



THAKUR SPECIALIZED DEGREE COLLEGE

Approved by Government of Maharashtra, Affiliated to University of Mumbai

Shivaji Road, off. M.G. Road, Kandivali (West), Mumbai - 400 067.

Telephone: 022-69384444/45 • E-mail: tspdcmumbai.in • Website: www.tspdcmumbai.org

Institute code :1235

Subject :-

Experiment / Tutorial / Assignment No. :- I. Page :- 16 Date :- 20/09/24

Queries Involving :-

- Data Function.

- String Function.
- Math Function.

→ Code.

```
CREATE DATABASE Practicals;
USE Practicals;
```

-- Create a table.

```
CREATE TABLE employees (id INT PRIMARY KEY,
name VARCHAR(255), hire_date DATE,
salary DECIMAL(10, 2), department VARCHAR(50));
```

-- Insert data.

```
INSERT INTO employees (id, name, hire_date,
salary, department) VALUES
(1, 'John Doe', '2020-01-01', 50000.00, 'Sales'),
(2, 'Jane Doe', '2020-02-01', 60000.00, 'Marketing'),
(3, 'Bob Smith', '2020-03-01', 40000.00, 'IT'),
(4, 'Alice Johnson', '2020-04-01', 40000.00, 'HR'),
(5, 'Mike Brown', '2020-05-01', 55000.00, 'Finance');
```

-- Data function.

```
SELECT NOW() AS & current - datetime;
SELECT YEAR(hire_date) AS hire_year, MONTH(hire_date)
AS hire_month, DAY(hire_date) AS hire_day FROM
employees;
SELECT DATE-ADD(NOW(), INTERVAL 30 DAY) AS
future_date;
```



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Data function :→

current_datetime

| 2024-10-20 22:22:02 |

↓

Data function :→

hire_year hire_month hire_day

hire_year	hire_month	hire_day
2020	1	1
2020	2	1
2020	3	1
2020	4	1
2020	5	1

↓

Data function :→

future_date

| 2024-11-19 22:22:02 |

↓



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ject:-

Experiment / Tutorial / Assignment No. :- 18 Page :- 18 Date :- 20/09/24

-- String function.

```
SELECT LENGTH(ename) AS name_length FROM employees;  
SELECT UPPER(ename) AS uppercase_name FROM employees;  
SELECT SUBSTRING(ename, 1, 5) AS substring_name  
FROM employees;
```

-- Math function.

```
SELECT SUM(salary) AS total_salary FROM employees;  
SELECT AVG(salary) AS average_salary FROM employees;  
SELECT SQRT(salary) AS sqrt_salary FROM employees;
```

Q8/19/24



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String function :->

name_length

8	8	9	13	10
---	---	---	----	----

String function :->

uppercase_name

JOHN DOE	JANE DOE	BOB SMITH	ALICE JOHNSON	MIKE BROWN
----------	----------	-----------	---------------	------------

String function :->

substring_name

John	Jane	Bob S	Alice	Mike
------	------	-------	-------	------

Math function :->

average_S

55000.0000

Math function :->

sqrt_salary

223.606797749978

244.948974278317

264.575131106459

200

234.520787991171

total_Salary

275000.00

Math function :->

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Subject :-

Experiment / Tutorial / Assignment No. :- VI Page :- 20 Date :- 27/09/29

- Join Queries.
 - Inner Join
 - Outer Join.
 - Code.

CREATE DATABASE Practical 6;
USE Practical 6;

-- Create Table.

```
CREATE TABLE Customers Customer ID int,  
Customer Name Varchar(255), Contact Name Varchar(255),  
Country Varchar(255);
```

```
CREATE TABLE Orders (Order ID int, Customer ID int,  
Order Date datetime);
```

-- Insert Values.

```
INSERT INTO Customers (Customer ID, Customer Name,  
Contact Name, Country) VALUES  
(1, 'Alfreds Futterkiste', 'Maria Anders', 'Germany'),  
(2, 'Ana Trujillo Emparedados y helados', 'Ana Trujillo', 'Mexico'),  
(3, 'Antonio Moreno Taqueria', 'Antonio Moreno', 'Mexico');
```

```
INSERT INTO Orders (Order ID, Customer ID, Order Date)  
VALUES  
(10308, 2, '1996-09-18'),  
(10309, 37, '1996-09-19'),  
(10310, 47, '1996-09-20');
```

