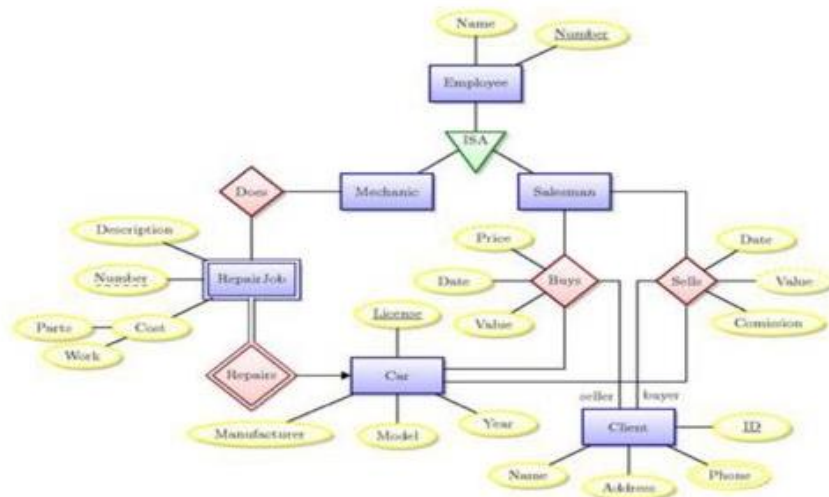


LAB9

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Roll no. : AM.EN.U4AIE22042



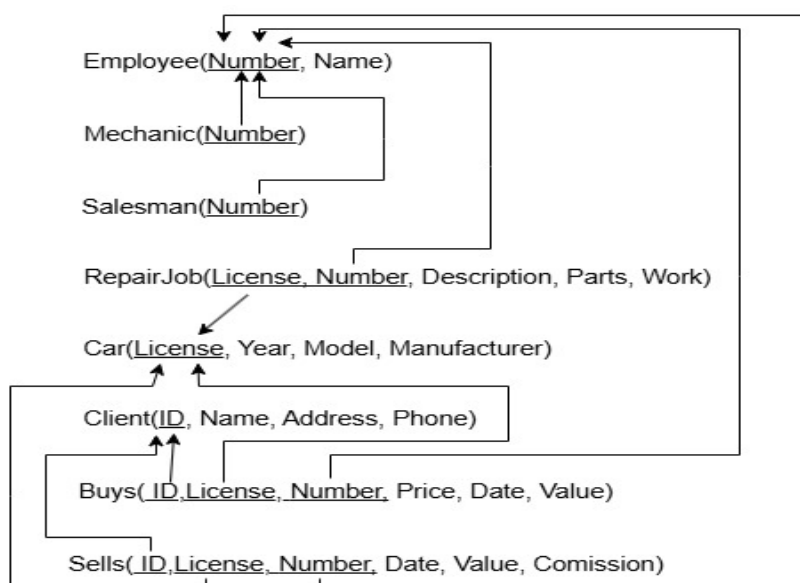
1) Convert the above ER diagram to relational schema

2) Create the corresponding tables and insert data.

3) Answer the following queries in SQL

- Find the car model numbers whose repair cost for the parts is greater than 10000
- Find the client names who buys item from all the salesmen.
- Find the date on which salesman with name 'Raju' sells item to client 'Arun'.

