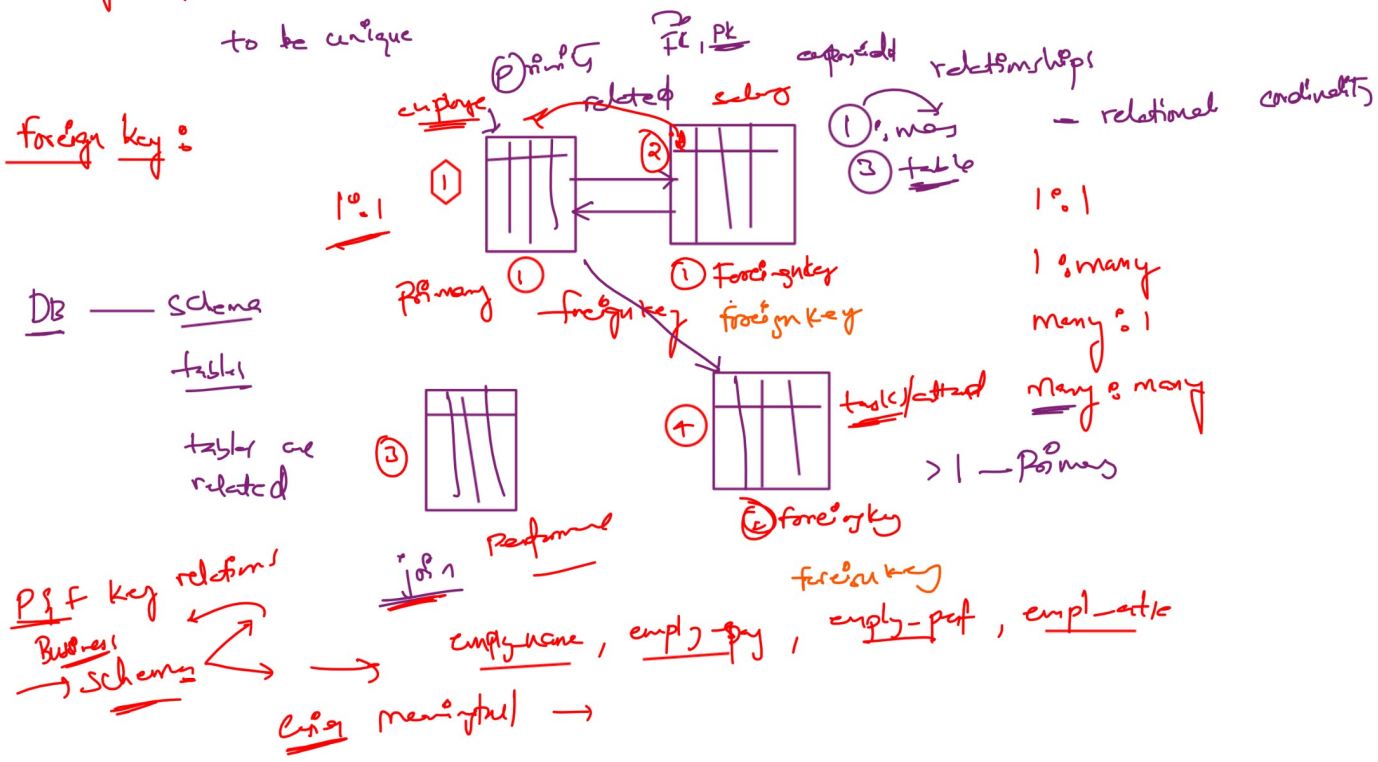
SQL Constraints

→ to add some rules & regulations on data insertion

Primary key : won't allow duplicate records & helps us to identify each record → unique

to be unique



(3) Not Null Constraint :

* ensures that column cannot have NULL value

On Creation

```
CREATE TABLE student(
   id INT NOT NULL,
   first_name VARCHAR(25) NOT NULL,
   last_name VARCHAR(25),
   age INT
);
SHOW TABLES;
DESCRIBE student;
```

→ id	first_name	last_name	age
doesn't make sense → 1	S.C	NULL	20
→ 2	NULL	NULL	20
→ 3	NULL	NULL	20

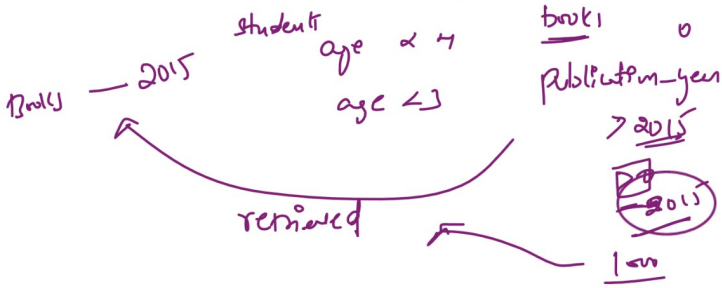
update query

After

```
ALTER TABLE student MODIFY age INT NOT NULL;
```

④ Check Constraint :

* ensures that a column's values meet specific condition




```
CREATE TABLE books (
 book_id INT PRIMARY KEY,
 title VARCHAR(20),
 author_id INT,
 publication_year INT CHECK(publication_year>0),
 FOREIGN KEY (author_id) REFERENCES authors(author_id)
 );
```

