Group B – 4

▪ Arithmetic Operators –

```
mysql> drop table student_details,student_2;
ERROR 1051 (42S02): Unknown table 'assignmentb2.student_2'
mysql> drop table student_details,studnet_2;
Query OK, 0 rows affected (0.02 sec)

mysql> -- Create a table called 'math_operations'
mysql> CREATE TABLE math_operations (
    ->   id INT PRIMARY KEY,
    ->   num1 INT,
    ->   num2 INT
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> -- Insert some values into the table
mysql> INSERT INTO math_operations (id, num1, num2)
    -> VALUES
    ->   (1, 10, 5),
    ->   (2, 20, 8),
    ->   (3, 15, 3),
    ->   (4, 30, 10);
Query OK, 4 rows affected (0.00 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql>
mysql> -- Query the table to perform arithmetic operations
mysql> SELECT
    ->   id,
    ->   num1 + num2 AS sum,
    ->   num1 - num2 AS difference,
    ->   num1 * num2 AS product,
    ->   num1 / num2 AS quotient,
    ->   num1 % num2 AS remainder
    -> FROM math_operations;
+----+------+------------+---------+----------+-----------+
| id | sum  | difference | product | quotient | remainder |
+----+------+------------+---------+----------+-----------+
|  1 |   15 |          5 |      50 |   2.0000 |         0 |
|  2 |   28 |         12 |     160 |   2.5000 |         4 |
|  3 |   18 |         12 |      45 |   5.0000 |         0 |
|  4 |   40 |         20 |     300 |   3.0000 |         0 |
+----+------+------------+---------+----------+-----------+
4 rows in set (0.00 sec)

mysql>
```

▪ Boolean Operator –

```
mysql> -- Create a table called 'students'
mysql> CREATE TABLE students (
    ->   id INT PRIMARY KEY,
    ->   name VARCHAR(50),
    ->   age INT,
    ->   is_female BOOLEAN,
    ->   grade INT
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> -- Insert some values into the table
mysql> INSERT INTO students (id, name, age, is_female, grade)
    -> VALUES
    ->   (1, 'Alice', 18, true, 12),
    ->   (2, 'Bob', 17, false, 10),
    ->   (3, 'Charlie', 16, false, 11),
    ->   (4, 'David', 18, false, 12),
    ->   (5, 'Eve', 17, true, 9);
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql>
mysql> -- Query the table using boolean operators
mysql> SELECT
    ->   name,
    ->   age,
    ->   is_female,
    ->   grade,
    ->   age >= 18 AND is_female AS can_vote,
    ->   grade > 10 OR age >= 18 AS can_pass
    -> FROM students;
+---------+------+-----------+-------+----------+----------+
| name    | age  | is_female | grade | can_vote | can_pass |
+---------+------+-----------+-------+----------+----------+
| Alice   |   18 |         1 |    12 |        1 |        1 |
| Bob     |   17 |         0 |    10 |        0 |        0 |
| Charlie |   16 |         0 |    11 |        0 |        1 |
| David   |   18 |         0 |    12 |        0 |        1 |
| Eve     |   17 |         1 |     9 |        0 |        0 |
+---------+------+-----------+-------+----------+----------+
5 rows in set (0.00 sec)
```

▪ RELATIONAL –

```
mysql> -- Create a table called 'employees'
mysql> CREATE TABLE employees (
    ->   id INT PRIMARY KEY,
    ->   name VARCHAR(50),
    ->   age INT,
    ->   salary DECIMAL(10, 2)
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> -- Insert some values into the table
mysql> INSERT INTO employees (id, name, age, salary)
    -> VALUES
    ->   (1, 'Alice', 30, 50000.00),
    ->   (2, 'Bob', 25, 40000.00),
    ->   (3, 'Charlie', 35, 60000.00),
    ->   (4, 'David', 28, 45000.00),
    ->   (5, 'Eve', 27, 55000.00);
Query OK, 5 rows affected (0.00 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql>
mysql> -- Query the table using relational operators
mysql> SELECT
    ->   name,
    ->   age,
    ->   salary,
    ->   age < 30 AS is_young,
    ->   salary >= 50000.00 AS is_well_paid
    -> FROM employees;
+---------+------+----------+----------+--------------+
| name    | age  | salary   | is_young | is_well_paid |
+---------+------+----------+----------+--------------+
| Alice   |   30 | 50000.00 |        0 |            1 |
| Bob     |   25 | 40000.00 |        1 |            0 |
| Charlie |   35 | 60000.00 |        0 |            1 |
| David   |   28 | 45000.00 |        1 |            0 |
| Eve     |   27 | 55000.00 |        1 |            1 |
+---------+------+----------+----------+--------------+
5 rows in set (0.00 sec)
```

