# SQL MODULE

# LAB - 7

*Bandi Amrutha*

*AF0366376*

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_assignment1.sql" Provide comments above each query to indicate the query's purpose.

Assignment 2:
Task1: 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: CourseId, 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.

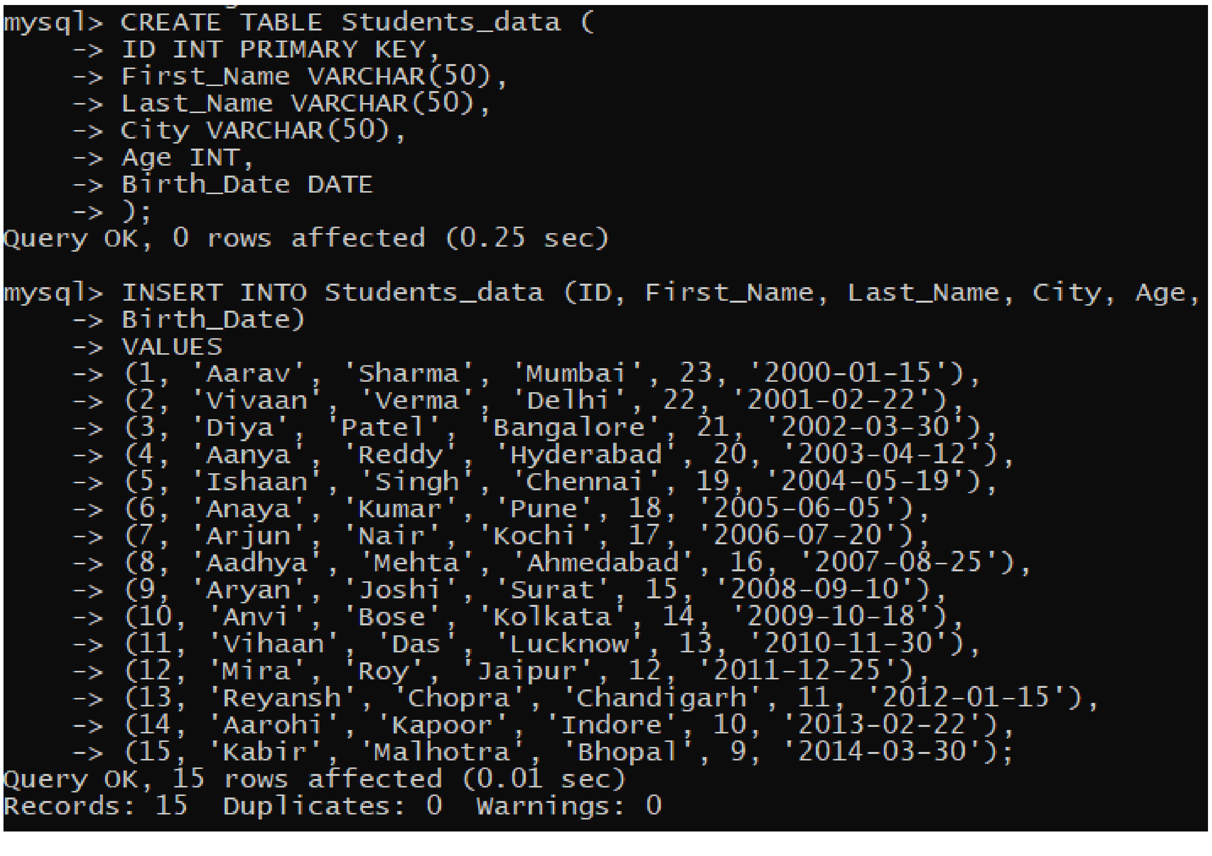
SOLUTION:
Database Schema:
Use the same database scheme created in previous lab.
Assignment 1:
Task 1: Assume you are managing a database of student records, and you need to retrieve information about students born after June 16, 2009. What will be the SQL queryfor this?

