Data Types

Data type	Description
INTEGER, **BOOLEAN**	The integer datatypes can store whole integer values like the count of a number or an age. In some implementations, the boolean value is just represented as an integer value of just 0 or 1.
FLOAT, **DOUBLE**, **REAL**	The floating point datatypes can store more precise numerical data like measurements or fractional values. Different types can be used depending on the floating point precision required for that value.
CHARACTER(num_chars), **VARCHAR(num_chars)**, **TEXT**	The text based datatypes can store strings and text in all sorts of locales. The distinction between the various types generally amount to underlaying efficiency of the database when working with these columns. Both the CHARACTER and VARCHAR (variable character) types are specified with the max number of characters that they can store (longer values may be truncated), so can be more efficient to store and query with big tables.
DATE, **DATETIME**	SQL can also store date and time stamps to keep track of time series and event data. They can be tricky to work with especially when manipulating data across timezones.
BLOB	Finally, SQL can store binary data in blobs right in the database. These values are often opaque to the database, so you usually have to store them with the right metadata to requery them.
Docs: MySQL, Postgres, SQLite, Microsoft SQL Server	

Data Type	Desc
INTEGER, BOOLEAN	For int it stores only whole numbers not decimals, Boolean stores 0 or 1
FLOAT, DOUBLE, REAL	Float - upto 3 decimal points, Double - 6, Real - 12
CHAR, VARCHAR, TEXT	Char - few chars (ex - gender), Varchar - Sentences, Text - paras
DATE, DATETIME	Only Date, Both Date & Time
BLOB	Binary data which can be used for anything

```
-- It is suggested to not Store in Database in the form of BLOB
-- We only store path of the file in the Database
```

INTEGER		
INT	SMALLINT	BIGINT
-2B,2B	-32K,32K	$-9* 10^8$, $9*10^8$

STRING	
VARCHAR	nVARCHAR

STRING	
To store speacial char it takes as 2 chars 	To Store the same char it takes as only 1 char. Ex : U+123U+456
VARCHAR(max)	nVARCHAR(max)

Decimal	
DECIMAL (Exact)	FLOAT(Approx)
DECIMAL(10(Number System),2) Ex : 1234.6891 -> 1234.68	Might lose few decimals when the precision is long(Rounds it off)

Refer - learn.microsoft.com

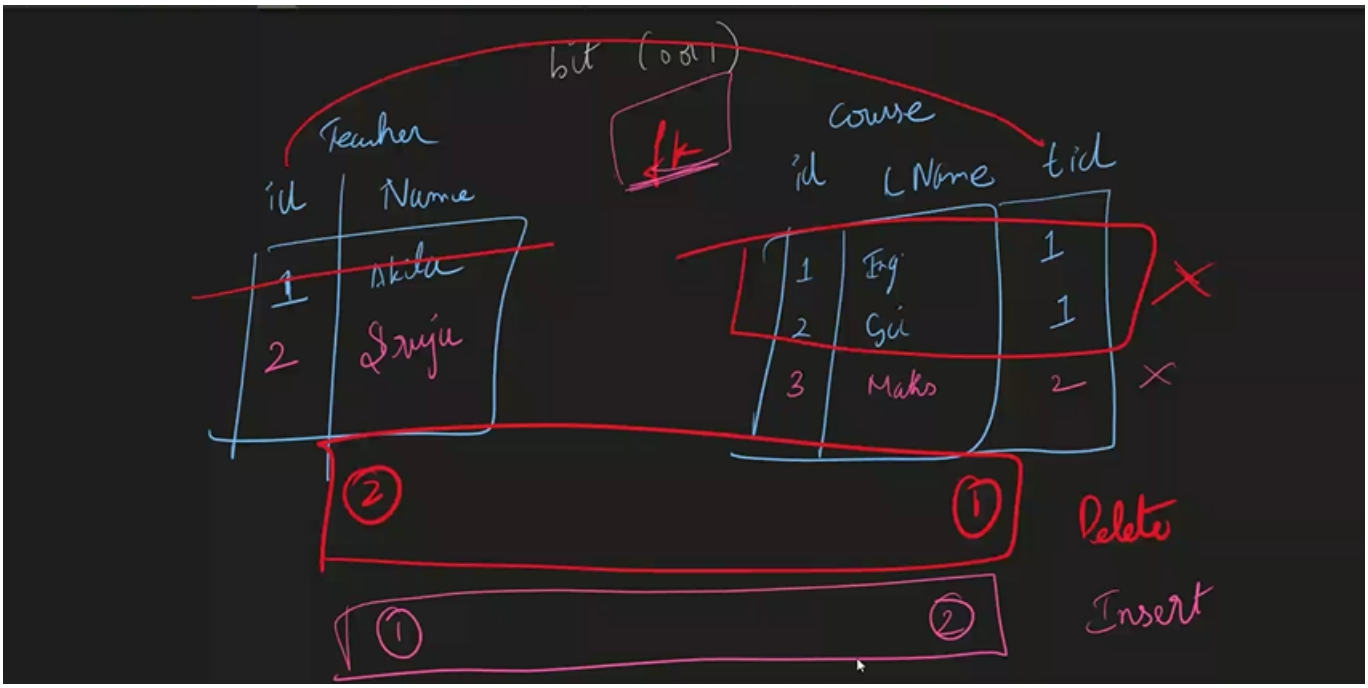
Constraints

Constraint	Description
PRIMARY KEY	This means that the values in this column are unique, and each value can be used to identify a single row in this table.
AUTOINCREMENT	For integer values, this means that the value is automatically filled in and incremented with each row insertion. Not supported in all databases.
UNIQUE	This means that the values in this column have to be unique, so you can't insert another row with the same value in this column as another row in the table. Differs from the `PRIMARY KEY` in that it doesn't have to be a key for a row in the table.
NOT NULL	This means that the inserted value can not be `NULL`.
CHECK (expression)	This allows you to run a more complex expression to test whether the values inserted are valid. For example, you can check that values are positive, or greater than a specific size, or start with a certain prefix, etc.
FOREIGN KEY	This is a consistency check which ensures that each value in this column corresponds to another value in a column in another table. For example, if there are two tables, one listing all Employees by ID, and another listing their payroll information, the `FOREIGN KEY` can ensure that every row in the payroll table corresponds to a valid employee in the master Employee list.

Why Constraints are needed?

To have the Data in a proper Format and have the Data Integrity(Honestness or correctness).

Even though we dont have foreign key constraint, we can join the tables! Then why foreign key is needed?


bit (0 or 1)
1
Teacher
id
Name
1
Akhil
2
Sruju
Course
id
CName
tid
1
Eng
1
2
Sci
1
3
Maths
2
X
X
2
1
Delete
1
2
Insert