▪ NORMALIZATION -

```
mysql> -- Create a table in 1NF
mysql> CREATE TABLE orders (
    ->   order_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   customer_name VARCHAR(50),
    ->   order_date DATE,
    ->   product_name VARCHAR(50),
    ->   quantity INT,
    ->   price DECIMAL(10,2),
    ->   total DECIMAL(10,2)
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> -- Insert some data into the table
mysql> INSERT INTO orders (customer_name, order_date, product_name, quantity, price, total)
    -> VALUES ('Alice', '2022-05-01', 'Product A', 2, 10.50, 21.00);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO orders (customer_name, order_date, product_name, quantity, price, total)
    -> VALUES ('Bob', '2022-05-02', 'Product B', 1, 15.00, 15.00);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO orders (customer_name, order_date, product_name, quantity, price, total)
    -> VALUES ('Charlie', '2022-05-03', 'Product C', 3, 20.00, 60.00);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO orders (customer_name, order_date, product_name, quantity, price, total)
    -> VALUES ('Dave', '2022-05-04', 'Product D', 1, 12.75, 12.75);
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> -- Select data from the table
mysql> SELECT * FROM orders;
+----------+---------------+------------+--------------+----------+-------+-------+
| order_id | customer_name | order_date | product_name | quantity | price | total |
+----------+---------------+------------+--------------+----------+-------+-------+
|        1 | Alice         | 2022-05-01 | Product A    |        2 | 10.50 | 21.00 |
|        2 | Bob           | 2022-05-02 | Product B    |        1 | 15.00 | 15.00 |
|        3 | Charlie       | 2022-05-03 | Product C    |        3 | 20.00 | 60.00 |
|        4 | Dave          | 2022-05-04 | Product D    |        1 | 12.75 | 12.75 |
+----------+---------------+------------+--------------+----------+-------+-------+
4 rows in set (0.00 sec)

mysql> -- Create a table in 2NF
mysql> CREATE TABLE customers (
    ->   customer_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   customer_name VARCHAR(50)
```

```
mysql> -- Create a table in 2NF
mysql> CREATE TABLE customers (
    ->   customer_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   customer_name VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> CREATE TABLE products (
    ->   product_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   product_name VARCHAR(50),
    ->   price DECIMAL(10,2)
    -> );
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> CREATE TABLE orders_2nf (
    ->   order_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   customer_id INT,
    ->   product_id INT,
    ->   quantity INT,
    ->   total DECIMAL(10,2),
    ->   order_date DATE,
    ->   FOREIGN KEY (customer_id) REFERENCES customers (customer_id),
    ->   FOREIGN KEY (product_id) REFERENCES products (product_id)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> -- Insert some data into the tables
mysql> INSERT INTO customers (customer_name) VALUES ('Alice');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Bob');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Charlie');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Dave');
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> INSERT INTO products (product_name, price) VALUES ('Product A', 10.50);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO products (product_name, price) VALUES ('Product B', 15.00);
    ->   order_id INT PRIMARY KEY AUTO_INCREMENT,
    ->   customer_id INT,
    ->   product_id INT,
    ->   quantity INT,
    ->   total DECIMAL(10,2),
    ->   order_date DATE,
    ->   FOREIGN KEY (customer_id) REFERENCES customers (customer_id),
    ->   FOREIGN KEY (product_id) REFERENCES products (product_id)
    -> );
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> -- Insert some data into the tables
mysql> INSERT INTO customers (customer_name) VALUES ('Alice');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Bob');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Charlie');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO customers (customer_name) VALUES ('Dave');
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> INSERT INTO products (product_name, price) VALUES ('Product A', 10.50);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO products (product_name, price) VALUES ('Product B', 15.00);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO products (product_name, price) VALUES ('Product C', 20.00);
Query OK, 1 row affected (0.00 sec)

mysql>
mysql> select * from customers;
+-------------+---------------+
| customer_id | customer_name |
+-------------+---------------+
|           1 | Alice         |
|           2 | Bob           |
|           3 | Charlie       |
|           4 | Dave          |
+-------------+---------------+
4 rows in set (0.00 sec)

mysql>
```