

INDEXES

Indexes

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

An index helps speed up SELECT queries and WHERE clauses, but it slows down data input, with UPDATE and INSERT statements. Indexes can be created or dropped with no effect on the data.

The CREATE INDEX Command:

```
CREATE INDEX index_EID ON table_EID (column_EID);
```

Composite Indexes:

```
CREATE INDEX index_EID on table_EID (column1, column2);
```

Implicit Indexes: Implicit indexes are indexes that are automatically created by the database server when an object is created. Indexes are automatically created for primary key constraints and unique constraints.

DROP INDEX Command:

```
DROP INDEX index_EID ON table_EID;
```

SQL VIEWS

VEWS

A view is nothing more than a SQL statement that is stored in the database with an associated ID.

A view can contain all rows of a table or select rows from a table. A view can be created from one or many tables which depends on the written SQL query to create a view.

Views which are kind of virtual tables, 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 see and (sometimes) modify exactly what they need and no more.
- Summarize data from various tables which can be used to generate reports.

VEWS

```
CREATE VIEW view_EID AS  
(SELECT column1, column2.....  
FROM table_EID  
WHERE [condition]  
);
```

The WITH CHECK OPTION:

The WITH CHECK OPTION is a CREATE VIEW statement option. The purpose of the WITH CHECK OPTION is to ensure that all UPDATE and INSERTs satisfy the condition(s) in the view definition.

```
CREATE VIEW view_EID AS  
SELECT column1, column2.....  
FROM table_EID  
WHERE [condition]  
WITH CHECK OPTION  
;
```

Updating a Views

A view can be updated under certain conditions:

- The SELECT clause may not contain the keyword DISTINCT.
- The SELECT clause may not contain summary functions.
- The SELECT clause may not contain set operators.
- The SELECT clause may not contain an ORDER BY clause.
- The FROM clause may not contain multiple tables.
- The WHERE clause may not contain subqueries.
- The query may not contain GROUP BY or HAVING.
- Calculated columns may not be updated.
- All NOT NULL columns from the base table must be included in the view in order for the INSERT query to function.

Dropping Views

```
DROP VIEW view_EID;
```

SQL HAVING CLAUSE

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The HAVING clause enables we to specify conditions that filter which group results appear in the final results

The WHERE clause places conditions on the selected columns, whereas the HAVING clause places conditions on groups created by the GROUP BY clause

The following is the position of the HAVING clause in a query

```
SELECT  
FROM  
WHERE  
GROUP BY  
HAVING  
ORDER BY
```

SQL HAVING CLAUSE

The HAVING clause must follow the GROUP BY clause in a query and must also precede the ORDER BY clause if used.

The following is the syntax of the SELECT statement, including the HAVING clause:

```
SELECT column1, column2  
FROM table1, table2  
WHERE [ conditions ]  
GROUP BY column1, column2  
HAVING [ conditions ]  
ORDER BY column1, column2
```



Time to Think!!

Create a View for the below queries:

From the employee table, we need to see the total salary as “TOTAL COST” for each department arranged in the descending order of total salary .

Also just show only those departments where “TOTAL COST” is greater than 50000.

ASSIGNMENT



ASSIGNMENT – 6

- 1) CREATE A VIEW EMP_SAL_DETAILS TO GET EID NAME DOJ DEPT DESI SALARY AS BASIC. ALSO CALCULATE HRA (15% OF BASIC), PF (9% OF BASIC), NET(BASIC+HRA+PF), GROSS(NET-PF).
- 2) CREATE A VIEW TO DISPLAY EID,NAME, DOJ, DESI, DEPT OF ALL THE MANAGERS JOINED IN 2019.
- 3) IN THE INVENTORY STRUCTURE GENERATE A VIEW BILL. IT SHOULD DISPLAY OID,ODATE,CNAME,ADDRESS,PHONE,PDESC, PRICE, OQTY, AMOUNT

SQL FUNCTIONS

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- **COUNT** Function - The SQL Server COUNT aggregate function is used to count the number of rows in a database table.
- **MAX** Function - The SQL Server MAX aggregate function allows to select the highest (maximum) value for a certain column.
- **MIN** Function - The SQL Server MIN aggregate function allows to select the lowest (minimum) value for a certain column.
- **AVG** Function - The SQL Server AVG aggregate function selects the average value for certain table column.
- **SUM** Function - The SQL Server SUM aggregate function allows selecting the total for a numeric column.
- **SQRT** Function - This is used to generate a square root of a given number.
- **RAND** Function - This is used to generate a random number using SQL command.
- **CONCAT** Function - This is used to concatenate multiple parameters to a single parameter.

SQL STRING FUNCTIONS

- ASCII()** Ascii code value will come as output for a character expression..
- CHAR()** Character will come as output for given Ascii code or integer.
- CHARINDEX()** Starting position for given search expression will come as output in a given string expression. EX: Select CHARINDEX('G', 'KING')
- LEFT()** Left part of the given string till the specified number of characters
- RIGHT()** Right part of the given string till the specified number of characters.
- LEN()** Number of characters will come as output for a given string expression
- LOWER()** Lowercase string will come as output for a given string data.
- UPPER()** Uppercase string will come as output for a given string data.

SQL STRING FUNCTIONS

SUBSTRING() Part of a string based on the start position value and length value.

Ex: Select SUBSTRING ('WORLD', 1,3)

REPLACE() String expression will come as output for a given string data after replacing all occurrences of specified character with specified character.

Ex: Select REPLACE('INDIA', 'I', 'K')

REVERSE() Reverse string expression will come as output for a given string data

STUFF() String expression will come as output for a given string data after replacing from starting character till the specified length with specified character.

Ex Select STUFF('ABCDEFGH', 2,4,'IJK')