Code:
```
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:



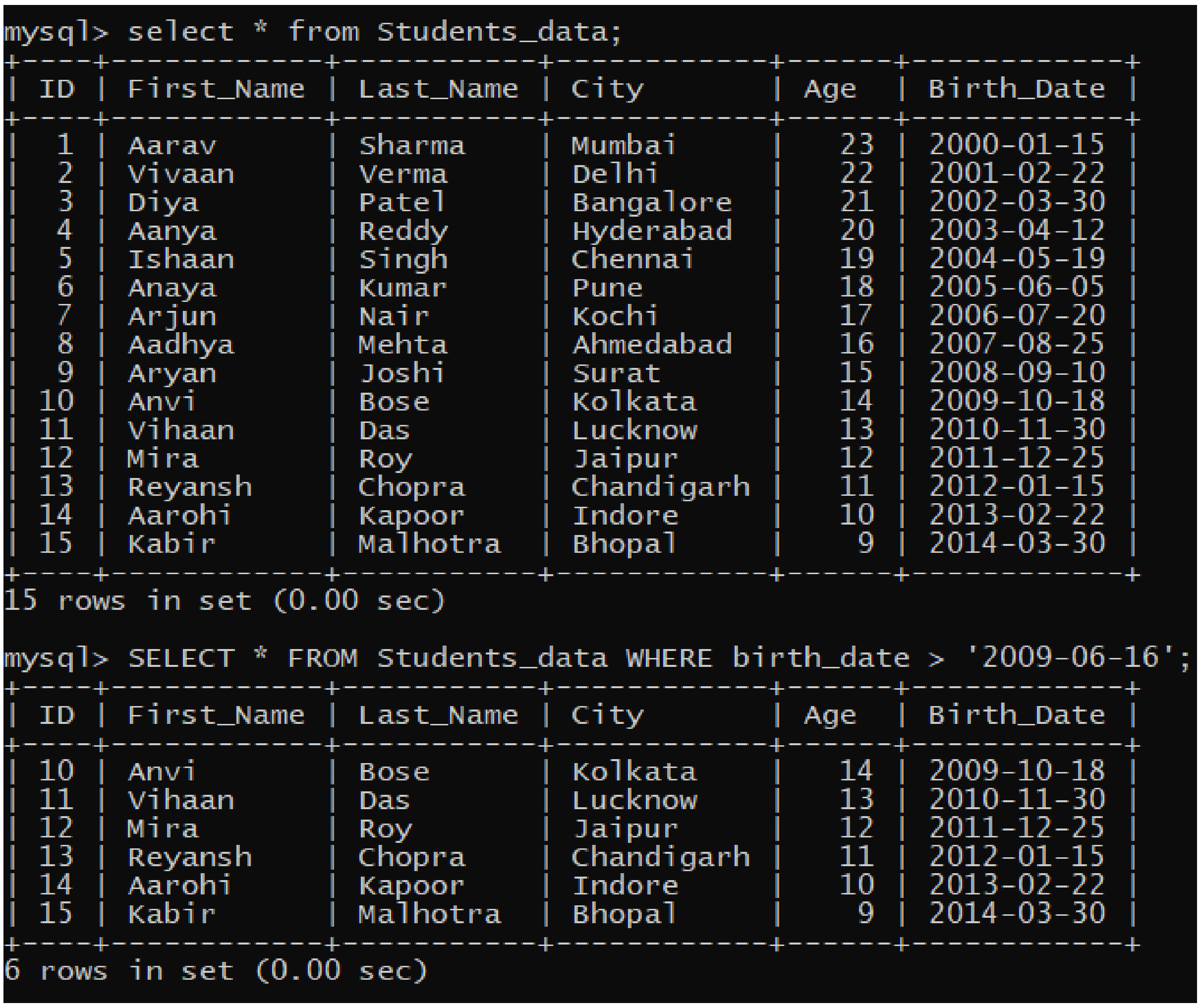
```
mysql> CREATE TABLE Students_data (
    -> ID INT PRIMARY KEY,
    -> First_Name VARCHAR(50),
    -> Last_Name VARCHAR(50),
    -> City VARCHAR(50),
    -> Age INT,
    -> Birth_Date DATE
    -> );
Query OK, 0 rows affected (0.25 sec)

mysql> 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');
Query OK, 15 rows affected (0.01 sec)
Records: 15  Duplicates: 0  Warnings: 0
```

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 | 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 |
+----+------------+-----------+------------+------+------------+
15 rows in set (0.00 sec)

mysql> SELECT * FROM Students_data WHERE birth_date > '2009-06-16';
+----+------------+-----------+------------+------+------------+
| ID | First_Name | Last_Name | City       | Age  | Birth_Date |
+----+------------+-----------+------------+------+------------+
| 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 |
+----+------------+-----------+------------+------+------------+
6 rows in set (0.00 sec)
```

