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Oracle Book Based Extra Questions

1: Using Single-Row Functions to Customize Output

1. What is SQL function? Why we use function?

Functions are a very powerful feature of SQL. It is used to do the following:

- Perform calculations on data
- Modify individual data items
- Manipulate output for groups of rows
- Format dates and numbers for display
- Convert column data types

2. What is single-Row Functions

single-Row Functions functions operate on single rows only and return one result per row. There are different types of single-row functions. They are:

- Character
- Number
- Date
- Conversion
- General

3. What is Multiple-Row Functions

Functions can manipulate groups of rows to give one result per group of rows. These functions are known as *group functions*

4. What should be a function argument?

An argument can be one of the following:

- User-supplied constant
- Variable value
- Column name
- Expression

5. What is Character Functions? How they categorized?

Single-row character functions accept character data as input and can return both character

and numeric values. Character functions can be divided into the following:

- Case-manipulation functions
- Character-manipulation functions

6. What is DUAL Table

The DUAL table is owned by the user SYS and can be accessed by all users. It contains one column, DUMMY, and one row with the value X. The DUAL table is useful when you want to return a value once only (for example, the value of a constant, pseudocolumn, or expression that is not derived from a table with user data). The DUAL table is generally used for SELECT clause syntax completeness, because both

SELECT and FROM clauses are mandatory, and several calculations do not need to select from actual tables.

7. Describe Oracle Date Format

The Oracle database stores dates in an internal numeric format, representing the century, year, month, day, hours, minutes, and seconds. The default display and input format for any date is DD-MON-RR. Valid Oracle dates are between January 1, 4712 B.C., and December 31, 9999 A.D.

8. What is SYSDATE Function

SYSDATE is a date function that returns the current database server date and time. You can use SYSDATE just as you would use any other column name. For example, you can display the current date by selecting SYSDATE from a table. It is customary to select SYSDATE from a dummy table called DUAL.

9. What is Implicit Data Type Conversion

If the Oracle server can convert the data type of the value used in the assignment to that of the assignment target. For example, the expression hire_date > '01-JAN-90' results in the implicit conversion from the string '01-JAN-90' to a date.

10. Difference between Coalesce and nvl

The advantage of the COALESCE function over the NVL function is that the COALESCE function can take multiple alternate values.

If the first expression is not null, the COALESCE function returns that expression; otherwise, it does a COALESCE of the remaining expressions.

Chapter-4

Reporting Aggregated Data Using the Group Functions

- **What are Group Functions?**

Ans: Group Functions operate on sets of rows to give one result per group. These sets may comprise the entire table or the table split into groups.

- **Name the type of Group Functions.**

Ans:

- AVG
- COUNT
- MAX
- MIN
- STDDEV
- SUM
- VARIANCE

- **Write down the guideline for Group functions.**

Ans: Guidelines for Using Group Functions:

- DISTINCT makes the function consider only non-duplicate values; ALL makes it consider every value, including duplicates. The default is ALL and therefore does not need to be specified.
- The data types for the functions with an expr argument may be CHAR, VARCHAR2, NUMBER, or DATE.
- All group functions ignore null values. To substitute a value for null values, use the NVL, NVL2, or COALESCE functions.

- **What is the function of HAVING clause?**

Ans: HAVING clause specifies which groups are to be displayed returned by group function. Actually it gives restriction like WHERE clause.

6. What is the function of DISTINCT Keyword

Use the DISTINCT keyword to suppress the counting of any duplicate values in a column.

7. How Group Functions deal with Null Values

All group functions ignore null values in the column.

The NVL function forces group functions to include null values.

- Displaying Data from Multiple Tables – 5 :

Q1.How many **Types of join** have? (5-4)

- Cross Join
- Natural Joins
- Using Clause
- Full (of two-side) Outer Joins
- Arbitrary Join Conditions for Outer Joins

Q2.Explain **Inner versus Outer Joins.** (5-22)

- Joining tables with the NATURAL JOIN, USING, or ON clause results in an inner join. Any unmatched rows are not displayed in the output. To return the unmatched rows, we can use an outer join. An outer join returns all rows that satisfy the join condition and also returns some or all of those rows from one table for which no rows from the other table satisfy the join condition.

