

CREATE INDEX Statement

SQL **CREATE INDEX** statement creates indexes in a table for fast and efficient data retrieval.

CREATE INDEX Statement

The **CREATE INDEX Statement in SQL** is used to create indexes in tables and retrieve data from the database faster than usual.

Indexes are invisible structures that work behind the scenes to speed up data retrieval operations in databases. They are essential for optimizing query performance and improving overall system efficiency.

Indexes can not be seen by users, and are only used to speed up the process of searches/queries.

Important Points

- Only use **INDEX constraint** on a column that is frequently searched or used in **WHERE clauses** of **SELECT queries**.
- Adding Indexes to all columns makes the process of updating the database slower, as on each update Index updates as well.

Syntax

There are **two syntaxes** to create index in table:

CREATE INDEX Syntax

Simple CREATE INDEX Syntax is:

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

This will create an index on the table and duplicate values are allowed.

CREATE UNIQUE INDEX Syntax

CREATE UNIQUE INDEX syntax is:

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

This will create a unique index on the table and will not allow duplicate values.

SQL CREATE INDEX Statement Example

Let's look at some examples of the CREATE INDEX Statement in SQL and understand it's working.

First, we will create a demo database and table, on which we will use the CREATE INDEX command.

Demo SQL Database

```
CREATE DATABASE GEEKSFORGEEKS;  
USE GEEKSFORGEEKS;  
CREATE TABLE STUDENTS(  
  STUDENT_ID INT PRIMARY KEY,  
  NAME VARCHAR(20),  
  ADDRESS VARCHAR(20),  
  AGE INT,  
  DOB DATE  
);  
INSERT INTO STUDENTS  
VALUES  
  (1, 'DEV SHARMA', '91 ABC STREET', 25, '1991-08-19'),  
  (2, 'ARYA RAJPUT', '77 XYZ STREET', 21, '1999-09-29'),  
  (3, 'GAURAV VERMA', '101 YEMEN ROAD', 29, '2000-01-01');
```

```
mysql> INSERT INTO STUDENTS VALUES(1,'DEV SHARMA','91 ABC STREET',25,'1991-08-19');  
Query OK, 1 row affected (0.00 sec)  
  
mysql> INSERT INTO STUDENTS VALUES(2,'ARYA RAJPUT','77 XYZ STREET',21,'1999-09-29');  
Query OK, 1 row affected (0.01 sec)  
  
mysql> INSERT INTO STUDENTS VALUES(3,'GAURAV VERMA','101 YEMEN ROAD',29,'2000-01-01');  
Query OK, 1 row affected (0.00 sec)  
  
mysql> |
```

Inserting data

Create Index in SQL Table Example

In this example, we will use the CREATE INDEX command to create an index.

Query

```
CREATE INDEX idx  
ON STUDENTS(NAME);
```

Output

```
mysql> CREATE INDEX idx
      -> ON STUDENTS(NAME);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> |
```

Creating an index

Retrieving Data From the Table Using Indexes

In this example, we will use the **USE INDEX** command to retrieve data from the table.

```
SELECT *
FROM STUDENTS
USE INDEX(idx);
```

Output

```
mysql> SELECT *
      -> FROM STUDENTS USE INDEX(idx);
+-----+-----+-----+-----+-----+
| STUDENT_ID | NAME          | ADDRESS          | AGE | DOB          |
+-----+-----+-----+-----+-----+
|          1 | DEV SHARMA    | 91 ABC STREET    | 25  | 1991-08-19   |
|          2 | ARYA RAJPUT   | 77 XYZ STREET    | 21  | 1999-09-29   |
|          3 | GAURAV VERMA  | 101 YEMEN ROAD   | 29  | 2000-01-01   |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> |
```

Retrieving data

Important Points About SQL CREATE INDEX Statement

- **The CREATE INDEX statement** – This statement is used to create indexes in tables to retrieve data more quickly.
- **Indexes are used to improve the efficiency of searches for data** – They help in presenting data in a specific order and enhance performance when joining tables.
- **Increasing the number of indexes in a database can impact overall system performance** – Therefore, indexes should be created on columns that will be frequently searched to balance performance and resource usage.
- **The CREATE UNIQUE INDEX statement** – This creates a unique index on a table where duplicate values are not allowed, ensuring data integrity.
- **The DROP INDEX statement** – This statement is used to delete an index from a table in SQL when it is no longer needed.

SQL Create Index – FAQs

Why do we need to create an index?

We create indexes for faster retrieving of data from tables.

How do we create an index?

We create indexes using CREATE INDEX command.

Can we add the same index in more than one column?

Yes, we can add the same index in any number of columns of the table.