22AIE303

LABSHEET - 9

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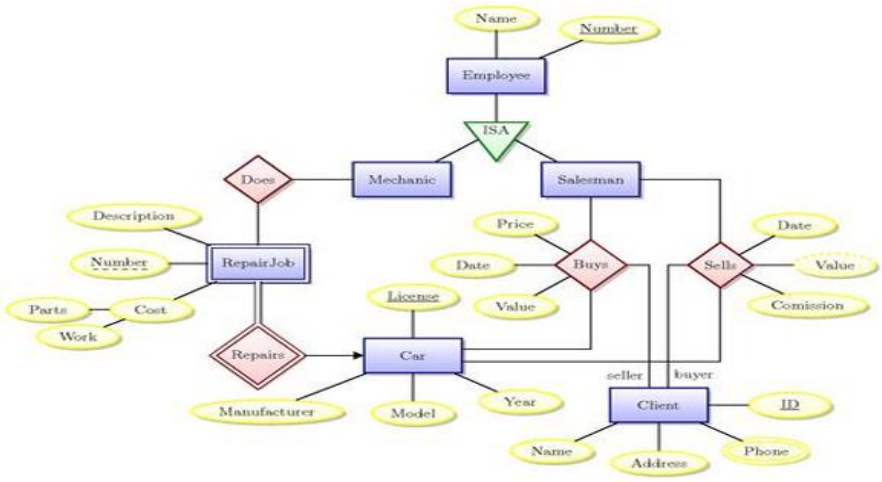
Question 1

Consider the following ER/ EER Diagram



1)Convert the above ER diagram to relational schema

2) Create the corresponding tables and insert data.

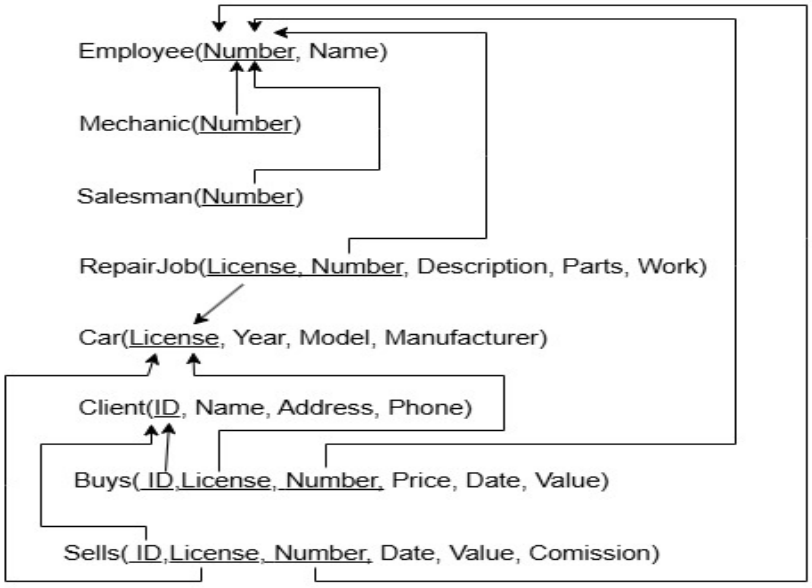
3) Answer the following queries in SQL

a) Find the car model numbers whose repair cost for the parts is greater than 10000

b) Find the client names who buys item from all the salesmen.

c)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),
```

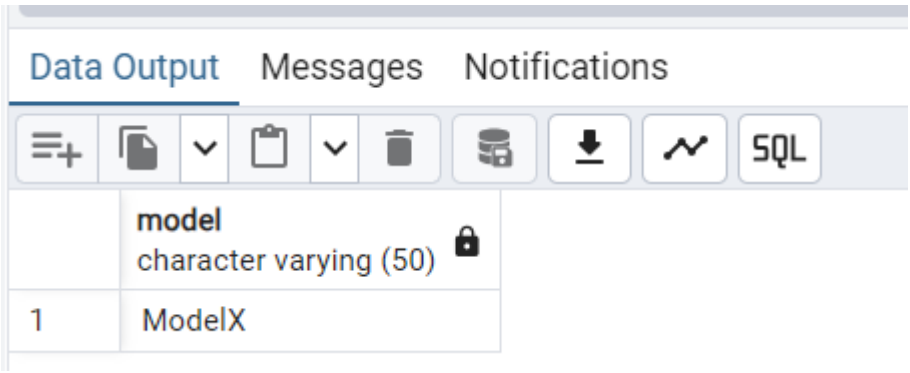
```
--     Phone VARCHAR(15)
-- );

