

DATABASE MANAGEMENT SYSTEM PRACTICAL

SQL

Database Schema

Supplier(SID, SName, Branch, City)

Part(PID, PName, Color, Cost)

Supplies(SID, PID, Quantity)

Answers

```
CREATE TABLE Supplier (
    SID INT PRIMARY KEY,
    SName VARCHAR(50),
    Branch VARCHAR(50),
    City VARCHAR(50));
```

```
CREATE TABLE Part (
    PID INT PRIMARY KEY,
    PName VARCHAR(50),
    Color VARCHAR(20),
    Cost DECIMAL(10,2));
```

```
CREATE TABLE Supplies (
    SID INT,
    PID INT,
    Quantity INT,
    PRIMARY KEY (SID, PID),
    FOREIGN KEY (SID) REFERENCES Supplier(SID),
    FOREIGN KEY (PID) REFERENCES Part(PID));
```

Insert values to this tables

```
INSERT INTO Supplier VALUES (1, 'Beta Components', 'Electronics', 'Chicago');  
INSERT INTO Supplier VALUES (2, 'Gamma Traders', 'Hardware', 'Delhi');  
INSERT INTO Supplier VALUES (3, 'Delta Supplies', 'Plastics', 'Delhi');  
INSERT INTO Supplier VALUES (4, 'ABC Traders', 'Stationery', 'Bombay');
```

```
INSERT INTO Part VALUES (101, 'Bolt', 'silver', 10);  
INSERT INTO Part VALUES (106, 'Bolt', 'BLACK', 19);  
INSERT INTO Part VALUES (102, 'Nut', 'black', 15);  
INSERT INTO Part VALUES (103, 'Plastic boxes', 'white', 30);  
INSERT INTO Part VALUES (104, 'Notebooks', 'blue', 50),  
INSERT INTO Part VALUES (105, 'keyboard', 'black', 200);
```

```
INSERT INTO Supplies VALUES (1, 101, 500);  
INSERT INTO Supplies VALUES (1, 102, 300);  
INSERT INTO Supplies VALUES (2, 105, 300);  
INSERT INTO Supplies VALUES (3, 103, 700);  
INSERT INTO Supplies VALUES (4, 104, 250);
```

1.

Queries

- a. Find the minimum, maximum, average, and total cost of all parts.

Ans: `SELECT MIN(Cost) AS Min_Cost, MAX(Cost) AS Max_Cost, AVG(Cost) AS Avg_Cost, SUM(Cost) AS Total_Cost
FROM Part;`

- b. Display each color with total value ($\text{Cost} \times \text{Quantity}$) of supplied parts using GROUP BY

Ans: `SELECT p.Color,sum(p.Cost*s.Quantity) as total_value
from Part p,Supplies s
where s.PID=p.PID
group by p.Color;`

- c. List only those colors where total value exceeds 5000 using HAVING.

Ans: `SELECT p.Color,sum(p.Cost*s.Quantity) as total_value`

```
from Part p,Supplies s  
where s.PID=p.PID  
group by p.Color  
having SUM(P.Cost * S.Quantity) > 5000;
```

- d. Count the total number of parts

Ans: SELECT COUNT(*) AS Total_Parts
FROM Part;

- e. Display each branch with number of suppliers.

Ans: SELECT Branch, COUNT(*) AS Number_of_Suppliers
FROM Supplier
GROUP BY Branch;

2.

Queries

- a. Display each branch with total number of suppliers (GROUP BY)

Ans: SELECT Branch, COUNT(SID) AS Total_Suppliers
FROM Supplier
GROUP BY Branch;

- b. Show only branches with more than 2 suppliers (HAVING)

Ans: SELECT Branch, COUNT(SID) AS Total_Suppliers
FROM Supplier
GROUP BY Branch;
HAVING
COUNT(SID) > 2;

- c. For parts with same name, sort by Cost in descending order.

Ans: SELECT PID, PName, Color, Cost
FROM Part
WHERE PName IN (
 SELECT PName
 FROM Part
 GROUP BY PName
 HAVING COUNT(*) > 1)
ORDER BY COST DESC

- d. Retrieve parts name supplied by ‘Beta Components’

Ans:

SELECT P.PName

FROM Supplier S,Supplies SP, Part P
WHERE S.SID = SP.SID AND SP.PID = P.PID AND S.SName = 'Beta
Components';

- e. Display each color with number of parts in that color.

SELECT Color, COUNT(*) AS Number_of_Parts

FROM Part
GROUP BY Color;

3. Queries

- a. Find the supplier name where ‘R’ is in the second position

Ans: SELECT SName

FROM Supplier
WHERE SName LIKE '_R%';

- b. Change the city of supplier 'Gamma Traders' to ‘Goa’

Ans: UPDATE Supplier

SET City = 'Goa'
WHERE SName = 'Gamma Traders';

- c. Show the contents in tables supplier, part and supplies

Select * from Supplier;

Select * from Supplies;

Select * Part;

- d. Find the name and city of all suppliers who stay in ‘Delhi’

SELECT SName, City
FROM Supplier
WHERE City = 'Delhi';

- e. Display only suppliers whose avg part cost is above 2000.

SELECT S.SName, AVG(P.Cost)

FROM Supplier S, Supplies SP, Part P
where S.SID = SP.SID and SP.PID = P.PID
GROUP BY S.SName
HAVING AVG(P.Cost) > 2000;

4.

Queries

- a. Display each supplier with the total quantity of parts they supplied.

Ans: SELECT S.SID, S.SName, SUM(SP.Quantity) FROM Supplier S, Supplies SP
WHERE S.SID=SP.SID GROUP BY S.SName;

- b. Show only suppliers contributing quantity > 100 units.

Ans: Select S.SID, S.SName, SUM(SP.Quantity) FROM Supplier S, Supplies SP
WHERE S.SID=SP.SID GROUP BY S.SName HAVING SP.Quantity > 100;

- c. Find the name of all suppliers who stay in ‘Delhi’

Ans: SELECT SName FROM Supplier WHERE City =’Delhi’;

- d. Find the name and city of all suppliers

Ans: SELECT SName, City FROM Supplier;

- e. Find the branch and the number of suppliers in that branch for branches which have more than 2 suppliers

Ans: SELECT Branch, Count(*) AS Suppliers FROM Supplier GROUP BY Branch
HAVING Count(*) > 2;

5.

Queries

- a. Display each supplier with total quantity and total cost supplied.

Ans: SELECT S.SName, Sum(SP.Quantity), Sum(SP.Quantity * P.Cost) AS
Total_Cost FROM Supplier S, Supplies SP, Part P WHERE S.SID=SP.SID AND
SP.PID = P.PID GROUP BY S.SName;

- b. Sort these suppliers by average cost.

Ans: SELECT S.SName, Avg(P.Cost) FROM Supplier S, Part P, Supplies SP
WHERE S.SID=SP.SID AND SP.PID=P.PID GROUP BY S.SName ORDER BY
Avg(P.Cost);

- c. Display each supplier with count of distinct parts supplied.

Ans: SELECT S.SName, Count(SP.PID) FROM Supplier S, Supplies SP WHERE
S.SID=SP.SID GROUP BY S.SName;

- d. List all parts sorted by PName (A-Z).

Ans: SELECT PName, Color, Cost FROM Part ORDER BY PName ASC;