What is a key ?
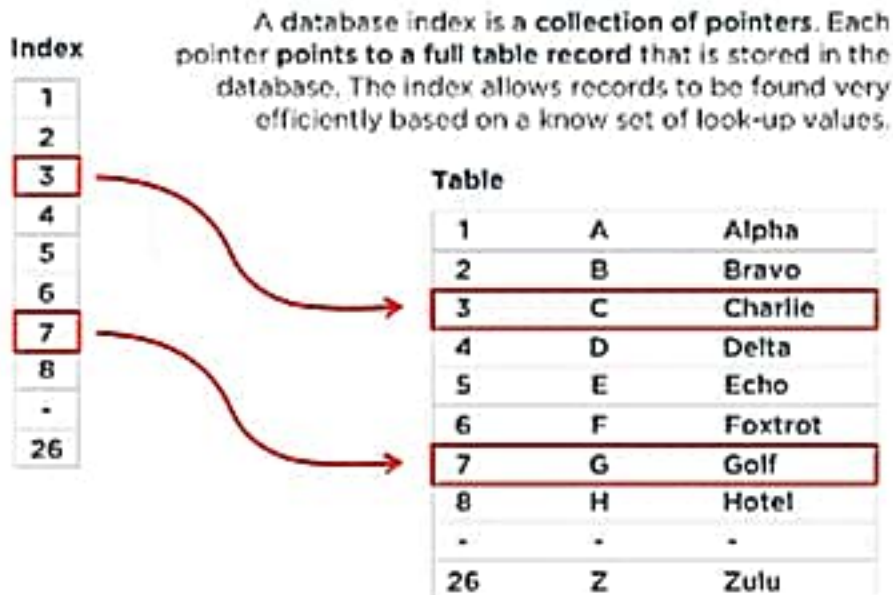
A Key is an attribute (column)or set of attributes (Columns) that helps to
identify a row in a table.

The database key is helpful for
finding unique records from the table.

The keys are defined in a table to
access or sequence
the stored data
quickly and smoothly

Keys allow
to
find the relation between
two tables

What is key / index on a table ?

A database index is a **collection of pointers**. Each pointer **points to a full table record** that is stored in the database. The index allows records to be found very efficiently based on a know set of look-up values.

Index

1
2
3
4
5
6
7
8
.
26

Table

1	A	Alpha
2	B	Bravo
3	C	Charlie
4	D	Delta
5	E	Echo
6	F	Foxtrot
7	G	Golf
8	H	Hotel
.	.	.
26	Z	Zulu

Stop sharing   Hide

Rules for Primary Key

1. Primary should be unique.

2. Primary should not be null .

3. A table can only have one primary key.

How to Add Primary Key in MySQL Table ?

- There are two ways in MySQL to create primary key in a table:
  - Using CREATE TABLE Statement
  - Using ALTER TABLE Statement

Defining Primary Key (single column) with CREATE TABLE Statement

Syntax 1 :

```
CREATE TABLE table_name (
column1 datatype,
column2 datatype,
PRIMARY KEY (column1)
);
```

```
CREATE TABLE student (
      ID int NOT NULL,
      Name varchar(30) ,
      PRIMARY KEY (ID)
);
```

Syntax 2 :

```
CREATE TABLE table_name (
column1 datatype, PRIMARY
    KEY
column2 datatype,
);
```

```
CREATE TABLE student (
      ID int PRIMARY KEY
      Name varchar(30) ,
);
```

Adding Primary Key with ALTER TABLE

Syntax :
- ALTER TABLE table_name ADD PRIMARY KEY (column name);

