

\Project 0502_12 - Proposal

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Brand Name: Terp Motor Dealer

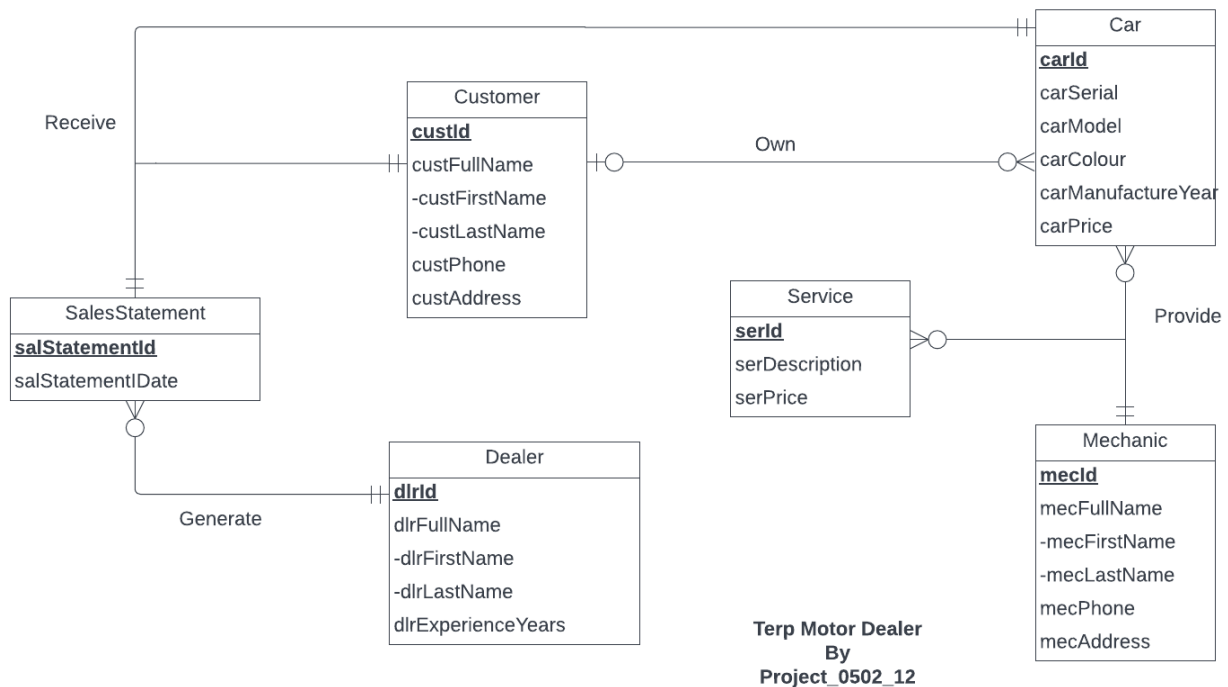
Mission Statement: We sell cars and provide services such as repairing, painting, washing, etc., as needed by our customers.

Mission Objective:

The mission objectives of this project are:

- To provide a list of services provided to the cars at the dealership as per customer request.
- To maintain complete car information being sold.
- To keep track of all clients that come in to buy or service their car.
- To maintain complete mechanic information.

ER Diagram:



ER Schema:

Entities, Attributes and Primary Keys

- Customer (**custID**, custFullName, -custFirstName, -custLastName, custPhone, custAddress)
- Car (**carId**, carSerial, carModel, carColour, carManufactureYear, carPrice)
- Mechanic (**mecId**, mecFullName, -mecFirstName, -mecLastName, mecPhone, mecAddress)
- Service (**serId**, serDescription, serPrice)
- Dealer (**dlrId**, dlrFullName, -dlrFirstName, -dlrLastName, dlrExperienceYears)
- SalesStatement (**salStatementId**, salStatementIDate)

Relationships, Attributes, Degrees, Participating Entities and Constraints

Own: binary relationship

1 Customer to 0 or more Cars

1 Car to 0 or 1 Customer

Provide: ternary relationship

1 Car and 1 Service to 1 Mechanic

1 Mechanic and 1 Car to 0 or more Services

1 Mechanic and 1 Service to 0 or more Cars

Generate: binary relationship

1 Dealer to 0 or more Sales Statements

1 Sales Statement to 1 Dealer

Receive: ternary relationship

1 Customer and 1 Sales Statement to 1 Car

1 Car and 1 Sales Statement to 1 Customer

1 Customer and 1 Car to 1 Sales Statement

Relational Schema:

