

# GOA COLLEGE OF ENGINEERING

FARMAGUDI, PONDA GOA

## BASIC SQL QUERIES

**EXPT NO: 1**

**DATE:**

**AIM:** To study basic SQL queries.

### **THEORY:**

SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in a relational database. SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

SQL is a hybrid of 4 languages which are Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), Data Query Language (DQL).

There are 2 types of databases:

- i) Relational database
- ii) Non-relational database

Relational Database	Non-Relational Database
A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd. It consists of Data arranged in the form of tables(relations), rows(tuples) and columns(attributes). Relational databases work best when the data they contain doesn't change very often, and when accuracy is crucial. Relational databases are, for instance, often found in financial applications. Popular examples of standard relational databases include Microsoft SQL Server, Oracle Database, MySQL and IBM DB2.	Non-relational databases (often called NoSQL databases) are different from traditional relational databases in that they store their data in a non-tabular form. Instead, non-relational databases might be based on data structures like documents. A document can be highly detailed while containing a range of different types of information in different formats. This ability to digest and organize various types of information side by side makes non-relational databases much more flexible than relational databases. MongoDB, Apache Cassandra, Redis, Couchbase and Apache HBase. They are best for Rapid Application Development.

### MySQL

- MySQL is a widely used relational database management system (RDBMS).
- MySQL is free and open-source.
- MySQL is ideal for both small and large applications.
- MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.
- It allows us to implement database operations on tables, rows, columns, and indexes. It defines the database relationship in the form of tables (collection of rows and columns), also known as relations. It provides the Referential Integrity between rows or columns of various tables. It allows us to updates the table indexes automatically. It uses many SQL queries and combines useful information from multiple tables for the end-users.

# GOA COLLEGE OF ENGINEERING

FARMAGUDI, PONDA GOA

COMMAND	FUNCTION
CREATE	<p>The CREATE DATABASE statement is used to create a new SQL database.</p> <p>Syntax                      CREATE DATABASE databasename;</p> <p>The CREATE TABLE statement is used to create a new table in a database.</p> <p>Syntax                      CREATE TABLE table_name (                                  column1 datatype,                                  column2 datatype,                                  column3 datatype,                                  .... );</p>
SELECT	<p>The SELECT statement is used to select data from a database. The data returned is stored in a result table, called the result-set.</p> <p>Syntax                      SELECT column1, column2, ... FROM table_name;</p> <p>If we want to select all the fields available in the table, use the following syntax:</p> <p>SELECT * FROM table_name;</p>
SELECT WHERE	<p>The WHERE clause is used to filter records. It is used to extract only those records that fulfill a specified condition.</p> <p>Syntax                      SELECT * FROM table_name WHERE condition;</p>
SELECT WHERE AND	<p>The WHERE clause can be combined with the AND operators. The AND operator are used to filter records based on more than one condition: The AND operator displays a record if all the conditions separated by AND are TRUE.</p> <p>Syntax                      SELECT column1, column2, ... FROM table_name                                  WHERE condition1 AND condition2 AND                                  condition3 ...;</p>
SELECT WHERE OR	<p>The WHERE clause can be combined with the OR operator. The OR operator are used to filter records based on more than one condition: The OR operator displays a record if any of the conditions separated by OR is TRUE.</p> <p>Syntax                      SELECT column1, column2, ... FROM table_name                                  WHERE condition1 OR condition2 OR condition3                                  ...;</p>
AGGREGATE FUNCTIONS	<p>AVG() Returns the average of the values in the selected column COUNT() Returns the number of rows returned for a selection MAX() Returns the maximum value for a column MIN() Returns the minimum value of a column SUM() Returns the sum of the values in a specified column</p>
LIKE	<p>The LIKE operator is used in a WHERE clause to search for a specified pattern in a column.</p>

# GOA COLLEGE OF ENGINEERING

FARMAGUDI, PONDA GOA

	<p>There are two wildcards often used in conjunction with the LIKE operator: The percent sign (%) represents zero, one, or multiple characters The underscore sign (_) represents one, single character The percent sign and the underscore can also be used in combinations</p> <p>Syntax                SELECT column1, column2, ... FROM table_name WHERE columnN LIKE pattern;</p>
DISTINCT	<p>The SELECT DISTINCT statement is used to return only distinct (different) values. A column often contains many duplicate values, and sometimes we only want to list the different values.</p> <p>Syntax                SELECT DISTINCT column1, column2, ... FROM table_name;</p>

## QUERIES

1) Create the following tables:

i) Book:

Name	Constraint	Data Type
BookId	Primary key	int
Title		varchar(25)
PublisherName		varchar(25)
Publish_date		date

ii) Book\_authors

Name	Constraint	Data Type
BookId	Primary key	int
Authorname	Primary key	varchar(25)

iii) Publisher

Name	Constraint	Data Type
Name	Primary key	varchar(25)
Addr		varchar(25)
Phone		int

iv) book\_copies

Name	Constraint	Data Type
Bookid	Primary key	int
Branch		varchar(25)
no_of_copies		int

# GOA COLLEGE OF ENGINEERING

FARMAGUDI, PONDA GOA

2) Insert atleast 5 rows in each table. (Insert data in such a way that every query below should generate an output).

3) Answer the following queries:

- a) List information about all books in the database.
- b) List information about all publishers in the database.
- c) List the bookid and title of all the books in the database.
- d) List the books with more than 1000 copies at the 'farmagudi' branch.
- e) List name and phone number of all the publishers.
- f) List the books with their authors.
- g) List the names of all the authors in the database.
- h) List names of all authors whose names are 5 characters long.
- i) List names of all authors whose names end with letter 'D'.
- j) List names of all books whose titles start with 'A' or 'G'.
- k) Select all branches whose names fall between 'A' and 'C' alphabetical range.
- l) List all the book details in the ascending order of no of copies.
- m) List the books branchwise(i.e. In the alphabetical order of the branch and within the branch in the descending order of the no\_of\_copies).
- n) List the books in the descending order of publish date.
- o) List the names of books published atleast 5 years ago.
- p) List the books published in the month of 'July'.

# GOA COLLEGE OF ENGINEERING

FARMAGUDI, PONDA GOA

**CONCLUSION:**

All fundamental SQL commands were successfully comprehended and implemented. The experiment demonstrated the basic knowledge of database creation, table creation, data insertion, and SQL queries.