SQL MODULE LAB – 7

BY

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Database Schema:

Use the same database scheme created in previous lab.

Assignment 1:

Task 1: Assume you are managing a database of student records, and you need to retrieve information about students born after June 16, 2009. What will be the SQL query for this?

Task 2: Assume you have a database containing a "Student" table with information about students, including their first names. You want to retrieve records of students whose first names start with either 'A' or 'J'. To achieve this, what will be your SQL query?

Task 3. Let's consider a scenario where you have a database with a "Student" table that contains information about students, including their first names and email addresses.

You want to retrieve records of students whose first name is not 'Alice' and whose email addresses contain the domain '@example.com'. To achieve this, what will be your SQL query?

Submission:

Create an SQL script file containing your solutions for all tasks (queries). Name the file lab_assignmentl.sql Provide comments above each query to indicate the query's purpose.

Assignment 2:

Taskl: Create a table Person with PersonID int, FirstName varchar(255), LastName varchar(255) and age (int).

Make PersonID PRIMARY KEY.

Task2: Create a table Employee with emp_id int, first_name varchar(255) last_name varchar(255) and age (int)

Make emp_id PRIMARY KEY.

Task 3: Insert data to Person table

Task 4: Insert data to Employee table

Task 5: Create Union of two tables

Submission:

Create an SQL script file containing your solutions for the task. Name the file "lab_assignment2.sql" Provide comments above the query to indicate the query's purpose.

ChatGPT Exercise

Using ChatGPT generate SQL queries of the below problem.

Scenario 1: In a student grades database with tables for courses and grades, find the courses where the average grade is below a 'C' (consider 'C' as a passing grade). We have a "Course" table with the following columns: Courseld, CourseName, CreditHours and "Grade" table with the following columns: StudentId(ForeignKey), CourseID((ForeignKey), Grade.

you want to find courses where the average grade is below a "C". Generate the ChatGPT prompt for creating the queries for the above requirement.

SOLUTION:

Database Schema:

Use the same database scheme created in previous lab.

Assignment 1:

Task 1: Assume you are managing a database of student records, and you need to retrieve information about students born after June 16, 2009. What will be the SQL queryfor this?

```
CREATE TABLE Students_data (
ID INT PRIMARY KEY,
First_Name VARCHAR(50),
Last_Name VARCHAR(50),
City VARCHAR(50),
Age INT,
Birth_Date DATE
);
Code:
```

```
INSERT INTO Students_data (ID, First_Name, Last_Name, City, Age,
Birth_Date)
```

VALUES

```
(1, 'Aarav', 'Sharma', 'Mumbai', 23, '2000-01-15'),
(2, 'Vivaan', 'Verma', 'Delhi', 22, '2001-02-22'),
(3, 'Diya', 'Patel', 'Bangalore', 21, '2002-03-30'),
(4, 'Aanya', 'Reddy', 'Hyderabad', 20, '2003-04-12'),
(5, 'Ishaan', 'Singh', 'Chennai', 19, '2004-05-19'),
(6, 'Anaya', 'Kumar', 'Pune', 18, '2005-06-05'),
(7, 'Arjun', 'Nair', 'Kochi', 17, '2006-07-20'),
(8, 'Aadhya', 'Mehta', 'Ahmedabad', 16, '2007-08-25'),
(9, 'Aryan', 'Joshi', 'Surat', 15, '2008-09-10'),
(10, 'Anvi', 'Bose', 'Kolkata', 14, '2009-10-18'),
(11, 'Vihaan', 'Das', 'Lucknow', 13, '2010-11-30'),
(12, 'Mira', 'Roy', 'Jaipur', 12, '2011-12-25'),
(13, 'Reyansh', 'Chopra', 'Chandigarh', 11, '2012-01-15'),
(14, 'Aarohi', 'Kapoor', 'Indore', 10, '2013-02-22'),
(15, 'Kabir', 'Malhotra', 'Bhopal', 9, '2014-03-30');
```

