Assignment 3

Basic practice questions

1. SQL practice (Do in both MySQL and PostgreSQL)

   (a) Create table student with fields id, name, address and email_address. 'id' should be primary key.

   (b) Create table course with fields id, name, instructor. 'id' should be primary key.

   (c) Create table marks with fields student_id, course_id, marks. student_id, course_id pair should be primary key. Enforce foreign key relationship that student_id must exist in table student and course_id must exist in table course.

   (d) Insert following data into student table

ID	Name	Address	Email Address
1	Saurabh Barjatiya	NBH	saurabh.barjaiya@iiit.ac.in
2.	Sanrag Sood	OBH	sanrag@students.iiit.ac.in
3.	Amit Arora	GHEB	amit.arora@research.iiit.ac.in

   (e) Try to re-insert one of the above rows and see that you get primary key constraint voilation error message.

   (f) Insert following data into course table

ID	Name	Instructor
1	Software Technologies	Saurabh Barjatiya
2	Computer Networks	Shatrunjay Rawat
3	Algorithms	Anand Swaroop Das
4	Advanced Computer Networks	Saurabh Barjatiya

   (g) Try to re-insert one of the above rows and see that you get primary key constraint voilation error message.

   (h) Insert following data into marks table

Student ID	Course ID	Marks
1	2	75
2	2	78
3	2	92
2	1	75
3	1	20
3	3	10
2	3	98
1	3	14
2	4	10
3	4	16

(i) Try to re-insert one of the above rows and see that you get primary key constraint voilation error message.

(j) Try to insert student id - 40, course id - 3 and marks - 57 and see that you get foreign key voilation error message.

(k) Find out answers to following questions using only one SQL query per question

    i. Find names of students who have failed in at least one question. Assume passing marks to be 40. Do not list the same student twice if same student fails in multiple papers.

    ii. Find of name of students who have failed in exactly k papers, where 'k' can be any integer.

    iii. Find of name of students who have got highest mark in some subject. List name of student along with name of subject in which he or she has got highest marks.

    iv. Find name of student who have got highest marks in at least one paper. Again do not repeat the name if same student has got highest marks in more then one subject.

    v. Find out name of students who have failed in at least one subject and have highest marks in at least one other subject.

    vi. List name of instructor along with the number of students he/she has failed. If instructor is taking multiple courses then students failed in each course should get added.

2. Understand all MySQL samples provided with lecture slides and achieve same functionality using postgreSQL

Assignment Questions

- Do assignment 2 questions 1 and 2 using MySQL

- Do assignment 2 questions 1 and 2 using PostgreSQL

Advanced practice questions

- Write generic program to copy database in source format to any destination format. Avaialble options for formats are MySQL, SQLite and PostgreSQL. You can assume that SQLite database is in proper state and all values are correct and tables have been created with proper data type.

  Basically given database name, username and password for both source and destination databases the program should be able to create the same table structure in destination database and copy values there.

  The problem can be divided into two problems. In first case you can assume that tables already exist in destination database and hence you only have to select data from source and insert into destination.

  In second case you have to find all tables in database and then table structure. Once you know the name of tables and strcture of each table then you have to run a create table query on destination database based on information collected.