

Stored Procedures Assignment

Your task in this assignment is to write stored procedures in the database provided that extracts the three tables of data that were used in the Transportation Algorithm Assignment, execute those stored procedures from Python and, finally, put the data into the specified format.

Develop your algorithm within the provided Python program by doing the following:

- Retrieve the assignment materials from Github repository:
 - `TransSPDev.py`
 - `trans_ec.sql` (MySQL dump file)
 - Github URL: <https://github.com/jrb28/BUAD5042StoredProcedures>
- Complete the `TransSPDev.py` program to make it fully functional in terms of acquiring data from the database, passing that data to the `trans()` transportation algorithm function, and printing out the results as directed below.
 - Paste your working solution to the Transportation Assignment into the `trans()` function within `TransSPDev.py`.
 - Be sure to change the MySQL connection parameters at the top of `TransSPDev.py` to those that are appropriate for your MySQL instance in order to connect to the database.
 - Write stored procedures to extract the data for the `dist`, `dcs`, and `stores_vol` variables in the “main” program portion of `TransSPDev.py`. Execute those stored procedures from within `TransSPDev.py` and, furthermore, ensure that these variables are in the format specified in the comments in `TransSPDev.py`
 - `dist`: a dictionary where the key is a tuple indicating a combination of one store ID and one DC ID in the form `(dc_id, store_id)` and the value is the distance between the two locations.
 - `dcs`: a dictionary of DCs where the key is a unique integer identifying each DC and the value is a list with 3 elements indicating the DC constraints in the form:

```
[max daily cubic feet vol., num. of doors, num. of drivers]
```
 - `stores_vol`: a list of lists where each sub-list is of the form

```
[store_id, daily cubic feet of goods needed]
```
 - Note that these stored procedures, given their placement in a loop that iterates through all the problems in the database, extract data for one problem at a time (there are two problems in the database). You will need, therefore, to create a parameter in your stored procedure that communicates the problem to be extracted. A stored procedure has already been provided that extracts a list of the problem IDs from the database.
 - Verify that the results you obtain are the same as your results for the Transportation Assignment.

- Algorithm/Function Output parameters: As a refresher, the `trans()` function in the Transportation Assignment returns two parameters. Your solution from that assignment should already provide this output.

- `name_or_team`: assign a string value to this variable with either your W&M username or your first and last name
- `result`: a Python list of tuples containing your solution. Each tuple in the list is of the form `(store_id, dc_id)` where the `store_id` values correspond to the data in the `stores_vol` list and the 0-th element of the dictionary keys in `dist`, and the `dc_id` values are the keys in the `dcs` dictionary. For example, the `result` list,

`[(0,1),(1,2),(2,1),...]`

indicates that the stores with `store_id` 0 and 2 have been assigned to the DC with `dc_id` 1 and `store_id` 1 has been assigned to `dc_id` 2. Each `store_id` can be listed only once and no DC can be overloaded along any one of the constraint dimensions, processing volume, number of truck doors, or number of available drivers.

- Submit your assignment by uploading a zip file, which contains both your database dump file (entitled `trans_ec_sol.sql`) and your completed `TransSPDev.py` file to Blackboard.
- Honor Code Disclosure
 - In completing this assignment, you may refer to the (i) PowerPoint lecture file and the accompanying Python programs and database, or (ii) any of the assignment code that has been given to you in class. However, you are forbidden to copy and paste code from those sources. You must type each character of your programming code and stored procedure yourself, manually. This requirement is intended to enhance your learning and retention of the materials.