Output:

```
mysql> CREATE TABLE Students_data (
-> ID INT PRIMARY KEY,
-> First_Name VARCHAR(50),
-> Last_Name VARCHAR(50),
         City VARCHAR(50),
Age INT,
Birth_Date DATE
Query OK, 0 rows affected (0.25 sec)
nysql> INSERT INTO Students_data (ID, First_Name, Last_Name, City, Age,
       -> Birth_Date)
                                                 'Mumbai', 23
Jbi', 22,
       > VALUES
                  'Aarav'
                                 'Sharma'
'Verma'
                                                                        '2000-01-15'
                  'Vivaan'
                                                                       '2001-02-22'
                              Patel
                                             , Deini ,
'Bangalore'
                  'Diya'
                                                                           2002-03-30
                                  Reddy
                                                Hyderabad'
                                                                    20, '2003-04-12'),
9, '2004-05-19'),
                   Aanya
                                   Singh'
                                                                  19, '2004-0;
'2005-06-05
                                                  Chennai
                                              'Pune',
'Kochi',
                  'Arjun'
                                                                              20\overline{07} - 08 - 25'),
                                                  Ahmedabad'
                   'Aadhya
                                                                      16,
                                                                      2008-09-10')
                                               'Surat',
                                  Joshi
                                                                      '2009-10-18'),
'2010-11-30')
                                                Lucknow', 14
                                  Bose
                                     Das
                                            Jaipur
                                                    ur', 12, 2011-12-23),
'Chandigarh', 11, '2012-0
'Indore', 10, '2013-02-22'
'Bhopal', 9, '2014-03-30'
                                    'Kapoor
                     Aarohi
                                  'Malhotra'
-> (15,
Query OK, 15
Records: 15
                    rows affected (0.01 sec)
Duplicates: 0 Warnings:
                                            Warnings:
```

Code: SELECT * FROM Students_data WHERE birth_date > '2009-06-16';

Output:

mysql> select * from Students_data;						
ID	First_Name	Last_Name	City	Age	Birth_Date	
 1 2 3 4 5 6 7 8 9 10 11 12 13 14	Aarav Vivaan Diya Aanya Ishaan Anaya Arjun Aadhya Aryan Anvi Vihaan Mira Reyansh Aarohi Kabir	Sharma Verma Patel Reddy Singh Kumar Nair Mehta Joshi Bose Das Roy Chopra Kapoor Malhotra	Mumbai Delhi Bangalore Hyderabad Chennai Pune Kochi Ahmedabad Surat Kolkata Lucknow Jaipur Chandigarh Indore Bhopal	23 22 21 20 19 18 17 16 15 14 13 12 11 10	2000-01-15 2001-02-22 2002-03-30 2003-04-12 2004-05-19 2005-06-05 2006-07-20 2007-08-25 2008-09-10 2010-11-30 2011-12-25 2012-01-15 2013-02-22 2014-03-30	
	++++++ 15 rows in set (0.00 sec)					
mysql>	· SELECT * FRO	M Students_c	data WHERE bi	rth_date	> '2009-06-16';	
ID	First_Name	Last_Name	City	Age	Birth_Date	
10 11 12 13 14 15	Anvi Vihaan Mira Reyansh Aarohi Kabir	Bose Das Roy Chopra Kapoor Malhotra	Kolkata Lucknow Jaipur Chandigarh Indore Bhopal	14 13 12 11 10 9	2009-10-18 2010-11-30 2011-12-25 2012-01-15 2013-02-22 2014-03-30	
6 rows in set (0.00 sec)						

Task2: Assume you have a database containing a "Student" table with Information about students, including their first names. You want to retrieve records of students whose first names start with either 'A' or 'J'. To achieve this, what will be your SQL query?

Code:

SELECT * FROM Students_data
WHERE first_name LIKE 'A%' OR first_name LIKE 'J%';

Output:

mysql> SELECT * FROM Students_data -> WHERE first_name LIKE 'A%' OR first_name LIKE 'J%';					
ID First_Name	Last_Name	City	Age	Birth_Date	
1 Aarav 4 Aanya 6 Anaya 7 Arjun 8 Aadhya 9 Aryan 10 Anvi 14 Aarohi ++	Sharma Reddy Kumar Nair Mehta Joshi Bose Kapoor	Mumbai Hyderabad Pune Kochi Ahmedabad Surat Kolkata Indore	23 20 18 17 16 15 14 10	2000-01-15 2003-04-12 2005-06-05 2006-07-20 2007-08-25 2008-09-10 2009-10-18 2013-02-22	

Task 3. Let's consider a scenario where you have a database with a "Student" table that contains information about students, including their first names and email addresses.

