Warehouse and Transportation Management System

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Problem Statement

To efficiently overcome the logistical problems that arise

in a warehouse product procurement and distribution process.

Introduction To System

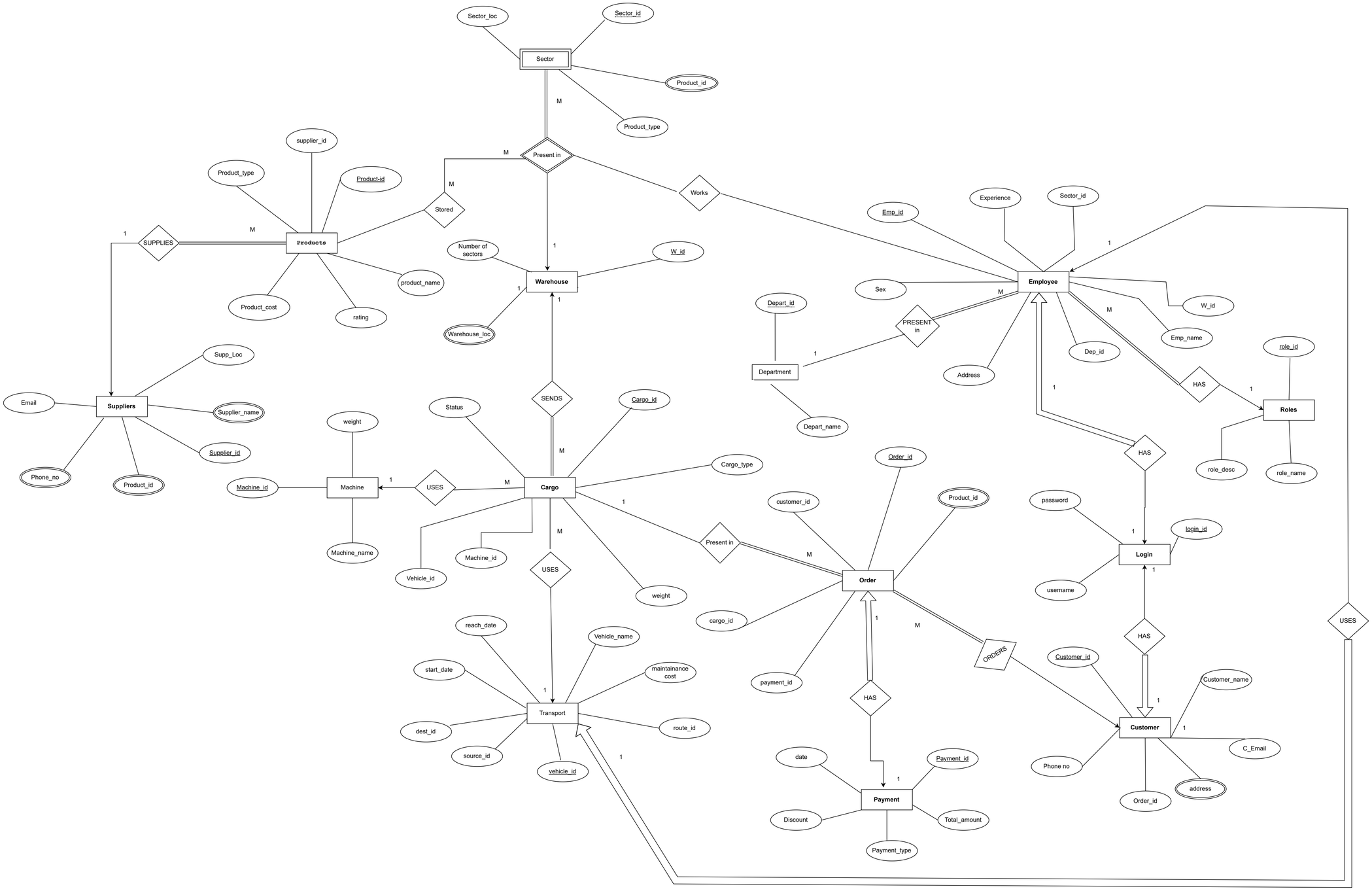
Our database system is able to manage all the processes by

