```sql
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-- In preparation for: COMP 4003 Assignment #1

--PART 1
--Create table containing suppliers
CREATE TABLE Suppliers (
      S#          VARCHAR(4)  PRIMARY KEY,
      SNAME       VARCHAR(10) NOT NULL,    --IC1
      STATUS      INTEGER     NOT NULL,    --IC2
      CITY        VARCHAR(10) NOT NULL     --IC3
);

--Create table containing parts
CREATE TABLE Parts (
      P#          VARCHAR(4)  PRIMARY KEY,
      PNAME       VARCHAR(10) NOT NULL,    --IC4
      COLOR       VARCHAR(10) NOT NULL,    --IC5
      WEIGHT      FLOAT       NOT NULL CHECK(WEIGHT > 0),  --IC6 cant have
zero or less weight
      CITY        VARCHAR(10) NOT NULL     --IC7
);

--Create table containing supplier-parts relation/info
CREATE TABLE SP (
      S#          VARCHAR(4),
      P#          VARCHAR(4),
      QTY         INTEGER     NOT NULL CHECK(QTY >=0),     --IC8 cant have
negative qty
      PRIMARY KEY (S#,P#),
      FOREIGN KEY (S#) REFERENCES Suppliers(S#)
      ON DELETE CASCADE,
      FOREIGN KEY (P#) REFERENCES Parts(P#)
      ON DELETE CASCADE
);

--Populate table containing suppliers
INSERT INTO Suppliers (S#, SNAME, STATUS, CITY) VALUES ('S1','Smith', 20,
'London');
INSERT INTO Suppliers (S#, SNAME, STATUS, CITY) VALUES ('S2','Jones', 30,
'Paris');
INSERT INTO Suppliers (S#, SNAME, STATUS, CITY) VALUES ('S3','Blake', 30,
'Paris');
INSERT INTO Suppliers (S#, SNAME, STATUS, CITY) VALUES ('S4','Clark', 20,
'London');
INSERT INTO Suppliers (S#, SNAME, STATUS, CITY) VALUES ('S5','Adams', 30,
'Athens');

--Populate table containing parts
INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P1','Nut',
'Red', 12.0, 'London');
INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P2','Bolt',
'Green', 17.0, 'Paris');
INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P3','Screw',
'Blue', 17.0, 'Oslo');
```

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INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P4','Screw',
'Red', 14.0, 'London');
INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P5','Cam',
'Blue', 12.0, 'Paris');
INSERT INTO Parts (P#, PNAME, COLOR, WEIGHT, CITY) VALUES ('P6','Cog',
'Red', 19.0, 'London');

--Populate table containing supplier-parts relation/info
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P1', 300);
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P2', 200);
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P3', 400);
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P4', 200);
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P5', 100);
INSERT INTO SP (S#, P#, QTY) VALUES ('S1','P6', 100);
INSERT INTO SP (S#, P#, QTY) VALUES ('S2','P1', 300);
INSERT INTO SP (S#, P#, QTY) VALUES ('S2','P2', 400);
INSERT INTO SP (S#, P#, QTY) VALUES ('S3','P2', 200);
INSERT INTO SP (S#, P#, QTY) VALUES ('S4','P2', 200);
INSERT INTO SP (S#, P#, QTY) VALUES ('S4','P4', 300);
INSERT INTO SP (S#, P#, QTY) VALUES ('S4','P5', 400);

--PART 2

/*
1. Get the part names that Smith supplies.

