CRUD + Data Changing Operations

```
mysql> DESC CodingNinja;
+-------------+--------------+------+-----+---------+----------------+
| Field       | Type         | Null | Key | Default | Extra          |
+-------------+--------------+------+-----+---------+----------------+
| user_id     | int          | NO   | PRI | NULL    | auto_increment |
| StudentName | varchar(50)  | NO   |     | Unknown |                |
| Gender      | char(1)      | YES  |     | NULL    |                |
| Email       | varchar(100) | YES  | UNI | NULL    |                |
| age         | int          | YES  |     | NULL    |                |
| IsActive    | tinyint(1)   | YES  |     | NULL    |                |
+-------------+--------------+------+-----+---------+----------------+
6 rows in set (0.01 sec)
```

By default its starts with 1;

```
CREATE TABLE CodingNinja(
    user_id INT AUTO_INCREMENT, -- NOT NULL & UNIQUE
    StudentName varchar(50) NOT NULL DEFAULT 'Unknown',
    Gender char(1),
    Email varchar(100) UNIQUE,
    age int,
    IsActive Boolean,
    PRIMARY KEY(user_id)
);
```

```
mysql> INSERT INTO CodingNinja(IsActive,StudentName,age,Gender)
    -> VALUES(1,"Utkarsh",29,'M');
Query OK, 1 row affected (0.04 sec)

mysql> SELECT * FROM CodingNinja;
+---------+-------------+--------+-------+------+----------+
| user_id | StudentName | Gender | Email | age  | IsActive |
+---------+-------------+--------+-------+------+----------+
|       1 | Utkarsh     | M      | NULL  |   29 |        1 |
+---------+-------------+--------+-------+------+----------+
1 row in set (0.00 sec)
```

```
mysql> INSERT INTO CodingNinja(StudentName,Gender,age)
    -> VALUES('Mohd Ali','M',21);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM CodingNinja;
+---------+-------------+--------+-------+------+----------+
| user_id | StudentName | Gender | Email | age  | IsActive |
+---------+-------------+--------+-------+------+----------+
|       1 | Utkarsh     | M      | NULL  |   29 |        1 |
|       2 | Mohd Ali    | M      | NULL  |   21 |     NULL |
+---------+-------------+--------+-------+------+----------+
2 rows in set (0.00 sec)
```

```
mysql> INSERT INTO CodingNinja
    -> VALUES(4299236,"Vaishnavi",'F','vaishnanil@gmail.com',24,1);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM CodingNinja;
+---------+-------------+--------+----------------------+-----+----------+
| user_id | StudentName | Gender | Email                | age | IsActive |
+---------+-------------+--------+----------------------+-----+----------+
|       1 | Utkarsh     | M      | NULL                 |  29 |        1 |
|       2 | Mohd Ali    | M      | NULL                 |  21 |     NULL |
| 4299236 | Vaishnavi   | F      | vaishnanil@gmail.com |  24 |        1 |
+---------+-------------+--------+----------------------+-----+----------+
3 rows in set (0.00 sec)

mysql> INSERT INTO CodingNinja(StudentName,Gender,age)
    -> VALUES('Shalu Kumari','F',24);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM CodingNinja;
+---------+--------------+--------+----------------------+-----+----------+
| user_id | StudentName  | Gender | Email                | age | IsActive |
+---------+--------------+--------+----------------------+-----+----------+
|       1 | Utkarsh      | M      | NULL                 |  29 |        1 |
|       2 | Mohd Ali     | M      | NULL                 |  21 |     NULL |
| 4299236 | Vaishnavi    | F      | vaishnanil@gmail.com |  24 |        1 |
| 4299237 | Shalu Kumari | F      | NULL                 |  24 |     NULL |
+---------+--------------+--------+----------------------+-----+----------+
4 rows in set (0.00 sec)

mysql> INSERT INTO CodingNinja(IsActive,StudentName,age,Gender)
    -> VALUES(1,"Utkarsh",29,'M');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM CodingNinja;
+---------+--------------+--------+----------------------+-----+----------+
| user_id | StudentName  | Gender | Email                | age | IsActive |
+---------+--------------+--------+----------------------+-----+----------+
|       1 | Utkarsh      | M      | NULL                 |  29 |        1 |
|       2 | Mohd Ali     | M      | NULL                 |  21 |     NULL |
| 4299236 | Vaishnavi    | F      | vaishnanil@gmail.com |  24 |        1 |
| 4299237 | Shalu Kumari | F      | NULL                 |  24 |     NULL |
| 4299238 | Utkarsh      | M      | NULL                 |  29 |        1 |
+---------+--------------+--------+----------------------+-----+----------+
5 rows in set (0.00 sec)

mysql> INSERT INTO CodingNinja
    -> VALUES(4299236,"Vaishnavi",'F','vaishnanil@gmail.com',24,1);
ERROR 1062 (23000): Duplicate entry '4299236' for key 'codingninja.PRIMARY'
```