-- Inner Join.

```
SELECT Orders . Order ID, Customer . Customer Name, Orders . Order Date  
FROM Orders  
INNER JOIN Customers ON Orders . Customer ID = Customers . Customer ID
```



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Inner Join ↗

OrderID	CustomerName	OrderDate
10308	Ana Trujillo Emparedados y helados	1996-09-18 00:00:00

Outer Join ↗

OrderID	CustomerName	OrderDate
10308	Ana Trujillo Emparedados y helados	1996-09-18 00:00:00
10309	NULL	1996-09-19 00:00:00
10310	NULL	1996-09-20 00:00:00
NULL	Alfreds Futterkiste	NULL
NULL	Antonio Moreno Taquería	NULL



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Subject :-

Experiment / Tutorial / Assignment No. :- VII Page :- 22 Date :- 27/09/24

-- Outer Join.

```
SELECT Orders.Order ID , Customers.CustomerName, Orders.Order Date
FROM Orders
LEFT OUTER JOIN Customers ON Orders.Customer ID = Customers.Customer ID;
UNION
```

```
SELECT Orders.Order ID , Customers.CustomerName, Orders.Order Date
FROM Orders
RIGHT OUTER JOIN Customers ON Orders.Customer ID = Customers.Customer ID;
```

-- Left Outer Join.

```
SELECT Orders.Order ID , Customers.CustomerName, Orders.Order Date
FROM Orders
```

```
LEFT OUTER JOIN Customers ON
Orders.Customer ID = Customers.Customer ID;
```

-- Right Outer Join.

```
SELECT Orders.Order ID , Customers.CustomerName, Orders.Order Date
FROM Orders
```

~~```
RIGHT OUTER JOIN Customers ON
Orders.Customer ID = Customers.Customer ID;
```~~

Q/A on 10/09/24



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Left Outer Join  $\rightarrow$

| OrderID | CustomerName                       | OrderDate           |
|---------|------------------------------------|---------------------|
| 10308   | Ana Trujillo Emparedados y helados | 1996-09-18 00:00:00 |
| 10309   | NULL                               | 1996-09-19 00:00:00 |
| 10310   | NULL                               | 1996-09-20 00:00:00 |

Right Outer Join  $\rightarrow$

| OrderID | CustomerName                       | OrderDate           |
|---------|------------------------------------|---------------------|
| NULL    | Alfreds Futterkiste                | NULL                |
| 10308   | Ana Trujillo Emparedados y helados | 1996-09-18 00:00:00 |
| NULL    | Antonio Moreno Taquería            | NULL                |





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Subject :-

Experiment / Tutorial / Assignment No. :- VII Page :- 24 Date :- 04 / 10 / 24

Subqueries :- o With IN clause.

o With EXISTS clause.  
→ Code.

CREATE DATABASE Practical7;

USE Practical7;

CREATE TABLE Products (ProductID int, ProductName varchar(255),  
Category varchar(255), Price decimal(10, 20));  
INSERT INTO Products (ProductID, ProductName, Category, Price)

VALUES

(1, 'Laptop', 'Electronics', 1200.00),  
(2, 'Smart phone', 'Electronics', 800.00),  
(3, 'Tablet', 'Electronics', 400.00),  
(4, 'Chair', 'Furniture', 150.00),  
(5, 'Desk', 'Furniture', 300.00);

-- Using IN clause.  
SELECT \* FROM Products WHERE Category IN ('Electronics');

-- Using EXISTS clause.  
SELECT \* FROM Products WHERE EXISTS  
SELECT \* FROM Products WHERE Price > 500);

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*IN Clause ↗*

| ProductID | ProductName | Category    | Price   |
|-----------|-------------|-------------|---------|
| 1         | Laptop      | Electronics | 1200.00 |
| 2         | Smartphone  | Electronics | 800.00  |
| 3         | Tablet      | Electronics | 400.00  |

*EXISTS Clause ↗*

| ProductID | ProductName | Category    | Price   |
|-----------|-------------|-------------|---------|
| 1         | Laptop      | Electronics | 1200.00 |
| 2         | Smartphone  | Electronics | 800.00  |
| 3         | Tablet      | Electronics | 400.00  |
| 4         | Chair       | Furniture   | 150.00  |
| 5         | Desk        | Furniture   | 300.00  |





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Subject :-

Experiment / Tutorial / Assignment No. :- VIII Page :- 26 Date :- 11 / 10 / 24

Converting ER Model to Relational Model and apply Normalization on database. (Represent entity and relationships in Tabular form, Represent attributes as columns, identifying keys and normalization up to 3<sup>rd</sup> Normal Form.

→ Code

