DBMS PROJECT

ELECTRONIC COMPANY DATA BASE MANAGEMENT SYSTEM

Designed By:

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Software used : MySQL workbench

Introduction:

The Electronic Company Database Management System (DBMS) is designed to handle the data management needs of an electronic goods company. It is aimed at efficiently managing products, suppliers, customers, sales, and employee information. A database is crucial for the company as it helps organize the company's operations, track inventory, manage customer orders, and oversee supplier relationships.

Need for Database in an Electronic Company:

1. Inventory Management: Efficient tracking of products, availability, and stock levels.
2. Supplier Management: Keeping records of various suppliers and their products.
3. Customer Management: Managing customer details and their purchase history.
4. Sales Management: Keeping track of sales transactions, products sold, and invoices.
5. Employee Management: Tracking employee roles, salaries, and performance.
6. Improved Efficiency: Automating routine tasks like stock updates and invoice generation.
7. Data Accuracy: Maintaining accurate, up-to-date records to reduce errors.

Entities and Their Relationships:

1. **Product**:
    - Represents the electronic products sold by the company.
    - **Attributes**: product_id, product_name, category, price, quantity_in_stock, supplier_id
    - **Relation**: Each product **belongs to one supplier**, and it can be part of many **sales transactions** (a product can be sold multiple times).
2. **Supplier**:
    - Represents the suppliers who provide the electronic products to the company.
    - **Attributes**: supplier_id, supplier_name, contact_number, email, address
    - **Relation**: A supplier **supplies many products**, but each product is **supplied by one supplier**. This is a **one-to-many** relationship between **Supplier** and **Product**.
3. **Customer**:
    - Represents the customers who purchase products from the company.
    - **Attributes**: customer_id, customer_name, contact_number, email, address
    - **Relation**: A customer **makes many purchases**, but each sales transaction is associated with only **one customer**.
      This is a **one-to-many** relationship between **Customer** and **Sales**.
4. **Sales**:

- Represents the sales transactions that occur when a customer purchases one or more products.
- **Attributes**: sales_id, product_id, customer_id, date_of_purchase, quantity_sold, total_price
- **Relation**: A sales transaction **involves one product** and **one customer**. However, each product can appear in many different sales (i.e., the product can be sold multiple times). Therefore, there's a **many-to-one (N:1)** relationship between **Sales** and **Product**, as well as between **Sales** and **Customer**.

5. **Employee**:
    - Represents the employees working at the company.
    - **Attributes**: employee_id, employee_name, role, salary, department
    - **Relation**: In this design, there is no direct link between **Employee** and the other entities, but you could extend the database by linking employees to manage sales or other processes.

Relationship Summary:

1. **Product and Supplier**:
    - **One-to-Many (1:N)**: A supplier supplies multiple products, but each product comes from only one supplier.
2. **Sales and Product**:
    - **Many-to-One (N:1)**: A product can be sold in many sales transactions, but each sales transaction is associated with only one product.
3. **Sales and Customer**:
    - **Many-to-One (N:1)**: A customer can make many purchases, but each sales transaction is made by one customer.
4. **Employee** (optional for extension):
    - Employees are not directly connected to sales or products in the base model but could be related by adding new tables.

```
CREATE TABLE Supplier (
   supplier_id INT PRIMARY
   KEY,
   supplier_name VARCHAR(50),
   contact_number VARCHAR(15),
   email VARCHAR(50),
   address VARCHAR(100)
);
```

INSERT INTO Supplier (supplier_id, supplier_name, contact_number, email, address) VALUES

(1, 'Reliance Electronics', '9876543210', 'contact@relianceelectronics.in', 'Mumbai'),

(2, 'Tata Electronics', '9867543211', 'support@tataelectronics.in', 'Bangalore'),

(3, 'Havells Suppliers', '9876543212', 'sales@havellssuppliers.in', 'Kolkata'),

(4, 'Bajaj Electricals', '9765432101', 'info@bajajelectricals.in', 'New Delhi'),

(5, 'Videocon Distributors', '9765432102', 'enquiries@videocondistributors.in', 'Chennai'),