First initialize the value and then the next insertion is always incremented by 1.

change in user_id won't find it as duplicate

Update

SYNTAX :

```
UPDATE <tableName>
SET ColumnName = "specific value"
WHERE <specific location>;
```

```
mysql> SELECT
    -> CustomerKey,
    ->    FirstName,
    ->    LastName,
    ->    EmailAddress,
    ->    TotalChildren
    -> FROM CustomerDetails
    -> WHERE LastName = "Mehta"
    -> LIMIT 25;
+-------------+------------+----------+------------------------------+---------------+
| CustomerKey | FirstName  | LastName | EmailAddress                 | TotalChildren |
+-------------+------------+----------+------------------------------+---------------+
|       11007 | MARCO      | MEHTA    | marco14@learnsector.com      |             1 |
|       11399 | BRENDA     | MEHTA    | brenda17@learnsector.com     |             1 |
|       11426 | KRISTOPHER | MEHTA    | kristopher12@learnsector.com |             1 |
|       11444 | TINA       | MEHTA    | tina15@learnsector.com       |             1 |
|       11450 | BRETT      | MEHTA    | brett13@learnsector.com      |             4 |
|       11588 | CANDACE    | MEHTA    | candace14@learnsector.com    |             1 |
|       11761 | EDGAR      | MEHTA    | edgar15@learnsector.com      |             5 |
|       12180 | HOLLY      | MEHTA    | holly13@learnsector.com      |             2 |
|       12322 | KARI       | MEHTA    | kari14@learnsector.com       |             1 |
|       12478 | RUBEN      | MEHTA    | ruben15@learnsector.com      |             2 |
|       12735 | DONALD     | MEHTA    | donald15@learnsector.com     |             0 |
|       12815 | DOMINIQUE  | MEHTA    | dominique11@learnsector.com  |             1 |
|       12816 | TAMMY      | MEHTA    | tammy14@learnsector.com      |             5 |
|       12858 | ADRIANA    | MEHTA    | adriana15@learnsector.com    |             1 |
|       12998 | MAYRA      | MEHTA    | mayra14@learnsector.com      |             2 |
|       13080 | DENISE     | MEHTA    | denise15@learnsector.com     |             2 |
+-------------+------------+----------+------------------------------+---------------+
16 rows in set (0.00 sec)
```

```
mysql> UPDATE CustomerDetails
    -> SET EmailAddress = "mehta@learnsector.com"
    -> WHERE lastName = "Mehta";
Query OK, 16 rows affected (0.02 sec)
Rows matched: 16  Changed: 16  Warnings: 0

mysql> SELECT
    -> CustomerKey,
    ->    FirstName,
    ->    LastName,
    ->    EmailAddress,
    ->    TotalChildren
    -> FROM CustomerDetails
    -> WHERE LastName = "Mehta"
    -> LIMIT 25;
+-------------+------------+----------+-----------------------+---------------+
| CustomerKey | FirstName  | LastName | EmailAddress          | TotalChildren |
+-------------+------------+----------+-----------------------+---------------+
|       11007 | MARCO      | MEHTA    | mehta@learnsector.com |             1 |
|       11399 | BRENDA     | MEHTA    | mehta@learnsector.com |             1 |
|       11426 | KRISTOPHER | MEHTA    | mehta@learnsector.com |             1 |
|       11444 | TINA       | MEHTA    | mehta@learnsector.com |             1 |
|       11450 | BRETT      | MEHTA    | mehta@learnsector.com |             4 |
|       11588 | CANDACE    | MEHTA    | mehta@learnsector.com |             1 |
|       11761 | EDGAR      | MEHTA    | mehta@learnsector.com |             5 |
|       12180 | HOLLY      | MEHTA    | mehta@learnsector.com |             2 |
|       12322 | KARI       | MEHTA    | mehta@learnsector.com |             1 |
|       12478 | RUBEN      | MEHTA    | mehta@learnsector.com |             2 |
|       12735 | DONALD     | MEHTA    | mehta@learnsector.com |             0 |
|       12815 | DOMINIQUE  | MEHTA    | mehta@learnsector.com |             1 |
|       12816 | TAMMY      | MEHTA    | mehta@learnsector.com |             5 |
|       12858 | ADRIANA    | MEHTA    | mehta@learnsector.com |             1 |
|       12998 | MAYRA      | MEHTA    | mehta@learnsector.com |             2 |
|       13080 | DENISE     | MEHTA    | mehta@learnsector.com |             2 |
+-------------+------------+----------+-----------------------+---------------+
```

