SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(AN AUTONOMOUS INSTITUTION)

# DEPARTMENT OF MECHATRONICS

## SQL

## ASSIGNMENT -2

| | |
|---|---|
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| YEAR/SEMESTER | IV/VII |
| ASSIGNMENT NUMBER | 2 |

I. Products Table

The Products table contains details about products, including their names, categories, and unit prices. It provides reference data for linking product information to sales transactions.

1. Retrieve all columns from the product table

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
  product_id INT PRIMARY KEY,
  product_name VARCHAR(100),
  category VARCHAR(50),
  unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT * FROM Products;
```

**Output:**

Result Grid | Filter Rows: | Edit:

| product_id | product_name | category | unit_price |
|---|---|---|---|
| 101 | Laptop | Electronics | 500.00 |
| 102 | Smartphone | Electronics | 300.00 |
| 103 | Headphones | Electronics | 30.00 |
| 104 | Keyboard | Electronics | 20.00 |
| 105 | Mouse | Electronics | 15.00 |

2. Retrieve all columns from the product table

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
   product_id INT PRIMARY KEY,
   product_name VARCHAR(100),
   category VARCHAR(50),
   unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT product_name, unit_price
FROM Products;
```

**Output:**

Result Grid | Filter Rows:

| product_name | unit_price |
|---|---|
| Laptop | 500.00 |
| Smartphone | 300.00 |
| Headphones | 30.00 |
| Keyboard | 20.00 |
| Mouse | 15.00 |

3. Filter the Products table to show only products in the 'Electronics' category.

**Query:**

```
create database production;
use production;
```

```
CREATE TABLE Products (
   product_id INT PRIMARY KEY,
   product_name VARCHAR(100),
   category VARCHAR(50),
   unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT *
FROM Products
WHERE category = 'Electronics';
```

**Output:**

Result Grid | Filter Rows: | Edit:

| product_id | product_name | category | unit_price |
|---|---|---|---|
| 101 | Laptop | Electronics | 500.00 |
| 102 | Smartphone | Electronics | 300.00 |
| 103 | Headphones | Electronics | 30.00 |
| 104 | Keyboard | Electronics | 20.00 |
| 105 | Mouse | Electronics | 15.00 |

4. Retrieve the product_id and product_name from the Products table for products with a unit_price greater than $100.

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
   product_id INT PRIMARY KEY,
```

```
  product_name VARCHAR(100),
  category VARCHAR(50),
  unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT product_id, product_name
FROM Products
WHERE unit_price > 100;
```

**Output:**

Result Grid | Filter Rows

| product_id | product_name |
|---|---|
| 101 | Laptop |
| 102 | Smartphone |

5. Calculate the average unit_price of products in the Products table.

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
  product_id INT PRIMARY KEY,
  product_name VARCHAR(100),
  category VARCHAR(50),
  unit_price DECIMAL(10, 2)
);
```

```
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT AVG(unit_price) AS average_price
FROM Products;
```

**Output:**

Result Grid | Filter Rc

| | average_price |
|---|---|
| ▶ | 173.000000 |

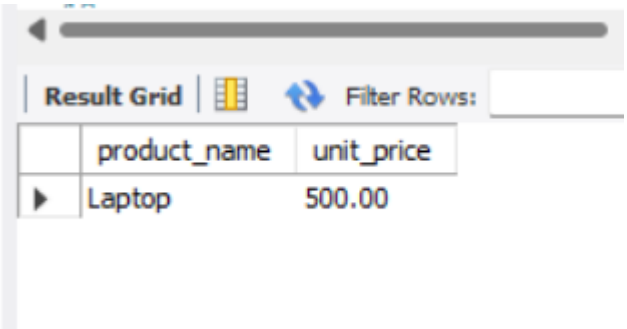
6. Retrieve product_name and unit_price from the Products table with the Highest Unit Price

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
  product_id INT PRIMARY KEY,
  product_name VARCHAR(100),
  category VARCHAR(50),
  unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT product_name, unit_price
```

```
FROM Products
ORDER BY unit_price DESC
LIMIT 1;
```

**Output:**



Result Grid | Filter Rows:

| | product_name | unit_price |
|---|---|---|
| ▶ | Laptop | 500.00 |

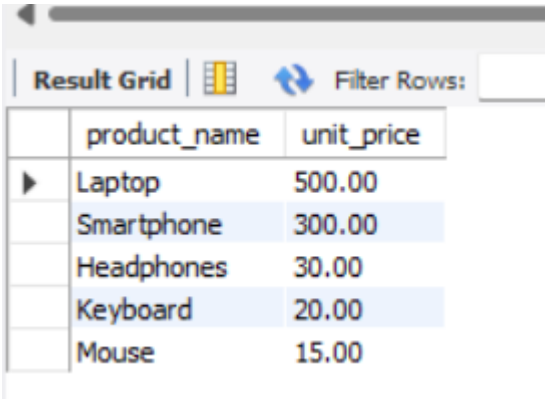
7. Retrieve the product_name and unit_price from the Products table, ordering the results by unit_price in descending order.

**Query:**