(6, 'Godrej Electricals', '9765432103', 'godrej@godrejelectricals.in', 'Ahmedabad'),

(7, 'Voltas India', '9865432104', 'contact@voltasindia.in', 'Hyderabad'),

(8, 'Philips India', '9898989898', 'service@philipsindia.in', 'Jaipur'),

(9, 'Syska Lighting', '9878989897', 'info@syskalighting.in', 'Chandigarh'),

(10, 'Anchor Electricals', '9988776655', 'sales@anchorelectricals.in', 'Pune'),

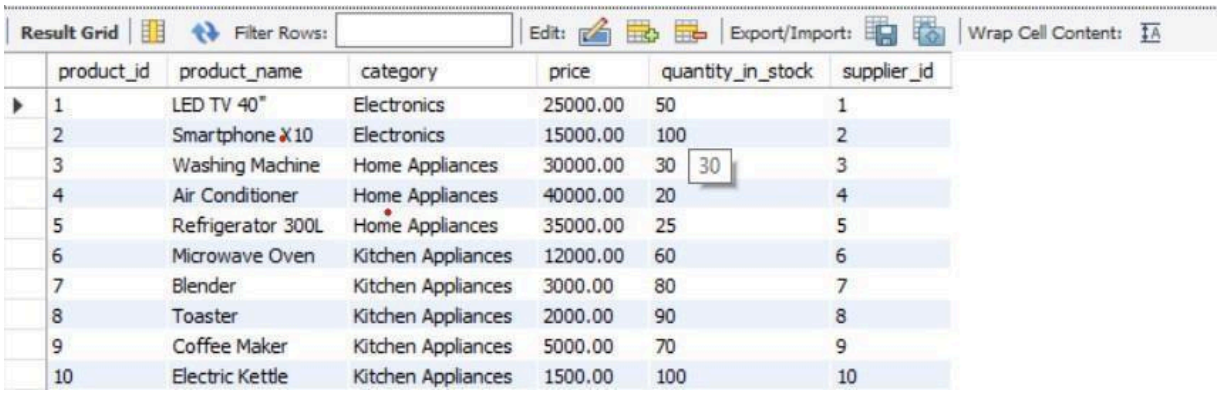
supplier_id	supplier_name	contact_number	email	address
1	Reliance Electronics	9876543210	contact@relianceelectronics.in	Mumbai
2	Tata Electronics	9867543211	support@tataelectronics.in	Bangalore
3	Havells Suppliers	9876543212	sales@havellssuppliers.in	Kolkata
4	Bajaj Electricals	9765432101	info@bajajelectricals.in	New Delhi
5	Videocon Distributors	9765432102	enquiries@videocondistributors.in	Chennai
6	Godrej Electricals	9765432103	godrej@godrejelectricals.in	Ahmedabad
7	Voltas India	9865432104	contact@voltasindia.in	Hyderabad
8	Philips India	9898989898	service@philipsindia.in	Jaipur
9	Syska Lighting	9878989897	info@syskalighting.in	Chandigarh
10	Anchor Electricals	9988776655	sales@anchorelectricals.in	Pune

```
CREATE TABLE Product (
    product_id INT PRIMARY KEY,
    product_name
    VARCHAR(50),          category
    VARCHAR(50),
    price DECIMAL(10, 2),

    quantity_in_stock
    INT, supplier_id INT,
    FOREIGN KEY (supplier_id) REFERENCES Supplier(supplier_id)

);


INSERT INTO Product (product_id, product_name, category, price,
quantity_in_stock, supplier_id) VALUES
(1, 'LED TV 40"', 'Electronics', 25000.00, 50, 1),
(2, 'Smartphone X10', 'Electronics', 15000.00, 100, 2),
(3, 'Washing Machine', 'Home Appliances', 30000.00, 30, 3),
(4, 'Air Conditioner', 'Home Appliances', 40000.00, 20, 4),
(5, 'Refrigerator 300L', 'Home Appliances', 35000.00, 25, 5),
(6, 'Microwave Oven', 'Kitchen Appliances', 12000.00, 60, 6),
(7, 'Blender', 'Kitchen Appliances', 3000.00, 80, 7),
(8, 'Toaster', 'Kitchen Appliances', 2000.00, 90, 8),
(9, 'Coffee Maker', 'Kitchen Appliances', 5000.00, 70, 9),
(10, 'Electric Kettle', 'Kitchen Appliances', 1500.00, 100, 10),
```



