**SQL NOTES**

SQL is a structured query language which is a computer language for storing, manipulating and retrieving data stored in a relational database. SQL is a standard language for relational database system.

Data in a (RDBMS) is stored in database object called tables. A **table** is a collection of related data entries and consist of numerous columns and rows.

Every table is broken down into small entities called fields. A **field** is a column in a tablethat is design to maintain specific information about every record in a table. A **record** is each individual entry that exist in a table.

A **column** is a vertical entity in a table that contain all information associated with a specific field.

**SQL commands**

**1. Data Definition Language (DDL)**

It is used to create and modify the structure of an object in a database using predefined commands and with a specific syntax.

Some of the common commands are:

**Create**: it is used to create new table in a database

**Truncate**: It is used to remove all the records in a table while keeping the structure

**Alter**: it is used to add, remove or modify a column in a table

**Drop**: it is used to drop existing table with its structure and records

**Rename**: it used to change the name of a table or column to a new one

2 **Data Manipulation Language**

The DML command in structured query language change the data present in the SQL database. We can easily access, store, modify, update and delete existing records from the database using DML commands.

1. Select command.
2. Insert command.
3. Update command.
4. Delete command.

**Entity**: A thing in the real world with an independent existence. May be an object with physical existence (person, house) or with conceptual existence (e.g. course, job)

**Attributes**: are properties that describe the entities.

**Composite Attributes**: attributes can be divided into further parts example name (fName, MName, LName)

**Simple Attributes**: Attributes cannot be divided further example is weight,

**Single-valued Attributes**-Have a single value for a particular entity example is Age

**Multivalued Attributes**: can have a set of values for a particular entity example phone, college degree.

**Derived attributes**: can be derived from other attributes. E.g. Age.

**Stored Attributes**: from which the value of other attributes are derived e.g. Date of birth

**Complex attributes**: Has multivalued & composite components in it .Multivalued attributes are represented within ‘{} ‘while composite attributes are represented within’ ()’

Example: {College degrees (College, year, Degree, field)}

**Null values**: Null is something which is not applicable or unknown

**Entity Type**: A collection of entities that have some attributes ex. STUDENT

**Entity set**: Collection of entities of a particular entity type at appoint in time

**Key Attribute**: That attribute that is capable of identifying each entity uniquely

Example. Roll number of a student.

**Value set of Attributes**: The set of values that can be assigned to an attribute

**Constraints:**

1. **Super Key** => An attribute, or set of attributes that can uniquely identity an entity occurrence.
2. Candidate key => A super key with minimal number of attributes that can identify entity uniquely.
3. Primary Key =>An attribute that identify an entity uniquely and not null.
4. Alternate key=>(candidate key – primary key).
5. Unique key => Unique and can be null.

**Relationships**

1. One to one relationship

When a single element of an entity is associated with single element of another entity that is called one to one relationship.

Fox example a student has only one identification card and identification card is given to one person.

2. One to many Relationship

When a single element of an entity is associated with more than one element of another entity that is called one too many relationship.

For example a customer can place many orders, but an order cannot be placed by many customers.

3. Many to one Relationship

When more than one element of an entity is related with a single element of another entity then it is called many to one relationship.

Fox example, students enrolls for only one course, but a course can have many students.

4. Many to many Relationship

When more than one element of an entity is associated with more than one element of another entity that is called many to many relationship.

Fox example, Employee can be assigned too many projects and projects can have many employees.