Schema Diagram



Code

--QUESTION 1--

```
-- CREATE TABLE Employee_lab9 (  
--   Number INT PRIMARY KEY,  
--   Name VARCHAR(100)  
-- );
```

```
-- CREATE TABLE Mechanic_lab9 (  
--   Number INT PRIMARY KEY,  
--   FOREIGN KEY (Number) REFERENCES Employee_lab9(Number)  
-- );
```

```
-- CREATE TABLE Salesman_lab9 (  
--   Number INT PRIMARY KEY,  
--   FOREIGN KEY (Number) REFERENCES Employee_lab9(Number)  
-- );
```

```
-- CREATE TABLE Car_lab9 (  
--   License VARCHAR(50) PRIMARY KEY,  
--   Year INT,  
--   Model VARCHAR(50),  
--   Manufacturer VARCHAR(50)  
-- );
```

```
-- CREATE TABLE RepairJob_lab9 (  
--   License VARCHAR(50),  
--   Number INT,  
--   Description VARCHAR(255),  
--   Parts INT,
```

```
-- Work INT,  
-- PRIMARY KEY (License, Number),  
-- FOREIGN KEY (License) REFERENCES Car_lab9(License)  
-- );
```

```
-- CREATE TABLE Client_lab9 (  
-- ID INT PRIMARY KEY,  
-- Name VARCHAR(100),  
-- Address VARCHAR(255),  
-- Phone VARCHAR(15)  
-- );
```

```
-- CREATE TABLE Buys_lab9 (  
-- Number INT,  
-- License VARCHAR(50),  
-- ID INT,  
-- Price DECIMAL(10, 2),  
-- Date DATE,  
-- Value DECIMAL(10, 2),  
-- PRIMARY KEY (Number, License, ID),  
-- FOREIGN KEY (Number) REFERENCES Salesman_lab9(Number),  
-- FOREIGN KEY (License) REFERENCES Car_lab9(License),  
-- FOREIGN KEY (ID) REFERENCES Client_lab9(ID)  
-- );
```

```
-- CREATE TABLE Sells_lab9 (  
-- Number INT,  
-- License VARCHAR(50),  
-- ID INT,  
-- Date DATE,
```

```

-- Value DECIMAL(10, 2),
-- Commission DECIMAL(10, 2),
-- PRIMARY KEY (Number, License, ID),
-- FOREIGN KEY (Number) REFERENCES Salesman_lab9(Number),
-- FOREIGN KEY (License) REFERENCES Car_lab9(License),
-- FOREIGN KEY (ID) REFERENCES Client_lab9(ID)
-- );

-- -- Insert data into Employee_lab9
-- INSERT INTO Employee_lab9 VALUES (1, 'Raju'), (2, 'John'), (3, 'Mike'), (4, 'Arun');

-- -- Insert data into Mechanic_lab9
-- INSERT INTO Mechanic_lab9 VALUES (3);

-- -- Insert data into Salesman_lab9
-- INSERT INTO Salesman_lab9 VALUES (1), (2);

-- -- Insert data into Car_lab9
-- INSERT INTO Car_lab9 VALUES
-- ('A123', 2015, 'ModelX', 'Tesla'),
-- ('B456', 2018, 'ModelS', 'Tesla'),
-- ('C789', 2020, 'Civic', 'Honda');

-- -- Insert data into Client_lab9
-- INSERT INTO Client_lab9 VALUES
-- (101, 'Arun', 'Street 1', '9876543210'),
-- (102, 'Mike', 'Street 2', '9876543211');

-- -- Insert data into RepairJob_lab9
-- INSERT INTO RepairJob_lab9 VALUES

```

```

-- ('A123', 1, 'Engine Repair', 15000, 5),
-- ('B456', 2, 'Battery Replacement', 8000, 2);

-- -- Insert data into Buys_lab9
-- INSERT INTO Buys_lab9 VALUES
-- (1, 'A123', 101, 25000, '2024-12-01', 23000),
-- (2, 'B456', 102, 20000, '2024-12-02', 18000);

-- -- Insert data into Sells_lab9
-- INSERT INTO Sells_lab9 VALUES
-- (1, 'A123', 101, '2024-12-01', 23000, 500),
-- (1, 'C789', 102, '2024-12-03', 18000, 400),
-- (2, 'B456', 102, '2024-12-04', 19000, 300);

--1)
-- SELECT Car_lab9.Model
-- FROM Car_lab9
-- JOIN RepairJob_lab9 ON Car_lab9.License = RepairJob_lab9.License
-- WHERE RepairJob_lab9.Parts > 10000;

--2)
-- SELECT DISTINCT Client_lab9.Name
-- FROM Client_lab9
-- WHERE NOT EXISTS (
--     SELECT Salesman_lab9.Number
--     FROM Salesman_lab9
--     WHERE NOT EXISTS (
--         SELECT 1
--         FROM Buys_lab9
--         WHERE Buys_lab9.Number = Salesman_lab9.Number AND Buys_lab9.ID = Client_lab9.ID
--     )
-- )

```

```
-- );
```

```
--3)
```

```
-- SELECT Sells_lab9.Date
```

```
-- FROM Sells_lab9
```











```
-- JOIN Employee_lab9 AS Salesman ON Sells_lab9.Number = Salesman.Number
```

```
-- JOIN Client_lab9 ON Sells_lab9.ID = Client_lab9.ID
```











```
-- WHERE Salesman.Name = 'Raju' AND Client_lab9.Name = 'Arun';
```

Output

1.