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

product_id	product_name	category	price	quantity_in_stock	supplier_id
1	LED TV 40"	Electronics	25000.00	50	1
2	Smartphone X10	Electronics	15000.00	100	2
3	Washing Machine	Home Appliances	30000.00	30	3
4	Air Conditioner	Home Appliances	40000.00	20	4
5	Refrigerator 300L	Home Appliances	35000.00	25	5
6	Microwave Oven	Kitchen Appliances	12000.00	60	6
7	Blender	Kitchen Appliances	3000.00	80	7
8	Toaster	Kitchen Appliances	2000.00	90	8
9	Coffee Maker	Kitchen Appliances	5000.00	70	9
10	Electric Kettle	Kitchen Appliances	1500.00	100	10

```
CREATE TABLE Customer (
    customer_id INT PRIMARY KEY,
    customer_name VARCHAR(50),
    contact_number VARCHAR(15),
    email VARCHAR(50),
    address VARCHAR(100)
);
```

```
INSERT INTO Customer (customer_id, customer_name, contact_number, email, address) VALUES
(1, 'Rajesh Kumar', '9876543210', 'rajesh.kumar@example.com', 'Mumbai'),
(2, 'Anita Sharma', '9867543211', 'anita.sharma@example.com', 'Bangalore'),
(3, 'Suresh Patel', '9876543212', 'suresh.patel@example.com', 'Kolkata'),
(4, 'Neha Gupta', '9765432101', 'neha.gupta@example.com', 'New Delhi'),
```

(5, 'Amit Singh', '9765432102', 'amit.singh@example.com', 'Chennai'),

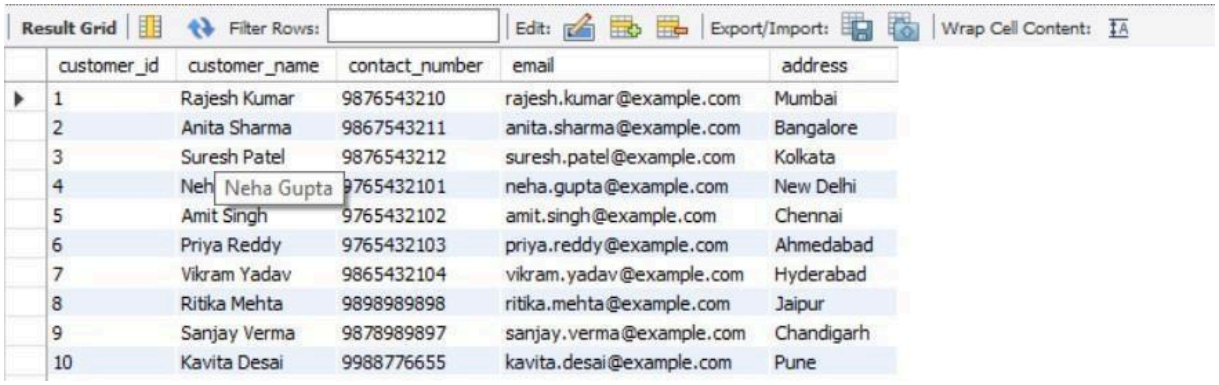
(6, 'Priya Reddy', '9765432103', 'priya.reddy@example.com', 'Ahmedabad'),

