DDL - Data Definition Language

DDL Commands for Databases

```
CREATE DATABASE database_name;
CREATE DATABASE IF NOT EXISTS database_name;
DROP DATABASE database_name;
DROP DATABASE IF EXISTS database_name;
```

DDL Commands for Tables

Create

```
CREATE TABLE users(
    user_id INT,
    name VARCHAR(255),
    email VARCHAR(255)
);
```

Drop

```
DROP TABLE users;
```

Truncate

```
TRUNCATE TABLE users;
```

truncate means to remove all the data present in the table but retain the schema or structure while drop completely deletes the table.

Data Integrity refers to the accuracy, completeness and reliability of the data in the table which is reliable and trustworthy which lets us know that data is free of corruption and unauthorized access. The data integrity is ensured by CONSTRAINTS (rules that must be passed in order to update or insert data), Transactions (sequence of operations which are treated as single piece of work), Normalization (minimize data redundancy and ensures data consistency be organizing the data in tables

CONSTRAINS

It is the rules or conditions that must be met in order to update or insert the data into the database, which are used to enforce the data integrity and prevent any corruption or duplicacy in the data.

- not null
- unique
- primary key
- auto increment
- check
- default
- foreign key

referential actions

- restrict
- cascade
- set null
- set default

- not null : It means that in the provided column, you can not enter the null values, ex Roll No of student in a table can be marked as NOT NULL
- unique : It means that in the provided column new value should not match with any of the exisiting value of the column, all values of the column should be unique
- primary key : combination of not null and unique, it is used to uniquely identify a particular row.
- auto increment : any new entry in the column has by default the incremented value as compared to last entry, we need not to keep track
- check : condition on value of column suppose enter data only if the age > 18 `age INTEGER student_age_check CHECK ( age > 6 AND age < 18)`
- default : sets the default value if no value is entered, ex : Nationality be default is done as Indian `travel_date DATETIME DEFAULT CURRENT_TIMESTAMP`
- foreign key : primary key of one table is present in another table to maintain the referential integrity.

```
CREATE TABLE IF NOT EXISTS users(
    user_id INT NOT NULL,
    name VARCHAR(255) NOT NULL UNIQUE,
    password VARCHAR(255) NOT NULL UNIQUE
);
```

This means that in the columns of name, no two names can be same and in the column of password, no two passwords can be same.

```
1 Om   34Tf
2 Om   34GH
3 Tony 34GH
```

will not work

```
CREATE TABLE IF NOT EXISTS users(
    user_id INT NOT NULL,
    name VARCHAR(255) NOT NULL ,
    password VARCHAR(255) NOT NULL,

    CONSTRAINT user_name_pwd_unique_constraint UNIQUE( user_id, password )
);
```

This way of writing has application that
1. We can use the name of constraint user_name_pwd_unique_constraint and do things with it.
2. In this we got the ability to say that in column name and column password, two respective entries can be same but the combination can be same.

```
1 Om   34Tf
2 Om   34GH
3 Tony 34GH
```

will work

```
CREATE TABLE orders(
    order_id INTEGER PRIMARY KEY AUTO_INCREMENT,
    cid INTEGER NOT NULL,
    order_date DATETIME NOT NULL DEFAULT CURRENT_TIME_STAMP,

    CONSTRAINT orders_fk FOREIGN KEY (cid) REFERENCES customers(cid)
);
```

This is foreign key application, there was a column in this table called as cid which is primary key of another table , we are linking both of the tables by the last line of code,

Constrain applied called as orders_fk applied on cid column of this table which references cid column of customer table

By default it is Restrict which means that it will not allow any change in the two inter related tables

Cascade means that change in one table will reflect the change in another table

SET NULL means that change in one column sets another table columns as Null

SET DEFAULT means that change in one column sets another table columns as some default value.

```
CREATE TABLE orders(
    order_id INTEGER PRIMARY KEY AUTO_INCREMENT,
    cid INTEGER NOT NULL,
    order_date DATETIME NOT NULL DEFAULT CURRENT_TIME_STAMP,

    CONSTRAINT orders_fk FOREIGN KEY (cid) REFERENCES customers(cid)
    ON DELETE CASCADE
    ON UPDATE CASCADE
);
```

ALTER TABLE Command

This is used to modify the structure of table, and we can ADD, Remove or Modify the columns

```
ALTER TABLE customers ADD COLUMN password VARCHAR(255) NOT NULL;


ALTER TABLE customers ADD COLUMN surname VARCHAR(250) NOT NULL AFTER NAME;


 ALTER TABLE customers
 ADD COLUMN pan_no INT AFTER name,
 ADD COLUMN time_of_creation DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP;
```

Adding the column with the use of Alter Table command

```
ALTER TABLE customers
DROP COLUMN pan_no,
DROP COLUMN time_of_creation;
```

dropping the column with the use of ALTER TABLE command

```
ALTER TABLE customers
MODIFY COLUMN surname INT,
MODIFY COLUMN password INT NOT NULL;
```

Modifying the columns with the use of ALTER TABLE

```
ALTER TABLE consumer ADD CONSTRAINT check_age_constraint CHECK (age >13 );

ALTER TABLE consumer DROP CONSTRAINT check_age_constraint;
```

Adding or deleting the constraint
Editing of constraint does not exist
you need to delete the exisiting one and add new constraint