There are three types of outer joins:

- LEFT OUTER
- RIGHT OUTER
- FULL OUTER

Q3.Define **Cartesian Products.** (5-26)

- When a join condition is invalid or omitted completely, the result is a Cartesian product, in which all combination of rows is displayed. All rows in the first table are joined to all rows in the second table.

- A Cartesian product tends to generate a large number of rows, and the result is rarely useful. We should always include a valid join condition unless we have a specific need to combine all rows from all tables.
- Cartesian products are useful for some tests when we need to generate a large number of rows to simulate a reasonable amount of data.

6: Using Subqueries to Solve Queries

Q.1. In which SQL clauses a sub-query can be placed?

Ans: We can place a sub-query in a number of SQL clauses, including the following:

- WHERE clause
- HAVING clause
- FROM clause

Q.2. How many types of sub-query are available in SQL ?

Ans: Two types of sub-query are available in SQL:

- Single-row sub-query;
- Multiple-row sub-query:

Q.3. What are the single-row sub-query and multiple-row sub-query ?

Ans:

- Single-row sub-query: Queries that return only one row from the inner SELECT statement.
- Multiple-row sub-query: Queries that return more than one row from the inner SELECT statement.

Chapter 7 : Set Operators

- **What are the names of set operators? Why do we use these?**

Ans: The name of set operators are UNION, UNION ALL, INTERSECT, MINUS.

The set operators combine the results of two or more component queries into one result.

- **What is the operation of UNION Operator?**

Ans: The UNION operator returns all rows either common or not from multiple tables that are selected by either query. If records that occur in both tables are identical, the records are displayed only once & eliminate any duplicate rows.

- **What is the operation of UNION ALL Operator?**

Ans: The UNION ALL operator also returns all rows from multiple tables that are selected by either query. But, it returns all duplicate rows without eliminating which are identical of both tables. So, the DISTINCT keyword cannot be used here.

- **What is the operation of INTERSECT Operator?**

Ans: The INTERSECT operator returns only all common rows from multiple tables that are selected by either query or it displays only identical rows from both tables & eliminate non- identical rows.

- **What is the operation of MINUS Operator?**

Ans: The MINUS operator returns rows in the first query that are not present in the second query.

8: Manipulating Data

1. Methods for Inserting Null Values

Implicit: Omit the column from the column list.

Explicit: Specify the NULL keyword in the VALUES list; specify the empty string ("") in the VALUES list for character strings and dates.

- **Rules of Copying Rows from Another Table**

- Write your INSERT statement with a subquery
- Do not use the VALUES clause.
- Match the number of columns in the INSERT clause to those in the subquery.

Syntax: `INSERT INTO table [column (, column)] subquery;`

- What is the function of DELETE statement?
- Specific rows are deleted if you specify the WHERE clause

Syntax: DELETE FROM departments

WHERE department_name = 'Finance';

1 row deleted.

- All rows in the table are deleted if you omit the WHERE clause

Syntax: DELETE FROM copy_emp;

22 rows deleted.

4. Define TRUNCATE Statement

A more efficient method of emptying a table is with the TRUNCATE statement.

You can use the TRUNCATE statement to quickly remove all rows from a table or cluster.

5. Advantages of COMMIT

and ROLLBACK Statements

With COMMIT and ROLLBACK statements, you can:

- Ensure data consistency
- Preview data changes before making changes permanent
- Group logically related operations

6. When Does a Transaction Start and End?

- A COMMIT or ROLLBACK statement is issued.
- A DDL statement, such as CREATE, is issued.
- A DCL statement is issued.
- The user exits iSQL*Plus.
- A machine fails or the system crashes.

A *transaction* consists of a collection of DML statements that form a logical unit of work.

7. Define COMMIT and ROLLBACK

COMMIT: Ends the current transaction by making all pending data changes permanent

ROLLBACK: ROLLBACK ends the current transaction by discarding all pending data changes.

8. Advantages of COMMIT and ROLLBACK Statements?

With COMMIT and ROLLBACK statements, you can:

- Ensure data consistency
- Preview data changes before making changes permanent
- Group logically related operations

9. An automatic commit occurs?

- An automatic commit occurs under the following circumstances:

– DDL statement is issued

- DCL statement is issued
 - Normal exit from iSQL*Plus, without explicitly issuing COMMIT or ROLLBACK statements
10. State of the data before COMMIT or ROLLBACK
- The previous state of the data can be recovered.
 - The current user can review the results of the DML operations by using the SELECT statement.
 - Other users *cannot* view the results of the DML statements by the current user.
 - The affected rows are *locked*; other users cannot change the data in the affected rows.