```
CREATE DATABASE Practical8;
```

```
USE Practical8;
```

```
-- Create Student Tables.
```

```
CREATE TABLE Student (StudentID INT AUTO_INCREMENT,
Name VARCHAR(255) NOT NULL, Email VARCHAR(255) UNIQUE NOT
NULL, PRIMARY KEY (StudentID));
```

```
-- Create Course Table.
```

```
CREATE TABLE Course (CourseID INT AUTO_INCREMENT,
CourseName VARCHAR(255) NOT NULL, Credits INT NOT NULL,
PRIMARY KEY (CourseID);
```

```
-- Create Enrollment Table.
```

```
CREATE TABLE Enrollment (EnrollmentID INT AUTO_INCREMENT,
StudentID INT NOT NULL, CourseID INT NOT NULL,
EnrollmentDate DATE NOT NULL, PRIMARY KEY (EnrollmentID),
FOREIGN KEY (StudentID) REFERENCES Student(StudentID),
FOREIGN KEY (CourseID) REFERENCES Course(CourseID));
```

```
-- Insert data into student table.
```

```
INSERT INTO Student (Name, Email)
```

VALUES

(‘John Doe’, ‘john.doe@example.com’),

(‘Jane Doe’, ‘jane.doe@example.com’),

(‘Bob Smith’, ‘bob.smith@example.com’);



| StudentID | Name      | Email                 |
|-----------|-----------|-----------------------|
| 1         | John Doe  | john.doe@example.com  |
| 2         | Jane Doe  | jane.doe@example.com  |
| 3         | Bob Smith | bob.smith@example.com |
| 4         | NULL      | NULL                  |

| CourseID | CourseName  | Credits |
|----------|-------------|---------|
| 1        | Mathematics | 3       |
| 2        | Science     | 4       |
| 3        | History     | 3       |
| 4        | NULL        | NULL    |

| EnrollmentID | StudentID | CourseID | EnrollmentDate |
|--------------|-----------|----------|----------------|
| 1            | 1         | 1        | 2022-01-01     |
| 2            | 1         | 2        | 2022-02-01     |
| 3            | 2         | 1        | 2022-01-01     |
| 4            | 3         | 3        | 2022-03-01     |
| NULL         | NULL      | NULL     | NULL           |





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Subject :-

Experiment / Tutorial / Assignment No. :- III Page :- 28 Date :- 11 / 10 / 24

-- Insert data into Course table.

INSERT INTO Course (CourseName, Credits)

VALUES

(‘Mathematics’, 3),

(‘Science’, 4),

(‘History’, 3);

-- Insert data into Enrollment Table.

INSERT INTO Enrollment (StudentID, CourseID, EnrollmentDate)

VALUES

(1, 1, ‘2022-01-01’),

(1, 2, ‘2022-02-01’),

(2, 1, ‘2022-01-01’),

-- Query to verify data.

SELECT \* FROM Student;

SELECT \* FROM Course;

SELECT \* FROM Enrollment;

1NF (First Normal form)

→ Ensures all values in a column are atomic and each entry is unique.

2NF (Second Normal form)

→ Achieved when in 1NF and all non-key attributes are only dependent on the primary key, eliminating partial dependency.

3NF (Third Normal form).

→ Achieved when in 2NF and all non-key attributes are only dependent on the Primary Key, removing transitive dependencies.