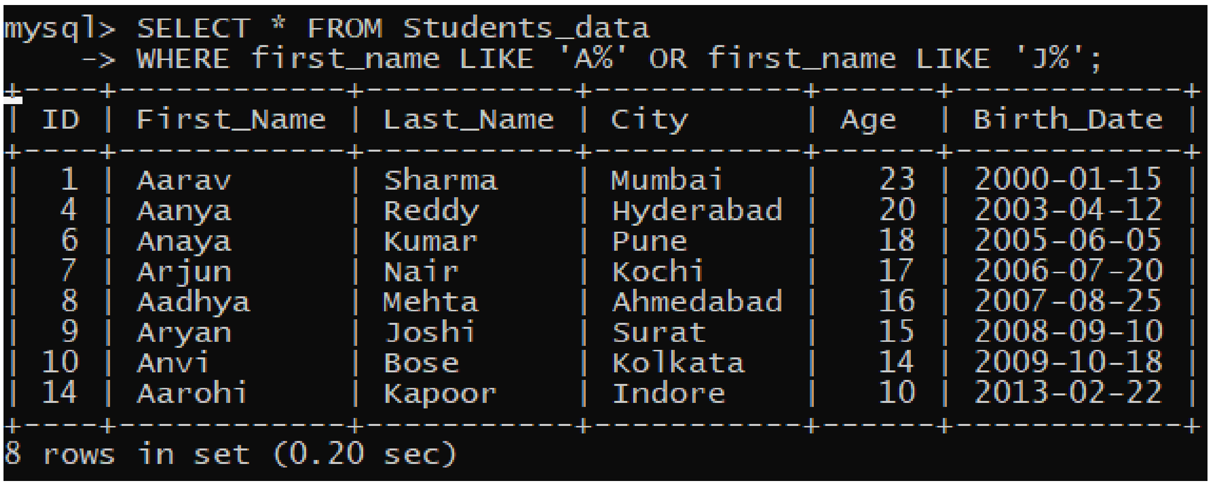
Task2: Assume you have a database containing a "Student" table with Information about students, including their first names. You want to retrieve records of students whose first names start with either 'A' or 'J'. To achieve this, what will be your SQL query?

Code:

SELECT * FROM Students_data

WHERE first_name LIKE 'A%' OR first_name LIKE 'J%';

Output:

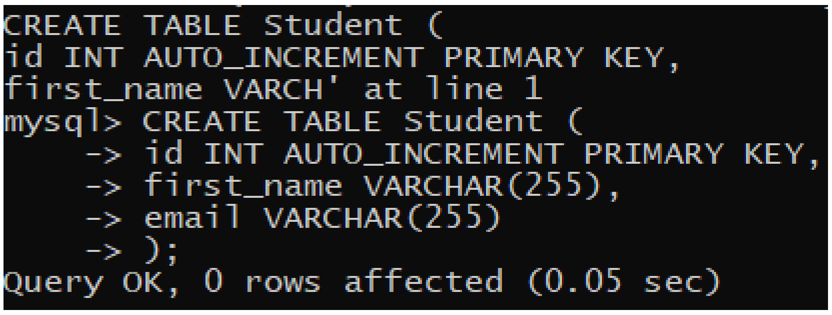

```
mysql> SELECT * FROM Students_data
    -> WHERE first_name LIKE 'A%' OR first_name LIKE 'J%';
+----+------------+-----------+-----------+------+------------+
| ID | First_Name | Last_Name | City      | Age  | Birth_Date |
+----+------------+-----------+-----------+------+------------+
|  1 | Aarav      | Sharma    | Mumbai    |   23 | 2000-01-15 |
|  4 | Aanya      | Reddy     | Hyderabad |   20 | 2003-04-12 |
|  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 |
| 14 | Aarohi     | Kapoor    | Indore    |   10 | 2013-02-22 |
+----+------------+-----------+-----------+------+------------+
8 rows in set (0.20 sec)
```