You want to retrieve records of students whose first name is not 'Alice' and whose email addresses contain the domain '@example.com'. To achieve this, what will be your SQL query?

Code:

```
CREATE TABLE Student (
id INT AUTO_INCREMENT PRIMARY KEY,
first_name VARCHAR(255),
email VARCHAR(255)
);
```

Output:

```
CREATE TABLE Student (
id INT AUTO_INCREMENT PRIMARY KEY,
first_name VARCH' at line 1
mysql> CREATE TABLE Student (
    -> id INT AUTO_INCREMENT PRIMARY KEY,
    -> first_name VARCHAR(255),
    -> email VARCHAR(255)
    -> );
Query OK, 0 rows affected (0.05 sec)
```

Code:

SELECT * FROM Student

WHERE first_name <> 'Alice' AND email LIKE '%@example.com';

Output:

```
mysql> select * from Student;
     | first_name | email
                       alice@example.com
        Alice
                       john@example.com
jane@example.com
        John
        Jane
                       bob@example.com
        Bob
                       anna@example.com
        Anna
  rows in set (0.00 sec)
mysql> SELECT * FROM Student
> WHERE first name <> 'Alice' AND email LIKE '@example.com';
     | first_name |
                      email
   2
3
                       john@example.com
       John
                       jane@example.com
        Jane
                       bob@example.com
       Bob
                      anna@example.com
       Anna
  rows in set (0.00 sec)
```

Submission:

Create an SQL script file containing your solutions for all tasks (queries). Name the file "lab_assignmentl.sql" Provide comments above each query to indicate the query's purpose.

Assignment 2:

Taskl: Create a table Person with PersonID int, FirstName varchar(255), LastName varchar(255) and age (int).

Make PersonID PRIMARY KEY.

```
CREATE TABLE Person (
PersonID INT AUTO_INCREMENT PRIMARY KEY,
FirstName VARCHAR(255),
LastName VARCHAR(255),
Age INT
);
```

Task 3: Insert data to Person table

Code:

```
-- Insert data into the Person table ('John', 'Doe', 30), ('Jane', 'Smith', 25), ('Alice', 'Johnson', 28), ('Bob', 'Brown', 35), ('Emily', 'Davis', 22);
```

Output:

mysql> select * from Person;				
PersonID	FirstName	LastName	Age	
1 2 3 4 5 6 7 8 9	John Jane Alice Bob Emily John Jane Alice Bob Emily	Doe Smith Johnson Brown Davis Doe Smith Johnson Brown Davis	30 25 28 35 22 30 25 28 35 22	
10 rows in s	set (0.00 se	c)	++	

```
Task2: Create a table Employee with emp_id int, first_name varchar(255) last_name varchar(255) and age (int )
Make emp_id PRIMARY KEY.
Code:
CREATE TABLE Employee (
emp_id INT AUTO_INCREMENT PRIMARY KEY,
first_name VARCHAR(255),
last_name VARCHAR(255),
age INT
);

Task 4: Insert data to Employee table
Code:
-- Insert data into the Employee table
INSERT INTO Employee (first_name, last_name, age)
```

VALUES

```
('Michael', 'Scott', 45);
('Jim', 'Halpert', 32);
('Pam', 'Beesly', 30);
('Dwight', 'Schrute', 38);
('Stanley', 'Hudson', 50);
```

Output:

mysql> select * from Employee;				
emp_id	first_name	last_name	age	
j 2 l 3 l 4	 Michael Jim Pam Dwight Stanley	Scott Halpert Beesly Schrute Hudson	45 32 30 38 50	
frows in set (0.00 sec)				

Task 5: Create a Union of two tables

Code:

SELECT first_name AS Name, last_name AS Surname, age AS Age FROM Employee

UNION

SELECT FirstName AS Name, LastName AS Surname, Age FROM Person;