-- 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
```

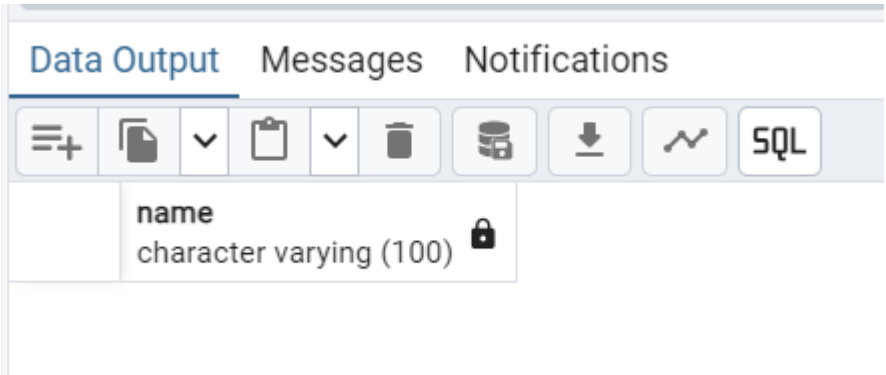
```
--         FROM Buys_lab9
--         WHERE Buys_lab9.Number = Salesman_lab9.Number AND Buys_lab9.ID = Client_lab9.ID
--     )
-- );

--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.



2.



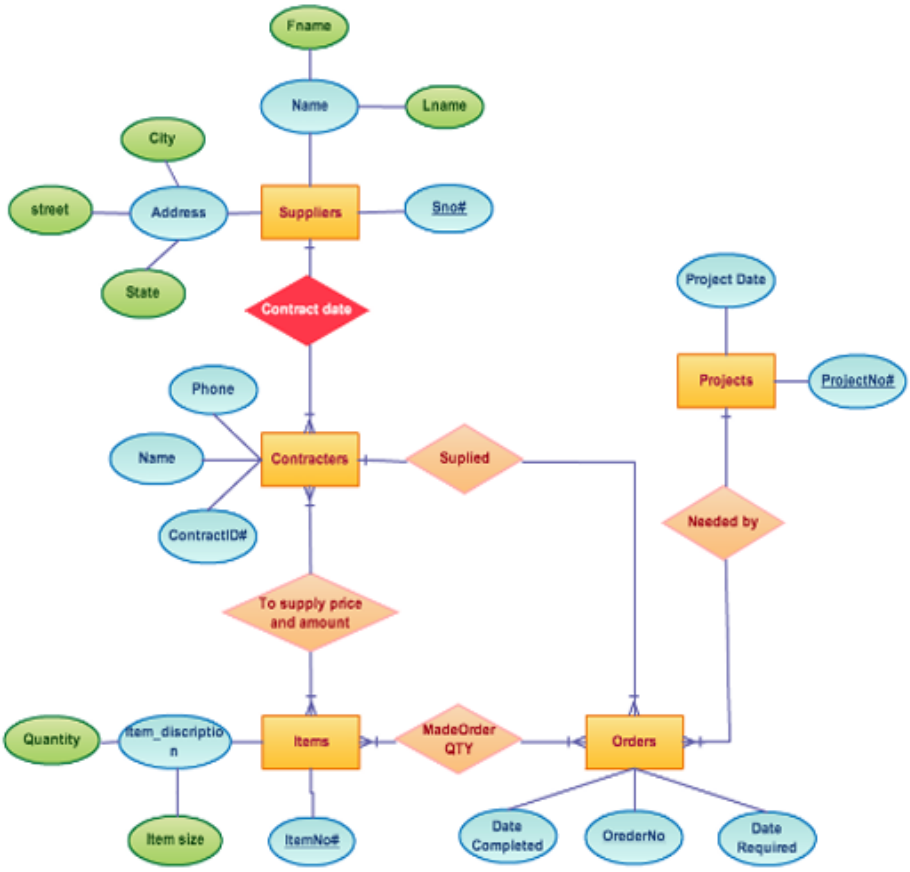
3.

