Logo, company name

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Database

Lab Guide

**Short Answer**

1. what is Data?

* Unprocessed raw facts of informatin.
* “Representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means. Any representations such as characters or analog quantities to which meaning is or might be assigned.”

1. what is Information?

* “The discrete, raw facts about a given situation with no analysis or interpretation applied.”

1. what is Database(DB)?

* **database** is an organized collection of [data](https://en.wikipedia.org/wiki/Data_(computing)) stored and accessed electronically. Small databases can be stored on a [file system](https://en.wikipedia.org/wiki/File_system), while large databases are hosted on [computer clusters](https://en.wikipedia.org/wiki/Computer_clusters) or [cloud storage](https://en.wikipedia.org/wiki/Cloud_storage).

1. What is the Relationl Database Management System(RDBMS)?

* RDBMS is the basis for all modern database systems such as MySQL, Microsoft SQL Server, Oracle, and Microsoft Access. It uses [SQL queries](https://www.w3schools.com/sql/default.asp) to access the data in the database.
* is a database that stores data items and sets based on how they relate to other items in the system. These database management systems use tables to show the relationships between different pieces of data, which can help make organizing large sets of data with multiple items simple.

5. Define the importance of Relationl Database Management System(RDBMS)?

RDBMS is important for the following reasons:

* Security: Security management sets rules that allow accessing the database. This function also sets restraints on what specific data any user can see or write.
* Accuracy: systems multiple tables are related to one another with the use of primary key and foreign key concepts. This makes data non repetitive so there is no chance for duplication of data. Hence, accuracy of RDBMS is good.
* Integrity: Data integrity enforces the three constraints. Entity integrity means a table should have the primary key.

### **Consistency:** The data consistency in relational model is best in RDBMS for maintaining data across application and database copies.

1. As we all know that there are Two types of Databases. **Relational Database (SQL)** AND **Non-Relational DB (NOSQL**). what is the difference between them.

* **SQL** databases defines and manipulates data based structured query language (SQL).
* Scalability – In almost all situations SQL databases are vertically scalable.
* **SQL** database have **fixed** or **static** or predefined schema
* **SQl** db are the best suited for complex queries
* **NoSQL**database has dynamic schema for unstructured data. Data is stored in many ways which means it can be document-oriented, column-oriented, graph-based or organized as a Key-Value store.
* NoSQL non-relational db have **dynamic** schema

7. List examples of Relation Database Management System(RDBMS)?

MySQL, SQL Server, MongoDB, Oracle Database, PostgreSQL, Informix, Sybase, Arora DB,

8. List examples of Non-Relational DB(Nosql)?

MangoDB, Apache Cassandra, Redis, Couchbase and Apache HBase

9. Define and Describe is Structured Query Language(SQL)?

SQL (Structured Query Language) is a specialized programming language which is standardized to be used for managing relational databases and performing various operations on the data. It consists of many types of statements, commonly known as a data query language (DQL), a data definition language (DDL), a data control language (DCL), and a data manipulation language (DML).

10. List and Describe each of the different subsets of SQL(Mean DDL, DML,

DCL, TCL)?

* DDL stands for Data Definition Language: It allows you to perform various operations on the database such as CREATE, ALTER and DELETE object.

CREATE: It creates SQL objects like stored procedures, tables, columns, etc

ALTER: It modifies existing SQL objects

DELETE: Deletes existing objects.

* **DML stands for Data Manipulation Language**: **DML gives a method to understand, modify, delete, or merge data accurately. The SQL commands mostly include the modification of data. This contains most of the SQL statements.**

**INSERT Insert new records in the table.**

**UPDATE Updates existing records within the table.**

**Delete** Deletes records within tables

**Merge** It’s like an upsert operation. It performs both insert and

operations based on conditions.

* **DCL stands for Data Control language**: It allows you to control access to the database. Example – Grant, Revoke access permissions.
* TCL (Transaction control language) is concerned about initiating, committing, or rolling back transactions. A transaction is basically a unit of work performed by a server. Its main purpose is to maintain the integrity of data within SQL statements. It contains statements like BEGIN TRANSACTION, COMMIT, and ROLLBACK.

BEGIN TRANSACTION: Opens a transaction

COMMIT: Indicates transaction is completed. Closes transaction.

ROLLBACK: ROLLBACK a transaction in case of error.

11. what is table in Database (DB)?

Tables are**database objects that contain all the data in a database**. In tables, data is logically organized in a row-and-column format similar to a spreadsheet. Each row represents a unique record, and each column represents a field in the record.

12. what is column and Row(tuples) in table?

The information in a database can be thought of as a spreadsheet, with columns (known as**fields or attributes) representing different categories of information, and tuples (rows) representing all the information from each field associated with a single record**. In a relational database, a tuple contains all the data for an individual record.

Column = key

Row = values

**To Be Continued…**

Reference

<https://www.thefreedictionary.com/data>

[Database - Wikipedia](https://en.wikipedia.org/wiki/Database)