Relations:

- Customer (**custId**, custFirstName, custLastName, custPhone, custAddress)
- Car (**carId**, *custId*, carSerial, carModel, carColour, carManufactureYear, carPrice)
- Mechanic (**mecId**, mecFirstName, mecLastName, mecPhone, mecAddress)
- Service (**serId**, serDescription, serPrice)
- SalesStatement (**salStatementId**, salStatementIDate)
- Dealer (**dlrId**, *salStatementId*, dlrFirstName, dlrLastName, dlrExperienceYears)
- Provide (**carId**, **serId**, *mecId*)
- Receive (**salStatementId**, *custId*, *carId*)

Functional Dependencies:

- custID → custFirstName, custLastName, custPhone, custAddress

- carId → carSerial, carModel, carColour, carManufactureYear, carPrice
- mecId → mecFirstName, mecLastName, mecPhone, mecAddress
- serId → serDescription, serPrice
- salStatementId → salStatementIDate
- dlrId → salStatementId, dlrFirstName, dlrLastName, dlrExperienceYears
- carId, serId → mecId
- salStatementId → custId, carId

Business Rules:

[R1] When customer information is updated, the car information should also be updated accordingly.

[R2] When a customer information is deleted, the car information should be deleted from the database.

[R3] When a Sales Statement is updated, the Dealer information should be updated accordingly.

[R4] When a Sales Statement is deleted, the Dealer information remains unchanged.

[R5] When a Car information is updated, the service provided by the mechanic is updated in the database.

[R6] When a Car information is deleted, the service provided by the mechanic remains unchanged.

[R7] When a Service information is updated, the car and mechanic information is updated in the database.

[R8] When a Service information is deleted, the car and mechanic information remains unchanged.

[R9] When a Mechanic information is updated, the information of the service provided to the car is updated in the database.

[R10] When a Mechanic information is deleted, the car and service information remains unchanged.

[R11] When a Sales Statement is updated, the car and customer information is also updated in the database.

[R12] When a Sales Statement is deleted, the car and customer information remains unchanged.

[R13] When a Customer information is updated, the car and sales statement information is also updated in the database.

[R14] When a Customer information is deleted, the car and sales statement information remains unchanged.

[R15] When a Car information is updated, the customer and sales statement information should also be updated in the database.

[R16] When a Car information is deleted, the customer and sales statement information remains unchanged.

Referential Integrity Actions:

Relation	Foreign Key	Base Relation	Primary Key	Business Rule	Constraint: ON DELETE	Business Rule	Constraint: ON UPDATE
Car	custId	Customer	custId	R2	SET NULL	R1	CASCADE
Dealer	salStatementId	SalStatement	salStatementId	R4	NO ACTION	R3	CASCADE
Provide	carId	Car	carId	R6	NO ACTION	R5	CASCADE
Provide	serId	Service	serId	R8	NO ACTION	R7	CASCADE
Provide	mechId	Mechanic	mechId	R10	NO ACTION	R9	CASCADE
Receive	salStatementId	SalesStatement	salStatementId	R12	NO ACTION	R11	CASCADE
Receive	custId	Customer	custId	R14	NO ACTION	R13	CASCADE
Receive	carId	Car	carId	R16	NO ACTION	R15	CASCADE

Sample Data:

- Customer ('119090', 'John', 'Fernandes', '2407859691', '5660 Apt 12 Hyattsville MD 20783')
- Car ('129068', 'SD 1098', 'Nissan Versa Note S', 'Maroon', '2018', '119090', 16485.00)
- Mechanic ('132891', 'Peter', 'Williams', '2407890789', '67 Apt 107 Berwyn MD 20724')
- Service ('142996', 'Wiper replacement', 45.00)
- SalesStatement ('178990', '10/17/2022')
- Dealer ('152440', 'Drew', 'Barrymore', '4', '178990')
- Provide ('123324', '142342', '139995')
- Receive ('178920', '118290', '127070')