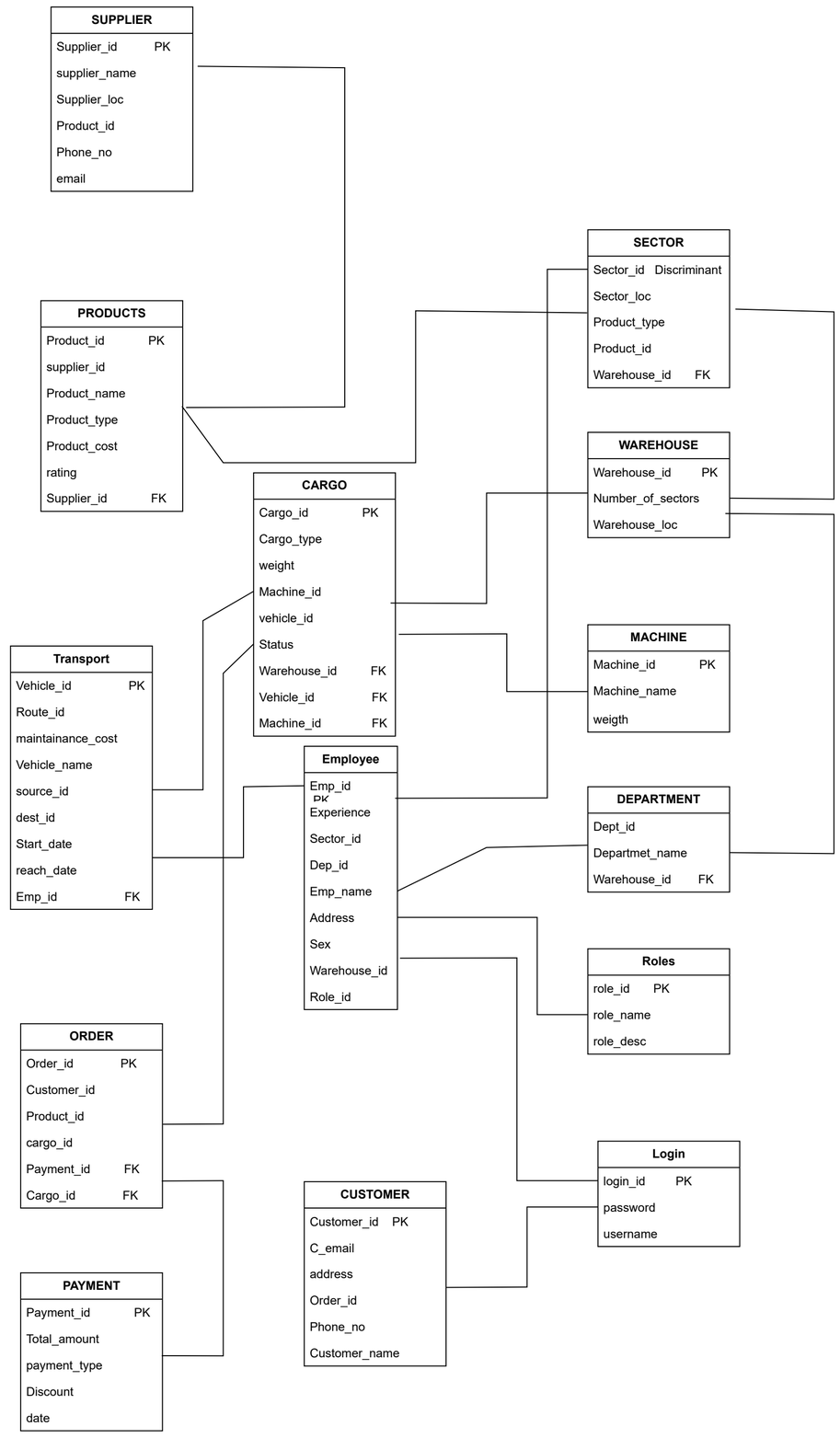
Dividing the table structure into 3 groups

