CAHPTER 12

STRUCTURED QUERY LANGUAGE

Part -II

Answer the following questions (2 Marks)

1. Write a query that selects all students whose age is less than 18 in order wise.

SELECT * FROM PUGAL WHERE AGE <18 ORDER BY NAME ASC;

2. Differentiate Unique and Primary Key constraint.

Unique	Primary
This constraint ensures that no two rows have thesame value in the specified columns.	This constraint declares a field as a Primary key which helps to uniquely identify a record.
For example **UNIQUE** constraint applied on Admno	The primary key does not allow **NULL** values and therefore a field declared as primary key must have the **NOT NULL** constraint

3. Write the difference between table constraint and column constraint?

Table constraint	Column constraint
Table constraint is applied to a group of fields of the table, it is known as Table constraint.	Column constraint is applied to individual column.

4. Which component of SQL lets insert values in tables and which lets to create a table?

- DML
- DDL

5. What is the difference between SQL and MySQL?

SQL	MySQL
SQL is a language that helps to create and operate relational databases.	***MySQL*** is a database management system.

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Part -III

Answer the following questions (3 Marks)

1. What is a constraint? Write short note on Primary key constraint.

- ❖ Constraints are used to limit the type of data that can go into a table.
- ❖ This ensures the accuracy and reliability of the data in the database.
- ❖ Constraints could be either on a column level or a table level.

Primary Key Constraint

- ❖ This constraint declares a field as a Primary key which helps to uniquely identify a record.
- ❖ It is similar to unique constraint except that only one field of a table can be set as primary key.
- ❖ The primary key does not allow **NULL** values and therefore a field declared as primary key must have the **NOT NULL** constraint.

2. Write a SQL statement to modify the student table structure by adding a new field.

ALTER TABLE <table-name> ADD <column-name><data type><size>;

EXAMPLE:

ALTER TABLE PUGAL ADD ADDRESS CHAR;

3. Write any three DDL commands.

TRUNCATE command:

The **TRUNCATE** command is used to delete all the rows from the table, the structure remains and the space is freed from the table.

DROP TABLE command

The **DROP TABLE** command is used to remove a table from the database.

ALTER COMMAND

The **ALTER** command is used to alter the table structure like adding a column, renaming the existing column, change the data type of any column or size of the column or delete the column from the table.

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4. Write the use of Savepoint command with an example.

The **SAVEPOINT** command is used to temporarily save a transaction so that you can rollback to the point whenever required.

The different states of our table can be saved at anytime using different names and the rollback to that state can be done using the **ROLLBACK** command.

SAVEPOINT savepoint_name;

EXAMPLE :

UPDATE PUGAL SET NAME = 'CHANDRU' WHERE ADMNO=1001; SAVEPOINT A;

5. Write a SQL statement using DISTINCT keyword.

- The **DISTINCT** keyword is used along with the **SELECT** command to eliminate duplicate rows in the table.
- This helps to eliminate redundant data.

For Example:

SELECT DISTINCT NAME FROM PUGAL;

Part -IV

Answer the following questions (5 Marks)

1. Write the different types of constraints and their functions.

Constraints ensure database integrity, therefore known as database integrity constraints.

- Unique Constraint
- Primary Key Constraint
- Default Constraint
- Check Constraint

Unique Constraint

This constraint ensures that no two rows have the same value in the specified columns.

For example **UNIQUE** constraint applied on Admno of PUGAL table ensures that no two students have the same admission number and the constraint can be used as:

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CREATE TABLE PUGAL (Admno integer NOT NULL UNIQUE, → Unique constraint

Name char (20));

Primary Key Constraint

- ❖ This constraint declares a field as a Primary key which helps to uniquely identify a record.
- ❖ It is similar to unique constraint except that only one field of a table can be set as primary key.
- ❖ The primary key does not allow **NULL** values and therefore a field declared as primary key must have the **NOT NULL** constraint

CREATE TABLE PUGAL (Admno integer NOT PRIMARY KEY, → PRIMARY constraint

Name char (20));

DEFAULT Constraint

- ❖ The **DEFAULT** constraint is used to assign a default value for the field.
- ❖ When no value is given for the specified field having **DEFAULT** constraint, automatically the default value will be assigned to the field.

CREATE TABLE PUGAL (Admno integer, Name char(20), Age integer DEFAULT = "25", → Default Constraint);

Check Constraint

- ❖ This constraint helps to set a limit value placed for a field.
- ❖ When we define a check constraint on a single column, it allows only the restricted values on that field.

