1. **Introduction:**

What is Database and How SQL is related?

An Oracle **database** is a collection of data treated as a unit. The purpose of a database is to store and retrieve related information. The database has **logical structures** and **physical structures**. The physical and logical structures are separate, the physical storage of data can be managed without affecting the access to logical storage structures.

1. **Types of Data:**

Structured Data

Unstructured Data

Technology Used to Deal with Structured Data: DBMS

Database Management System (DBMS) is a software for storing and retrieving users' data while considering appropriate security measures. It consists of a group of programs which manipulate the database. The DBMS accepts the request for data from an application and instructs the operating system to provide the specific data. In large systems, a DBMS helps users and other third-party software to store and retrieve data.

1. **RDMS: Relational Database Management System**

In this model, data is organized in two-dimensional tables and the relationship is maintained by storing a common field.

1. **Normalization of Database**

Database Normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eliminate data redundancy (repetition) and undesirable characteristics like Insertion, Update and Deletion Anomalies. It is a multi-step process that puts data into tabular form, removing duplicated data from the relation tables.

Data Types:

1. String   
   CHAR(N)

VARCHAR2(N)

LONG

1. NUMERIC/NUMBERS  
   NUMBER(P,S) -> P->Precision S->Scale

NUMBER(N)

NUMBER -> 38

1. DATE/TIME

DATE -> DATE+TIME

TIMESTAMP

1. LOB Large Object  
   BLOB

CLOB

RAW

<https://www.oracle.com/database/technologies/xe-prior-releases.html>

Schema -> It’s collection of database objects, which is same as ur user id.

NULL -> There is no value.

DDL->

student\_details  
Roll\_no number(10), first\_name varchar2(30), last\_name varchar2(30), DOB date, joining\_date date

Constraints:

1. Unique Key (can be multiple)

Unique value along Null can accept.

1. Not null ( for eg 100 col u can make 100 not null constraints or 1 or 0)

Data can be duplicate but cannot be null.

1. Primary Key (only one primary key is possible)

Combination of Unique key + Not Null

Data should be unique as well as not null.

Composite Primary Key -> Combination of column will be unique and not null

Stude\_rec-> student\_id subject\_id marks

101 ABC1 30

101 BCD2 40

101 CDE4 50

102 ABC1

1. Foreign Key will always refer either to primary key or unique key

State -> state\_id state name

1. MP
2. UP
3. Kerala

Location -> location\_id, location\_name state\_id

101 Kanpur Uttar Pradesh

102 Kannur Kerala

Area -> area\_id area\_name loc\_id st\_id

1 ABC 102 Kerala

1. Check -> Business Validation …

CHECK gender in (‘M’,’F’,T’);

**DML**

INSERT -> Loading or inserting data into tables.

DUAL-> Dummy table already been there in system which have single column and single value but can fetch any type of data from dual.

UPDATE->

DELETE ->

DRL (Select)