(7, 'Vikram Yadav', '9865432104', 'vikram.yadav@example.com', 'Hyderabad'),

(8, 'Ritika Mehta', '9898989898', 'ritika.mehta@example.com', 'Jaipur'),

(9, 'Sanjay Verma', '9878989897', 'sanjay.verma@example.com', 'Chandigarh'),

(10, 'Kavita Desai', '9988776655', 'kavita.desai@example.com', 'Pune'),



customer_id	customer_name	contact_number	email	address
1	Rajesh Kumar	9876543210	rajesh.kumar@example.com	Mumbai
2	Anita Sharma	9867543211	anita.sharma@example.com	Bangalore
3	Suresh Patel	9876543212	suresh.patel@example.com	Kolkata
4	Neh	9765432101	neha.gupta@example.com	New Delhi
5	Amit Singh	9765432102	amit.singh@example.com	Chennai
6	Priya Reddy	9765432103	priya.reddy@example.com	Ahmedabad
7	Vikram Yadav	9865432104	vikram.yadav@example.com	Hyderabad
8	Ritika Mehta	9898989898	ritika.mehta@example.com	Jaipur
9	Sanjay Verma	9878989897	sanjay.verma@example.com	Chandigarh
10	Kavita Desai	9988776655	kavita.desai@example.com	Pune

```
CREATE TABLE Sales (
    sales_id INT PRIMARY KEY,
    product_id INT,
    customer_id INT,
    date_of_purchase DATE,
```

```
    quantity_sold INT,
    total_price DECIMAL(10, 2),
    FOREIGN KEY (product_id) REFERENCES Product(product_id),
    FOREIGN KEY (customer_id) REFERENCES Customer(customer_id)
);

INSERT INTO Sales (sales_id, product_id, customer_id, date_of_purchase, quantity_sold, total_price) VALUES
(1, 1, 1, '2024-01-15', 2, 50000.00),
(2, 2, 2, '2024-01-17', 1, 15000.00),
(3, 3, 3, '2024-02-01', 1, 30000.00),
(4, 4, 4, '2024-02-05', 1, 40000.00),
(5, 5, 5, '2024-02-10', 1, 35000.00),
(6, 6, 6, '2024-03-01', 3, 12000.00),
(7, 7, 7, '2024-03-03', 2, 3000.00),
(8, 8, 8, '2024-03-05', 4, 2000.00),
(9, 9, 9, '2024-03-10', 5, 5000.00),
(10, 10, 10, '2024-03-15', 1, 1500.00),
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

sales_id	product_id	customer_id	date_of_purchase	quantity_sold	total_price
1	1	1	2024-01-15	2	50000.00
2	2	2	2024-01-17	1	15000.00
3	3	3	2024-02-01	1	30000.00
4	4	4	2024-02-05	1	40000.00
5	5	5	2024-02-10	1	35000.00
6	6	6	2024-03-01	3	12000.00
7	7	7	2024-03-03	2	3000.00
8	8	8	2024-03-05	4	2000.00
9	9	9	2024-03-10	5	5000.00
10	10	10	2024-03-15	1	1500.00

```
CREATE TABLE Employee (
    employee_id INT PRIMARY KEY,
    employee_name VARCHAR(50),
    role VARCHAR(50),
    salary DECIMAL(10, 2),
    department VARCHAR(50)
);
```

```
INSERT INTO Employee (employee_id, employee_name, role, salary, department) VALUES
(1, 'Amit Kumar', 'Sales Manager', 75000.00, 'Sales'),