1)Tables for the supplier and the products supplied

2)Tables for the internal processes in warehouse

3)Tables for managing the customer details and orders


Sector_loc
Sector_id
Sector
Product_id
Product_type
M
Present in
M
Works
supplier_id
Product_type
Product-id
Stored
M
1
SUPPLIES
M
Products
Number of sectors
W_id
1
Warehouse
product_name
Product_cost
rating
1
1
Warehouse_loc
Supp_Loc
Email
Suppliers
Supplier_name
Supplier_id
Phone_no
Product_id
SENDS
Status
Cargo_id
M
weight
Machine_id
Machine
1
USES
M
Cargo
Cargo_type
Machine_name
Vehicle_id
Machine_id
M
USES
1
weight
Present in
M
Order
Order_id
customer_id
Product_id
cargo_id
payment_id
1
M
ORDERS
reach_date
Vehicle_name
start_date
maintainance cost
1
Transport
dest_id
route_id
source_id
vehicle_id
1
Emp_id
Experience
Sector_id
1
Sex
Employee
M
Depart_id
PRESENT in
M
W_id
Emp_name
Dep_id
Address
1
Department
1
Depart_name
HAS
1
Roles
role_id
role_desc
role_name
HAS
password
1
login_id
Login
username
1
HAS
Customer_id
Customer_name
1
Customer
1
C_Email
Phone no
address
Order_id
USES
date
Payment_id
1
Payment
Discount
Total_amount
Payment_type


SUPPLIER
Supplier_id PK
supplier_name
Supplier_loc
Product_id
Phone_no
email
PRODUCTS
Product_id PK
supplier_id
Product_name
Product_type
Product_cost
rating
Supplier_id FK
SECTOR
Sector_id Discriminant
Sector_loc
Product_type
Product_id
Warehouse_id FK
WAREHOUSE
Warehouse_id PK
Number_of_sectors
Warehouse_loc
CARGO
Cargo_id PK
Cargo_type
weight
Machine_id
vehicle_id
Status
Warehouse_id FK
Vehicle_id FK
Machine_id FK
MACHINE
Machine_id PK
Machine_name
weigth
Transport
Vehicle_id PK
Route_id
maintainance_cost
Vehicle_name
source_id
dest_id
Start_date
reach_date
Emp_id FK
Employee
Emp_id
PK
Experience
Sector_id
Dep_id
Emp_name
Address
Sex
Warehouse_id
Role_id
DEPARTMENT
Dept_id
Departmet_name
Warehouse_id FK
Roles
role_id PK
role_name
role_desc
ORDER
Order_id PK
Customer_id
Product_id
cargo_id
Payment_id FK
Cargo_id FK
Login
login_id PK
password
username
CUSTOMER
Customer_id PK
C_email
address
Order_id
Phone_no
Customer_name
PAYMENT
Payment_id PK
Total_amount
payment_type
Discount
date

Supplier Section

The supplier section consists of the following tables:

1) Supplier table :

Normalized form :BCNF

Attributes:

Supp_id(PK),Supp_loc,

Supp_name ,Product_id

PhneNo,Email

2) Products Table:

Normalized form:BCNF

Attributes:

Product_id(PK),Product_name,

Supplier_id(FK),rating,

Product_type,cost

WareHouse Section

1) WareHouse Table:

Noramlization Form:BCNF

Attributes:

1) W_id (PK)
2) Number of sectors
3) Warehouse_loc

2) Sector table:

Noramlization Form:BCNF

Attributes:

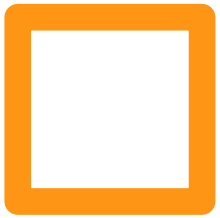
1) Sector_id(pk)
2) Sector_loc
3) Product_id
4) Product_type

3) Department Table :

Noramlization Form:BCNF

Attributes:

1) Depart_id (pk)
2) Depart_name



4) Cargo Table:

Noramlization Form:BCNF

Attributes:

1)Cargo_id(pk)

2) Cargo_type

3) Weight

4) Machine_id

5) Vehicle_id

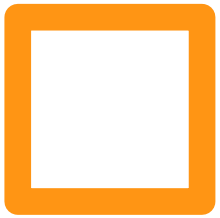
6) Status

5) Employee Table:

Noramlization Form:BCNF

Attributes:

1) Emp_id(pk)
2) Emp_name
3) Dep_id
4) W_id
5) Address
6) Sex
7) Experience
8) Sector_id

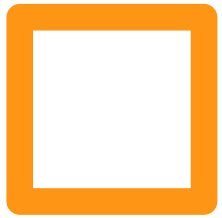


6) Roles Table:

Noramlization Form:BCNF

Attributes:

1) role_id (pk)
2) role_name
3) role_desc



7) Order table:

Noramlization Form:BCNF

Attributes:

1) Order_id(pk)
2) Product_id
3) customer_id
4) cargo_id
5) payment_id

8) Payment Table:

Noramlization Form:BCNF

Attributes:

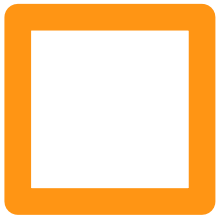
1) Payment_id(pk)
2) Total_amount
3) Payment_type
4) Discount
5) date

9) Transport Table:

Noramlization Form:BCNF

Attributes:

1) vehicle_id(pk)
2) source_id
3) dest_id
4) start_date
5) reach_date
6) Vehicle_name
7) maintainance cost
8) route_id



10) Login Table:

Noramlization Form:BCNF

Attributes:

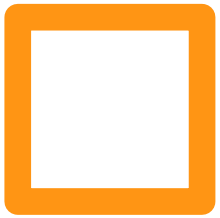
1) login_id(pk)
2) Password
3) username

11) Machine table:

Noramlization Form:BCNF

Attributes:

1) Machine_id(pk)
2) Machine_name
3) weight



Customer Section

1) **Customer table:**

Nomalization form:BCNF

Attributes:

Customer_id(PK),Customer_name,

Order_id(Fk),PhoneNo,Address,Email

Inserting tuples in Tables:-

1) Supplier:

```
  INSERT INTO supplier values (1, 'John', 'Doe', 'New York', 1, 2,
NULL, '1234567890', '9876543210', NULL, 'john.doe@example.com');
    INSERT INTO supplier values (2, 'Alice', 'Smith', 'Los Angeles',
3, NULL, NULL, '2345678901', NULL, NULL, 'alice.smith@example.com');
    INSERT INTO supplier values (3, 'Michael', 'Johnson', 'Chicago',
4, 5, NULL, '3456789012', '8765432109', NULL,
'michael.johnson@example.com');
    INSERT INTO supplier values (4, 'Emily', 'Davis', 'Houston', 6,
7, NULL, '4567890123', '7654321098', NULL,
'emily.davis@example.com');
    INSERT INTO supplier values (5, 'David', 'Brown', 'San
Francisco', 8, NULL, NULL, '5678901234', NULL, NULL,
'david.brown@example.com');
    INSERT INTO supplier values (6, 'Sarah', 'Wilson', 'Seattle', 9,
NULL, NULL, '6789012345', NULL, NULL, 'sarah.wilson@example.com');
    INSERT INTO supplier values (7, 'Matthew', 'Thompson', 'Boston',
10, NULL, NULL, '7890123456', NULL, NULL,
'matthew.thompson@example.com');
    INSERT INTO supplier values (8, 'Emma', 'Robinson', 'Miami', 9,
NULL, NULL, '8901234567', NULL, NULL, 'emma.robinson@example.com');
    INSERT INTO supplier values (9, 'Daniel', 'Lee', 'Dallas', 5,
NULL, NULL, '9012345678', NULL, NULL, 'daniel.lee@example.com');
    INSERT INTO supplier values (10, 'Olivia', 'Hall', 'Phoenix', 4,
3, NULL, '0123456789', '9012345678', NULL,
'olivia.hall@example.com');
```

2) warehouse:

```
 INSERT INTO warehouse VALUES(1, 5, 'City1', 'State1');
  INSERT INTO warehouse VALUES(2, 8, 'City2', 'State2');
  INSERT INTO warehouse VALUES(3, 3, 'City3', 'State3');
  INSERT INTO warehouse VALUES(4, 6, 'City4', 'State4');
  INSERT INTO warehouse VALUES(5, 4, 'City5', 'State5');
  INSERT INTO warehouse VALUES(6, 7, 'City6', 'State6');
  INSERT INTO warehouse VALUES(7, 2, 'City7', 'State7');
```

```
INSERT INTO warehouse VALUES(8, 9, 'City8', 'State8');
INSERT INTO warehouse VALUES(9, 5, 'City9', 'State9');
INSERT INTO warehouse VALUES(10, 3, 'City10', 'State10');
```