```
create database production;
use production;
CREATE TABLE Products (
  product_id INT PRIMARY KEY,
  product_name VARCHAR(100),
  category VARCHAR(50),
  unit_price DECIMAL(10, 2)
);
INSERT INTO Products (product_id, product_name, category, unit_price) VALUES
(101, 'Laptop', 'Electronics', 500.00),
(102, 'Smartphone', 'Electronics', 300.00),
(103, 'Headphones', 'Electronics', 30.00),
(104, 'Keyboard', 'Electronics', 20.00),
(105, 'Mouse', 'Electronics', 15.00);
SELECT product_name, unit_price
FROM Products
```

ORDER BY unit_price DESC;

**Output:**



Result Grid | Filter Rows:

| product_name | unit_price |
|---|---|
| Laptop | 500.00 |
| Smartphone | 300.00 |
| Headphones | 30.00 |
| Keyboard | 20.00 |
| Mouse | 15.00 |

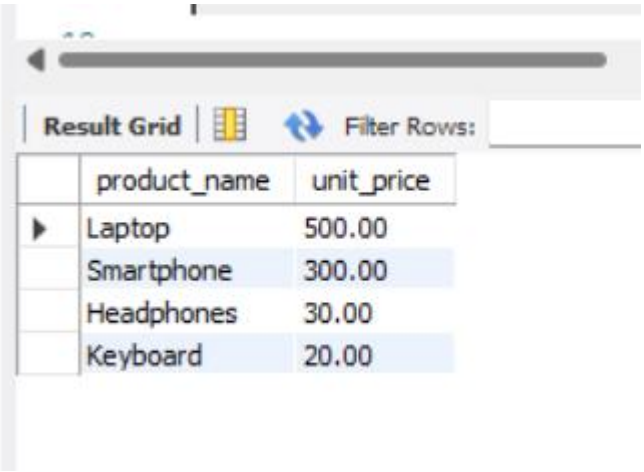
8. Retrieve the product_name and unit_price from the Products table, filtering the unit_price to show only values between $20 and $600.

**Query:**

```
create database production;

use production;

CREATE TABLE Products (

   product_id INT PRIMARY KEY,

   product_name VARCHAR(100),

   category VARCHAR(50),

   unit_price DECIMAL(10, 2)

);

INSERT INTO Products (product_id, product_name, category, unit_price) VALUES

(101, 'Laptop', 'Electronics', 500.00),

(102, 'Smartphone', 'Electronics', 300.00),

(103, 'Headphones', 'Electronics', 30.00),

(104, 'Keyboard', 'Electronics', 20.00),

(105, 'Mouse', 'Electronics', 15.00);

SELECT product_name, unit_price

FROM Products
```

WHERE unit_price BETWEEN 20 AND 600;

**Output:**



Result Grid | Filter Rows:

| product_name | unit_price |
|---|---|
| Laptop | 500.00 |
| Smartphone | 300.00 |
| Headphones | 30.00 |
| Keyboard | 20.00 |

9. Retrieve the product_name and category from the Products table, ordering the results by category in ascending order.

**Query:**

```
create database production;

use production;

CREATE TABLE Products (

   product_id INT PRIMARY KEY,

   product_name VARCHAR(100),

   category VARCHAR(50),

   unit_price DECIMAL(10, 2)

);

INSERT INTO Products (product_id, product_name, category, unit_price) VALUES

(101, 'Laptop', 'Electronics', 500.00),

(102, 'Smartphone', 'Electronics', 300.00),

(103, 'Headphones', 'Electronics', 30.00),

(104, 'Keyboard', 'Electronics', 20.00),

(105, 'Mouse', 'Electronics', 15.00);

SELECT product_name, category
```

FROM Products

ORDER BY category ASC;

**Output:**

Result Grid | Filter Rows:

| product_name | category |
|---|---|
| Laptop | Electronics |
| Smartphone | Electronics |
| Headphones | Electronics |
| Keyboard | Electronics |
| Mouse | Electronics |

II. Sales Table

The Sales table records information about product sales, including the quantity sold, sale date, and total price for each sale. It serves as a transactional data source for analyzing sales trends.

1. Retrieve all columns from the Sales table.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);
SELECT * FROM Sales;
```