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:

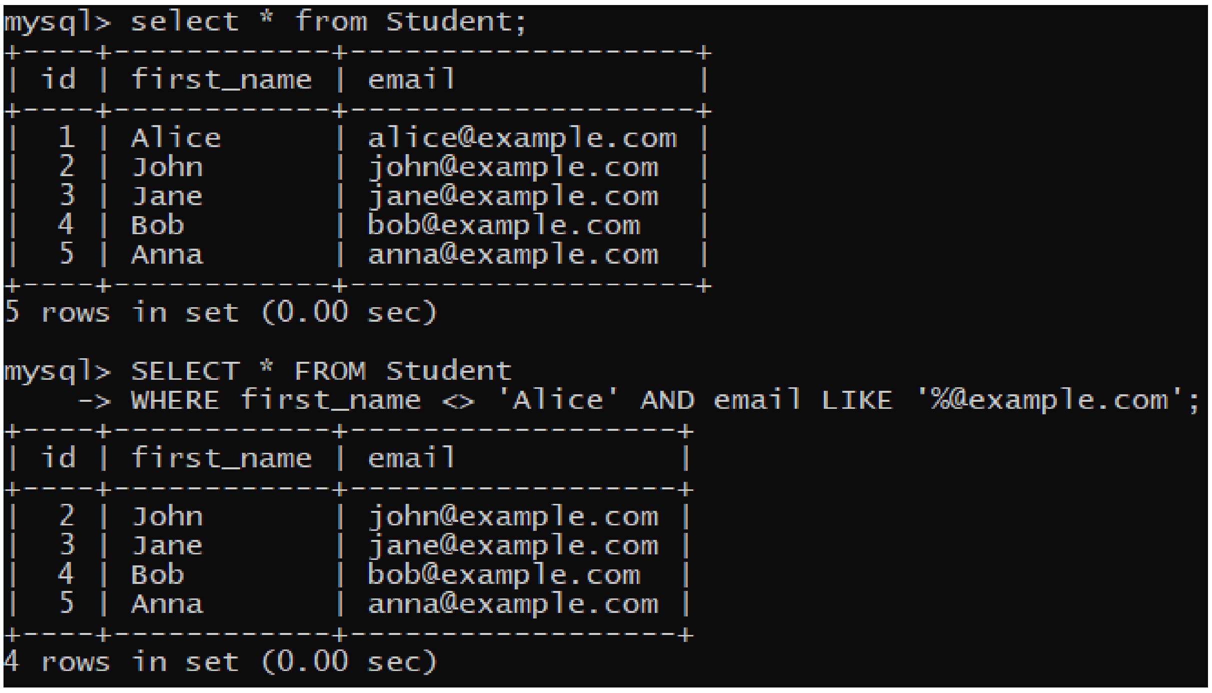

```
CREATE TABLE Student (
id INT AUTO_INCREMENT PRIMARY KEY,
first_name VARCH' at line 1
mysql> CREATE TABLE Student (
    -> id INT AUTO_INCREMENT PRIMARY KEY,
    -> first_name VARCHAR(255),
    -> email VARCHAR(255)
    -> );
Query OK, 0 rows affected (0.05 sec)
```

Code:

```
SELECT * FROM Student
```

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

Output:



```
mysql> select * from Student;
+----+------------+-------------------+
| id | first_name | email             |
+----+------------+-------------------+
|  1 | Alice      | alice@example.com |
|  2 | John       | john@example.com  |
|  3 | Jane       | jane@example.com  |
|  4 | Bob        | bob@example.com   |
|  5 | Anna       | anna@example.com  |
+----+------------+-------------------+
5 rows in set (0.00 sec)

mysql> SELECT * FROM Student
    -> WHERE first_name <> 'Alice' AND email LIKE '%@example.com';
+----+------------+------------------+
| id | first_name | email            |
+----+------------+------------------+
|  2 | John       | john@example.com |
|  3 | Jane       | jane@example.com |
|  4 | Bob        | bob@example.com  |
|  5 | Anna       | anna@example.com |
+----+------------+------------------+
4 rows in set (0.00 sec)
```

