, employee number)
- c. Appointments (Date, time, customer name, vehicle, service, employee assigned)
- d. Invoices (Invoice Number, customer name, date, total amount)
- e. Payments (Payment number, invoice number, payment type, payment date, amount)
- f. Authorize_contacts (name, relationship, phone number)
- g. Vehicle makes (Make name, description)
- h. Vehicles(year,make,model,VIN,color, submodel, past service w/date)
- i. Vehicle models (Model name, description, make ID)
- j. Services(Work order number, date, customer name, vehicle, service, employee assigned)
- k. Service Categories (Category name, description)
- l. Suppliers (Supplier name, address, phone, email)
- m. Parts(In stock, number of availability, brand): [Oil Filters(), Air Filters(), WindShield wipers(), cleaning supplies()]
- n. Special promotions (Promotion ID, description, start date, end date)
- o. Parts Ordered (Part number, supplier name, date ordered, quantity, cost)
- p. Insurance companies (Insurance company name, policy number, phone number)
- q. Accidents (Accident number, date, customer name, vehicle, description)
- r. MONTHS (mid int, month varchar(9))
- s. WEEKDAYS (did int, day_of_week varchar(9))

3. Scenarios:

- a. Book an appointment for customers on a given day (do not overfill appointment),
- b. Store sends a reminder email about upcoming appointments,
- c. During special promotions, price of some car parts are discounted
- d. Check inventory of car parts
- e. Order car parts from a supplier
- f. Send insurance a billing of a car repair
- g. Bill a customer for a service
- h. Record a service given to a car

4. Analytical Q:

- a. What is the average age of a vehicle visiting the shop?
- b. What is the most frequent repair performed in Winter/Spring/Summer/Autumn?

- c. What are common vehicle parts that are out of inventory in Winter/Spring/Summer/Autumn?
- d. What was the average store's profit increase when there was a special promotion?
- e. Among the cars that made an appointment at the store, which car returned for the same appointment within a year? (I want to identify if there is any problem with car parts)
- f. Which vehicle makes and models are the most profitable for the repair shop in Winter/Spring/Summer/Autumn?
- g. What is the average number of service appointments per month for each vehicle make and model?
- h. Which family owns more than 3 vehicles?
- i. What was the most profitable month for repairs?

5. **Business logic:**

- a. Send reminder email after 6 months post visit,
- b. Do not install customer supplied parts.
- c. Parts must have at least a 20% markup.