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Homework # 2

Database and Mining

CSCI 391

What makes SQL a nonprocedural language?

**SQL is considered a nonprocedural language because implementation consist of what should be done and not how it should be done.**

How can you tell whether a database is truly relational?

**-Must apply Codd's 12 rules.(Google Codd’s 12 rules for reference)**

What can you do with SQL?

**SQL can retrieve, insert, update, delete, and view, data from a database**

**Create tables in an organize manner with data in them.**

Name the process that separates data into distinct, unique sets.

**Database normalization: organizing the tables of a relational database to reduce redundant data. (defining foreign keys in the old table referencing the primary keys of the new ones)**

Do the following statements return the same or different output:

SELECT \* FROM ARRESTS; select \* from arrests;

-**Same, SQL is not case sensitive.**

None of the following queries work. Why not?

select \*; Select \* from checks Select amount name payee FROM checks;

Which of the following SQL statements will work?

select \* from checks; select \* from checks; select \* from checks /

**The first select has to specify which table it is pulling from. A comma is also missing for another table.**

Given the following table description for the arrests table:

|  |  |  |
| --- | --- | --- |
| nysid | officerId | topCharge |

Do the following:

Write a query to return just the check officerId and the topCharge.

-**SELECT officerID,topCharge from arrest;**

Rewrite the query from exercise 1 so that the topCharge will appear as the first column in your query results.

**- SELECT topCharge, offierID from arrest;**

Using the arrests table, write a query to return all the unique topCharges.

**-SELECT DISTINCT topCharges FROM arrest;**

Use the doubleAgents table to answer the following questions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LASTNAME** | **FIRSTNAME** | **AREACODE** | **PHONE** | **ST** | **ZIP** |
| BUNDY | AL | 100 | 555-1111 | IL | 22333 |
| MEZA | AL | 200 | 555-2222 | UK |  |
| MERRICK | BUD | 300 | 555-6666 | CO | 80212 |
| MAST | JD | 381 | 555-6767 | LA | 23456 |
| BULHER | FERRIS | 345 | 555-3223 | IL | 23332 |
| PERKINS | ALTON | 911 | 555-3116 | CA | 95633 |
| BOSS | SIR | 204 | 555-2345 | CT | 95633 |

Write a query that returns everyone in the database whose last name begins with M.

**-SELECT \* FROM doubleAgents WHERE lastname LIKE 'M%';**

Write a query that returns everyone who lives in Illinois with a first name of AL.

**SELECT \* FROM doubleAgents WHERE ST = ‘IL’ AND FIRSTNAME = ‘AL’;**

What shorthand could you use instead of WHERE a >= 10 AND a <=30?

**WHERE a BETWEEN 10 AND 30;**

What will this query return?

SELECT FIRSTNAME FROM DOUBLE\_AGENTS WHERE FIRSTNAME = 'AL' AND LASTNAME = 'BULHER';

**Nothing, no one meets the said conditions**.

Using the DOUBLEAGENTS table, write a query that returns the following:

|  |  |
| --- | --- |
| **NAME** | **ST** |
| AL FROM | IL |

**SELECT (FIRSTNAME || 'FROM') NAME, STAT FROM** DOUBLEAGENTS **WHERE STATE = 'IL' AND LASTNAME = 'BUNDY';**

Using the DOUBLEAGENTS table, write a query that returns the following:

|  |  |
| --- | --- |
| **NAME** | **PHONE** |
| MERRICK, BUD | 300-555-6666 |
| MAST, JD | 381-555-6767 |
| BULHER, FERRIS | 345-555-3223 |

Which function capitalizes the first letter of a character string and makes the rest lowercase?

**INITCAP**

Which functions are also known by the *same* name?

**MID() and SUBSTRING()**

Will this query work?

SELECT COUNT(LASTNAME) FROM CHARACTERS;

**Yes, COUNT() - Returns the number of rows.**

How about this one?

SELECT SUM(LASTNAME) FROM CHARACTERS

**No, SUM() - Returns the sum of two numbered values.**

Assuming that they are separate columns, which function(s) would splice together FIRSTNAME and LASTNAME?

**Select concat()**

What does the answer 37 mean from the following SELECT?

SELECT COUNT(\*) FROM drone\_strikes;

**The table drone\_strikes contains 37 records.**

Will the following statement work? (Hint: look up substr)

SELECT SUBSTR LASTNAME,1,5 FROM NAME\_TBL;

**Needs to be SELECT SUBSTR LASTNAME(1,5) FROM NAME\_TBL;**

Marksmanship table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| officerId | FirstName | LastName | hits | shotsTaken |

Using a table called SHOOTSTATS table, write a query to determine who is are on target less than .25.

-**Select officerId from SHOOTSTATS where hits <.25;**

Using today's OFFICERS table, write a query that will return the following:

officers table

|  |  |  |  |
| --- | --- | --- | --- |
| **First** | **Middle** | **Last** | **BadgeID** |
| Kevin | Anthony | Petrone | 32 |

OUTPUT:

|  |  |
| --- | --- |
| **INITIALS** | **CODE** |
| K.A.P. | 32 |

Which clause works just like LIKE(%)? (HINT: Look it up on google.)

-**STARTING WITH**

What is the function of the GROUP BY clause, and what other clause does it act like?

**- GROUP BY, groups data results and ORDER BY sort the results.**

Will this SELECT work?

NAME, AVG(SALARY), DEPARTMENT FROM PAY\_TBL WHERE DEPARTMENT = 'SWAT' ORDER BY NAME GROUP BY DEPARTMENT, SALARY;

-**No, Group By must come before Order by.**

When using the HAVING clause, do you always have to use a GROUP BY also?

**-Yes**

Can you use ORDER BY on a column that is not one of the columns in the SELECT statement?

**-No you can’t. You must select a table/column that contains the column or actually exist.**

Using the ORGCHART table from the following examples, find out how many people on each team have 30 or more days of sick leave.

Here is your baseline that shows how many folks are on each team.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| empId | First | Last | Team | Sickleave |
| 1 | Alan | Turing | Algebra | 31 |
| 2 | John | Von Neuman | PDE | 32 |
| 3 | Robert | Oppenhiemer | Physics | 27 |
| 4 | Enrico | Fermi | Physics | 24 |
| 5 | Leo | Szilard | Physics | 37 |
| 6 | George | Danzig | Operations | 22 |
| 7 | Eric | Djkstra | CS | 21 |
| 8 | Linus | Torvals | CS | 36 |
| 9 | Richard | Stallman | CS | 40 |

Compare it to the query that solves the question: INPUT:

SELECT TEAM, COUNT(TEAM)

FROM ORGCHART

WHERE SICKLEAVE >=30

GROUP BY TEAM;

**30 Days or more:**

**Algebra : 1 time**

**PDE : 1 time**

**Physics: 1 time**

**Operations: 0 time**

**CS : 2 times.**