DELETE

```
DELETE FROM <TableName>
Where <ColumnName> = "Specific Value";
```

```
mysql> DELETE FROM CustomerDetails
    -> WHERE lastName = "Mehta";
Query OK, 16 rows affected (0.05 sec)

mysql> SELECT
    ->   CustomerKey,
    ->     FirstName,
    ->     LastName,
    ->     EmailAddress,
    ->     TotalChildren
    -> FROM CustomerDetails
    -> WHERE LastName = "Mehta";
Empty set (0.02 sec)
```

```
mysql> DELETE FROM CustomerDetails;
Query OK, 2046 rows affected (0.10 sec)

mysql> SELECT * FROM CustomerDetails;
Empty set (0.00 sec)

mysql> DESC CustomerDetails;
+------------------+--------+------+-----+---------+-------+
| Field            | Type   | Null | Key | Default | Extra |
+------------------+--------+------+-----+---------+-------+
| CustomerKey      | int    | YES  |     | NULL    |       |
| Prefix           | text   | YES  |     | NULL    |       |
| FirstName        | text   | YES  |     | NULL    |       |
| LastName         | text   | YES  |     | NULL    |       |
| BirthDate        | text   | YES  |     | NULL    |       |
| MyUnknownColumn  | text   | YES  |     | NULL    |       |
| MaritalStatus    | text   | YES  |     | NULL    |       |
| Gender           | text   | YES  |     | NULL    |       |
| EmailAddress     | text   | YES  |     | NULL    |       |
| AnnualIncome     | text   | YES  |     | NULL    |       |
| TotalChildren    | int    | YES  |     | NULL    |       |
| EducationLevel   | text   | YES  |     | NULL    |       |
| Occupation       | text   | YES  |     | NULL    |       |
| HomeOwner        | text   | YES  |     | NULL    |       |
| Phone_number     | bigint | YES  |     | NULL    |       |
+------------------+--------+------+-----+---------+-------+
15 rows in set (0.01 sec)
```

Delete is an DML command which removes the data without changing the structure of a table

DROP Command ⟶ DDL [Removes the structure as well].

```
mysql> DROP TABLE CustomerDetails;
Query OK, 0 rows affected (0.09 sec)

mysql> SHOW TABLES;
+-------------------------+
| Tables_in_bike_analysis |
+-------------------------+
| calendar                |
| codingninja             |
| customers               |
| product-categories      |
| product-subcategories   |
| products                |
| returns                 |
| sales-2015              |
| sales-2016              |
| sales-2017              |
| territories             |
+-------------------------+
11 rows in set (0.02 sec)
```

Deletes Everything [data, structure, constraints]

TRUNCATE - Deletes all rows at once ~ faster than Delete Command [DDL]
~ There is no "where" clause
~ There is no roll back options.

