MySQL - Create Index

A database index improves the speed of operations in a database table. They can be created on one or more columns, providing the basis for both rapid random lookups and efficient ordering of access to records.

Practically, indexes are a special type of lookup tables, that hold a pointer to each record into the actual table.

We can create indexes on a MySQL table in two scenarios: while creating a new table and on an existing table.

Creating Indexes on New Table

If we want to define an index on a new table, we use the CREATE TABLE statement.

Syntax

Following is the syntax to create an index on a new table –

```
CREATE TABLE(
 column1 datatype PRIMARY KEY,
 column2 datatype,
 column3 datatype,
 ...
 INDEX(column_name)
);
```

Example

In this example, we are create a new table CUSTOMERS and adding an index to one of its columns using the following CREATE TABLE query −

```
CREATE TABLE CUSTOMERS (
  ID INT NOT NULL,
  NAME VARCHAR (20) NOT NULL,
  AGE INT NOT NULL,
  ADDRESS CHAR (25),
  SALARY DECIMAL (18, 2),
  INDEX(ID));
```

To verify whether the index has been defined or not, we check the table definition using the following DESC statement.

DESC CUSTOMERS;

Output

Creating Indexes on Existing Table

To create an index on existing table, we use the following SQL statements −

- With CREATE INDEX Statement
- With ALTER Command

CREATE INDEX Statement

The basic syntax of the CREATE INDEX statement is as follows –

```
CREATE INDEX index_name ON table_name;
```

In the following example, let us create an index on CUSTOMERS table. We are using CREATE INDEX statement here −

CREATE INDEX NAME_INDEX ON CUSTOMERS (Name);

To check if the index is created on the table or not, let us display the table structure using DESC statement as shown below −

DESC CUSTOMERS;

Output

ALTER... ADD Command

Following is the basic syntax of ALTER statement −

```
ALTER TABLE tbl_name ADD INDEX index_name (column_list);
```

Let us use ALTER TABLE... ADD INDEX statement in the following example to add an index to the CUSTOMERS table −

```
ALTER TABLE CUSTOMERS ADD INDEX AGE_INDEX (AGE);
```

Output

Simple and Unique Index

A unique index is the one which cannot be created on two rows at once. Following is the syntax to create a unique index −

```
CREATE UNIQUE INDEX index_name ON table_name ( column1, column2,...);
```

Example

Following example creates a unique index on the table temp −

```
CREATE UNIQUE INDEX UNIQUE_INDEX ON CUSTOMERS (Name);
```

Composite Indexes

We can also create an index on more than one column and it is called a composite index the basic syntax to create a composite index is as follows −

```
CREATE INDEX index_name
on table_name (column1, column2);
```

Example

Following query creates a composite index on the ID and Name columns of the above created table −

```
CREATE INDEX composite_index on CUSTOMERS (ID, Name);
```