(2, 'Sneha Patel', 'Marketing Executive', 50000.00,

'Marketing'),

(3, 'Ravi Sharma', 'HR Specialist', 55000.00, 'Human Resources'),

(4, 'Priya Singh', 'Software Engineer', 80000.00, 'Engineering'),
```

(5, 'Rohit Verma', 'Product Manager', 90000.00, 'Product'),

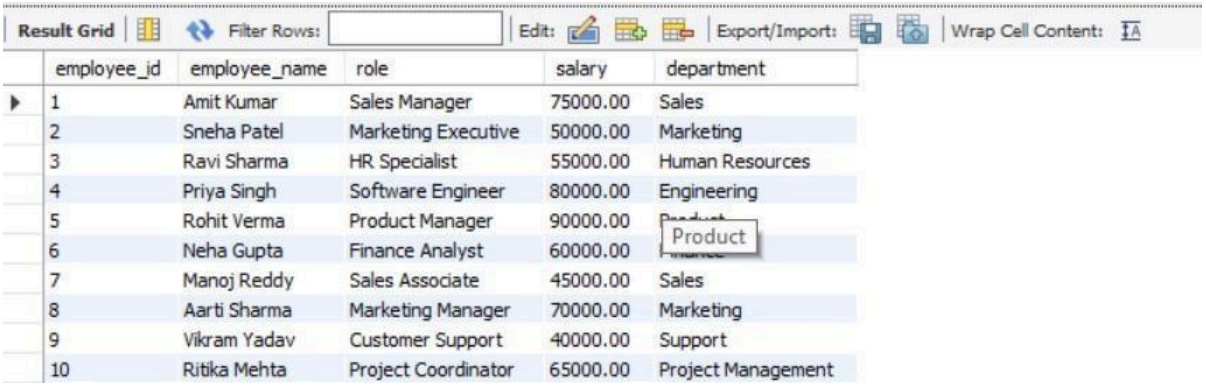
(6, 'Neha Gupta', 'Finance Analyst', 60000.00, 'Finance'),

(7, 'Manoj Reddy', 'Sales Associate', 45000.00, 'Sales'),

(8, 'Aarti Sharma', 'Marketing Manager', 70000.00, 'Marketing'),

(9, 'Vikram Yadav', 'Customer Support', 40000.00, 'Support'),

(10, 'Ritika Mehta', 'Project Coordinator', 65000.00, 'Project Management'),



employee_id	employee_name	role	salary	department
1	Amit Kumar	Sales Manager	75000.00	Sales
2	Sneha Patel	Marketing Executive	50000.00	Marketing
3	Ravi Sharma	HR Specialist	55000.00	Human Resources
4	Priya Singh	Software Engineer	80000.00	Engineering
5	Rohit Verma	Product Manager	90000.00	
6	Neha Gupta	Finance Analyst	60000.00	
7	Manoj Reddy	Sales Associate	45000.00	Sales
8	Aarti Sharma	Marketing Manager	70000.00	Marketing
9	Vikram Yadav	Customer Support	40000.00	Support
10	Ritika Mehta	Project Coordinator	65000.00	Project Management

ER Diagram

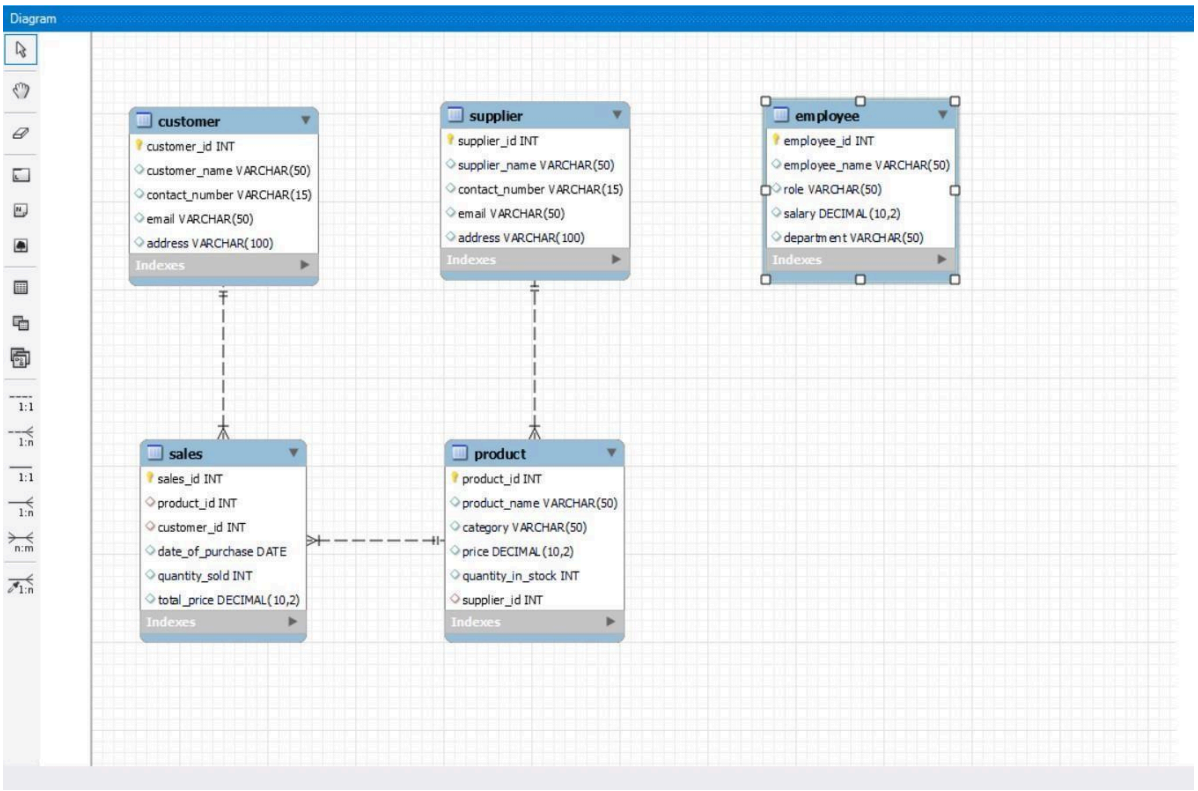


Diagram
customer
customer_id INT
customer_name VARCHAR(50)
contact_number VARCHAR(15)
email VARCHAR(50)
address VARCHAR(100)
Indexes
supplier
supplier_id INT
supplier_name VARCHAR(50)
contact_number VARCHAR(15)
email VARCHAR(50)
address VARCHAR(100)
Indexes
employee
employee_id INT
employee_name VARCHAR(50)
role VARCHAR(50)
salary DECIMAL(10,2)
department VARCHAR(50)
Indexes
sales
sales_id INT
product_id INT
customer_id INT
date_of_purchase DATE
quantity_sold INT
total_price DECIMAL(10,2)
Indexes
product
product_id INT
product_name VARCHAR(50)
category VARCHAR(50)
price DECIMAL(10,2)
quantity_in_stock INT
supplier_id INT
Indexes

SOME EXAMPLE QUERIES PERFROMED ON THE DATABASE

1. Find All Products Supplied by a Specific Supplier