TRUNCATE TABLE <TableName>

```
mysql> SELECT * FROM CustomerDetails LIMIT 10;
+-----------+--------+-----------+----------+-----------+-----------------+---------------+--------+--------------------------+--------------+--------------+----------------+--------------+-----------+--------------+
| CustomerKey | Prefix | FirstName | LastName | BirthDate | MyUnknownColumn | MaritalStatus | Gender | EmailAddress | AnnualIncome | TotalChildren | EducationLevel | Occupation | HomeOwner | Phone_number |
+-----------+--------+-----------+----------+-----------+-----------------+---------------+--------+--------------------------+--------------+--------------+----------------+--------------+-----------+--------------+
|     11000 | MR.    | JON       | YANG     | 04/08/1966 |                 | M             | M      | jon24@learnsector.com    | $90,000      | 2            | Bachelors      | Professional | Y         | 6697921661   |
|     11001 | MR.    | EUGENE    | HUANG    | 14/05/1965 |                 | M             | M      | eugene1@learnsector.com  | $60,000      | 3            | Bachelors      | Professional | N         | 8586376955   |
|     11002 | MR.    | RUBEN     | TORRES   | 08/12/1965 |                 | M             | M      | ruben35@learnsector.com  | $60,000      | 3            | Bachelors      | Professional | Y         | 6528852745   |
|     11003 | MS.    | CHRISTY   | ZHU      | 15/02/1968 |                 | S             | F      | christy12@learnsector.com| $0           | 0            | Bachelors      | Professional | N         | 3646568427   |
|     11004 | MRS.   | ELIZABETH | JOHNSON  | 08/08/1968 |                 | S             | F      | elizabeth8@learnsector.com| $80,000     | 5            | Bachelors      | Professional | Y         | 7132265883   |
|     11005 | MR.    | JULIO     | RUIZ     | 08/05/1965 |                 | M             | M      | julio1@learnsector.com   | $70,000      | 0            | Bachelors      | Professional | Y         | 1982716743   |
|     11007 | MR.    | MARCO     | MEHTA    | 05/09/1964 |                 | M             | M      | marco14@learnsector.com  | $60,000      | 3            | Bachelors      | Professional | Y         | 4283325209   |
|     11008 | MRS.   | ROBIN     | VERHOFF  | 07/07/1964 |                 | S             | F      | rob4@learnsector.com     | $60,000      | 4            | Bachelors      | Professional | Y         | 2866694333   |
|     11009 | MR.    | SHANNON   | CARLSON  | 04/01/1964 |                 | S             | M      | shannon38@learnsector.com| $70,000      | 0            | Bachelors      | Professional | N         | 3417265787   |
|     11010 | MS.    | JACQUELYN | SUAREZ   | 02/06/1964 |                 | S             | F      | jacquelyn20@learnsector.com| $70,000    | 0            | Bachelors      | Professional | N         | 3166486176   |
+-----------+--------+-----------+----------+-----------+-----------------+---------------+--------+--------------------------+--------------+--------------+----------------+--------------+-----------+--------------+
10 rows in set (0.02 sec)
```

```
mysql> TRUNCATE TABLE CustomerDetails;
Query OK, 0 rows affected (0.07 sec)

mysql> SELECT * FROM CustomerDetails LIMIT 10;
Empty set (0.01 sec)

mysql> DESC CustomerDetails;
+-----------------+--------+------+-----+---------+-------+
| Field           | Type   | Null | Key | Default | Extra |
+-----------------+--------+------+-----+---------+-------+
| CustomerKey     | int    | YES  |     | NULL    |       |
| Prefix          | text   | YES  |     | NULL    |       |
| FirstName       | text   | YES  |     | NULL    |       |
| LastName        | text   | YES  |     | NULL    |       |
| BirthDate       | text   | YES  |     | NULL    |       |
| MyUnknownColumn | text   | YES  |     | NULL    |       |
| MaritalStatus   | text   | YES  |     | NULL    |       |
| Gender          | text   | YES  |     | NULL    |       |
| EmailAddress    | text   | YES  |     | NULL    |       |
| AnnualIncome    | text   | YES  |     | NULL    |       |
| TotalChildren   | int    | YES  |     | NULL    |       |
| EducationLevel  | text   | YES  |     | NULL    |       |
| Occupation      | text   | YES  |     | NULL    |       |
| HomeOwner       | text   | YES  |     | NULL    |       |
| Phone_number    | bigint | YES  |     | NULL    |       |
+-----------------+--------+------+-----+---------+-------+
15 rows in set (0.01 sec)
```

DROP
Truncate ~ Delete
DML
DDL

EMPTY "" Vs NULL

```
mysql> SELECT DISTINCT AnnualINcome FROM Customers;
+--------------+
| AnnualINcome |
+--------------+
| $90,000      |
| $60,000      |
|              |
| $80,000      |
| $70,000      |
| $100,000     |
| $30,000      |
| $20,000      |
| $40,000      |
| $10,000      |
| $160,000     |
| $170,000     |
| $130,000     |
| $110,000     |
| $120,000     |
| $150,000     |
| $50,000      |
+--------------+
17 rows in set (0.02 sec)
```

→ Empty

IS / IS NOT
NULL

Empty != Null

AnnualIncome = "";
AnnualIncome IS NULL;

