CSc4710/6710
Fall 2017
Project
Due Date: Dec 6, 2017, 10:00PM

Construct a database for the following "simple auto shop" management system and populate it with the provided data. Then answer the queries. Submit your script and results by emailing to zhe4@student.gsu.edu

Following is the detailed information regarding the database. This is a simple auto shop management database, the database records the information of all the customers, vehicles of customers, placed orders, services provided by the auto shop, and labor rates of services. In the database, each customer may own one or more vehicles, each vehicle may have one or more orders placed on it at different time, each order may contain one or more services, and each service has its specific rate. There are 8 tables in this database as shown below. For a single service, its cost is calculated by **labor hours × labor cost per hour + part cost**, thus the cost of an order is the sum of all the service costs associated with this order, the total spending cost of a vehicle is the sum of all the order costs associated with this vehicle, and the total expense of a customer is the sum of all the spending costs of the vehicles owned by this customer.

Table	Fields	Data Type	Length	Notes
tbl_customer	customer_id	int	11	auto increment
	first_name	varchar	45	not null
	last_name	varchar	45	not null
	telephone	varchar	45	not null
	email	varchar	45	
	address	varchar	255	
	city	varchar	45	
	state	varchar	45	
	zip_code	varchar	45	

Primary key: customer_id

Table	Fields	Data Type	Length	Notes

tbl_vehivle	vehicle_id	int	11	auto increment
	VIN	varchar	45	
	year	year		not null
	make	varchar	45	not null
	model	varchar	45	not null
	mileage	int	11	not null

Primary key: vehicle_id

Table	Fields	Data Type	Length	Notes
tbl_order	order_id	integer	11	auto increment
	start_time	datetime		not null
	end_time	datatime		not null

Primary key: order_id

Table	Fields	Data Type	Length	Notes
tbl_service	service_id	integer	11	auto increment
	name	varchar	255	not null
	labor_hour	double		not null
	part_cost	double		not null
	rate_id	integer	11	not null

Primary key: service_id
Foreign key: rate_id references tbl_rate

Table	Fields	Data Type	Length	Notes
tbl_rate	rate_id	integer	11	auto increment
	labor_cost_per_hour	double		not null

Primary key: rate_id

Table	Fields	Data Type	Length	Notes
tbl_customer_vehicle	customer_vehicle_id	integer	11	auto increment
	customer_id	integer	11	not null
	vehicle_id	integer	11	not null

Primary key: customer_vehicle_id
Foreign key 1: customer_id references tbl_customer
Foreign key 2: vehicle_id references tbl_vehicle

Table	Fields	Data Type	Length	Notes
tbl_vehicle_order	vehicle_order_id	integer	11	auto increment
	vehicle_id	integer	11	not null
	order_id	integer	11	not null

Primary key: vehicle_order_id
Foreign key 1: vehicle_id references tbl_vehicle
Foreign key 2: order_id references tbl_order

Table	Fields	Data Type	Length	Notes
tbl_order_service	order_service_id	integer	11	auto increment
	order_id	integer	11	not null
	service_id	integer	11	not null

Primary key: order_service_id
Foreign key 1: order_id references tbl_order
Foreign key 2: service_id references tbl_service

Answer all the following queries.

1) List the customer id of customers who own more than 2 vehicles.
2) List the order id of orders and the number of services associated with the corresponding order.
3) List the first name and the last name of customers who own more than 2 vehicles.

4) List the service id, name and cost of services whose costs are more than 500.

5) List the service id, name, number of service times and total income of each service.
6) Which customer spent the most in this auto shop? List the first name, last name, customer id and total expense of the customer.
7) List the vehicle id, year, make, model, mileage, number of the associated orders and total spending cost of vehicles.