Query:
*/
SELECT Parts.PNAME
FROM Parts
WHERE EXISTS
      (SELECT *
       FROM Suppliers, SP
       WHERE Suppliers.S# = SP.S# AND SP.P# = Parts.P#
       AND Suppliers.SNAME = 'Smith');
/*
Result:

PNAME
----------
Nut
Bolt
Screw
Screw
Cam
Cog

2. Get supplier names for suppliers who supply part P2.

Query:
*/
SELECT Suppliers.SNAME
FROM Suppliers
WHERE EXISTS
```

```
        (SELECT *
         FROM Parts, SP
         WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#
         AND Parts.P# = 'P2');

/*
Result:

SNAME
----------
Smith
Jones
Blake
Clark

3. Get supplier names and the quantity of parts supplied.

Query:
*/
SELECT Suppliers.SNAME, SUM(SP.QTY) AS TOTAL_QTY
FROM Suppliers, SP
WHERE Suppliers.S# = SP.S#
GROUP BY Suppliers.SNAME;

/*
Result:

SNAME        TOTAL_QTY
---------- ----------
Blake             200
Clark             900
Jones             700
Smith            1300

4. Get supplier names for suppliers who supply a part with quantity less
than 500

Query:
*/
SELECT Suppliers.SNAME
FROM Suppliers
WHERE EXISTS
        (SELECT *
         FROM Parts, SP
         WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#
         AND SP.QTY < 500);

/*
Result:

SNAME
----------
Smith
Jones
```

```
Blake
Clark

5. Get supplier names for suppliers who supply either blue or green
parts.
Query:
*/
SELECT Suppliers.SNAME
FROM Suppliers
WHERE EXISTS
      (SELECT *
       FROM Parts, SP
       WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#
       AND Parts.COLOR IN('Blue', 'Green'));

/*
Result:

SNAME
----------
Blake
Clark
Jones
Smith

6. Get supplier names for suppliers who supply both blue and green parts.
Query:
*/
SELECT Suppliers.SNAME
FROM Suppliers
WHERE EXISTS
      (SELECT *
       FROM Parts, SP
       WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#
       AND Parts.COLOR IN('Blue'))
INTERSECT
SELECT Suppliers.SNAME
FROM Suppliers
WHERE EXISTS
      (SELECT *
       FROM Parts, SP
       WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#
       AND Parts.COLOR IN('Green'));

/*
Result:

SNAME
----------
Clark
Smith

7. Get supplier name/part name pairs such that the indicated supplier
does not supply the indicated part.
```

```
Query:
*/
SELECT Suppliers.SNAME, Parts.PNAME
FROM Suppliers, Parts
WHERE NOT EXISTS
      (SELECT *
       FROM SP
       WHERE Parts.P# = SP.P# AND SP.S# = Suppliers.S#);

/*
Result:

SNAME      PNAME
---------- ----------
Jones      Screw
Jones      Screw
Jones      Cam
Jones      Cog
Blake      Nut
Blake      Screw
Blake      Screw
Blake      Cam
Blake      Cog
Clark      Nut
Clark      Screw
Clark      Cog
Adams      Nut
Adams      Bolt
Adams      Screw
Adams      Screw
Adams      Cam
Adams      Cog

8. Get supplier names for suppliers who does not supply any parts.
Query:
*/
SELECT Suppliers.SNAME
FROM Suppliers
WHERE NOT EXISTS
      (SELECT *
       FROM SP
       WHERE SP.S# = Suppliers.S#);

/*
Result:

SNAME
----------
Adams

9. Get supplier names for suppliers who supply all parts.
Query:
*/
SELECT Suppliers.SNAME
```

```
FROM Suppliers
WHERE NOT EXISTS
      (SELECT *
       FROM Parts
       WHERE NOT EXISTS
            (SELECT *
             FROM SP
             WHERE Suppliers.S# = SP.S# AND SP.P# = Parts.P#));

/*
Result:

SNAME
----------
Smith

10. Get supplier names, the number of parts and total quantity supplied.
Query:
*/
SELECT Suppliers.SNAME, COUNT(SP.P#) AS TOTAL_PARTS, SUM(SP.QTY) AS
TOTAL_QTY
FROM Suppliers, SP
WHERE Suppliers.S# = SP.S#
GROUP BY Suppliers.SNAME;

/*
Result:

SNAME      TOTAL_PARTS  TOTAL_QTY
---------- -----------  ----------
Blake                1         200
Clark                3         900
Jones                2         700
Smith                6        1300
*/
```