CIS*3530 Data Base Systems and Concepts

Fall 2019

Instructor: Fangju Wang

Assignment 3 (10%)

In this assignment, you use PostgreSQL to create tables and develop application programs.

The database is the tiny credit card company database that we were using in the course lectures. The tables store data of customers, vendors, and transactions.

Write a PostgreSQL program/script to create the three tables with names *vendor, customer*, and *transaction*, specify the vendor number, account number and transaction number as the primary keys respectively, and insert data into the tables (1%). The data are those on the eighth page of the "SQL" course notes. Use the PostgreSQL date format to store dates. Then write the following application programs to access the database:

Program 1: displays data of all the transactions of a given customer. For each transaction, the data to display include vendor name, date, and amount. Write the program as a function that accepts a customer name as a parameter, and displays transactions of the customer. (0.5%)

Program 2: displays data of the customers who have transactions with a given vendor. The data include customer numbers, customer names, and provinces. Write the program as a function that accepts a vendor name as a parameter and displays data of customers. (0.5%)

Program 3: inserts a new customer record (tuple). Write this program as a function, which takes data of the custmer as parameters and stores the data into the customer table. It then displays all the customer records. The new customer's balance should be zero (0.00). (1%)

Program 4 displays the most recent transaction of every customer. The program displays account number, customer name, amount, and vendor name. If a customer has no transaction (e.g. the new one), the program should display "no transaction". (1%)

Program 5 calculates the total amount of transactions of every vendor in the transaction table, and add the total amount to the vendor's current balance. The program then displays vendor numbers, vendor names and the new balances. (1%)

Program 6 charges each vendor a service fee that is 4% of the vendor's balance, and subtracts the service fee from the balance. The program then displays the name of each vendors, the fee charged, and the new balance. (1%)

Program 7 charges a service fee for each customer whose current balance is greater than the credit limit and add the charge to the balance. The service fee is 10% of the portion over the credit limit. The program then displays the name of each of such customers and the new balance. (2%)

Program 8 adds a new transaction. Each time the program is executed, it takes a transaction number, a vendor number, an account number, and an amount from the user. The date of the transaction should be the date on which the program is executed and assigned by the computer automaticaly. The program stores the new transaction into the transaction

table, it then updates the balances of the related customer and vendor with the amount of the new transaction. It then displays the new transaction, and the updated customer and vendor records. (2%)

Summary/Note:

- Write a script to create the tables and insert the data. The file should be named 'a3data.sql'.
- Write a script to store each program. The scripts should be named 'pi.sql', where $i = 1$, 2, ... 8.
- Validity checking of input data (e.g. checking if a credit limit is negative) is not required.
- Write a README file if you have something to tell the TA.

Submission: Submit your work as a tar file to the course Moodle page.

Due time: 08:00am, Nov 11, 2019, Monday