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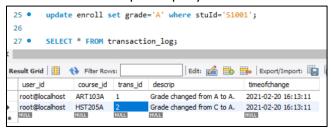
CUS 725 - Advanced Database Systems
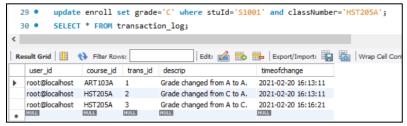
Week 4 - Homework 3

Triggers

1. SQL File Attached.
   a. Results for the first update query:

   ```
   25 •    update enroll set grade='A' where stuId='S1001';
   26
   27 •    SELECT * FROM transaction_log;
   ```

user_id	course_id	trans_id	descrip	timeofchange
root@localhost	ART103A	1	Grade changed from A to A.	2021-02-20 16:13:11
root@localhost	HST205A	2	Grade changed from C to A.	2021-02-20 16:13:11
NULL	NULL	NULL	NULL	NULL

   b. Results for the second update query:

   ```
   29 •    update enroll set grade='C' where stuId='S1001' and classNumber='HST205A';
   30 •    SELECT * FROM transaction_log;
   ```

user_id	course_id	trans_id	descrip	timeofchange
root@localhost	ART103A	1	Grade changed from A to A.	2021-02-20 16:13:11
root@localhost	HST205A	2	Grade changed from C to A.	2021-02-20 16:13:11
root@localhost	HST205A	3	Grade changed from A to C.	2021-02-20 16:16:21
NULL	NULL	NULL	NULL	NULL

Connecting to the database from Python

2. Notebook file (.ipynb) and Python file (.py) attached.
   a. I moved the database connection into a function since I'd be running it multiple times:

   ```python
   def connect_to_db(database_name):
       try:
           cnx = mysql.connector.connect(user='root',
                                         password='kettlecorn',
                                         host='localhost',
                                         database=database_name)

           return cnx
       except mysql.connector.Error as e:
           print(e)
           print("done")
   ```

   b. SimpleDBTest.py code and output:

   ```python
   db = 'university'
   question_2 = """
   SELECT
       lastName,
       firstName
   FROM student
   WHERE major = 'Math'
   """
   cnx = connect_to_db(db)
   with cnx.cursor() as cursor:
       cursor.execute(question_2)

       for (firstName, lastName) in cursor:
           print("{}, {} is a student".format(lastName,firstName))

   cnx.close()

   Ann, Chin is a student
   Owen, McCarthy is a student
   Mary, Jones is a student
   ```
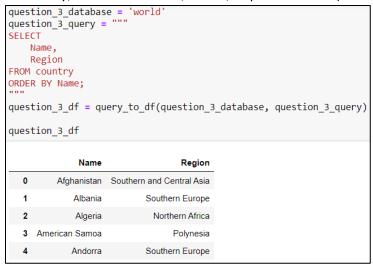
3. I also put the querying portion of the code into its own function so I can easily return a dataframe of the results. This function calls the first function to connect to the db.
   a. Query into dataframe function:

```python
def query_to_df(database,query):
    cnx = connect_to_db(database)

    with cnx.cursor() as cursor:

        cursor.execute(query)
        df = pd.DataFrame(cursor.fetchall(), columns=cursor.column_names)

    cnx.close()

    return df
```

   b. Homework 1 Question 2 query from python (note: the results are truncated for readability, but I can still view, access, or print each row):

```python
question_3_database = 'world'
question_3_query = """
SELECT
    Name,
    Region
FROM country
ORDER BY Name;
"""
question_3_df = query_to_df(question_3_database, question_3_query)

question_3_df
```

	Name	Region
0	Afghanistan	Southern and Central Asia
1	Albania	Southern Europe
2	Algeria	Northern Africa
3	American Samoa	Polynesia
4	Andorra	Southern Europe

4. For the final query I chose to run the query you posted on piazza for crowd testing:

```python
question_4_database = 'nypl_menus'
question_4_query = """
select menus.sponsor, menus.place, menus.location, dishes.name
from menus, menu_pages, menu_items, dishes
where menus.menu_id = menu_pages.menu_id
    and menu_pages.menu_page_id = menu_items.menu_page_id
    and dishes.dish_id = menu_items.dish_id
    and dishes.name like '%lo mein%';

"""
question_4_df = query_to_df(question_4_database, question_4_query)

question_4_df
```

	sponsor	place	location	name
0	Shun Lee West	Shun Lee West	Shun Lee West	Lo Mein with Chicken
1	Shun Lee West	Shun Lee West	Shun Lee West	Lo Mein with Roast Pork
2	Unknown	Unknown	Unknown	Vegetable Noodles [Lo Mein]
3	Unknown	Unknown	Unknown	Shrimp Noodles [Lo Mein]
4	Unknown	Unknown	Unknown	Beef Noodles [Lo Mein]