Project 1: SQLAlchemy

INSTRUCTIONS

1. This project is an individual project.
2. Submit the "`project1.zip`" ZIP file containing the following two files to the "`Project 1 Submissions`" folder in IVLE Workbin (Files) "`Projects/Project 1`" by **Tuesday 28 August, 20:00**.
   - The completed python file "`project1.py`",
   - The updated SQLite database file "`project1.db`".
3. Past this deadline and before **Friday 31 August, 20:00**, you may submit to the "`Project 1 Late Submissions`" folder (penalties apply).

In this project, we use Python 2.7 with the SQLAlchemy library[1] to connect to and interact with an SQLite[2] database.

- Download and install `Python 2.7.15` from `https://www.python.org/downloads/release/python-2715/`
- Install the `sqlalchemy` library using the following command "`pip install sqlalchemy`" on your terminal or command prompt (You might need root access).

We interact with the database using two different methods: (1) the direct execution of SQL commands as strings and (2) an Object Relational Mapping (ORM)[3].

- Download the file "`project1.zip`" from the IVLE Workbin (Files) "`Projects/Project 1`" folder.
- Extract the two files "`project1.py`" and "`project1.db`".

The file "`project1.db`" is an SQLite database. It contains the table "`transactions`" that records credit card transactions. The following is the DDL code used to create the table "`transactions`".

```
CREATE TABLE transactions (
        number INTEGER,
        merchant_name VARCHAR(50),
        merchant_code VARCHAR(50),
        credit_card_number VARCHAR(50),
        credit_card_type VARCHAR(50),
        amount NUMERIC);
```

The file "`project1.zip`" contains Python code that you need to complete to answer the following two questions.

Question 1 [5 marks]

(a) Find the number, credit card number and the merchant name of the transactions involving a mastercard for an amount larger than 450 dollars. Use the session object and its "`execute`" method to execute the SQL query as an SQL string. Use the session object and its "`execute`" method to insert the results of the SQL query into the table "`sqlresults`" with SQL insertions as SQL strings. (2)

(b) Find the number, credit card number and the merchant name of the transactions involving a mastercard for an amount larger than 450 dollars. Use the session object and its "`query`" method to query the class mapped to the "`transactions`" table. Map a class to the "`ormresults`" table. Use the session object and its "`add`" method to add the results of the query to the class mapped to the "`ormresults`" table. (3)

Submit the revised "`project1.zip`" ZIP file containing the following two files.

- The completed python file "`project1.py`",
- The updated SQLite database file "`project1.db`" with the two new tables "`sqlresults`" and "`ormresults`" and their content.

– END OF PAPER –

[1] `https://www.sqlalchemy.org/`
[2] https://www.sqlite.org/index.html
[3] You can see the introductory tutorial and example here `https://www.pythoncentral.io/introductory-tutorial-python-sqlalchemy/`