```
SELECT p.product_id, p.product_name, p.category,
p.price FROM Product p
JOIN Supplier s ON p.supplier_id = s.supplier_id
WHERE s.supplier_name = 'Reliance electronics';
```

	product_id	product_name	category	price
▶	1	LED TV 40"	Electronics	25000.00

2. Get Total Sales Amount and Quantity Sold for Each Product SELECT p.product_name, SUM(s.quantity_sold) AS total_quantity, SUM(s.total_price) AS total_sales
   FROM Sales s
   JOIN Product p ON s.product_id = p.product_id
   GROUP BY p.product_name;

	product_name	total_quantity	total_sales
▶	LED TV 40"	5	125000.00
	Smartphone X10	3	45000.00
	Washing Machine	2	60000.00
	Air Conditioner	3	120000.00
	Refrigerator 300L	2	70000.00
	Microwave Oven	7	60000.00
	Blender	3	6000.00
	Toaster	6	6000.00
	Coffee Maker	8	20000.00
	Electric Kettle	6	9000.00
	Ceiling Fan	8	7500.00
	Table Fan	8	3000.00
	Dishwasher	12	175000.00
	Water Purifier	12	40000.00
	Induction Cooktop	8	28000.00
	Electric Stove	3	8000.00
	Washing Machin...	4	18000.00
	Refrigerator 500L	5	45000.00

3. List All Customers Who Made Purchases in the Last Month