Data Output | Messages | Notifications

	date date
1	2024-12-01

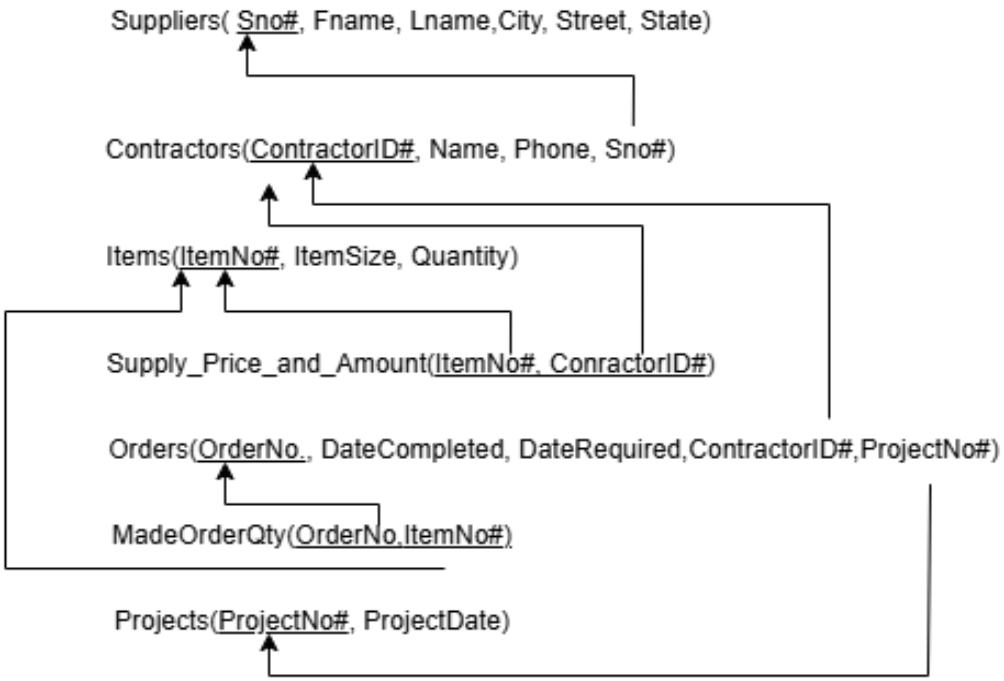
Question 2

E-R Diagram for Supplies Contract System



1. Convert the above ER diagram to relational schema .
2. Create the corresponding tables and insert some data.
3. Write the following queries in SQL.
   a) Find the projects for which items are supplied by contractor named 'Kiran'.
   b) Find the number of projects for which items are supplied by all the Suppliers .
   c) List all the items required for the project 'P100'.

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)
-- );
```

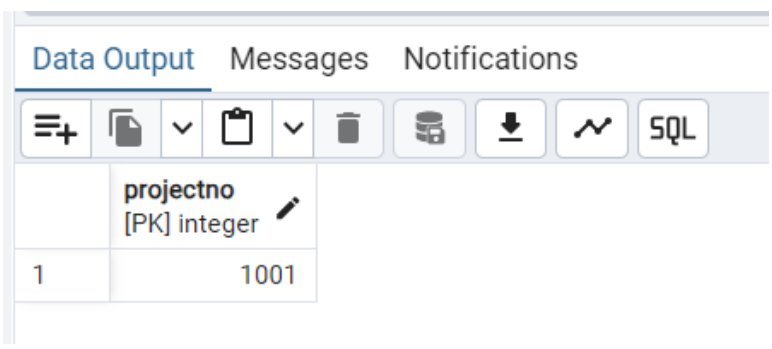
```
-- INSERT INTO Suppliers_lab9 (Sno, Fname, Lname, City, Street, State) VALUES
-- (1, 'Kiran', 'Patel', 'Mumbai', 'MG Road', 'Maharashtra'),
-- (2, 'John', 'Doe', 'Delhi', 'Ring Road', 'Delhi'),
-- (3, 'Alice', 'Smith', 'Bangalore', 'MG Road', 'Karnataka');

-- 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', '9999999999', 4),
-- (105, 'Sara Enterprises', '8888888888', 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
```

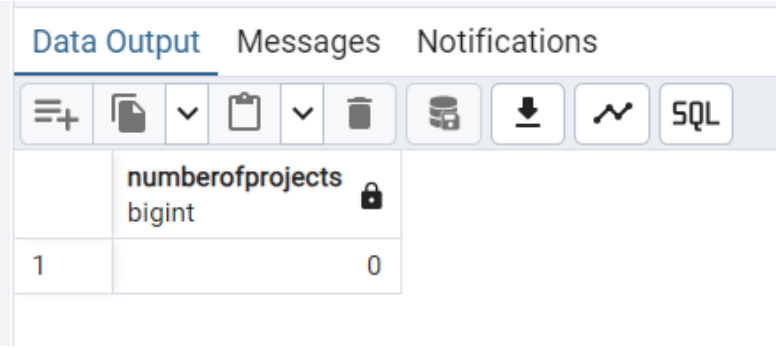
```
-- (4, '2024-12-03', '2024-12-10', 104, 1004), -- David's order for project 1004
-- (5, '2024-12-06', '2024-12-15', 105, 1005); -- Sara's order for project 1005


-- -- 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.

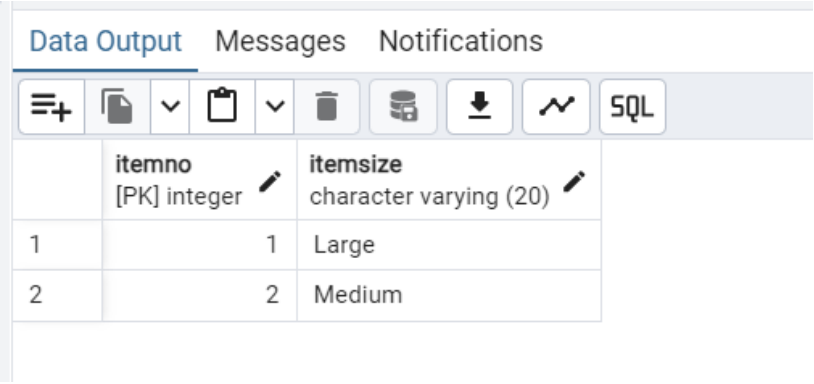


2.



	numberofprojects bigint
1	0

3.



	itemno [PK] integer	itemsize character varying (20)
1	1	Large
2	2	Medium