INST 327 – Database Design and Modeling

Assignment 5 - See Canvas for due date

Questions

Q.1) (40 points) – Recursion

Write a recursive CTE to get the employee management tree from the **employees** table in the **ex** database. Each employee has one assigned manager but a manager may have many employees underneath them including other employees' managers. Your result should reflect this and show first the employee at the top of the chain, then the employees underneath them, then the employees underneath those, etc. until every employee is listed. With this, join other tables to get the second result set shown below. For the recursive CTE, return these columns: employee_id, employee's full name, department number and management_id as shown below. See the MYSQL reference manual for help writing recursive queries.

employee_id	employee_name	department_number	manager_id
1	Cindy Smith	2	NULL
2	Elmer Jones	4	1
9	Paulo Locario	6	1
3	Ralph Simonian	2	2
4	Olivia Hernandez	1	9
7	Thomas Hardy	5	2
8	Rhea O'Leary	4	9
5	Robert Aaronsen	2	4
6	Denise Watson	6	8

HINT: To make sure your CTE is recursive begin it with the recursive keyword:
WITH RECURSIVE management_cte AS ([...]

After getting your recursive CTE, join other tables as necessary to your output to match the result set below. It is logically the same as above, but we are replacing department_number and manager_id with the actual names each of those foreign keys represent. Please note that there is no department_number 6 in the ex database so it requires a LEFT JOIN.

employee_id	employee_name	department_name	manager_name
1	Cindy Smith	Payroll	NULL
2	Elmer Jones	Personnel	Cindy Smith
9	Paulo Locario	NULL	Cindy Smith
3	Ralph Simonian	Payroll	Elmer Jones
4	Olivia Hernandez	Accounting	Paulo Locario
7	Thomas Hardy	Maintenance	Elmer Jones
8	Rhea O'Leary	Personnel	Paulo Locario
5	Robert Aaronsen	Payroll	Olivia Hernandez
6	Denise Watson	NULL	Rhea O'Leary

Q.2) (30 points) – System Variables

System variables can be set via the command line. Please write a sequence of statements to:

- Set safe updates to **FALSE** for the session.
- Do the following **at the global level unless specified for the session level**:
  - Set the maximum number of connections to **60** for the server.
  - Turn auto commit OFF for this session. Now turn it back ON.
  - Set the threshold for long running queries to **10** seconds for every session on the server.
  - Set the maximum depth for a recursion CTE to **300** for the current session.
- Write the command(s) to show the value of the five variables you updated above.
- Write the commands to display all variables.

Q.3) (30 points) – Managing Users

Mild spoilers for Falcon and the Winter Soldier are included in the remainder of the assignment, but it's nothing that's not clear from the end of Avenger's Endgame. Write a script that creates the following users who must change their passwords every 60 days:

- Create users as follows:
  - Create user **falcon@localhost** with password **cap**
  - Create user **bucky_barnes@localhost** with password **longing_rusted_seventeen**
  - Create user **john_walker@localhost** with password **battlestar**
  - Create user **flag_smasher@localhost** with password **Karli**
- Rename user **falcon** to have username **captain_america**
- Change password for **captain_america** to be **redwing**
- Drop user **john_walker**