3) Sector:

```
INSERT INTO sector VALUES(1, 'Loc1', 'Type1', 1, 2, 3, 1);
INSERT INTO sector VALUES(2, 'Loc2', 'Type2', 4, 5, 6, 1);
INSERT INTO sector VALUES(3, 'Loc3', 'Type3', 7, 8, 9, 2);
INSERT INTO sector VALUES(4, 'Loc4', 'Type4', 10, 11, 12, 2);
INSERT INTO sector VALUES(5, 'Loc5', 'Type5', 13, 14, 15, 3);
INSERT INTO sector VALUES(6, 'Loc6', 'Type6', 16, 17, 18, 3);
INSERT INTO sector VALUES(7, 'Loc7', 'Type7', 19, 20, 21, 4);
INSERT INTO sector VALUES(8, 'Loc8', 'Type8', 22, 23, 24, 4);
INSERT INTO sector VALUES(9, 'Loc9', 'Type9', 25, 26, 27, 5);
INSERT INTO sector VALUES(10, 'Loc10', 'Type10', 28, 29, 30, 5);
```

4) products:

```
INSERT INTO products VALUES (1, 1, 'Product1', 'Type1', 10.99, 4);
INSERT INTO products VALUES (2, 2, 'Product2', 'Type2', 15.99, 3);
INSERT INTO products VALUES (3, 1, 'Product3', 'Type1', 12.50, 5);
INSERT INTO products VALUES (4, 3, 'Product4', 'Type3', 9.99, 4);
INSERT INTO products VALUES (5, 2, 'Product5', 'Type2', 18.75, 3);
INSERT INTO products VALUES (6, 1, 'Product6', 'Type1', 14.99, 5);
INSERT INTO products VALUES (7, 3, 'Product7', 'Type3', 11.25, 4);
INSERT INTO products VALUES (8, 2, 'Product8', 'Type2', 17.50, 3);
INSERT INTO products VALUES (9, 1, 'Product9', 'Type1', 9.99, 5);
INSERT INTO products VALUES (10, 3, 'Product10', 'Type3', 13.75,
4);
```

5)Machine:

```
INSERT INTO machine VALUES(1, 100, 'Machine A');
INSERT INTO machine VALUES(2, 150, 'Machine B');
INSERT INTO machine VALUES(3, 200, 'Machine C');
INSERT INTO machine VALUES(4, 120, 'Machine D');
```

```
INSERT INTO machine VALUES(5, 180, 'Machine E');
INSERT INTO machine VALUES(6, 90, 'Machine F');
INSERT INTO machine VALUES(7, 160, 'Machine G');
INSERT INTO machine VALUES(8, 140, 'Machine H');
INSERT INTO machine VALUES(9, 110, 'Machine I');
INSERT INTO machine VALUES(10, 170, 'Machine J');
```

6)Department:

```
  INSERT INTO department VALUES (1, 'Department1');
  INSERT INTO department VALUES (2, 'Department2');
  INSERT INTO department VALUES (3, 'Department3');
  INSERT INTO department VALUES (4, 'Department4');
  INSERT INTO department VALUES (5, 'Department5');
  INSERT INTO department VALUES (6, 'Department6');
  INSERT INTO department VALUES (7, 'Department7');
  INSERT INTO department VALUES (8, 'Department8');
  INSERT INTO department VALUES (9, 'Department9');
  INSERT INTO department VALUES (10, 'Department10');
```