Submission:
Create an SQL script file containing your solutions for all tasks (queries).
Name the file "lab_assignment1.sql" Provide comments above each query to indicate the query's purpose.
Assignment 2:
Task1: Create a table Person with PersonID int, FirstName varchar(255), LastName varchar(255) and age (int).
Make PersonID PRIMARY KEY.

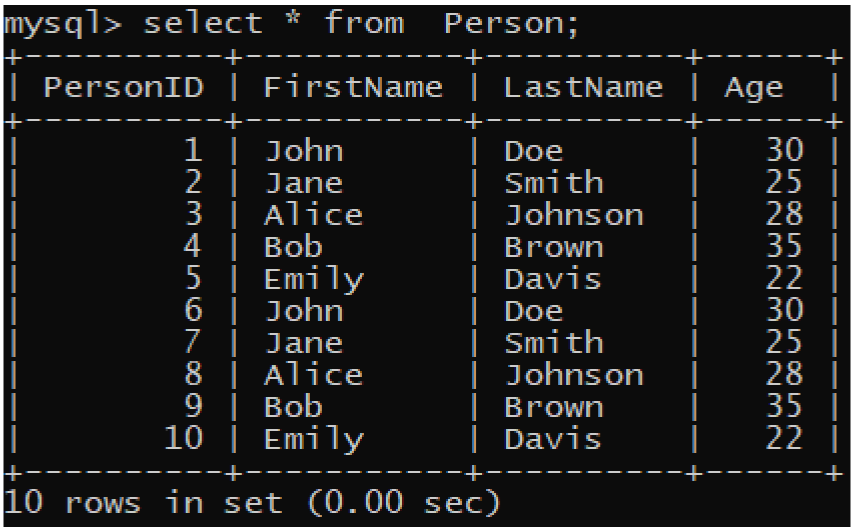
Code:
```
CREATE TABLE Person (
 PersonID INT AUTO_INCREMENT PRIMARY KEY,
 FirstName VARCHAR(255),
 LastName  VARCHAR(255),
 Age INT
);
```

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 | John      | Doe      |   30 |
|        2 | Jane      | Smith    |   25 |
|        3 | Alice     | Johnson  |   28 |
|        4 | Bob       | Brown    |   35 |
|        5 | Emily     | Davis    |   22 |
|        6 | John      | Doe      |   30 |
|        7 | Jane      | Smith    |   25 |
|        8 | Alice     | Johnson  |   28 |
|        9 | Bob       | Brown    |   35 |
|       10 | Emily     | Davis    |   22 |
+----------+-----------+----------+------+
10 rows in set (0.00 sec)
```

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
);
```

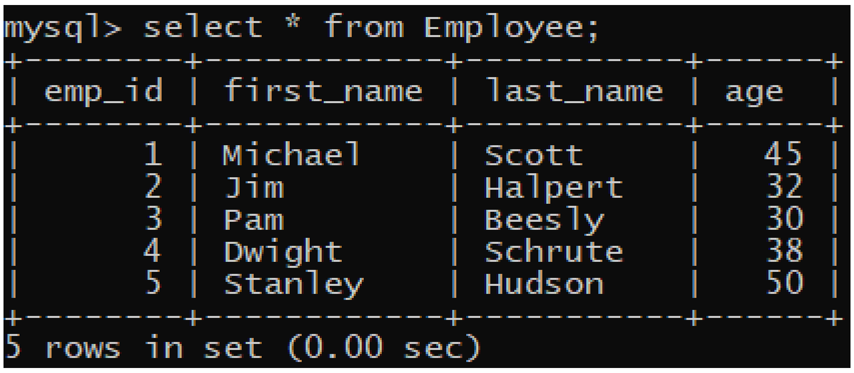
Task 4: Insert data to Employee table

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:



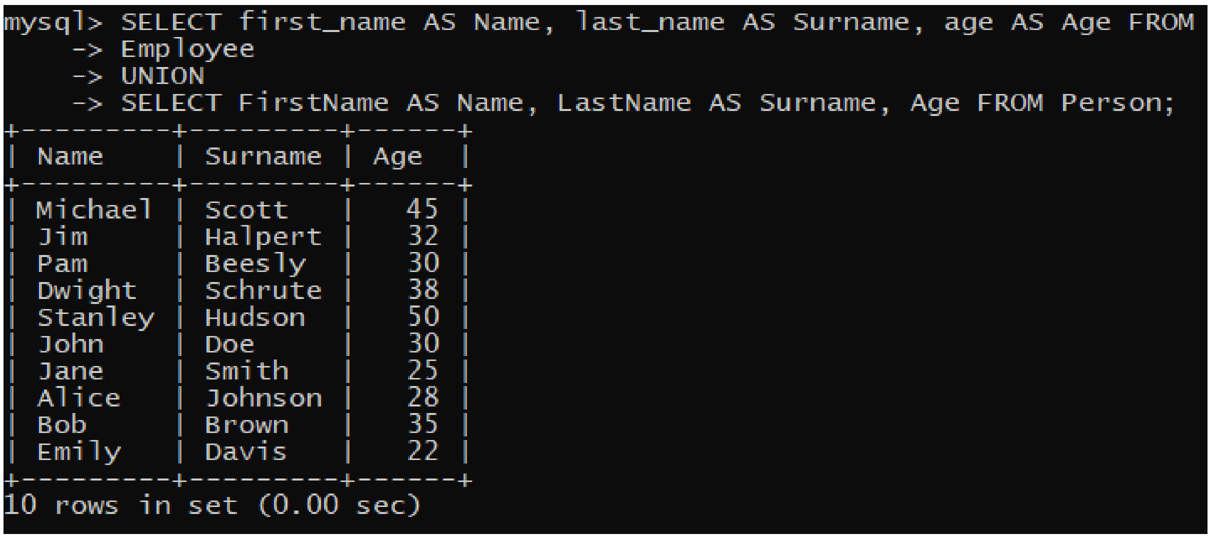
```
mysql> select * from Employee;
+--------+------------+-----------+------+
| emp_id | first_name | last_name | age  |
+--------+------------+-----------+------+
|      1 | Michael    | Scott     |   45 |
|      2 | Jim        | Halpert   |   32 |
|      3 | Pam        | Beesly    |   30 |
|      4 | Dwight     | Schrute   |   38 |
|      5 | Stanley    | Hudson    |   50 |
+--------+------------+-----------+------+
5 rows 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:



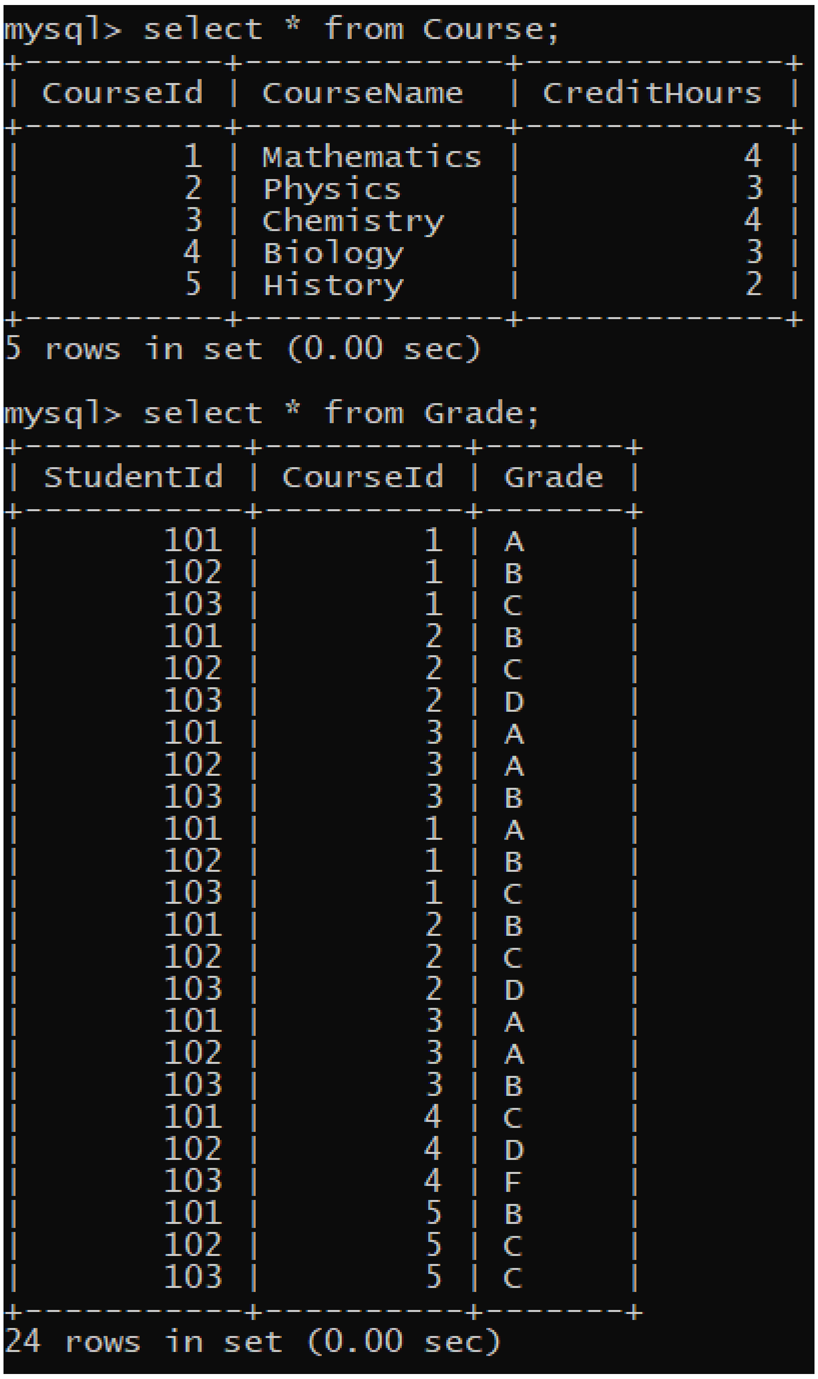
```
mysql> SELECT first_name AS Name, last_name AS Surname, age AS Age FROM
    -> Employee
    -> UNION
    -> SELECT FirstName AS Name, LastName AS Surname, Age FROM Person;
+---------+---------+------+
| Name    | Surname | Age  |
+---------+---------+------+
| Michael | Scott   |   45 |
| Jim     | Halpert |   32 |
| Pam     | Beesly  |   30 |
| Dwight  | Schrute |   38 |
| Stanley | Hudson  |   50 |
| John    | Doe     |   30 |
| Jane    | Smith   |   25 |
| Alice   | Johnson |   28 |
| Bob     | Brown   |   35 |
| Emily   | Davis   |   22 |
+---------+---------+------+
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:
CourseId, 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.

