SQL INTERVIEW QUESTION DAY 2

WHAT IS AN INDEX? WHY WOULD YOU USE THAT

Index is a database objects that improves the speed of retrieval

Imagine you have a database for an online bookstore and you have named the table as Books

Knows the table Books has the following columns

Book ID

Title

Author

Published Year

Price

Now for example you have need to search for the Title: 1984

You can use the following query:

```
Select * from Books where Title =”1984”;
```

(This will be a slow process)

Now if we add index in it and then run it

```
Create INDEX title on BOOKS(Title);
```

So this will showcase the result faster then the above first query

WHAT IS PRIMARY KEY

Primary key is unique value

Ensure each records is unique

Cannot contain null values

Provide a way to established relationship between tables (foreign keys)

WHAT IS SUBQUERY, HOW DOES IT DIFFER FROM JION

A query nested inside another query, it can return a single value or a set of values

A join combines rows from two or more tables based on related columns, executed in a single query

NORMALIZATION? NAME THE DIFFERENT NORMAL FORMS

Normalization is a process of organizing data to reduce redundancy and improve data integrity

Normal Forms:

Ensure that each column contain only atomic value (individual value) and no repeating groups of data

For example:

If you have a table where one column lists multiple phone numbers for a customer:

lua Copy code

```
| CustomerID | Name     | PhoneNumbers          |
|------------|----------|-----------------------|
| 1          | John Doe | 123-4567, 987-6543    |
```

Then INF (first normal form)

1NF Transformation:

lua Copy code

```
| CustomerID | Name     | PhoneNumber |
|------------|----------|-------------|
| 1          | John Doe | 123-4567    |
| 1          | John Doe | 987-6543    |
```

Explain

- Each row now contains only one phone number

For example here the John Doe has 2 number so both the number are given in 1 column

Therefore the two numbers can be given in 2 rows

2NF: a partial dependency happens when a column depends on just part of primary key

Student Name:

Course Name:

For example Student Name is dependent on student id and student name

Course name is dependent on course id

That basically means it is partial difference

That basically means that second normal forms works on making sure that the information is dependent on primary key and not just part of it

3RD NORMAL FORM (3NF)

Basically its showcase that non key element should be dependent on primary key and no other non-key column , This basically means that if there are 3 columns student , instructor and course then instructor number should be dependent on instructor and not course

WHAT ARE ACID PROPERTIES IN SQL

1. Atomicity: transaction should be meaningful, either all operation should success or not a single one

2. Durabiity: transaction happens even in state of system failure

3. Isolation: transaction operates independently, modification made should be showcased only after it is done and not before that

4. Consistency: basically meanings that all the necessary rules should be followed and transaction moves correctly

WHAT ARE TYPES OF SQL COMMANDS

DDL (data definition language): create, alter, and drop

DML (data manipulation language): select, insert, update, delete

DCL (Data control language): grant and revoke

TCL (Transaction control language): commit and rollback

DIFFERENCE BETWEEN UNION AND UNION ALL

Union: combines result of two select and removes duplicate

Union all: combines result of more than two and does not remove duplicate

Difference BETWEEN PRIMARY AND UNIQUE KEY

PRIMARY KEY: unique value, one in every table, does not allow null

UNIQUE KEY: unique value, but do allow one null in every table

WHAT IS DIFFERENCE BETWEEN DATABASE AND SCHEMA

Database: collection of tables and related objects that are managed and accesses as a unit

Schema: A Schema is a collection of database objects (tables, views and procedure)

WHAT IS DIFFERENCE BETWEEN GROUP BY AND ORDER BY

Group by: group some values, typically to apply some aggregate function

Order by: Sort the result query either in ascending or descending order

WHAT IS DIFFERENCE BETWEEN SQL AND NO SQL

Sal is relational and no sq. is non – relational

WHAT ARE DIFFERENT TYPES OF INDEXES IN SQL

Clustered index: physically reorders the data rows in table based and column fields

Non clustered index: creates a separates structure from the data rows, containing index key column and row locators

Unique index: ensure uniqueness in index columns

Composite index:

CORRELATED AND NON CO – RELATED SUB QUERY

NON CORELATED: EXECUTED Independent from the outer query and run only once

CO-Related: Depends on the outer query for running and once the outer query is run it is also get executed

WHAT IS THE USE OF COLAESCE FUNCTION

The coalesce function returns the first non – null expression among its requirements

SELECT COLAESCE (column 1, column2,'no value') AS result FROM TABLE1;

WHAT IS MATERIALEZED VIEW?

Materialized views stores the result of complex query physically such as mathematical calculation of joins and aggregations

SQL PARTIONING

Involves dividing a larger table into small and manageable pieces, still being treated as a single table

For example a table can be portioned by date range, monthly / weekly etc.

EXPLAIN IN SQL:

Provide information about how sq. queries are executed, which can help in optimizing query performance

WHAT IS THE MEANING OF GHOST RECORDS

A ROW WHICH IS PRESENT IN THE TABLE BUT ITS IS LOGICALLY DELETED, SUCH ARE BUGS OR INCONSISTENCY IN DATA SUCH RECORDS ARE CALLED AS GHOST RECORDS