7)Transport:

```
 INSERT INTO transport VALUES (1, 'Vehicle1', 1000, 1, 1, 2,
'01-may-2023','02-jan-2022');
  INSERT INTO transport VALUES (2, 'Vehicle2', 1500, 2, 2, 3,
'02-may-2002', '04-june-2006');
  INSERT INTO transport VALUES (3, 'Vehicle3', 1200, 3, 3, 4,
'02-may-2003', '04-june-2007');
  INSERT INTO transport VALUES (4, 'Vehicle4', 1800, 4, 4, 5,
'02-may-2004', '04-june-2008');
  INSERT INTO transport VALUES (5, 'Vehicle5', 900, 5, 5, 6,
'02-may-2005', '04-june-2009');
  INSERT INTO transport VALUES (6, 'Vehicle6', 2000, 6, 6, 7,
'02-may-2006', '04-june-2010');
  INSERT INTO transport VALUES (7, 'Vehicle7', 1700, 7, 7, 8,
'02-may-2007', '04-june-2011');
  INSERT INTO transport VALUES (8, 'Vehicle8', 1400, 8, 8, 9,
'02-may-2008', '04-june-2012');
  INSERT INTO transport VALUES (9, 'Vehicle9', 1100, 9, 9,
10,'02-may-2009', '04-june-2013');
```

```
  INSERT INTO transport VALUES (10, 'Vehicle10', 1600, 10, 10, 1,
'02-may-2010', '04-june-2014');
```

8)Payment:

```
 INSERT INTO payment VALUES (1, 100, 'Credit Card', 10,
'06-jan-2001');
    INSERT INTO payment VALUES (2, 50, 'Cash', 0, '06-jan-2002');
    INSERT INTO payment VALUES (3, 75, 'Credit Card', 5,
'06-jan-2003');
    INSERT INTO payment VALUES (4, 200, 'Cash', 0, '06-jan-2004');
    INSERT INTO payment VALUES (5, 150, 'Debit Card', 0,
'06-jan-2005');
    INSERT INTO payment VALUES (6, 80, 'Credit Card', 10,
'06-jan-2006');
    INSERT INTO payment VALUES (7, 120, 'Cash', 0, '06-jan-2007');
    INSERT INTO payment VALUES (8, 90, 'Debit Card', 0,
'06-jan-2008');
    INSERT INTO payment VALUES (9, 60, 'Credit Card', 5,
'06-jan-2009');
    INSERT INTO payment VALUES (10, 180, 'Cash', 0, '06-jan-2010');
```

9) Customer:

```
 INSERT INTO customer VALUES (1, 'John Doe', 'john@example.com',
1234567890, 'California', 'Los Angeles', 'Main Street');
    INSERT INTO customer VALUES (2, 'Jane Smith',
'jane@example.com', 9876543210, 'New York', 'New York City',
'Broadway');
    INSERT INTO customer VALUES (3, 'Mike Johnson',
'mike@example.com', 4567891230, 'Texas', 'Houston', 'Oak Street');
    INSERT INTO customer VALUES (4, 'Emily Davis',
'emily@example.com', 7891234560, 'Florida', 'Miami', 'Palm Avenue');
    INSERT INTO customer VALUES (5, 'Robert Wilson',
'robert@example.com', 3216549870, 'Illinois', 'Chicago', 'Park
Road');
    INSERT INTO customer VALUES (6, 'Sarah Thompson',
'sarah@example.com', 6543217890, 'Washington', 'Seattle', 'Pine
Street');
```

```
    INSERT INTO customer VALUES (7, 'David Anderson',
'david@example.com', 9876541230, 'Colorado', 'Denver', 'Mountain
View');
    INSERT INTO customer VALUES (8, 'Amy Brown', 'amy@example.com',
4567893210, 'Arizona', 'Phoenix', 'Sunset Boulevard');
    INSERT INTO customer VALUES (9, 'Michael Lee',
'michael@example.com', 7891236540, 'Massachusetts', 'Boston', 'Maple
Avenue');
    INSERT INTO customer VALUES (10, 'Olivia Taylor',
'olivia@example.com', 3216547890, 'Nevada', 'Las Vegas', 'Sapphire
Street');
```