Wardrobe

"Books"	"Gadgets"
""	Clothes
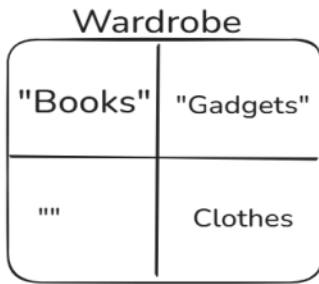
NULL [There is no space Exist] [IS NULL | IS NOT NULL]

```
mysql> SELECT
    ->  CustomerKey,
    ->     FirstName,
    ->     LastName,
    ->     AnnualIncome
    -> FROM Customers
    -> WHERE AnnualIncome = "";
+-------------+-----------+-----------+--------------+
| CustomerKey | FirstName | LastName  | AnnualIncome |
+-------------+-----------+-----------+--------------+
|       11003 | CHRISTY   | ZHU       |              |
|       11015 | CHLOE     | YOUNG     |              |
|       11081 | SAVANNAH  | BAKER     |              |
|       11130 | CAROLINE  | RUSSELL   |              |
|       11227 | MARSHALL  | CHAVEZ    |              |
|       11359 | JARROD    | PRASAD    |              |
|       11552 | EDDIE     | RUBIO     |              |
|       11673 | SUSAN     | YE        |              |
|       12152 | ADRIAN    | RAMIREZ   |              |
|       12756 | ANTONIO   | BUTLER    |              |
+-------------+-----------+-----------+--------------+
10 rows in set (0.02 sec)
```

```
mysql> SELECT
    ->  CustomerKey,
    ->     FirstName,
    ->     LastName,
    ->     AnnualIncome
    -> FROM Customers
    -> WHERE AnnualIncome IS NULL;
Empty set (0.01 sec)
```

```
mysql> UPDATE Customers
    -> SET AnnualIncome = NULL
    -> WHERE AnnualIncome = "";
Query OK, 10 rows affected (0.02 sec)
Rows matched: 10  Changed: 10  Warnings: 0

mysql> SELECT
    ->  CustomerKey,
    ->     FirstName,
    ->     LastName,
    ->     AnnualIncome
    -> FROM Customers
    -> WHERE AnnualIncome IS NULL;
+-------------+-----------+-----------+--------------+
| CustomerKey | FirstName | LastName  | AnnualIncome |
+-------------+-----------+-----------+--------------+
|       11003 | CHRISTY   | ZHU       | NULL         |
|       11015 | CHLOE     | YOUNG     | NULL         |
|       11081 | SAVANNAH  | BAKER     | NULL         |
|       11130 | CAROLINE  | RUSSELL   | NULL         |
|       11227 | MARSHALL  | CHAVEZ    | NULL         |
|       11359 | JARROD    | PRASAD    | NULL         |
|       11552 | EDDIE     | RUBIO     | NULL         |
|       11673 | SUSAN     | YE        | NULL         |
|       12152 | ADRIAN    | RAMIREZ   | NULL         |
|       12756 | ANTONIO   | BUTLER    | NULL         |
+-------------+-----------+-----------+--------------+
10 rows in set (0.01 sec)
```

The annualIncome of this customerKey
Doesn't Exist.

```
mysql> SELECT
    ->  CustomerKey,
    ->     FirstName,
    ->     LastName,
    ->     AnnualIncome
    -> FROM Customers
    -> WHERE AnnualIncome IS NOT NULL
    -> LIMIT 10;
+-------------+-----------+----------+--------------+
| CustomerKey | FirstName | LastName | AnnualIncome |
+-------------+-----------+----------+--------------+
|       11000 | JON       | YANG     | $90,000      |
|       11001 | EUGENE    | HUANG    | $60,000      |
|       11002 | RUBEN     | TORRES   | $60,000      |
|       11004 | ELIZABETH | JOHNSON  | $80,000      |
|       11005 | JULIO     | RUIZ     | $70,000      |
|       11007 | MARCO     | MEHTA    | $60,000      |
|       11008 | ROBIN     | VERHOFF  | $60,000      |
|       11009 | SHANNON   | CARLSON  | $70,000      |
|       11010 | JACQUELYN | SUAREZ   | $70,000      |
|       11011 | CURTIS    | LU       | $60,000      |
+-------------+-----------+----------+--------------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT DISTINCT Prefix FROM Customers;
+--------+
| Prefix |
+--------+
| MR.    |
| MS.    |
| MRS.   |
|        |
+--------+
4 rows in set (0.02 sec)
```

```
mysql> SELECT
    ->  CustomerKey,
    ->     Prefix,
    ->     FirstName,
    ->     LastName
    -> FROM Customers
    -> WHERE Prefix = "";
+-------------+--------+-----------+-----------+
| CustomerKey | Prefix | FirstName | LastName  |
+-------------+--------+-----------+-----------+
|       11025 |        | ALEJANDRO | BECK      |
|       11035 |        | WENDY     | DOMINGUEZ |
|       11082 |        | ANGELA    | BUTLER    |
|       11234 |        | ANNA      | GRIFFIN   |
|       11475 |        | CESAR     | SUBRAM    |
|       11526 |        | KATHERINE | DIAZ      |
|       11623 |        | ANGELA    | PERRY     |
|       11643 |        | NAOMI     | MUNOZ     |
|       11965 |        | KATIE     | SHE       |
|       12276 |        | ALISHA    | SHAN      |
|       12283 |        | TODD      | ZENG      |
|       12300 |        | ADRIANA   | GONZALEZ  |
|       12372 |        | DARREN    | PRASAD    |
|       12446 |        | JASMINE   | HALL      |
|       12517 |        | ALEXA     | WATSON    |
|       12765 |        | ROBYN     | GILL      |
|       12790 |        | BRANDON   | KUMAR     |
|       12936 |        | RENEE     | MORENO    |
+-------------+--------+-----------+-----------+
18 rows in set (0.01 sec)
```

```
mysql> UPDATE Customers
    -> SET Prefix = NULL
    -> WHERE Prefix = "";
Query OK, 18 rows affected (0.02 sec)
Rows matched: 18  Changed: 18  Warnings: 0

mysql> SELECT
    ->  CustomerKey,
    ->     Prefix,
    ->      FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE Prefix = "";
Empty set (0.01 sec)
```

```
mysql> SELECT
    ->  CustomerKey,
    ->     Prefix,
    ->      FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE Prefix IS NULL;
+-------------+--------+-----------+------------+
| CustomerKey | Prefix | FirstName | LastName   |
+-------------+--------+-----------+------------+
|       11025 | NULL   | ALEJANDRO | BECK       |
|       11035 | NULL   | WENDY     | DOMINGUEZ  |
|       11082 | NULL   | ANGELA    | BUTLER     |
|       11234 | NULL   | ANNA      | GRIFFIN    |
|       11475 | NULL   | CESAR     | SUBRAM     |
|       11526 | NULL   | KATHERINE | DIAZ       |
|       11623 | NULL   | ANGELA    | PERRY      |
|       11643 | NULL   | NAOMI     | MUNOZ      |
|       11965 | NULL   | KATIE     | SHE        |
|       12276 | NULL   | ALISHA    | SHAN       |
|       12283 | NULL   | TODD      | ZENG       |
|       12300 | NULL   | ADRIANA   | GONZALEZ   |
|       12372 | NULL   | DARREN    | PRASAD     |
|       12446 | NULL   | JASMINE   | HALL       |
|       12517 | NULL   | ALEXA     | WATSON     |
|       12765 | NULL   | ROBYN     | GILL       |
|       12790 | NULL   | BRANDON   | KUMAR      |
|       12936 | NULL   | RENEE     | MORENO     |
+-------------+--------+-----------+------------+
18 rows in set (0.01 sec)
```