**Output:**

Result Grid | Filter Rows: | Edit:

| sale_id | product_id | quantity_sold | sale_date | total_price |
|---|---|---|---|---|
| 1 | 101 | 5 | 2024-01-01 | 2500.00 |
| 2 | 102 | 3 | 2024-01-02 | 900.00 |
| 3 | 103 | 2 | 2024-01-02 | 60.00 |
| 4 | 104 | 4 | 2024-01-03 | 80.00 |
| 5 | 105 | 6 | 2024-01-03 | 90.00 |

2. Retrieve the sale_id and sale_date from the Sales table.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);
SELECT sale_id, sale_date
FROM Sales;
```

**Output:**

Result Grid | Filte

| sale_id | sale_date |
|---|---|
| 1 | 2024-01-01 |
| 2 | 2024-01-02 |
| 3 | 2024-01-02 |
| 4 | 2024-01-03 |
| 5 | 2024-01-03 |

3. Filter the Sales table to show only sales with a total_price greater than $100.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);
SELECT *
FROM Sales
WHERE total_price > 100;
```

**Output:**

Result Grid | Filter Rows: | Edit:

| sale_id | product_id | quantity_sold | sale_date | total_price |
|---|---|---|---|---|
| 1 | 101 | 5 | 2024-01-01 | 2500.00 |
| 2 | 102 | 3 | 2024-01-02 | 900.00 |

4. Retrieve the sale_id and total_price from the Sales table for sales made on January 3, 2024.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);
SELECT sale_id, total_price
FROM Sales
WHERE sale_date = '2024-01-03';
```

**Output:**

Result Grid | Filte

| sale_id | total_price |
|---|---|
| 4 | 80.00 |
| 5 | 90.00 |

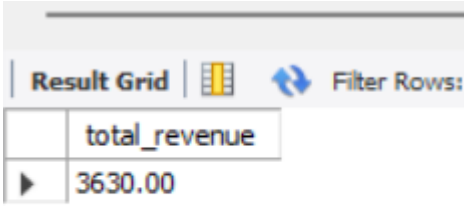
5. Calculate the total revenue generated from all sales in the Sales table.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
```

```
  total_price DECIMAL(10, 2),
  FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);

SELECT SUM(total_price) AS total_revenue
FROM Sales;
```

**Output:**



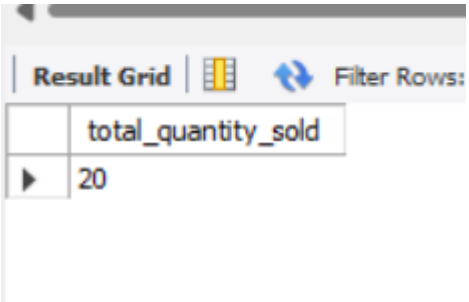

6. Calculate the total quantity_sold from the Sales table.

   **Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
  sale_id INT PRIMARY KEY,
  product_id INT,
  quantity_sold INT,
  sale_date DATE,
  total_price DECIMAL(10, 2),
  FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);

SELECT SUM(quantity_sold) AS total_quantity_sold
```

```
FROM Sales;
```

**Output:**



| total_quantity_sold |
| --- |
| 20 |

7. Retrieve the sale_id, product_id, and total_price from the Sales table for sales with a quantity_sold greater than 4.

   **Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);

SELECT sale_id, product_id, total_price
FROM Sales
WHERE quantity_sold > 4;
```

**Output:**

Result Grid | Filter Rows:

| sale_id | product_id | total_price |
|---|---|---|
| 1 | 101 | 2500.00 |
| 5 | 105 | 90.00 |

8. Calculate the average total_price of sales in the Sales table.

**Query:**

```
create database salesm;
use salesm;
CREATE TABLE Sales (
   sale_id INT PRIMARY KEY,
   product_id INT,
   quantity_sold INT,
   sale_date DATE,
   total_price DECIMAL(10, 2),
   FOREIGN KEY (product_id) REFERENCES Products(product_id)
);

-- Insert sample data into Sales table
INSERT INTO Sales (sale_id, product_id, quantity_sold, sale_date, total_price) VALUES
(1, 101, 5, '2024-01-01', 2500.00),
(2, 102, 3, '2024-01-02', 900.00),
(3, 103, 2, '2024-01-02', 60.00),
(4, 104, 4, '2024-01-03', 80.00),
(5, 105, 6, '2024-01-03', 90.00);

SELECT AVG(total_price) AS average_total_price
FROM Sales;
```

**Output:**

Result Grid | Filter Rows:

| average_total_price |
|---|
| 726.000000 |