Assignment 3: Charity Database

CS 410/510 - Databases

Due **Feb. 21, 2018 at 11:59 p.m.**

Summary

In this assignment, you will set up your MySQL database, reverse-engineer a logical schema from some SQL DDL statements, and write queries to retrieve information.

This homework will use the data in the SQL file `charity.sql`. Run this file as an SQL script in to import the data (it will create a database called 'charity').

Submit the final results of your assignment as a single PDF file; this is probably easiest to do by copying SQL queries and results into a Word or LibreOffice document.

Part 1 (10 points): Setup

In this part, you need to set up you

1. Set up your MySQL sandbox using the instructions on Blackboard.

2. Import the database file; you can run 'mysql mysql_options <charity.sql' (where *mysql_options* are the options you need to provide to get MySQL to connect to your sandbox), or you can run the file through DataGrip or MySQL Workbench.

3. Run the MySQL command 'SHOW TABLE STATUS' on your `charity` database, and put the results in your report.

Part 2 (30 points): Data Model

Draw a logical data model in entity-relationship syntax for the following tables as defined by their CREATE TABLE statements:

```
CREATE TABLE donor (
  donor_id INTEGER PRIMARY KEY AUTO_INCREMENT,
  donor_name VARCHAR(500) NOT NULL,
  donor_email VARCHAR(200) NOT NULL,
  donor_address VARCHAR(200) NOT NULL,
  donor_city VARCHAR(100) NOT NULL,
  donor_state VARCHAR(20) NOT NULL,
  donor_zip VARCHAR(10) NOT NULL
);

CREATE TABLE fund (
  fund_id INTEGER PRIMARY KEY AUTO_INCREMENT,
  fund_name VARCHAR(50) NOT NULL
);

CREATE TABLE gift (
  gift_id INTEGER PRIMARY KEY AUTO_INCREMENT,
  donor_id INTEGER NOT NULL,
  gift_date DATE NOT NULL,

  FOREIGN KEY (donor_id) REFERENCES donor (donor_id),
  INDEX (donor_id)
);

CREATE TABLE gift_fund_allocation (
  gf_alloc_id INTEGER PRIMARY KEY AUTO_INCREMENT,
  gift_id INTEGER NOT NULL REFERENCES gift,
  fund_id INTEGER NOT NULL REFERENCES fund,
  amount DECIMAL NOT NULL,

  FOREIGN KEY (gift_id) REFERENCES gift (gift_id),
  FOREIGN KEY (fund_id) REFERENCES fund (fund_id),
  INDEX (gift_id),
  INDEX (fund_id)
);
```

You must draw the model yourself. You cannot submit the output of a tool that reverse-engineers the data model.

Part 3 (40 points): SQL Queries

Write SQL queries to retrieve the following data. Include the query and the first 5 rows of output in your report.

1. All gifts received in the year 2012.

2. All donors in the state of Texas (TX).

3. All donations to the 'Cat Sheltering' fund in 2011, ordered in increasing order by date.

4. The name of every donor who gave a gift in 2012.

5. The total amount received in each year.

6. The total amount received in each month of 2007.

7. For donor 35, the gifts they gave in 2007 with the date and total amount of each gift.

8. For donor 35, the funds to which they contributed in 2007 with the total amount contributed to each fund.

9. The names and full addresses of the top 5 donors in 2010, with their total donations, in decreasing order of total donations.

10. The list of Dog Lovers: everyone who has donated to Dog Sheltering. Do not include duplicates.

Tip: remember that you can convert the gift date into a year with the SQL function `EXTRACT(YEAR FROM gift_date)`.