ALTERING TABLE STRUCTURE → Whenever we import table directly using .csv file, we can't change the structure of the table at initially.

https://dev.mysql.com/doc/refman/8.4/en/alter-table.html

```
ALTER TABLE tbl_name
    [alter_option [, alter_option] ...]
    [partition_options]
```

```
alter_option: {
    table_options
  | ADD [COLUMN] col_name column_definition
        [FIRST | AFTER col_name]
  | ADD [COLUMN] (col_name column_definition,...)
  | ADD [CONSTRAINT [symbol]] PRIMARY KEY
        [index_type] (key_part,...)
        [index_option] ...
  | ADD [CONSTRAINT [symbol]] UNIQUE [INDEX | KEY]
        [index_name] [index_type] (key_part,...)
        [index_option] ...
  | ADD [CONSTRAINT [symbol]] FOREIGN KEY
        [index_name] (col_name,...)
        reference_definition
  | ADD [CONSTRAINT [symbol]] CHECK (expr) [[NOT] ENFORCED]
  | DROP {CHECK | CONSTRAINT} symbol

  | CHANGE [COLUMN] old_col_name new_col_name column_definition
        [FIRST | AFTER col_name]

  DROP [COLUMN] col_name
  DROP {INDEX | KEY} index_name
  DROP PRIMARY KEY
  DROP FOREIGN KEY fk_symbol

  | MODIFY [COLUMN] col_name column_definition
        [FIRST | AFTER col_name]

  | RENAME COLUMN old_col_name TO new_col_name

    RENAME [TO | AS] new_tbl_name
```

Future Concepts (annotations)

TO (annotation)

ADD COLUMN

```
mysql> ALTER TABLE Customers
    -> ADD COLUMN Country VARCHAR(50);
Query OK, 0 rows affected (0.16 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| CustomerKey      | int         | YES  |     | NULL    |       |
| Prefix           | text        | YES  |     | NULL    |       |
| FirstName        | text        | YES  |     | NULL    |       |
| LastName         | text        | YES  |     | NULL    |       |
| BirthDate        | text        | YES  |     | NULL    |       |
| MyUnknownColumn  | text        | YES  |     | NULL    |       |
| MaritalStatus    | text        | YES  |     | NULL    |       |
| Gender           | text        | YES  |     | NULL    |       |
| EmailAddress     | text        | YES  |     | NULL    |       |
| AnnualIncome     | text        | YES  |     | NULL    |       |
| TotalChildren    | int         | YES  |     | NULL    |       |
| EducationLevel   | text        | YES  |     | NULL    |       |
| Occupation       | text        | YES  |     | NULL    |       |
| HomeOwner        | text        | YES  |     | NULL    |       |
| Phone_number     | bigint      | YES  |     | NULL    |       |
| Country          | varchar(50) | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
16 rows in set (0.01 sec)
```