CREATE TABLE PUGAL (Admno integer, Name char(20), Age integer (CHECK<=19), → Check Constraint);

TABLE CONSTRAINT

When the constraint is applied to a group of fields of the table, it is known as Table constraint.

CREATE TABLE PUGAL 1 (Admno integer, Age integer, PRIMARY KEY (Admno, Age) → Table constraint);

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2. Consider the following employee table. Write SQL commands for the qtns.(i) to (v).

EMP CODE	NAME	DESIG	PAY	ALLO WANCE
S1001	Hariharan	Supervisor	29000	12000
P1002	Shaji	Operator	10000	5500
P1003	Prasad	Operator	12000	6500
C1004	Manjima	Clerk	8000	4500
M1005	Ratheesh	Mechanic	20000	7000

(i) To display the details of all employees in descending order of pay.

SELECT * FROM EMP ORDER BY PAY DESC;

(ii) To display all employees whose allowance is between 5000 and 7000.

SELECT * FROM EMP WHERE ALLOWANCE BETWEEN 5000 AND 7000;

(iii) To remove the employees who are mechanic.

DELETE FROM EMP WHERE DESIG=" mechanic";

(iv) To add a new row.

INSERT INTO EMP VALUES("C1007","MOHIT","OPERATOR" ,30000,5000);

(v) To display the details of all employees who are operators.

SELECT * FROM EMP WHERE DESIG="OPERATOR"

3. What are the components of SQL? Write the commands in each.

- DML - Data Manipulation Language
- DDL - Data Definition Language
- DCL - Data Control Language
- TCL - Transaction Control Language
- DQL - Data Query Language

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DATA MANIPULATION LANGUAGE:

The Data Definition Language (DDL) consist of SQL statements used to define the database structure or schema.
It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in databases.

SQL commands which comes under Data Definition Language are:

Create	To create tables in the database.
Alter	Alters the structure of the database.
Drop	Delete tables from database.
Truncate	Remove all records from a table, also release the space occupied by those records.

DATA MANIPULATION LANGUAGE
A Data Manipulation Language (DML) is a computer programming language used for adding (inserting), removing (deleting), and modifying (updating) data in a database.

SQL commands which comes under Data Manipulation Language are :

Insert	Inserts data into a table
Update	Updates the existing data within a table.
Delete	Deletes all records from a table, but not the space occupied by them.

DATA CONTROL LANGUAGE
A **Data Control Language (DCL)** is a programming language used to control the access of data stored in a database.
SQL commands are: Grant, Revoke.

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TRANSACTIONAL CONTROL LANGUAGE

Transactional control language (TCL) commands are used to manage transactions in the database.
SQL commands are:COMMIT, ROLL BACK,SAVE POINT.

DATA QUERY LANGUAGE

The Data Query Language consist of commands used to query or retrieve data from a database.
SQL commands are: SELECT.

4. Construct the following SQL statements in the student table-

(i) SELECT statement using GROUP BY clause.

(ii) SELECT statement using ORDER BY clause.

SELECT STATEMENT USING GROUP BY CLAUSE:

The **GROUP BY** clause is used with the **SELECT** statement to group the students on rows or columns having identical values or divide the table in to groups.
For example to know the number of male students or female students of a class, the **GROUP BY** clause may be used.

The syntax for the **GROUP BY** clause is

SELECT <column-names> FROM <table-name> GROUP BY <column-name>HAVING condition];
EXAMPLE:

SELECT Gender FROM PUGAL GROUP BY GENDER;

Gender
M
M
F

SELECT STATEMENT USING ORDER BY CLAUSE:

The **ORDER BY** clause in SQL is used to sort the data in either ascending or descending based on one or more columns.

1. By default **ORDER BY** sorts the data in ascending order.

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2. We can use the keyword **DESC** to sort the data in descending order and the keyword **ASC** to sort in ascending order.

SELECT <column-name>[,<column-name>,….] FROM <table-name>ORDER BY <column1>,<column2>,…ASC| DESC ;

For example :

To display the students in alphabetical order of their names, the command is used as

SELECT * FROM PUGAL ORDER BY NAME;

Admno	Name	Gender	Age	Place
1001	CHANDRU	M	25	ERODE
1002	MOHIT	M	4	SALEM

5. **Write a SQL statement to create a table for employee having any five fields and create a table constraint for the employee table.**

CREATE TABLE EMP (EMPID INTEGER,ENAME CHAR(20),DESIG CHAR(15),PAY INTEGER,ALLOWANCE INTEGER,PRIMARY KEY(NAME,DESIG));

PREPARED BY

CAHNDRUPUGAL

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