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

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

Output:



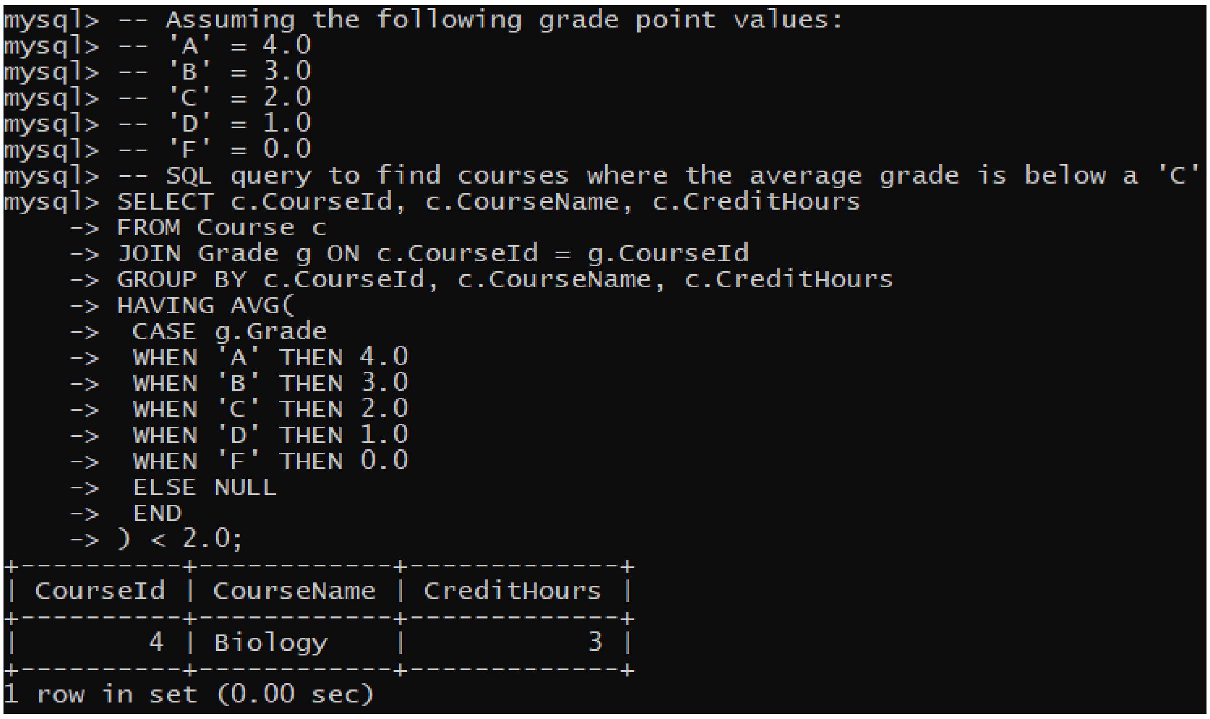
```
mysql> select * from Course;
+----------+-------------+-------------+
| CourseId | CourseName  | CreditHours |
+----------+-------------+-------------+
|        1 | Mathematics |           4 |
|        2 | Physics     |           3 |
|        3 | Chemistry   |           4 |
|        4 | Biology     |           3 |
|        5 | History     |           2 |
+----------+-------------+-------------+
5 rows in set (0.00 sec)

mysql> select * from Grade;
+-----------+----------+-------+
| StudentId | CourseId | Grade |
+-----------+----------+-------+
|       101 |        1 | A     |
|       102 |        1 | B     |
|       103 |        1 | C     |
|       101 |        2 | B     |
|       102 |        2 | C     |
|       103 |        2 | D     |
|       101 |        3 | A     |
|       102 |        3 | A     |
|       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 |        3 | A     |
|       103 |        3 | B     |
|       101 |        4 | C     |
|       102 |        4 | D     |
|       103 |        4 | F     |
|       101 |        5 | B     |
|       102 |        5 | C     |
|       103 |        5 | C     |
+-----------+----------+-------+
24 rows in set (0.00 sec)
```

Code:

```
-- Assuming the following grade point values:
-- 'A' = 4.0
-- 'B' = 3.0
-- 'C' = 2.0
-- 'D' = 1.0
-- 'F' = 0.0
-- SQL query to find courses where the average grade is below a 'C'
SELECT c.CourseId, 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;
```

Code:



```
mysql> -- Assuming the following grade point values:
mysql> -- 'A' = 4.0
mysql> -- 'B' = 3.0
mysql> -- 'C' = 2.0
mysql> -- 'D' = 1.0
mysql> -- 'F' = 0.0
mysql> -- SQL query to find courses where the average grade is below a 'C'
mysql> SELECT c.CourseId, 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;
+----------+------------+-------------+
| CourseId | CourseName | CreditHours |
+----------+------------+-------------+
|        4 | Biology    |           3 |
+----------+------------+-------------+
1 row in set (0.00 sec)
```