Drop Column

```
mysql> ALTER TABLE Customers
    -> DROP Column Country;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+-----------------+--------+------+-----+---------+-------+
| Field           | Type   | Null | Key | Default | Extra |
+-----------------+--------+------+-----+---------+-------+
| CustomerKey     | int    | YES  |     | NULL    |       |
| Prefix          | text   | YES  |     | NULL    |       |
| FirstName       | text   | YES  |     | NULL    |       |
| LastName        | text   | YES  |     | NULL    |       |
| BirthDate       | text   | YES  |     | NULL    |       |
| MyUnknownColumn | text   | YES  |     | NULL    |       |
| MaritalStatus   | text   | YES  |     | NULL    |       |
| Gender          | text   | YES  |     | NULL    |       |
| EmailAddress    | text   | YES  |     | NULL    |       |
| AnnualIncome    | text   | YES  |     | NULL    |       |
| TotalChildren   | int    | YES  |     | NULL    |       |
| EducationLevel  | text   | YES  |     | NULL    |       |
| Occupation      | text   | YES  |     | NULL    |       |
| HomeOwner       | text   | YES  |     | NULL    |       |
| Phone_number    | bigint | YES  |     | NULL    |       |
+-----------------+--------+------+-----+---------+-------+
15 rows in set (0.01 sec)
```

Adding a new column at beginning [FIRST]

```
mysql> ALTER TABLE Customers
    -> ADD COLUMN Country VARCHAR(50) FIRST;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+-----------------+-------------+------+-----+---------+-------+
| Field           | Type        | Null | Key | Default | Extra |
+-----------------+-------------+------+-----+---------+-------+
| Country         | varchar(50) | YES  |     | NULL    |       |
| CustomerKey     | int         | YES  |     | NULL    |       |
| Prefix          | text        | YES  |     | NULL    |       |
| FirstName       | text        | YES  |     | NULL    |       |
| LastName        | text        | YES  |     | NULL    |       |
| BirthDate       | text        | YES  |     | NULL    |       |
| MyUnknownColumn | text        | YES  |     | NULL    |       |
| MaritalStatus   | text        | YES  |     | NULL    |       |
| Gender          | text        | YES  |     | NULL    |       |
| EmailAddress    | text        | YES  |     | NULL    |       |
| AnnualIncome    | text        | YES  |     | NULL    |       |
| TotalChildren   | int         | YES  |     | NULL    |       |
| EducationLevel  | text        | YES  |     | NULL    |       |
| Occupation      | text        | YES  |     | NULL    |       |
| HomeOwner       | text        | YES  |     | NULL    |       |
| Phone_number    | bigint      | YES  |     | NULL    |       |
+-----------------+-------------+------+-----+---------+-------+
16 rows in set (0.01 sec)
```

Adding a new column at specific Position [AFTER ColumnName]

```
mysql> ALTER TABLE Customers
    -> DROP Column Country;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> ALTER TABLE Customers
    -> ADD COLUMN Country VARCHAR(50)
    -> AFTER BirthDate;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| CustomerKey    | int         | YES  |     | NULL    |       |
| Prefix         | text        | YES  |     | NULL    |       |
| FirstName      | text        | YES  |     | NULL    |       |
| LastName       | text        | YES  |     | NULL    |       |
| BirthDate      | text        | YES  |     | NULL    |       |
| Country        | varchar(50) | YES  |     | NULL    |       |
| MyUnknownColumn| text        | YES  |     | NULL    |       |
| MaritalStatus  | text        | YES  |     | NULL    |       |
| Gender         | text        | YES  |     | NULL    |       |
| EmailAddress   | text        | YES  |     | NULL    |       |
| AnnualIncome   | text        | YES  |     | NULL    |       |
| TotalChildren  | int         | YES  |     | NULL    |       |
| EducationLevel | text        | YES  |     | NULL    |       |
| Occupation     | text        | YES  |     | NULL    |       |
| HomeOwner      | text        | YES  |     | NULL    |       |
| Phone_number   | bigint      | YES  |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
16 rows in set (0.00 sec)
```