Output:

```
mysql> SELECT first_name AS Name, last_name AS Surname, age AS Age FROM
    -> Employee
    -> UNION
    -> SELECT FirstName AS Name, LastName AS Surname, Age FROM Person;
 Name
          | Surname | Age
 Michael |
            Scott
 Jim
            Halpert
 Pam
            Beesly
            Schrute
 Dwight
 Stanley
            Hudson
                         30
 John
            Doe
                         25
28
35
22
 Jane
            Smith
  Alice
            Johnson
 Bob
            Brown
 Emily
            Davis
10 rows in set (0.00 sec)
```

Submission:

Create an SQL script file containing your solutions for the task. Name the file "lab_assignment2.sql" Provide comments above the query to indicate the query's purpose. ChatGPT Exercise Using ChatGPT generate SQL queries of the below problem. Scenario 1: In a student grades database with tables for courses and grades, find the courses where the average grade is below a 'C' (consider 'C' as a passing grade).

We have a "Course" table with the following columns:

Courseld, CourseName, CreditHours, and "Grade" table with the following columns: StudentId(ForeignKey), CourseID((ForeignKey), Grade. you want to find courses where the average grade is below a "C". Generate the theChatGPT prompt for creating the queries for the above requirement.

```
-- Create the Course table
CREATE TABLE Course (
Courseld INT PRIMARY KEY,
CourseName VARCHAR(100),
CreditHours INT
);

-- Create the Grade table
CREATE TABLE Grade (
StudentId INT,
Courseld INT,
Grade CHAR(1),
FOREIGN KEY (CourseId) REFERENCES Course(CourseId)
);
```

Output:

mysql> select * from Course;	output.						
1 Mathematics 4 2 Physics 3 3 3 4 4 Biology 3 5 History 2 4 5 rows in set (0.00 sec)	mysql> select * from Course;						
2 Physics 3 3 4 4 8 8 100 10	CourseId	CourseName	Cred	itHours			
mysql> select * from Grade; +	1 2 3 4 5	Physics Chemistry Biology		4 3 4 3 2			
StudentId CourseId Grade	5 rows in se	t (0.00 sec)					
101 1 A 102 1 B 103 1 C 101 3 A 102 3 A 102 1 B 103 1 C 103 3 B 101 1 A 102 1 B 103 1 C 101 2 B 102 2 C 103 2 D 101 3 A 102 1 B 102 1 B 103 1 C 101 2 B 102 2 C 103 3 A 102 3 A 103 3 B 101 4 C 102 4 D 103 4 F 101 5 B 102 5 C 103 104 105	mysql> selec	t * from Gra	ıde;				
102	StudentId	CourseId	Grade				
24 ' (0 00)	102 103 101 102 103 101	++	B C B C D A A B A B C B C D A A B C D F B C C				

Code:

-- Assuming the following grade point values:

```
-- SQL query to find courses where the average grade is below a 'C'
SELECT c.Courseld, c.CourseName, c.CreditHours
FROM Course c
JOIN Grade g ON c.CourseId = g.CourseId
GROUP BY c.CourseId, c.CourseName, c.CreditHours
HAVING AVG(
CASE g.Grade
WHEN 'A' THEN 4.0
WHEN 'B' THEN 3.0
WHEN 'C' THEN 2.0
WHEN 'D' THEN 1.0
WHEN 'F' THEN 0.0
ELSE NULL
END
) < 2.0;
```

```
Assuming the following grade point values:
'A' = 4.0
'B' = 3.0
mysql>
nysql>
             SQL query to find courses where the average grade is below a 'C'
ECT c.CourseId, c.CourseName, c.CreditHours
nysql>
mysql> SELECT
        FROM Course c
     -> JOIN Grade g ON c.CourseId = g.CourseId
-> GROUP BY c.CourseId, c.CourseName, c.CreditHours
-> HAVING AVG(
          CASE g.Grade
                      THEN 4.0
THEN 3.0
THEN 2.0
          WHEN
          WHEN
          WHEN 'D'
                      THEN 1.0
                 'F'
                       THEN 0.0
          WHEN
          ELSE NULL
          END
     -> ) < 2.0;
  CourseId | CourseName | CreditHours
            4 | Biology
                                                  3
  row in set (0.00 sec)
```