⑤ Unique Constraint :

* ensures that all values in a column are unique
* Allows NULL values (unlike primary keys)


```
CREATE TABLE person(
    id INT PRIMARY KEY,
    first_name VARCHAR(25) NOT NULL,
    last_name VARCHAR(25) UNIQUE,
    age INT
);
```

⑥ Altering table on Constraints

Add Constraints :

cmd: ALTER TABLE <table_name> MODIFY <column_name> <datatype> <CONSTRAINT>

Eg: ALTER TABLE Student MODIFY Age INT NOT NULL ;

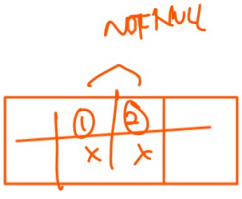
Drop Constraint

cmd: ALTER TABLE <table_name> DROP <CONSTRAIN> ×①

eg: ALTER TABLE Student DROP PRIMARY KEY ×

ALTER TABLE Student NOT NULL

②<column> <type>



Constraints

* Default
* Index
* Composite Key

① Default Constraint :

def: provides a default value for a column when NONE is specified during insertion

purpose: Automatically assign a value when no value is provided during record insertion

eg:

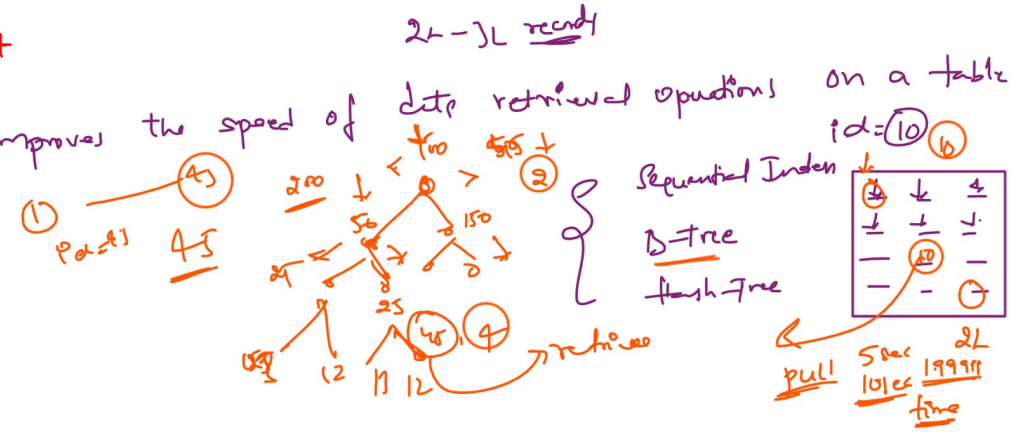
```
CREATE TABLE members(
id INT PRIMARY KEY,
first_name VARCHAR(25) NOT NULL,
last_name VARCHAR(25),
email VARCHAR(25) UNIQUE,
salary INT DEFAULT 22000
);

INSERT INTO members VALUES (1,'Alex',NULL,'alex@gmail.com',NULL);

SELECT * from members;

INSERT INTO members (id,first_name,email) VALUES (2,'Bob','bob@gmail.com');
```

② Index Constraint



def: improves the speed of data retrieval operations on a table

purpose: makes database queries faster by optimizing search operations

Syntax:

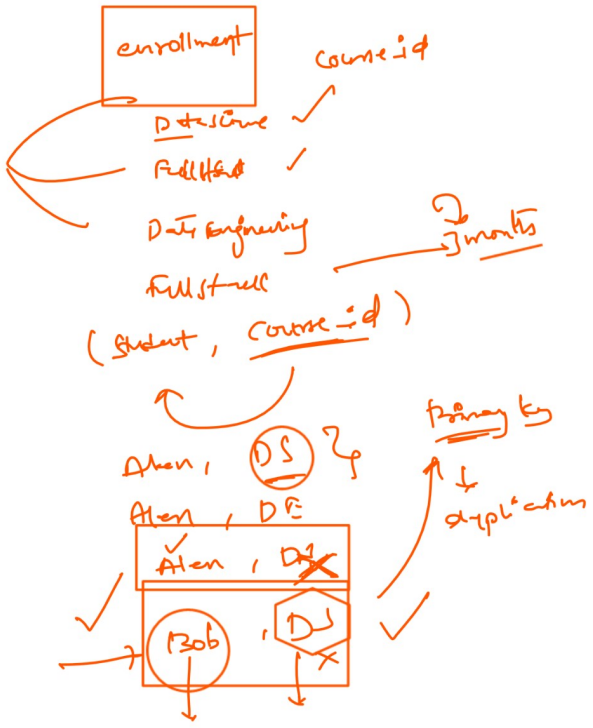
CREATE INDEX <index_name> ON <table_name>(column)?;

Eg: CREATE INDEX index_first_name ON members(first_name);

Composite key

def: A primary key consisting of two or more columns used to uniquely identify records

purpose: When a single column cannot uniquely identify records, we can club multiple columns together




```
CREATE TABLE enrollment(
 student_id INT,
 course_id INT,
 enrollment_date DATE,
 PRIMARY KEY(student_id,course_id)
 );
```