

Assignment - Managing Employee Data in MySQL

Task - 1 : Database Creation & Schema Design

1. Create a new MySQL database named 'company'.

```
1 • CREATE DATABASE company;  
2 • USE company;
```

2. Create a table employee with schema (id, name, DOB, gender, department number, department, city, salary, titles).

```
4 • CREATE TABLE employee (  
5     id INT PRIMARY KEY AUTO_INCREMENT,  
6     name VARCHAR(100),  
7     DOB DATE,  
8     gender ENUM('Male', 'Female', 'Other'),  
9     department_no INT,  
10    department VARCHAR(50),  
11    city VARCHAR(50),  
12    salary DECIMAL(10, 2),  
13    titles VARCHAR(100)  
14 );  
15
```

3. Insert 10 records to the employee table.

```
16 • INSERT INTO employee (name, DOB, gender, department_no, department, city, salary, titles) VALUES  
17 ('John Doe', '1985-05-20', 'Male', 101, 'HR', 'New York', 55000.00, 'HR Manager'),  
18 ('Jane Smith', '1990-02-15', 'Female', 102, 'Finance', 'Los Angeles', 65000.00, 'Accountant'),  
19 ('Mark Johnson', '1988-11-05', 'Male', 103, 'IT', 'Chicago', 70000.00, 'Software Engineer'),  
20 ('Emily Davis', '1995-08-25', 'Female', 104, 'Marketing', 'Houston', 50000.00, 'Marketing Analyst'),  
21 ('Michael Brown', '1979-12-12', 'Male', 105, 'Sales', 'Phoenix', 60000.00, 'Sales Manager'),  
22 ('Olivia Wilson', '1992-07-17', 'Female', 106, 'Operations', 'San Antonio', 53000.00, 'Operations Manager'),  
23 ('William Moore', '1983-04-10', 'Male', 107, 'Legal', 'Dallas', 72000.00, 'Legal Advisor'),  
24 ('Sophia Taylor', '1987-01-29', 'Female', 108, 'HR', 'San Diego', 54000.00, 'HR Executive'),  
25 ('James Martinez', '1993-03-08', 'Male', 109, 'IT', 'Austin', 75000.00, 'System Administrator'),  
26 ('Isabella Anderson', '1986-06-14', 'Female', 110, 'Finance', 'Miami', 68000.00, 'Financial Analyst');
```

	id	name	DOB	gender	department_no	department	city	salary	titles
1	1	John Doe	1985-05-20	Male	101	HR	New York	55000.00	HR Manager
2	2	Jane Smith	1990-02-15	Female	102	Finance	Los Angeles	65000.00	Accountant
3	3	Mark Johnson	1988-11-05	Male	103	IT	Chicago	70000.00	Software Engineer
4	4	Emily Davis	1995-08-25	Female	104	Marketing	Houston	50000.00	Marketing Analyst
5	5	Michael Brown	1979-12-12	Male	105	Sales	Phoenix	60000.00	Sales Manager
6	6	Olivia Wilson	1992-07-17	Female	106	Operations	San Antonio	53000.00	Operations Manager
7	7	William Moore	1983-04-10	Male	107	Legal	Dallas	72000.00	Legal Advisor
8	8	Sophia Taylor	1987-01-29	Female	108	HR	San Diego	54000.00	HR Executive
9	9	James Martinez	1993-03-08	Male	109	IT	Austin	75000.00	System Administrator
10	10	Isabella Anderson	1986-06-14	Female	110	Finance	Miami	68000.00	Financial Analyst

4. Create another table employee_department to store department information with Schema (department_no, department name)

```
28 • CREATE TABLE employee_department (  
29     department_no INT PRIMARY KEY,  
30     department_name VARCHAR(50)  
31 );  
32
```

```

33 • INSERT INTO employee_department (department_no, department_name) VALUES
34     (101, 'HR'),
35     (102, 'Finance'),
36     (103, 'IT'),
37     (104, 'Marketing'),
38     (105, 'Sales'),
39     (106, 'Operations'),
40     (107, 'Legal');

```

department_no	department_name
101	HR
102	Finance
103	IT
104	Marketing
105	Sales
106	Operations
107	Legal
NULL	NULL

Write justification for using different datatypes for each attribute in 2 & 4.

Q2:

id (INT): The ID is the primary key, giving each employee a distinct identity. It is an integer.

name (VARCHAR): A VARCHAR is appropriate because employee names can vary in length.

The Date of Birth (DOB) datatype is a natural fit for the datatype DATE.

gender (ENUM): Data consistency is ensured by restricting the available values for gender to a predetermined set (Male, Female, Other).

department_no (INT): The department number, expressed as an integer, is referred to here.

department (VARCHAR): VARCHAR is used since department names might contain characters and vary in length.

city (VARCHAR): VARCHAR is perfect because city names are usually not all the same length.

salary (DECIMAL): Since salaries are often expressed in monetary terms, DECIMAL guarantees accuracy for these figures.

titles (VARCHAR): VARCHAR is used since employee job titles can have different lengths and should support alphanumeric characters.

Q4:

department_no (INT): The department's numerical identification number.

department_name (VARCHAR): VARCHAR is used since department names are textual and can have different lengths.

5. Drop table employee.

```

41
42 • DROP TABLE employee;
43
44

```

6. Which one's better approach?

-> Data Deletion by dropping the relation or Data Archival by renaming the relation.
Provide your justification for each of the above specified approaches.

Data Erasure versus Data Archiving: Data Erasure by Dropping the Relationship

Benefits: By eliminating obsolete data, it increases performance and frees up space.

Cons: Data is destroyed forever and cannot be retrieved in the future.

Data Archiving through Relation Renaming:

Benefits: Keeps the primary database clear while preserving data for later usage, which is beneficial for audits or legal requirements.

Cons: If there are a lot of archived tables, the system may become slower as the archived data still takes up space.

In summary, data archiving is often preferable for employee-related data since it keeps information safe for future use. If space is an issue and the data is no longer needed, deletion is the better option.

7. Describe the potential ethical and privacy considerations when working with employee data in a database. How would you ensure that the database complies with data protection regulations like GDPR or HIPAA?

Data Privacy: Use access controls and encryption to safeguard private data, such as your salary and date of birth.

Minimizing Data: Gather only the information that is required to prevent storing extraneous personal data.

Anonymization of Data: Anonymize data for analytics purposes to safeguard employee identities.

Making Sure HIPAA or GDPR Compliance:

Get express consent before collecting any data.

Employees should have the ability to access or request that their data be erased.

Data protection policies should be put into place for staff training, audits, and breach reporting.

Encryption and Secure Access: Make use of multi-factor authentication and encryption.

Data Retention: Save information for as long as it's required, then archive or destroy it when it's no longer needed.