Data Output		Messages	Notifications
         SQL			
	model character varying (50) 		
1	ModelX		

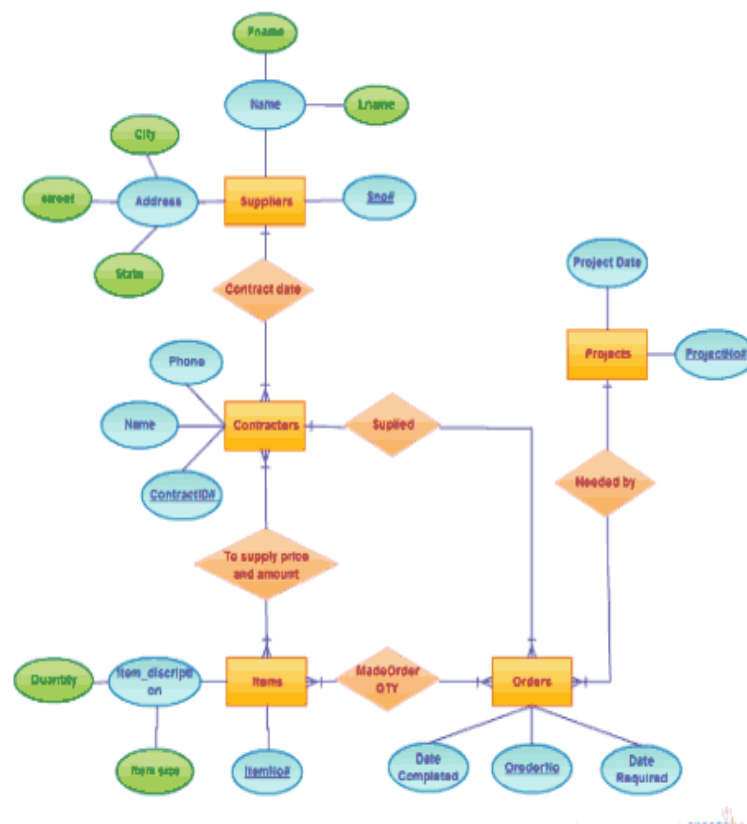
2.

Data Output		Messages	Notifications
         SQL			
	name character varying (100) 		

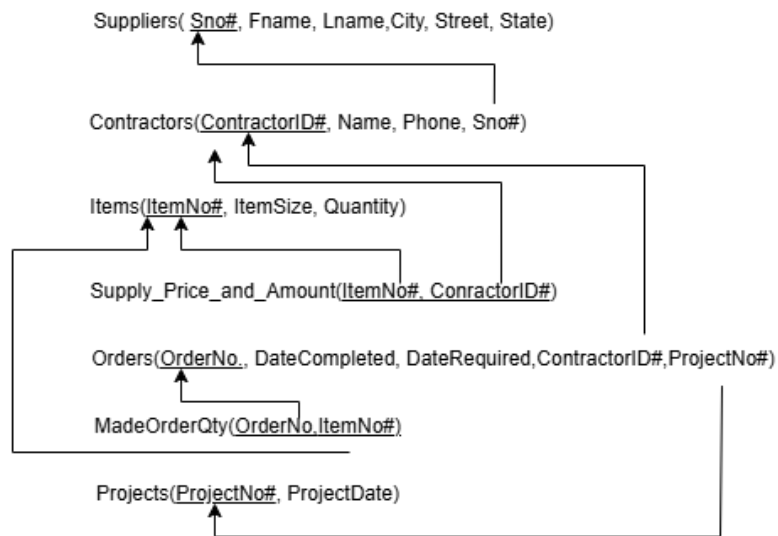
3.

2.

