

Ex1 (5 point): design a database schema, **the requirements stated below**

Music Database

A database needs to be developed that keeps track of compact disks, and songs recorded on them, together with authors and performers of the songs. The data requirements are as follows:

1. For each disk, we want to store the disk ID, the title, and the year of production. Disk ID's are unique.
2. A song is recorded on some disk. It has a title and a number that indicates on which track it is recorded on the disk. For each disk, a song is uniquely identified by its track number.
3. For each person that may occur as an author or a performer we want to store the person ID, the name, and the nationality. Person ID's are unique.
4. Each song has at least one author who is a person. There are different types of authorship, e.g., composer, text writer, or arranger. For each author of a song, we want to store the type of authorship.
5. Each song has at least one performer who is a person. There are different instruments for a performer, e.g., voice, piano, violin. We want to store for each performer the instrument they have played during the recording.

Ex2 (5 point):

Giving a database schema:

- Employee(emp_id: integer, firstname: string, lastname: string, department_id: int, gender:string, salary:money)
- Department(dept_id:integer , dept_name: string)

<i>Emp_id</i>	<i>Firstname</i>	<i>Lastname</i>	<i>Department_id</i>	<i>gender</i>	<i>Salary</i>
Emp_01	Nam	Trần V	101	Nam	6000000
Emp_02	Nữ	Nguyễn	102	Nữ	4000000
Emp_03	Hùng	Trần V	103	Nam	6500000
Emp_04	Tú	Nguyễn	101	Nữ	5000000
Emp_05	Thành	Bùi	102	Nam	5500000
Emp_06	Hồng	Cầm	103	Nữ	8000000

Employee

<i>Dept_id</i>	<i>Dept_name</i>
101	Administrative
102	Accounting
103	HR

Department

Using relational algebra expression to answer below queries

1. Find the firstname, lastname, salary of employee who working in the HR department.
2. Find the firstname, lastname, salary of employee whose gender is male.
3. Find the firstname, lastname, salary of female employee with salary over 7 million.
4. Find the firstname, lastname, salary of male employee in HR with salary over 6 million.
5. Find the firstname, lastname, salary of female employee in Accounting with salary at least 4 million.
6. Find the department names which is HR.
7. Find the total number of male employees.

8. How many female employees does the accounting department have?
9. How many male employees in the administrative department with salary from 7 million?
10. Find the total salary of HR department staff