```
SELECT DISTINCT c.customer_name, c.email
FROM Sales s
JOIN Customer c ON s.customer_id = c.customer_id
WHERE s.date_of_purchase >= DATE_SUB(CURDATE(),
INTERVAL 1 MONTH);
```

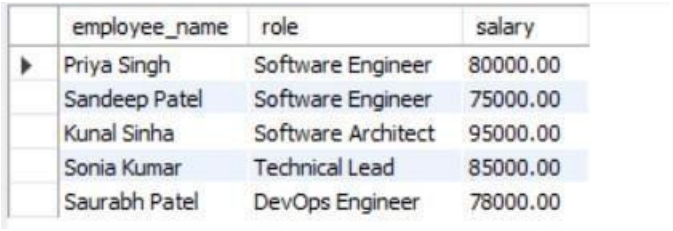
	customer_name	email
▶	Kiran Sharma	kiran.sharma@example.com
	Manish Agrawal	manish.agrawal@example.com
	Sheetal Jain	sheetal.jain@example.com
	Gaurav Patel	gaurav.patel@example.com
	Swati Agarwal	swati.agarwal@example.com
	Kunal Verma	kunal.verma@example.com
	Neelam Yadav	neelam.yadav@example.com
	Rohit Kumar	rohit.kumar@example.com
	Rajesh Kumar	rajesh.kumar@example.com
	Anita Sharma	anita.sharma@example.com
	Suresh Patel	suresh.patel@example.com
	Neha Gupta	neha.gupta@example.com
	Amit Singh	amit.singh@example.com
	Priya Reddy	priya.reddy@example.com
	Vikram Yadav	vikram.yadav@example.com

4. Find Employees in the 'Engineering' Department with a Salary Above Rs. 70,000

   SELECT employee_name, role, salary

   FROM Employee

   WHERE department = 'Engineering' AND salary > 70000;

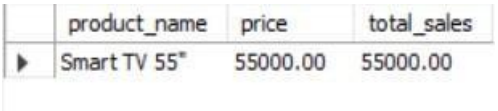


employee_name	role	salary
Priya Singh	Software Engineer	80000.00
Sandeep Patel	Software Engineer	75000.00
Kunal Sinha	Software Architect	95000.00
Sonia Kumar	Technical Lead	85000.00
Saurabh Patel	DevOps Engineer	78000.00

5. Find the Most Expensive Product Sold and Its Total Sales Amount

   SELECT p.product_name, p.price, SUM(s.total_price) AS total_sales
   FROM Sales s

   JOIN Product p ON s.product_id = p.product_id
   GROUP BY p.product_id
   ORDER BY p.price DESC
   LIMIT 1;



product_name	price	total_sales
Smart TV 55"	55000.00	55000.00

6. List Products with Quantity In Stock Less Than 50)
   SELECT product_name, quantity_in_stock
   FROM Product
   WHERE quantity_in_stock < 50;

	product_name	quantity_in_stock
▶	Washing Machine	30
	Air Conditioner	20
	Refrigerator 300L	25
	Ceiling Fan	40
	Dishwasher	15
	Water Purifier	35
	Induction Cooktop	45
	Washing Machine 6kg	25
	Refrigerator 500L	20
	Air Conditioner 1.5T	30
	Microwave 25L	40
	Electric Chimney	25
	Dishwasher 12 Place	10
	Smart TV 55"	15
	Smartphone Pro	40
	Home Theater System	20

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Conclusion:- We have built a fully functional Data base management model of an electronic company which stores information related to their employees, products, supplier, sale and cutomers.