

Lab 03

Operations on relations .01

IT214 Database Management System, Autumn'2018; pm_jat @ daiict

In this lab, you learn and practice querying databases using Relational Algebra and SQL.

Note that for practice purposes, you are given access to a database named as **public** (on same server 10.100.71.21). Where in various schemas are populated with some sample data that you can use for practice purposes. Browse through the long list of databases in pg-admin-iv, you should find **public** database.

Do following tasks-

1. Write down queries (in relational Algebra and SQL) for following queries on XIT schema. For test run of SQL queries you can access XIT instance in public database.
 - a. List Prog-ID, Prog-Name, Department-ID, Department-Name of programs offered at XIT.
 - b. List Student-ID, Student-Name of students studying in MTech(IT) program and having cpi > 6.5.
 - c. List Student-ID, Student-Name for students studying in department 'EE' or department 'IT'.
 - d. List all details of 2nd year students (batch 2012) enrolled in MSc(IT) program.
2. Write down queries (in relational Algebra and SQL) for following queries on company database.
 - a. List the name of projects handled by departments which are located at 'Houston'.
 - b. List the details of employees who have salary less than their managers.
 - c. List the details of dependents of employees working in department number 1.
 - d. List the names of all employees in department number 5 who work more than 2 hours per week on the ProductX project.
3. Write down queries in relational algebra and SQL for following queries on the supply parts database.
 - a. Give the details of items having SalePrice > 500 and belonging to category 5.
 - b. List the Invoice Numbers of the customer named Allen.
 - c. List the names of items purchased by John on date 2011-08-23.
 - d. List the customer names who have purchased items belonging to category c1.
4. Write down queries in relational algebra and SQL for following queries on the ACAD database.
 - a. List Courses offered by Instructor 'P M Jat' in 'Winter' of 2010.
 - b. List ID of students who have registered in either of the courses - 'MT101' or 'MT104'.
 - c. List ID of students who have taken 'MT101' but have not taken 'MT104'.
 - d. List ID, Name, CPI of students from 2008 batch who have taken both courses 'MT101' and 'MT104'.
 - e. List student (ID, Name, CPI) who have scored AA or AB in all courses in Semester Autumn 2008.
 - f. List IDs of students of B.Tech.(CS) batch 2007 having SPI >= 6 in all semesters.