E-R Diagram for Supplies Contract System



Schema Diagram



CODE

```
-- -- Create Suppliers Table
-- CREATE TABLE Suppliers_lab9 (
--   Sno INT PRIMARY KEY,
--   Fname VARCHAR(50),
--   Lname VARCHAR(50),
--   City VARCHAR(50),
--   Street VARCHAR(50),
--   State VARCHAR(50)
-- );

-- -- Create Contractors Table
-- CREATE TABLE Contractors_lab9 (
--   ContractorID INT PRIMARY KEY,
--   Name VARCHAR(50),
--   Phone VARCHAR(15),
--   Sno INT,
--   FOREIGN KEY (Sno) REFERENCES Suppliers_lab9(Sno)
-- );
```


-- -- Create Items Table

-- CREATE TABLE Items_lab9 (

-- ItemNo INT PRIMARY KEY,

-- ItemSize VARCHAR(20),

-- Quantity INT

--);

-- -- Create Supply_Price_and_Amount Table

-- CREATE TABLE Supply_Price_and_Amount_lab9 (

-- ItemNo INT,

-- ContractorID INT,

-- PRIMARY KEY (ItemNo, ContractorID),

-- FOREIGN KEY (ItemNo) REFERENCES Items_lab9(ItemNo),

-- FOREIGN KEY (ContractorID) REFERENCES Contractors_lab9(ContractorID)

--);

-- -- Create Projects Table

-- CREATE TABLE Projects_lab9 (

-- ProjectNo INT PRIMARY KEY,

-- ProjectDate DATE

--);

-- -- Create Orders Table (with FK for ProjectNo)

-- CREATE TABLE Orders_lab9 (

-- OrderNo INT PRIMARY KEY,

-- DateCompleted DATE,

-- DateRequired DATE,

-- ContractorID INT,

-- ProjectNo INT,

-- FOREIGN KEY (ContractorID) REFERENCES Contractors_lab9(ContractorID),

-- FOREIGN KEY (ProjectNo) REFERENCES Projects_lab9(ProjectNo)

--);

```

-- -- Create MadeOrderQty Table
-- CREATE TABLE MadeOrderQty_lab9 (
--   OrderNo INT,
--   ItemNo INT,
--   PRIMARY KEY (OrderNo, ItemNo),
--   FOREIGN KEY (OrderNo) REFERENCES Orders_lab9(OrderNo),
--   FOREIGN KEY (ItemNo) REFERENCES Items_lab9(ItemNo)
-- );

-- INSERT INTO Suppliers_lab9 (Sno, Fname, Lname, City, Street, State) VALUES
-- (1, 'Kiran', 'Patel', 'Mumbai', 'MG Road', 'Maharashtra'),
-- (2, 'John', 'Doe', 'Delhi', 'Ring Road', 'Delhi'),
-- (3, 'Alice', 'Smith', 'Bangalore', 'MG Road', 'Karnataka');

-- INSERT INTO Contractors_lab9 (ContractorID, Name, Phone, Sno) VALUES
-- (101, 'Kiran Constructions', '1234567890', 1),
-- (102, 'BuildTech', '9876543210', 2),
-- (103, 'PrimeWorks', '5556667777', 3);

-- INSERT INTO Items_lab9 (ItemNo, ItemSize, Quantity) VALUES
-- (1, 'Large', 500),
-- (2, 'Medium', 300),
-- (3, 'Small', 200);

-- INSERT INTO Supply_Price_and_Amount_lab9 (ItemNo, ContractorID) VALUES
-- (1, 101),
-- (2, 101),
-- (3, 102),
-- (1, 103),
-- (2, 103);

```

```

-- INSERT INTO Projects_lab9 (ProjectNo, ProjectDate) VALUES
-- (1001, '2024-11-01'),
-- (1002, '2024-11-05'),
-- (1003, '2024-11-10');

-- INSERT INTO Orders_lab9 (OrderNo, DateCompleted, DateRequired, ContractorID, ProjectNo) VALUES
-- (1, '2024-12-01', '2024-12-15', 101, 1001),
-- (2, '2024-11-20', '2024-12-05', 102, 1002),
-- (3, '2024-11-15', '2024-12-10', 103, 1003);

-- INSERT INTO MadeOrderQty_lab9 (OrderNo, ItemNo) VALUES
-- (1, 1),
-- (1, 2),
-- (2, 3),
-- (3, 1),
-- (3, 2);

--QUERY 1
-- SELECT DISTINCT Projects_lab9.ProjectNo
-- FROM Projects_lab9
-- JOIN Orders_lab9 ON Projects_lab9.ProjectNo = Orders_lab9.ProjectNo
-- JOIN Contractors_lab9 ON Orders_lab9.ContractorID = Contractors_lab9.ContractorID
-- WHERE Contractors_lab9.Name LIKE '%Kiran%';

-- -- Insert Suppliers
-- INSERT INTO Suppliers_lab9 (Sno, Fname, Lname, City, Street, State) VALUES
-- (4, 'David', 'Johnson', 'Pune', 'JM Road', 'Maharashtra'),
-- (5, 'Sara', 'Williams', 'Chennai', 'Anna Salai', 'Tamil Nadu');

-- -- Insert Contractors
-- INSERT INTO Contractors_lab9 (ContractorID, Name, Phone, Sno) VALUES