Removing the MyUnknownColumn which doesn't have any data.

```
mysql> ALTER TABLE Customers
    -> DROP Column MyUnknownColumn;
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| CustomerKey    | int         | YES  |     | NULL    |       |
| Prefix         | text        | YES  |     | NULL    |       |
| FirstName      | text        | YES  |     | NULL    |       |
| LastName       | text        | YES  |     | NULL    |       |
| BirthDate      | text        | YES  |     | NULL    |       |
| Country        | varchar(50) | YES  |     | NULL    |       |
| MaritalStatus  | text        | YES  |     | NULL    |       |
| Gender         | text        | YES  |     | NULL    |       |
| EmailAddress   | text        | YES  |     | NULL    |       |
| AnnualIncome   | text        | YES  |     | NULL    |       |
| TotalChildren  | int         | YES  |     | NULL    |       |
| EducationLevel | text        | YES  |     | NULL    |       |
| Occupation     | text        | YES  |     | NULL    |       |
| HomeOwner      | text        | YES  |     | NULL    |       |
| Phone_number   | bigint      | YES  |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
15 rows in set (0.02 sec)
```

text

Let's Modify the EmailAddress datatype
From Text -> Varchar(100)

Modifying Column Data Type

```
mysql> ALTER TABLE Customers
    -> MODIFY COLUMN EmailAddress VARCHAR(100);
Query OK, 2062 rows affected (0.28 sec)
Records: 2062  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| CustomerKey    | int          | YES  |     | NULL    |       |
| Prefix         | text         | YES  |     | NULL    |       |
| FirstName      | text         | YES  |     | NULL    |       |
| LastName       | text         | YES  |     | NULL    |       |
| BirthDate      | text         | YES  |     | NULL    |       |
| Country        | varchar(50)  | YES  |     | NULL    |       |
| MaritalStatus  | text         | YES  |     | NULL    |       |
| Gender         | text         | YES  |     | NULL    |       |
| EmailAddress   | varchar(100) | YES  |     | NULL    |       |
| AnnualIncome   | text         | YES  |     | NULL    |       |
| TotalChildren  | int          | YES  |     | NULL    |       |
| EducationLevel | text         | YES  |     | NULL    |       |
| Occupation     | text         | YES  |     | NULL    |       |
| HomeOwner      | text         | YES  |     | NULL    |       |
| Phone_number   | bigint       | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
15 rows in set (0.01 sec)
```

```
mysql> ALTER TABLE Customers
    -> MODIFY COLUMN Phone_number TEXT;
Query OK, 2062 rows affected (0.20 sec)
Records: 2062  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| CustomerKey    | int          | YES  |     | NULL    |       |
| Prefix         | text         | YES  |     | NULL    |       |
| FirstName      | text         | YES  |     | NULL    |       |
| LastName       | text         | YES  |     | NULL    |       |
| BirthDate      | text         | YES  |     | NULL    |       |
| Country        | varchar(50)  | YES  |     | NULL    |       |
| MaritalStatus  | text         | YES  |     | NULL    |       |
| Gender         | text         | YES  |     | NULL    |       |
| EmailAddress   | varchar(100) | YES  |     | NULL    |       |
| AnnualIncome   | text         | YES  |     | NULL    |       |
| TotalChildren  | int          | YES  |     | NULL    |       |
| EducationLevel | text         | YES  |     | NULL    |       |
| Occupation     | text         | YES  |     | NULL    |       |
| HomeOwner      | text         | YES  |     | NULL    |       |
| Phone_number   | text         | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
15 rows in set (0.00 sec)
```

Renaming Column

```
mysql> ALTER TABLE Customers
    -> RENAME COLUMN BirthDATE TO DateOfBirth;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| CustomerKey    | int          | YES  |     | NULL    |       |
| Prefix         | text         | YES  |     | NULL    |       |
| FirstName      | text         | YES  |     | NULL    |       |
| LastName       | text         | YES  |     | NULL    |       |
| DateOfBirth    | text         | YES  |     | NULL    |       |
| Country        | varchar(50)  | YES  |     | NULL    |       |
| MaritalStatus  | text         | YES  |     | NULL    |       |
| Gender         | text         | YES  |     | NULL    |       |
| EmailAddress   | varchar(100) | YES  |     | NULL    |       |
| AnnualIncome   | text         | YES  |     | NULL    |       |
| TotalChildren  | int          | YES  |     | NULL    |       |
| EducationLevel | text         | YES  |     | NULL    |       |
| Occupation     | text         | YES  |     | NULL    |       |
| HomeOwner      | text         | YES  |     | NULL    |       |
| Phone_number   | text         | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
15 rows in set (0.01 sec)
```