Example :
- ALTRE TABLE student ADD PRIMARY KEY (ID);

```
MySQL Command Line Client

mysql> create database studentdb;
Query OK, 1 row affected (0.10 sec)

mysql> use studentdb;
Database changed
mysql>
mysql> show tables()'
    '> ;
    '> ;^C
mysql> show tables ;
Empty set (0.06 sec)

mysql> create table student (id int , name varchar(20));
Query OK, 0 rows affected (0.18 sec)

mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql> insert  into student (1 )
```

```
    '> ;
    '> ;^C
mysql> show tables ;
Empty set (0.06 sec)

mysql> create table student (id int , name varchar(20));
Query OK, 0 rows affected (0.18 sec)

mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql> insert  into student values (1, 'kishore');
Query OK, 1 row affected (0.03 sec)

mysql> insert  into student values (1, 'kishore');
Query OK, 1 row affected (0.01 sec)

mysql> select * from student ;
+------+---------+
| id   | name    |
+------+---------+
|    1 | kishore |
|    1 | kishore |
+------+---------+
2 rows in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line Client

mysql>
mysql> insert  into student values (1, 'kishore');
Query OK, 1 row affected (0.03 sec)

mysql> insert  into student values (1, 'kishore');
Query OK, 1 row affected (0.01 sec)

mysql> select * from student ;
+------+---------+
| id   | name    |
+------+---------+
|    1 | kishore |
|    1 | kishore |
+------+---------+
2 rows in set (0.00 sec)

mysql> drop table student ;
Query OK, 0 rows affected (0.06 sec)

mysql> create table student (id int  primary key , name varchar(20));
Query OK, 0 rows affected (0.04 sec)

mysql> insert  into student values (1, 'kishore');
Query OK, 1 row affected (0.01 sec)

mysql> insert  into student values (1, 'kishore');
ERROR 1062 (23000): Duplicate entry '1' for key 'student.PRIMARY'
mysql>
```

```
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql>
mysql> create  table stud_info (id int ,  address varchar (30));
Query OK, 0 rows affected (0.05 sec)

mysql> alter table stud_info add primary key (id);
Query OK, 0 rows affected (0.11 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> show create table stud_info;
+------------+--------------------------------------------------------------
------------------------------------------------------------------+
| Table      | Create Table
                                                                    |
+------------+--------------------------------------------------------------
------------------------------------------------------------------+
| stud_info | CREATE TABLE `stud_info` (
  `id` int NOT NULL,
  `address` varchar(30) DEFAULT NULL,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+------------+--------------------------------------------------------------
------------------------------------------------------------------+
1 row in set (0.00 sec)

mysql>
```

```
+-------------+--------------------------------------------------------------------+
| stud_info | CREATE TABLE `stud_info` (
  `id` int NOT NULL,
  `address` varchar(30) DEFAULT NULL,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-------------+--------------------------------------------------------------------+
1 row in set (0.00 sec)

mysql> alter table stud_info  drop  primary key ;
Query OK, 0 rows affected (0.11 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> show create table stud_info;
+-------------+-----------------------------------------------------------
| Table       | Create Table
+-------------+-----------------------------------------------------------
| stud_info | CREATE TABLE `stud_info` (
  `id` int NOT NULL,
  `address` varchar(30) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-------------+-----------------------------------------------------------
1 row in set (0.00 sec)

mysql>
```

```
mysql> insert intto stud_info values (1, 'pune);
    '> ;
    '> ^C
mysql> insert intto stud_info values (1, 'pune);
    '> ^C
mysql> insert intto stud_info values (1, 'pune');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that correspo
he right syntax to use near 'stud_info values (1, 'pune')' at line 1
mysql> insert into stud_info values (1, 'pune');
Query OK, 1 row affected (0.01 sec)

mysql> insert into stud_info values (1, 'pune'), (2. ' mumbai');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that correspo
he right syntax to use near '' mumbai')' at line 1
mysql> insert into stud_info values (1, 'pune'), (2, ' mumbai');
ERROR 1062 (23000): Duplicate entry '1' for key 'stud_info.PRIMARY'
mysql> insert into stud_info values (3, 'pune'), (2, ' mumbai');
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select * from stud_info;
+----+---------+
| id | address |
+----+---------+
|  1 | pune    |
|  2 |  mumbai |
|  3 | pune    |
+----+---------+
3 rows in set (0.00 sec)

mysql>
```

```
mysql> insert into stud_info values (3, 'pune'), (2, ' mumbai');
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select * from stud_info;
+----+---------+
| id | address |
+----+---------+
|  1 | pune    |
|  2 |  mumbai |
|  3 | pune    |
+----+---------+
3 rows in set (0.00 sec)

mysql> insert into stud_info values (4, 'pune'), (5, ' mumbai'), (6, 'thane');
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from stud_info;
+----+---------+
| id | address |
+----+---------+
|  1 | pune    |
|  2 |  mumbai |
|  3 | pune    |
|  4 | pune    |
|  5 |  mumbai |
|  6 | thane   |
+----+---------+
6 rows in set (0.00 sec)

mysql>
```

```
mysql> insert into stud_info values ( , 'pune');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL
he right syntax to use near ', 'pune')' at line 1
mysql> insert into stud_info columns (id , name ) values ( , 'pune');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL
he right syntax to use near 'columns (id , name ) values ( , 'pune')' at line 1
mysql> insert into stud_info columns (id , name ) values ( 1, 'pune');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL
he right syntax to use near 'columns (id , name ) values ( 1, 'pune')' at line 1
mysql> insert into stud_info  values ( 1, 'pune');
ERROR 1062 (23000): Duplicate entry '1' for key 'stud_info.PRIMARY'
mysql> insert into stud_info  values ( ' ' , 'pune');
ERROR 1366 (HY000): Incorrect integer value: ' ' for column 'id' at row 1
mysql> insert into stud_info  values ( 111 , 'pune');
Query OK, 1 row affected (0.01 sec)

mysql> select * from stud_info;
+-----+---------+
| id  | address |
+-----+---------+
|   0 | pune    |
|   1 | pune    |
|   2 | mumbai  |
|   3 | pune    |
|   4 | pune    |
|   5 | mumbai  |
|   6 | thane   |
| 111 | pune    |
+-----+---------+
8 rows in set (0.00 sec)

mysql>
```