# Relational Databases and SQL Course 2020-2021

Home Exercise 4

In this home exercise you will be practicing the concepts of foreign keys and referential integrity. Along the way you will also get to use DDL commands.

For each of the numbered action items below please submit the SQL code and answer any questions.

1. Create a new database called ex4.
2. Create a table called person with two columns: person\_id - make it a primary key (PK) -and name. Give them appropriate types.
3. Add a couple of people to the table: "Dr. John Dolittle" and "Sir Windston Churchill".
4. Create a table called pet with two columns: pet\_id (PK) and name.
5. Add these 4 pets to the table: "Polynesia", "Gub-Gub", "Jip" and "Rufus".
6. Add a new column to the pet table and call it owner\_id. This will eventually become a foreign key to the person table so give it the same type as that table's PK.
7. Try to update the pet table so "Rufus" has the value 1337 in the owner\_id column. Did you succeed? If you did, does this maintain or violate referential integrity? Why?
8. Add a foreign key constraint from the pet table's owner\_id column to the person table's PK. Please note:
   1. In MySQL, a foreign key constraint is always created along with an index (key). This is done with the syntax we learned in class:   
        
      CONSTRAINT *<name>*   
      FOREIGN KEY (*<column-name>*)  
      REFERENCES *<table-name>*(*<column-name>*)
   2. Use this naming convention for the constraint name:   
        
      fk\_*<child-table-name>*\_*<parent-table-name>*
   3. No need to set the index (FOREIGN KEY) name yourselves. MySQL will use the same name for it as it does for the constraint. I will explain more about this in the beginning of lesson 10.
   4. Do not specify ON DELETE or ON UPDATE. Leave the default behavior in place.
9. Did you succeed in creating the foreign key and index? Why not?   
   Update the data in the pet table to fix the problem. Hint: Rufus was Sir Winston Churchill's favorite dog.
10. Having fixed the problem and successfully added the FK to the pet table, update Polynesia, Gub-Gub and Jip to have Dr. Dolittle as their owner.
11. Now update Rufus to have 1337 as his owner\_id. Did you succeed? Why not?
12. Delete Dr. Dolittle. Did you succeed? Why not?
13. Remove (drop) the foreign key constraint (and index) from the pet table. You will need their names for this.
14. If you delete Dr. Dolittle now will you succeed? If you succeed, will you have maintained referential integrity? Why?

Good luck!

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