```

```

-- (104, 'David Constructions', '999999999', 4),
-- (105, 'Sara Enterprises', '888888888', 5);

-- -- Insert Items
-- INSERT INTO Items_lab9 (ItemNo, ItemSize, Quantity) VALUES
-- (4, 'Extra Large', 100),
-- (5, 'Small', 50);

-- -- Insert Supply_Price_and_Amount
-- INSERT INTO Supply_Price_and_Amount_lab9 (ItemNo, ContractorID) VALUES
-- (1, 104), -- Item 1 supplied by David
-- (2, 104), -- Item 2 supplied by David
-- (3, 105), -- Item 3 supplied by Sara
-- (4, 105), -- Item 4 supplied by Sara
-- (5, 104), -- Item 5 supplied by David
-- (5, 105); -- Item 5 supplied by Sara

-- -- Insert Projects
-- INSERT INTO Projects_lab9 (ProjectNo, ProjectDate) VALUES
-- (1004, '2024-12-01'),
-- (1005, '2024-12-05');

-- -- Insert Orders
-- INSERT INTO Orders_lab9 (OrderNo, DateCompleted, DateRequired, ContractorID, ProjectNo) VALUES
-- (4, '2024-12-03', '2024-12-10', 104, 1004), -- David's order for project 1004
-- (5, '2024-12-06', '2024-12-15', 105, 1005); -- Sara's order for project 1005

-- -- Insert MadeOrderQty
-- INSERT INTO MadeOrderQty_lab9 (OrderNo, ItemNo) VALUES
-- (4, 1), -- Order 4 contains Item 1
-- (4, 2), -- Order 4 contains Item 2
-- (5, 3), -- Order 5 contains Item 3
-- (5, 4), -- Order 5 contains Item 4

```

-- (5, 5); -- Order 5 contains Item 5

--QUERY 2

-- SELECT COUNT(*) AS NumberOfProjects

-- FROM (

-- SELECT Projects_lab9.ProjectNo

-- FROM Projects_lab9

-- JOIN Orders_lab9 ON Projects_lab9.ProjectNo = Orders_lab9.ProjectNo

-- JOIN MadeOrderQty_lab9 ON Orders_lab9.OrderNo = MadeOrderQty_lab9.OrderNo

-- JOIN Supply_Price_and_Amount_lab9 ON MadeOrderQty_lab9.ItemNo =
Supply_Price_and_Amount_lab9.ItemNo

-- GROUP BY Projects_lab9.ProjectNo

-- HAVING COUNT(DISTINCT Supply_Price_and_Amount_lab9.ContractorID) = (SELECT COUNT(*) FROM
Suppliers_lab9)

--) AS AllSuppliersProjects;

--QUERY 3

-- SELECT DISTINCT Items_lab9.ItemNo, Items_lab9.ItemSize

-- FROM Items_lab9

-- JOIN MadeOrderQty_lab9 ON Items_lab9.ItemNo = MadeOrderQty_lab9.ItemNo

-- JOIN Orders_lab9 ON MadeOrderQty_lab9.OrderNo = Orders_lab9.OrderNo

-- WHERE Orders_lab9.ProjectNo = 1001;

OUTPUTS

1.

Data Output		Messages	Notifications
	projectno [PK] integer		
1	1001		

2.

Data Output		Messages	Notifications
	numberofprojects bigint		
1	0		

3.

Data Output			Messages	Notifications
	itemno [PK] integer	itemsized character varying (20)		
1	1	Large		
2	2	Medium		