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PostgreSQL

Lesson 5: PostgreSQL - Indexes and Views

Lesson Objectives

In this lesson, you will learn about:
- Indexes
- Views

Indexes

- Indexes are special look up tables that the database search engine can use to speed up data retrieval

- Index in a database is just like an index at the back of a book

- E.g.. If we have to reference all pages in a book that discuss a certain topic, we first refer to the index, which lists all topics alphabetically and are then referred to one or more specific page numbers

- Index helps speed up select queries and WHERE clauses, but at the same time it can slow down data input.

- Creating and dropping indexes have no effect on data

- While creating index we can specify the table and column to index on

CREATE INDEX emp_idx ON employee(depno);

Unique Index and Implicit Indexes

- Unique indexes are used for performance and for data integrity
- Unique indexes do not allow any duplicate values to be inserted in a table

> *CREATE UNIQUE INDEX my_idx ON table_name(depno);*

- IMPLICIT Indexes
- Implicit indexes are those which are created automatically when an object is created
- Implicit indexes are automatically created for primary key constraints and Unique constraints

Important points about Indexes

- Indexes should not be used for:
    - small tables
    - Tables that have frequent, large batch update or insert operations
    - On columns that contain high number of NULL values
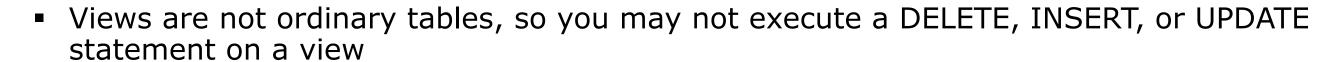   - Columns that are frequently manipulated

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Views

- View is like pseudo table, but it is appears as ordinary table
- A view can represent a subset of underlying table
- A view can represent joined table
- Views are assigned separate permissions, so we can restrict table access so that users see only specific rows or columns of table
- A view can contain some or all rows from one or more tables
- Views, allow users to do the following:
  - Structure data in a way that users or classes of users find natural or intuitive
  - Restrict access to the data such that a user can only see limited data instead of complete table
  - Summarize data from various tables which can be used to generate reports

Views

- Views are not ordinary tables, so you may not execute a DELETE, INSERT, or UPDATE statement on a view

- Create view

```
CREATE VIEW emp_vu

AS

Select empid,name,deptno

From employee;
```

```
Select * from emp_vu;
```

Lab

Lab 5

Summary

In this lesson, you have learn about:

- Indexes are created to improve performance of the query
- Unique indexes are created on unique key and primary key
- Views are virtual tables that get data from base table
- Views can be used to restrict data, abstract complex queries and for security purpose

Summary

Review Question

Question 1: Which of the following constraints create implicit indexes?

- Primary key
- Unique key
- Not null
- Foreign key

Question 2: We can perform DML operations on all views.

- TRUE/FALSE

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