Tutorial– SQL

Exercises

All questions in this lab/tutorial relate to the *Parts* database, shown below. The Parts database is used by C.J. Date in his database textbooks and articles. C.J. Date is one of the most respected thinkers in relational database theory and his database is commonly used in database teaching and exercises.

Parts database:

Supplier (SNO, SName, Status, City)

Part (PNO, PName, Color, Weight, City)

Shipment (SNO, PNO, Qty)
FOREIGN KEY (SNO) REFERENCES S
FOREIGN KEY (PNO) REFERECENES P

Project (JNO, JName, City)

SHIPPART (SNO, PNO, JNO, Qty)

FOREIGN KEY (SNO) REFERENCES S
FOREIGN KEY (PNO) REFERECENES P
FOREIGN KEY (JNO) REFERECENES J

S = Supplier
P = Part type
SP = Shipment of a part type by a supplier
J = Project
SPJ = a part type shipped by a given supplier and used on a given project

Write SQL queries to answer the information requests below.

1. Show full details of all suppliers.
2. Show full details of all parts
3. Show full details of all suppliers in London.
4. Show the part number (PNO), name and color of all parts located in Paris.
5. Show the part number and name of all parts that weigh more than 15.
6. Show the part number and name of all parts that weigh more than 15 and are not red.
7. Show the part number and name of all parts that weigh more than 15 and are neither red nor green.
8. Show the part number and name of all parts that weigh between15 and 19 inclusive. Order the results by part name.
9. Show full details of all parts that have been shipped by supplier S1. Use a join query and make sure no duplicates appear in your output. (Note: it is recommended that you try both implicit and explicit joins.)
10. Show full details of suppliers who have shipped part P1. Use a join query and make sure no duplicates appear in your output.
11. Show full details of suppliers who are located in London and have shipped parts that are located in London. Use a join query and make sure no duplicates appear in your output.
12. Repeat question 9 but use the IN operator.
13. Repeat question 10 but use the IN operator.
14. Repeat question 9 but use the EXISTS operator.
15. Repeat question 10 but use the EXISTS operator.

16. Repeat question 11 but use a subquery inside a subquery. Use the IN operator.
17. Repeat question 11 but use a subquery inside a subquery. Use the EXISTS operator.
18. Show details of suppliers who have never made a shipment. Use the NOT IN operator.
19. Show details of suppliers who have never made a shipment. Use the NOT EXISTS operator.
20. Show details of suppliers who have never made a shipment. Use an outer JOIN.
21. How many suppliers are there?
22. How many suppliers are there in London?
23. Show the maximum and minimum status values in the supplier table.
24. Show the maximum and minimum status values in the supplier table for London suppliers.
25. How many parts has each supplier shipped? Show the supplier number (SNO) total shipped only.
26. How many parts has each supplier shipped? Show the supplier number, name and city as well as the total shipped. (Note: you will have to modify your group by statement. Why?)
27. Which suppliers have shipped more than 500 parts in total? Show the supplier number only.
28. Which suppliers have shipped more than 300 red parts? Show the supplier number only.
29. Which suppliers have shipped more than 300 red parts? Show the supplier number, name, and city and the number of red parts shipped. (Note: you will have to modify your group by statement. Why?)
30. How many suppliers are there in each city?
31. Which supplier has shipped the most parts? Show the name and number.
32. Show a list of cities that have either suppliers or parts. In other words, show all the cities from the supplier table and all the cities from the parts table. Show the results in a single column and remove duplicates.
33. Write an SQL statement to insert a new supplier: S6, Duncan, 30, Paris.
34. Write an SQL statement to change S6's city to Sydney.
35. Write an SQL statement to increase each London supplier's status by 10.
36. Write an SQL statement to delete supplier S6.
37. Write a create table statement to create the supplier table. The syntax for the create table statement is provided at the end of this tutorial sheet.
38. Write a create table statement to create the shipments table.
39. Alter the shipments table and add a constraint that the QTY value must be greater than 0. The syntax for the Alter Table statement is provided at the end of this tutorial sheet.
40. Show full details of suppliers who have supplied each and every part type. You should use NOT EXISTS to answer this question.