Q What is the difference between primary key and unique constraints?

The primary key cannot have NULL value, the unique constraints can have NULL values. There is only one primary key in a table, but there can be multiple unique constrains.

Q Why is the use of DBMS recommended? Explain by listing some of its major advantages?

Some of the major advantages of DBMS are as follows:

Controlled Redundancy: DBMS supports a mechanism to control the redundancy of data inside the database by integrating all the data into a single database and as data is stored in only one place, the duplicity of data does not happen.

Data Sharing: Sharing of data among multiple users simultaneously can also be done in DBMS as the same database will be shared among all the users and by different application programs.

Backup and Recovery Facility: DBMS minimizes the pain of creating the backup of data again and again by providing a feature of 'backup and recovery' which automatically creates the data backup and restores the data whenever required.

Enforcement of Integrity Constraints: Integrity Constraints are very important to be enforced on the data so that the refined data after putting some constraints are stored in the database and this is followed by DBMS.

Independence of Data: It simply means that you can change the structure of the data without affecting the structure of any of the application programs.

Q. What is Identity?

Identity (or AutoNumber) is a column that automatically generates numeric values. A start and increment value can be set, but most DBA leave these at 1. A GUID column also generates numbers; the value of this cannot be controlled. Identity/GUID columns do not need to be indexed.

Q. What is a view in SQL? How to create a view?

A view is a virtual table based on the result-set of an SQL statement. We can create it using create view syntax.

CREATE VIEW view_name AS

SELECT column_name(s)

FROM table_name

WHERE condition

Q. What are the uses of view?

1. Views can represent a subset of the data contained in a table; consequently, a view can limit the degree of exposure of the underlying tables to the outer world: a given user may have permission to query the view, while denied access to the rest of the base table.

2. Views can join and simplify multiple tables into a single virtual table.

3. Views can act as aggregated tables, where the database engine aggregates data (sum, average, etc.) and presents the calculated results as part of the data.

4. Views can hide the complexity of data.

5. Views take very little space to store; the database contains only the definition of a view, not a copy of all the data which it presents.

6. Depending on the SQL engine used, views can provide extra security.

Q. What is a Trigger?

A Trigger is a code associated with insert, update or delete operations. The code is executed automatically whenever the associated query is executed on a table. Triggers can be useful to maintain integrity in the database.

Q. What is a stored procedure?

A stored procedure is like a function that contains a set of operations compiled together. It contains a set of operations that are commonly used in an application to do some common database tasks.

Q. What is the difference between Trigger and Stored Procedure?

Unlike Stored Procedures, Triggers cannot be called directly. They can only be associated with queries.

Q. What are clustered and non-clustered Indexes?

Clustered indexes are the index according to which data is physically stored on a disk. Therefore, only one clustered index can be created on a given database table.

Non-clustered indexes don't define the physical ordering of data, but logical ordering. Typically, a tree is created whose leaf point to disk records. B-Tree or B+ tree are used for this purpose.

Q. What is CLAUSE in SQL?

A clause in SQL is a part of a query that lets you filter or customize how you want your data to be queried to you.

Q. What is a Live Lock?

Livelock situation can be defined as when two or more processes continually repeat the same interaction in response to changes in the other processes without doing any useful work These processes are not in the waiting state, and they are running concurrently. This is different from a deadlock because in a deadlock all processes are in the waiting state.

Q. What is QBE?

Query-by-example represents a visual/graphical approach for accessing information in a database through the use of query templates called skeleton tables. It is used by entering example values directly into a query template to represent what is to be achieved. QBE is used by many database systems for personal computers. QBE is a very powerful facility that gives the user the capability to access the information a user wants without the knowledge of any programming language. Queries in QBE are expressed by skeleton tables. The QBE data-manipulation language has two distinctive features: 1. Unlike most query languages and programming languages, QBE has a two- dimensional syntax. Queries look like tables.

Q. Why are cursors necessary in embedded SQL?

A cursor is an object used to store the output of a query for row-by-row processing by the application programs. SQL statements operate on a set of data and return a set of data. On other hand, host language programs operate on a row at a time. The cursors are used to navigate through a set of rows returned by an embedded SQL SELECT statement. A cursor can be compared to a pointer.

Q.What are the main differences between Primary key and Unique Key?

Given below are few differences:

The main difference between the Primary key and the Unique key is that the Primary key can never have a null value while the Unique key may consist of a null value.

In each table, there can be only one primary key while there can be more than one unique key in a table.

Q.What is the use of the DROP command and what are the differences between DROP, TRUNCATE and DELETE commands?

DROP command is a DDL command which is used to drop/delete the existing table, database, index, or view from the database.

The major difference between DROP, TRUNCATE and DELETE commands are:

DROP and TRUNCATE commands are the DDL commands which are used to delete tables from the database.

And when we make use of a DROP command, the tables get deleted permanently all the privileges and indexes that are related to the table also get deleted. This operation cannot be rolled back and so should be used only when necessary.

However in case of TRUNCATE, only the data stored in a table is deleted and the structure of the table is preserved and you can re-insert data by the use of “INSERT INTO clause”. It can be rolled back until the commit has been made.

DELETE command, on the other hand, is a DML Command which is used to delete rows from the table and this can be rolled back, however its considered slower than truncate. Using the delete command, we can delete 1 or more specific rows from the table.

Q.What is the main difference between UNION and UNION ALL?

UNION and UNION ALL are used to join the data from 2 or more tables but UNION removes duplicate rows and picks the rows which are distinct after combining the data from the tables whereas UNION ALL does not remove the duplicate rows, it just picks all the data from the tables.