10) Roles:

```
    INSERT INTO roles_ VALUES (1, 'Admin', 'Administrator role');
    INSERT INTO roles_ VALUES (2, 'Manager', 'Manager role');
    INSERT INTO roles_ VALUES (3, 'Supervisor', 'Supervisor role');
    INSERT INTO roles_ VALUES (4, 'Employee', 'Employee role');
    INSERT INTO roles_ VALUES (5, 'Accountant', 'Accountant role');
    INSERT INTO roles_ VALUES (6, 'Salesperson', 'Salesperson
role');
    INSERT INTO roles_ VALUES (7, 'Engineer', 'Engineer role');
    INSERT INTO roles_ VALUES (8, 'Analyst', 'Analyst role');
    INSERT INTO roles_ VALUES (9, 'Consultant', 'Consultant role');
    INSERT INTO roles_ VALUES (10, 'Support', 'Support role');
```

11) Cargo:

```
INSERT INTO cargo VALUES (1, 'Pending', 1, 'Electronics', 100, 1,
1);
    INSERT INTO cargo VALUES (2, 'Delivered', 2, 'Furniture', 500,
2, 2);
    INSERT INTO cargo VALUES (3, 'In Transit', 3, 'Clothing', 200,
3, 1);
    INSERT INTO cargo VALUES (4, 'Pending', 4, 'Books', 50, 4, 3);
    INSERT INTO cargo VALUES (5, 'Delivered', 5, 'Appliances', 300,
2, 2);
    INSERT INTO cargo VALUES (6, 'In Transit', 6, 'Toys', 150, 1,
3);
```

```
    INSERT INTO cargo VALUES (7, 'Delivered', 7, 'Food', 75, 3, 2);
    INSERT INTO cargo VALUES (8, 'Pending', 8, 'Electronics', 250,
4, 1);
    INSERT INTO cargo VALUES (9, 'In Transit', 9, 'Furniture', 400,
2, 3);
    INSERT INTO cargo VALUES (10, 'Delivered', 10, 'Clothing', 120,
1, 2);
```

12) Order:

```
    INSERT INTO order_ VALUES (1, 1, 1, 1, 1, NULL, NULL);
    INSERT INTO order_ VALUES (2, 2, 2, 2, 2, 3, NULL);
    INSERT INTO order_ VALUES (3, 3, 3, 3, 4, 5, NULL);
    INSERT INTO order_ VALUES (4, 4, 4, 4, 6, 7, 8);
    INSERT INTO order_ VALUES (5, 5, 5, 5, 9, NULL, NULL);
    INSERT INTO order_ VALUES (6, 1, 6, 6, 10, NULL, NULL);
    INSERT INTO order_ VALUES (7, 2, 7, 7, 1, 2, 3);
    INSERT INTO order_ VALUES (8, 3, 8, 8, 4, NULL, NULL);
    INSERT INTO order_ VALUES (9, 4, 9, 9, 5, 6, NULL);
    INSERT INTO order_ VALUES (10, 5, 10, 10, 7, 8, 9);
```

13)Employee:

```
 INSERT INTO EMPLOYEE VALUES (1, 5, 1, 1, 'John Doe', 'California',
'Los Angeles', '123 Main St', 'Male',1 , 1);
    INSERT INTO EMPLOYEE VALUES (2, 3, 2, 2, 'Jane Smith', 'New
York', 'New York City', '456 Elm St', 'Female', 3, 2);
    INSERT INTO EMPLOYEE VALUES (3, 8, 3, 1, 'Michael Johnson',
'Texas', 'Houston', '789 Oak St', 'Male', 4, 3);
    INSERT INTO EMPLOYEE VALUES (4, 6, 2, 3, 'Emily Davis',
'Florida', 'Miami', '321 Maple St', 'Female', 2, 2);
    INSERT INTO EMPLOYEE VALUES (5, 4, 1, 2, 'Robert Wilson',
'California', 'San Francisco', '567 Pine St', 'Male', 7, 7);
    INSERT INTO EMPLOYEE VALUES (6, 2, 3, 1, 'Jessica Brown',
'Texas', 'Austin', '890 Walnut St', 'Female', 6, 3);
    INSERT INTO EMPLOYEE VALUES (7, 7, 2, 3, 'David Lee', 'Florida',
'Orlando', '432 Cedar St', 'Male', 7, 2);
    INSERT INTO EMPLOYEE VALUES (8, 4, 1, 2, 'Sarah Thompson',
'California', 'San Diego', '876 Birch St', 'Female',6 , 7);
```

```
    INSERT INTO EMPLOYEE VALUES (9, 3, 3, 1, 'Christopher Clark',
'Texas', 'Dallas', '1098 Oak St', 'Male',8 , 3);
    INSERT INTO EMPLOYEE VALUES (10, 5, 2, 3, 'Jennifer Hall',
'Florida', 'Tampa', '543 Maple St', 'Female', 10, 2);
```

