Indexes & Views

Indexes

- A database index is a data structure that improves the speed of operations in a table. Indexes can be created using one or more columns, providing the basis for both rapid random lookups and efficient ordering of access to records.

- While creating index, it should be taken into consideration which all columns will be used to make SQL queries and create one or more indexes on those columns.

- Practically, indexes are also a type of tables, which keep primary key or index field and a pointer to each record into the actual table. The users cannot see the indexes, they are just used to speed up queries and will be used by the Database Search Engine to locate records very fast.

- The INSERT and UPDATE statements take more time on tables having indexes, whereas the SELECT statements become fast on those tables. The reason is that while doing insert or update, a database needs to insert or update the index values as well.

- When a table is created with a primary key or unique key, it automatically creates a special index named PRIMARY. We called this index as a clustered index. All indexes other than PRIMARY indexes are known as a non-clustered index or secondary index.

Indexes

CREATE INDEX Statement

```
CREATE INDEX index name ON table
name (column names)
```

DROP INDEX Statement

```
DROP INDEX index name ON table
name
```

SHOW INDEXES Statement

```
SHOW INDEXES
FROM table name
```

If we want to see how many rows did the SELECT statement take to execute, use below statement.

```
EXPLAIN SELECT * FROM table
name
WHERE index col name = value;
```

Unique Index

- To enforce the uniqueness value of one or more columns, you often use the PRIMARY KEY constraint. However, each table can have only one primary key. Hence, if you want to have a more than one column or a set of columns with unique values, you cannot use the primary key constraint.

- Luckily, MySQL provides another kind of index called UNIQUE index that allows you to enforce the uniqueness of values in one or more columns. Unlike the PRIMARY KEY index, you can have more than one UNIQUE index per table.

CREATE UNIQUE INDEX Statement

```
CREATE UNIQUE INDEX index name  ON table name (index column1, index column2,...);
```

Views

- A view is a database object that has no values. Its contents are based on the base table.
- It contains rows and columns similar to the real table.
- In MySQL, the View is a virtual table created by a query by joining one or more tables. It is operated similarly to the base table but does not contain any data of its own.
- The View and table have one main difference that the views are definitions built on top of other tables (or views). If any changes occur in the underlying table, the same changes reflected in the View also.

CREATE VIEW Statement

```
CREATE [OR REPLACE] VIEW view name AS
SELECT columns FROM tables
[WHERE conditions];
```

ALTER VIEW Statement

```
ALTER VIEW view name AS
SELECT columns FROM table
WHERE conditions;
```

DROP VIEW Statement

```
DROP VIEW [IF EXISTS] view name;
```