**CSCI 4333 Database Design and Implementation**

**Assignment #4**

Instructor: Dr. Xiang Lian

Due Date: See the course Web page

**Description**

For the attached ER diagram and the corresponding database schema, express the following queries in relational algebra and SQL (*note: please use standard SQL, not MySQL or Oracle*):

1. Find names of all mechanics whose salaries are in the range of $50,000 – $75,000.
2. Find all sales transactions where the sale price was larger than the sticker price.
3. Find all vehicles sold to customer Jim Gray.
4. Find customers who bought at least two different vehicles of the same color.
5. Find names of all employees (mechanics, sales managers and sales people) who were involved in sales or service transactions with customer Peter Chen.
6. Find all manufacturers that supplied both Honda and Toyota cars in 2013.
7. Find all trucks that are currently in stock (not involved in sales transactions).
8. Find names of all sales people who were involved in every sales transaction with customer Edgar Codd.
9. Find vehicles that were supplied, services and sold on the same date.
10. Find customers whose every purchased car was in the price range of $25,000 – $30,000.

**Submission**

Submit an electronic copy of your homework solution to the [**Blackboard**](https://mycourses.utpa.edu/).

**Grading**

Each problem receives 10 points (100 total, if solved correctly).





**DATABASE SCHEMA**

**Manufacturer (mid, name, address)**

**Vehicle (vin, make, model, year, color, sticker price, type)**

// No separate relations for Car and Truck

**ManufacturerSuppliedVehicle (vin, mid, date, supply\_price)**

FK: vin references Vehicle

FK: mid references Manufacturer

// Merge Vehicle and ManufacturerSuppliedVehicle into

**Vehicle (vin, make, model, year, color, sticker\_price, type, mid, date, supply\_price)**

FK: mid references Manufacturer

Part (pid, name, description, quantity, price)

**ManufacturerSuppliedPart (mid, pid, supply\_price, date, quantity)**

FK: mid references Manufacturer

FK: pid references Part

**Mechanic (ssn, name, salary)**

**Customer (cid, name, dob, address)**

// Merge Serviced and Involved into

**ServiceTransactionServiceTransaction (tid, cost, date, vin, cid)**

FK: vin references Vehicle

FK: cid references Customer

**PartUsed (pid, tid)**

FK: pid references Part

FK: tid references ServiceTransaction

**ServicePerformed (ssn, tid, hours)**

FK: ssn references Mechanic

FK: tid references ServiceTransaction

**SalesManager (ssn, name, salary)**

**SalesPerson (ssn, name, salary)**

// Merge Sold, Bought, and SalesManagerInvolved into SaleTransaction

**SaleTransaction (tid, sale\_price, date, vin, ssn, cid)**

FK: vin references Vehicle

FK: ssn references SalesManager

FK: cid references Customer

**SalesPersonInvolved (ssn, tid)**

FK: ssn references SalesPerson

FK: tid references SaleTransaction