CIS 11051 – PRACTICAL FOR DATABASE DESIGN

Information and communication Technology

Faculty of Technology

South Eastern University of Sri Lanka

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Lab Sheet 09

1. Create database

```
mysql> create database lab9; use lab9;
Query OK, 1 row affected (0.01 sec)
```

Create table

```
MySQL 8.0 Command Line Client

mysql> create table sales(id int primary key auto_increment,product_name varchar(20) not null,Amount_Sold int not null,Sales_Date date not null, category varchar(20) nu
ll,Discount float null);
Query OK, 0 rows affected (0.03 sec)

mysql> desc sales;
+--------------+-------------+------+-----+---------+----------------+
| Field        | Type        | Null | Key | Default | Extra          |
+--------------+-------------+------+-----+---------+----------------+
| id           | int         | NO   | PRI | NULL    | auto_increment |
| product_name | varchar(20) | NO   |     | NULL    |                |
| Amount_Sold  | int         | NO   |     | NULL    |                |
| Sales_Date   | date        | NO   |     | NULL    |                |
| category     | varchar(20) | YES  |     | NULL    |                |
| Discount     | float       | YES  |     | NULL    |                |
+--------------+-------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

2. Inserting data

```
mysql> insert into sales(product_name,amount_sold,sales_date,category,discount) values("Laptop",50,"2025-04-01","Electronics",5.2),("SmartPhone",30,"2025-04-02","Electr
onics",null),("Tablet",40,"2025-04-03","Electronics",3.00),("Headphones",70,"2025-04-04","Accessories",2.50),("Mouse",100,"2025-04-05","Accessories",null),("Keyboard",6
0,"2025-04-06","Accessories",4.00),("Monitor",20,"2025-04-07",null,null);
Query OK, 7 rows affected (0.01 sec)
Records: 7  Duplicates: 0  Warnings: 0

mysql> select * from sales;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  1 | Laptop       |          50 | 2025-04-01 | Electronics |      5.2 |
|  2 | SmartPhone   |          30 | 2025-04-02 | Electronics |     NULL |
|  3 | Tablet       |          40 | 2025-04-03 | Electronics |        3 |
|  4 | Headphones   |          70 | 2025-04-04 | Accessories |      2.5 |
|  5 | Mouse        |         100 | 2025-04-05 | Accessories |     NULL |
|  6 | Keyboard     |          60 | 2025-04-06 | Accessories |        4 |
|  7 | Monitor      |          20 | 2025-04-07 | NULL        |     NULL |
+----+--------------+-------------+------------+-------------+----------+
7 rows in set (0.00 sec)
```

3. Sum of amount_sold

```
mysql> select sum(amount_sold) from sales;
+------------------+
| sum(amount_sold) |
+------------------+
|              370 |
+------------------+
1 row in set (0.00 sec)
```

4. Average amount_sold

```
mysql> select avg(amount_sold) from sales;
+------------------+
| avg(amount_sold) |
+------------------+
|          52.8571 |
+------------------+
1 row in set (0.00 sec)
```

5. Maximum amount_sold

```
mysql> select max(amount_sold) from sales;
+------------------+
| max(amount_sold) |
+------------------+
|              100 |
+------------------+
1 row in set (0.01 sec)
```

6. Minimum amound_sold

```
mysql> select min(amount_sold) from sales;
+------------------+
| min(amount_sold) |
+------------------+
|               20 |
+------------------+
1 row in set (0.00 sec)
```

7. Total product sold

```
mysql> select count(amount_sold) from sales;
+--------------------+
| count(amount_sold) |
+--------------------+
|                  7 |
+--------------------+
1 row in set (0.01 sec)
```

8. "Electronics" category that have sold more than 30 units.

```
mysql> select * from sales where category="Electronics" and amount_sold>30;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  1 | Laptop       |          50 | 2025-04-01 | Electronics |      5.2 |
|  3 | Tablet       |          40 | 2025-04-03 | Electronics |        3 |
+----+--------------+-------------+------------+-------------+----------+
2 rows in set (0.00 sec)
```

9. sales data by category and calculate the total sales for each category

```
mysql> select category,sum(amount_sold) from sales group by category;
+-------------+-------------------+
| category    | sum(amount_sold) |
+-------------+-------------------+
| Electronics |               120 |
| Accessories |               230 |
| NULL        |                20 |
+-------------+-------------------+
3 rows in set (0.01 sec)
```

10. categories that have sold more than 100 units in total.