14) Login:

```
INSERT INTO login VALUES ('login1', 'user1', 'pass1', 1, NULL);
    INSERT INTO login VALUES ('login2', 'user2', 'pass2', 2, NULL);
    INSERT INTO login VALUES ('login3', 'user3', 'pass3', 3, NULL);
    INSERT INTO login VALUES ('login4', 'user4', 'pass4', 4, NULL);
    INSERT INTO login VALUES ('login5', 'user5', 'pass5', 5, NULL);
    INSERT INTO login VALUES ('login6', 'user6', 'pass6', NULL, 1);
    INSERT INTO login VALUES ('login7', 'user7', 'pass7', NULL, 2);
    INSERT INTO login VALUES ('login8', 'user8', 'pass8', NULL, 3);
    INSERT INTO login VALUES ('login9', 'user9', 'pass9', NULL, 4);
    INSERT INTO login VALUES ('login10', 'user10', 'pass10', NULL,
5);
```

–Queries

```
--count the number of departmenst that have a department name given
as input
select (warehouse_id) from
(select * from employee
where dept_id=(select dept_id from department where
dept_name='Department3'));
```

Output:-

	WAREHOUSE_ID
1	2
2	7
3	10

```
--show all the products that are present in a warehouse when
warehouse id is given
select product_id1,product_id2,product_id2 from sector where
warehouse_id=1;
```

Output:-

	PRODUCT_ID1	PRODUCT_ID2	PRODUCT_ID2_1
1	1	2	2
2	4	5	5

```
--show all the cargos that are sent from a given warehouse
select cargo_id from cargo where warehouse_id=1;
```

Output:-

	CARGO_ID
1	1
2	3
3	8

```
--show all the cargos on which a machine with a given machine id has
worked on
select cargo_id from cargo where machine_id=1;
```

Output:-

	CARGO_ID
1	1

```
--show all the id of off the orders that are being transported in a
given cargoid
select order_id from order_ where cargo_id=9;
```

Output:-

	ORDER_ID
1	9

```
--show the start date and reach date of a given orderid
select start_date,reach_date from transport where vehicle_id=(select
vehicle_id from cargo where cargo_id=(select cargo_id from order_
where order_id=1));
```

Output:-

	START_DATE	REACH_DATE
1	01-05-23	02-01-22

```
--show the suppliers of products present in a given order id
select * from supplier where product_id1=(select product_id1 from
order_ where order_id=1) or product_id2=(select product_id1 from
order_ where order_id=1) or product_id2=(select product_id1 from
order_ where order_id=1);
```

Output:-

	SUPPLIER_ID	SUPPLIER_FNAME	SUPPLIER_LNAME	SUPPLIER_LOC	PRODUCT_ID1	PRODUCT_ID2	PRODUCT_ID3	PHONE_NO1	PHONE_NO2	PHONE_NO3	EMAIL
1	1	John	Doe	New York	1	2	(null)	1234567890	9876543210	(null)	john.doe@example.com

```
--show all products of a given supplier
select product_id1,product_id2,product_id3 from supplier where
supplier_id=3;
```

Output:-

	PRODUCT_ID1	PRODUCT_ID2	PRODUCT_ID3
1	4	5	(null)

```
--show the details of a customer when a payment id is given
select * from customer where customer_id=(select customer_id from
order_ where payment_id=1);
```

Output:-

	CUSTOMER_ID	CUSTOMER_NAME	CUSTOMER_EMAIL	CUSTOMER_PHONE	CUSTOMER_STATE	CUSTOMER_CITY	CUSTOMER_STREET
1	1	John Doe	john@example.com	1234567890	California	Los Angeles	Main Street

```sql
--count the total number of employess having a given role
select count(emp_id) from employee where role_id=1;
```

Output:-

	COUNT(EMP_ID)
1	1