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|  | **WEEK—5 Lecture-3 hr** |
|  | **DATABASE LANGUAGES** |
| **1.** | **Explain Database Languages:** |
|  | Database languages can be used to read, store and update the data in the database. |
|  | DBMS provides different varieties of languages.   * Data-Definition Language * Data-Manipulation Language * Data Control Language * Transaction Control Language   Data Definition Language  * **DDL** stands for **D**ata **D**efinition **L**anguage. It is used to define database structure or pattern. * It is used to create schema, tables, indexes, constraints, etc. in the database. * Using the DDL statements, you can create the skeleton of the database. * Data definition language is used to store the information of metadata like the number of tables and schemas, their names, indexes, columns in each table, constraints, etc.   **DDL Commands**   * **Create:** It is used to create objects in the database. * **Alter:** It is used to alter the structure of the database. * **Drop:** It is used to delete objects from the database. * **Rename:** It is used to rename an object.   These commands are used to update the database schema that's why they come under Data definition language. 2. Data Manipulation Language **DML** stands for **D**ata **M**anipulation **L**anguage. It is used for accessing and manipulating data in a database. It handles user requests.  **DML Commands**   * **Select:** It is used to retrieve data from a database. * **Insert:** It is used to insert data into a table. * **Update:** It is used to update existing data within a table. * **Delete:** It is used to delete all records from a table.  Data Control Language  * **DCL** stands for **D**ata **C**ontrol **L**anguage. It is used to retrieve the stored or saved data.   Here are some tasks that come under DCL:   * **Grant:** It is used to give user access privileges to a database. * **Revoke:** It is used to take back permissions from the user.  Transaction Control Language TCL is used to run the changes made by the DML statement.  Here are some tasks that come under TCL:   * **Commit:** It is used to save the transaction on the database. * **Rollback:** It is used to restore the database to original since the last Commit. |
| **2.** | **Explain DDL Commands and DML Commands** |
|  | **Data Definition Language (DDL) commands:**   * **Create:** It is used to create objects in the database. * **Alter:** It is used to alter the structure of the database. * **Drop:** It is used to delete objects from the database. * **Rename:** It is used to rename an object.   **Data Manipulation Language (DML) commands:**   * **Select:** It is used to retrieve data from a database. * **Insert:** It is used to insert data into a table. * **Update:** It is used to update existing data within a table. * **Delete:** It is used to delete all records from a table. |
| **3.** | Explain Integrity Constraints |
|  | Integrity Constraints  * Integrity constraints are a set of rules. It is used to maintain the quality of information. * Integrity constraints ensure that the data insertion, updating, and other processes have to be performed in such a way that data integrity is not affected. * Thus, integrity constraint is used to guard against accidental damage to the database.  Types of Integrity Constraint: **Domain Constraints:**  Domain constraints specify that within each tuple, the value of each attribute *A* must be an atomic value from the domain dom(*A*).  **Key Constraints:**  A *relation* is defined as a *set of tuples and* all elements of a set are distinct; hence, all tuples in a relation must also be distinct. This means that no two tuples can have the same combination of values for *all* their attributes.  **Entity integrity constraints:**  The entity integrity constraintstates that no primary key value can be NULL. This is because the primary key value is used to identify individual tuples in a relation.  **Referential Integrity Constraints:**  The referential integrity constraintis specified between two relations and is used to maintain the consistency among tuples in the two relations. Informally, the referential integrity constraint states that a tuple in one relation that refers to another relation must refer to an *existing tuple* in that relation. |
|  | **MySQL** |
| **4.** | * **MySQL OVERVIEW:** |
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|  | MySQL is **an open-source relational database management system (RDBMS)**. It is the most popular database system used with PHP. MySQL is developed, distributed, and supported by Oracle Corporation. The data in a MySQL database are stored in tables which consists of columns and rows. |
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| **5.** | **MySQL Features:** |
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|  | **The following are the most important features of MySQL:**   * Relational Database Management System (RDBMS) MySQL is a relational database management system. * Easy to use. MySQL is easy to use. * It is secure. * Client/ Server Architecture. * Free to download. * It is scalable. * Speed. * High Flexibility. * Compatible on many operating systems. |
| **6.** | **MySQL Datatypes:** |
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|  | **MySQL uses many different data types broken into three categories −**   * Numeric * Date and Time * String Types.   **Numeric Data Types**  MySQL uses all the standard ANSI SQL numeric data types. The following list shows the common numeric data types.   * INT * TINYINT * SMALLINT * MEDIUMINT * BIGINT * FLOAT(M,D) * DOUBLE(M,D) * DECIMAL(M,D)   **Date and Time Types**  The MySQL date and time datatypes are as follows −   * **DATE:** YYYY-MM-DD format. * **DATETIME:** YYYY-MM-DD HH:MM:SS format. * **TIMESTAMP:** YYYYMMDDHHMMSS format. * **TIME:** HH:MM:SS format. * **YEAR(M):** Stores a year in a 2-digit or a 4-digit format.   **String Types**  Although the numeric and date types are fun, most data you'll store will be in a string format. This list describes the common string datatypes in MySQL.   * **CHAR(M) −** A fixed-length string between 1 and 255 characters in length. * **VARCHAR(M) −** A variable-length string between 1 and 255 characters in length. * **BLOB or TEXT**− A field with a maximum length of 65535 characters. BLOBs are "Binary Large Objects" and are used to store large amounts of binary data, such as images or other types of files. Fields defined as TEXT also hold large amounts of data. The difference between the two is that the sorts and comparisons on the stored data are case sensitive on BLOBs and are not case sensitive in TEXT fields. You do not specify a length with BLOB or TEXT. |
| **7.** | **MySQL Standardization guidelines:** |
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|  | * Do not ever give anyone (except MySQL root accounts) access to the user table in the mysql system database. * Learn how the MySQL access privilege system works. * Do not store cleartext passwords in your database. |