```
mysql> select category,sum(amount_sold) from sales group by category having sum(amount_sold)>100;
+-------------+-----------------+
| category    | sum(amount_sold) |
+-------------+-----------------+
| Electronics |             120 |
| Accessories |             230 |
+-------------+-----------------+
2 rows in set (0.01 sec)
```

11. products sorted by amount_sold in descending order

```
mysql> select * from sales order by amount_sold desc;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  5 | Mouse        |         100 | 2025-04-05 | Accessories |     NULL |
|  4 | Headphones   |          70 | 2025-04-04 | Accessories |      2.5 |
|  6 | Keyboard     |          60 | 2025-04-06 | Accessories |        4 |
|  1 | Laptop       |          50 | 2025-04-01 | Electronics |      5.2 |
|  3 | Tablet       |          40 | 2025-04-03 | Electronics |        3 |
|  2 | SmartPhone   |          30 | 2025-04-02 | Electronics |     NULL |
|  7 | Monitor      |          20 | 2025-04-07 | NULL        |     NULL |
+----+--------------+-------------+------------+-------------+----------+
```

12. Show the products sorted first by category in ascending order and then by amount_sold in descending order.

```
mysql> select * from sales order by category asc, amount_sold desc;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  7 | Monitor      |          20 | 2025-04-07 | NULL        |     NULL |
|  5 | Mouse        |         100 | 2025-04-05 | Accessories |     NULL |
|  4 | Headphones   |          70 | 2025-04-04 | Accessories |      2.5 |
|  6 | Keyboard     |          60 | 2025-04-06 | Accessories |        4 |
|  1 | Laptop       |          50 | 2025-04-01 | Electronics |      5.2 |
|  3 | Tablet       |          40 | 2025-04-03 | Electronics |        3 |
|  2 | SmartPhone   |          30 | 2025-04-02 | Electronics |     NULL |
+----+--------------+-------------+------------+-------------+----------+
7 rows in set (0.01 sec)
```

13. Get the first 3 products with the highest sales.

```
mysql> select * from sales order by amount_sold desc limit 3;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  5 | Mouse        |         100 | 2025-04-05 | Accessories |     NULL |
|  4 | Headphones   |          70 | 2025-04-04 | Accessories |      2.5 |
|  6 | Keyboard     |          60 | 2025-04-06 | Accessories |        4 |
+----+--------------+-------------+------------+-------------+----------+
3 rows in set (0.00 sec)
```

14. Retrieve the last 5 rows from the sales table based on sales_date.

```
mysql> select * from sales order by sales_date desc limit 5;
+----+--------------+-------------+------------+-------------+----------+
| id | product_name | Amount_Sold | Sales_Date | category    | Discount |
+----+--------------+-------------+------------+-------------+----------+
|  7 | Monitor      |          20 | 2025-04-07 | NULL        |     NULL |
|  6 | Keyboard     |          60 | 2025-04-06 | Accessories |        4 |
|  5 | Mouse        |         100 | 2025-04-05 | Accessories |     NULL |
|  4 | Headphones   |          70 | 2025-04-04 | Accessories |      2.5 |
|  3 | Tablet       |          40 | 2025-04-03 | Electronics |        3 |
+----+--------------+-------------+------------+-------------+----------+
5 rows in set (0.00 sec)
```

15. Write an SQL query to retrieve 3 records from the sales table, starting from the 4th record (i.e., skipping the first 3). Display the product_name, amount_sold, and sales_date columns.

```
mysql> select product_name,amount_sold,sales_date from sales limit 3 offset 3;
+--------------+-------------+------------+
| product_name | amount_sold | sales_date |
+--------------+-------------+------------+
| Headphones   |          70 | 2025-04-04 |
| Mouse        |         100 | 2025-04-05 |
| Keyboard     |          60 | 2025-04-06 |
+--------------+-------------+------------+
3 rows in set (0.00 sec)
```