

COMS 363 Fall 2022**Practice Problems for Exam on SQL****Question 1:** Test your understanding of SQL.

Consider the following relational schemas for suppliers, parts, and catalog. You have the script called “suppliers_supply_parts.sql” to generate this database in the Week 6 class participation folder.

Suppliers(sid: int, sname: VARCHAR(30), address: VARCHAR(50))

Parts(pid: int, pname: VARCHAR(30), color: VARCHAR(10))

Catalog(sid: int, pid: int, cost: double)

The Catalog relation lists the prices charged for parts by Suppliers. Catalog.pid is a foreign key to Parts.pid. Catalog.sid is a foreign key to Suppliers.sid. The primary keys are underlined.

Write a SQL query to answer each question below.

- a. Return the number of parts in the Parts table.
Output of the query against one instance of the database

numParts
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- b. Show the catalog information indicating which supplier supplies which part(s) in ascending order of suppliers.sname. List only the values of these attributes in your answer: Parts.pid, Parts.pname, Suppliers.sid, Suppliers.sname, and Catalog.cost. Limit the output to 5 rows.

Output of the query against one instance of the database:

sid	sname	pid	pname	cost
3	Advance Auto Parts	101	Battery	65
3	Advance Auto Parts	201	Catalytic Converter	55
3	Advance Auto Parts	703	Spark Plugs	85
3	Advance Auto Parts	704	Shock Absorbers	70
3	Advance Auto Parts	800	Battery	37

- c. List sid, sname, and address values of all suppliers who supply at least one part. Show each supplier data only one time. The answer must not show sid and sname of any supplier who does not have its sid value in the Catalog table. The order of the rows in the output does not matter.

Output of the query against one instance of the database:

sid	sname	address
1	Amazon	Ames
2	AutoZone	Boone
3	Advance Auto Parts	Ankeny
4	O Reilly	Bondurant
5	Walmart	Des Moines
6	Ford	Ames
7	Wilson Toyota	Boone
8	Lithia Honda	Nevada
9	George Chevy	Clive
10	Deerly Bro	West Des Moines
11	Dewey Ford	Ankeny
12	Huxley Nissan	Huxley
13	Story City Dodge	Story City
14	Iowa Auto	Iowa City
15	Seth Auto	Davenport
16	Valve Auto	

- d. Find all parts with the color attribute value as 'black'. Furthermore, each part in the output must have at least one supplier who supplies the part. Show only the *pid* and *pname* values of each of these parts only once. The order of the rows in the output does not matter.

Output of the query against one instance of the database:

pid	pname
102	Wiper Blades
201	Catalytic Converter
202	Oxygen Sensor
301	Ignition Coil
800	Battery
805	Brake Pads
806	Brake Rotors
808	Serpentine Belt
809	Spark Plugs
810	Shock Absorbers
820	Air Filter
821	Engine Oil
822	Transmission Fluid
823	Air Pressure Sensor
824	Wheel Bearing

- e. Find sid and sname values of suppliers who supply both red parts and green parts. A red part has the value of its color attribute as 'red'. A green part has the value of its color attribute as 'green'. Show the sid value and sname value for each supplier once in the output. Each supplier that is listed in the output must supply parts with both colors.

Use the in operator in your query. Don't leave the answer blank. Partial credits are given for a query that gives the correct answer although it does not use the in operator.

Output of the query against one instance of the database:

sid	sname
3	Advance Auto Parts
1	Amazon
4	O Reilly
2	AutoZone
5	Walmart
6	Ford
7	Wilson Toyota
8	Lithia Honda
9	George Chevy
10	Deerly Bro
11	Dewey Ford
12	Huxley Nissan
13	Story City Dodge
14	Iowa Auto
15	Seth Auto

- f. Find the sid values of all suppliers who supply **every green part**, i.e., every part that has its color attribute value as 'green'. Show the result in ascending order of the *sid* values. Write one query using the INNER JOIN operator, one query using the IN operator, and one query using the EXISTS operator with correlation.

Output of the query against one instance of the database:

sid
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