Q. Explain Entity, Entity Type, and Entity Set in DBMS?

The entity is an object, place, or thing which has its independent existence in the real world and about which data can be stored in a database. For Example, any person, book, etc.

Entity Type is a collection of entities that have the same attributes. For Example, the STUDENT table contains rows in which each row is an entity holding the attributes like name, age, and id of the students, hence STUDENT is an Entity Type that holds the entities having the same attributes.

Entity Set is a collection of entities of the same type. For Example, A collection of the employees of a firm.

Q. What do you mean by Entity type extension?

Compilation of similar entity types into one particular type which is grouped together as an entity set is known as entity type extension.

Q. What are temporary tables? When are they useful?

Temporary tables exist solely for a particular session, or whose data persists for the duration of the transaction. The temporary tables are generally used to support specialized rollups or specific application processing requirements. Unlike a permanent table, space is not allocated to a temporary table when it is created. Space will be dynamically allocated for the table as rows are inserted. The CREATE GLOBAL TEMPORARY TABLE command is used to create a temporary table in Oracle.

Q.Explain different types of failures that occur in the Oracle database.

Types of Failures – In the Oracle database following types of failures can occur:

1. Statement Failure
2. Bad data type
    a. .Insufficient space
3. Insufficient Privileges (e.g., object privileges to a role)
4. User Process Failure
    a. The user performed an abnormal disconnect
    b. The user's session was abnormally terminated
    c. The user's program raised an address exception
5. User Error
    a. The user drops a table
    b. User damages data by modification
6. Instance Failure
7. Media Failure
    a. The user drops a table
    b. User damages data by modification
8. Alert Logs
    a. Records informational and error messages
    b. All Instance startups and shutdowns are recorded in the log

Q. What is the main goal of RAID technology?

RAID stands for Redundant Array of Inexpensive (or sometimes "Independent")Disks.

RAID is a method of combining several hard disk drives into one logical unit (two or more disks grouped together to appear as a single device to the host system). RAID technology was developed to address the fault-tolerance and performance limitations of conventional disk storage. It can offer fault tolerance and higher throughput levels than a single hard drive or group of independent hard drives. While arrays were once considered complex and relatively specialized storage solutions, today they are easy to use and essential for a broad spectrum of client/server applications.

Q. There is a table where only one row is fully repeated. Write a Query to find the Repeated row

Name Section

abc CS1

bcd CS2

abc CS1

In the above table, we can find duplicate row using below query.

SELECT name, section FROM tbl

GROUP BY name, section

HAVING COUNT(*) > 1

Q. Query to find 2nd higheSELECT max(salary) FROM EMPLOYEES WHERE salary IN

(SELECT salary FROM EMPLOYEEs MINUS SELECT max(salary)

FROM EMPLOYEES);

OR

SELECT max(salary) FROM EMPLOYEES WHERE

salary <> (SELECT max(salary) FROM EMPLOYEES);st salary of an employee?

Write a trigger to update Emp table such that, If an updation is done in Dep table then salary of all employees of that department should be incremented by some amount (updation) Assuming Table name are Dept and Emp, trigger can be written as follows:

CREATE OR REPLACE TRIGGER update_trig

AFTER UPDATE ON Dept

FOR EACH ROW

DECLARE

CURSOR emp_cur IS SELECT * FROM Emp;

BEGIN

FOR i IN emp_cur LOOP

IF i.dept_no = :NEW.dept_no THEN

DBMS_OUTPUT.PUT_LINE(i.emp_no); -- for printing those

UPDATE Emp -- emp number which are

SET sal = i.sal + 100 -- updated

WHERE emp_no = i.emp_no;

END IF;

END LOOP;

END;

Q. Why we cannot use WHERE clause with aggregate functions like HAVING ? The difference between the having and where clause in SQL is that the where clause canNOT be used with aggregates, but the having clause can.

Q. What's the difference between materialized and dynamic view?

Materialized views

Disk-based and are updated periodically based upon the query definition.

A materialized table is created or updated infrequently and it must be synchronized with its associated base tables.

Dynamic views

Virtual only and run the query definition each time they are accessed.

A dynamic view may be created every time that a specific view is requested by the user.

Q. What is embedded and dynamic SQL?

Static (embedded) SQL	**Dynamic (interactive) SQL**
In static SQL how database will be accessed is predetermined in the embedded SQL statement.	In dynamic SQL, how database will be accessed is determined at run time.
It is more swift and efficient.	It is less swift and efficient.
SQL statements are compiled at compile time.	SQL statements are compiled at run time.
Parsing, validation, optimization, and generation of application plan are done at compile time.	Parsing, validation, optimization, and generation of application plan are done at run time.
It is generally used for situations where data is distributed uniformly.	It is generally used for situations where data is distributed non-uniformly.
EXECUTE IMMEDIATE, EXECUTE and PREPARE statements are not used.	EXECUTE IMMEDIATE, EXECUTE and PREPARE statements are used.
It is less flexible.	It is more flexible.

Q. What is the difference between CHAR and VARCHAR?

CHAR and VARCHAR differ in storage and retrieval.

CHAR column length is fixed while VARCHAR length is variable.

The maximum no. of characters CHAR data type can hold is 255 characters while VARCHAR can hold up to 4000 characters.

CHAR is 50% faster than VARCHAR.

CHAR uses static memory allocation while VARCHAR uses dynamic memory allocation.