11. State of the data after COMMIT

- Data changes are made permanent in the database.
- The previous state of the data is permanently lost.
- All users can view the results.
- Locks on the affected rows are released; those rows are available for other users to manipulate.
- All savepoints are erased.

12. State of the data after ROLLBACK

Discard all pending changes by using the ROLLBACK statement:

- Data changes are undone.
- Previous state of the data is restored.
- Locks on the affected rows are released.

13. What is SAVEPOINT statement?

You can create a marker in the current transaction by using the SAVEPOINT statement, which divides the transaction into smaller sections. You can then discard pending changes.

Up to that marker by using the ROLLBACK TO SAVEPOINT statement.

9: Using DDL Statements to Create and Manage Tables

- **What are the data types allowed in a table?**
Answer: CHAR, VARCHAR2, NUMBER, DATE, RAW, LONG and LONG RAW.
- **Describe Datetime Data Types**
 - **TIMESTAMP:**
Enables the time to be stored as a date with fractional seconds. There are several variations of this data type.
 - **INTERVAL YEAR TO MONTH:**
Enables time to be stored as an interval of years and months. Used to represent the difference between two datetime values in which the only significant portions are the year and month.
 - **INTERVAL DAY TO SECOND:**

Enables time to be stored as an interval of days, hours, minutes, and seconds. Used to represent the precise difference between two datetime values.

- **What are The Valid Constraint types?**

The following constraint types are valid:

- NOT NULL
- UNIQUE
- PRIMARY KEY
- FOREIGN KEY
- CHECK

- **What is the function of Dropping a Table?**

The DROP TABLE statement removes the definition of an Oracle table. When you

drop a table, the database loses all the data in the table and all the indexes associated with it.

Syntax

DROP TABLE *table*

Ques.1: What are database objects?

Ans.: An Oracle database can contain multiple data structures. The database objects are-

- Table: Stores data
- View: Subset of data from one or more tables
- Sequence: Generates numeric values
- Index: Improves the performance of some queries
- Synonym: Gives alternative names to objects.

Ques.2: What are Naming Rules?

Ans.: The rules of Table names and column names:

- Must begin with a letter
- Must be 1–30 characters long
- Must contain only A–Z, a–z, 0–9, _, \$, and #
- Must not duplicate the name of another object owned by the same user
- Must not be an Oracle server reserved word.

Ques.3.: How to create a table?

Ans.: To create a table, a user must have the CREATE TABLE privilege and a storage area in

which to create objects. The database administrator uses data control language statements to grant privileges to users.

```
CREATE TABLE dept  
(deptno    NUMBER(2),  
dname     VARCHAR2(14),  
loc       VARCHAR2(13),  
create_date DATE DEFAULT SYSDATE);
```

Ques.4.: What is Schema? Write down the objects of Schema?

Ans.: A schema is a collection of objects. Schema objects are the logical structures that directly refer to the data in a database.

Schema objects include tables, views, synonyms, sequences, stored procedures, indexes, clusters, and database links.

Ques.5.: What is constraints? Write the uses/functions of constraints?

Ans.: The Oracle server uses constraints to prevent invalid data entry into tables.

You can use constraints to do the following:

- Enforce rules on the data in a table whenever a row is inserted, updated, or deleted from that table. The constraint must be satisfied for the operation to succeed.
- Prevent the deletion of a table if there are dependencies from other tables
- Provide rules for Oracle tools, such as Oracle Developer

Ques.6.: Write down the name of the type of valid constraints?

Ans.: The following constraint types are valid:

- NOT NULL
- UNIQUE
- PRIMARY KEY
- FOREIGN KEY

– CHECK

Ques.7.: What is NOT NULL Constraint?

Ans.: The NOT NULL constraint ensures that the column contains no null values. Columns

without the NOT NULL constraint can contain null values by default. NOT NULL constraints must be defined at the column level.

Ques.8.: What is UNIQUE Constraint?

Ans.: A UNIQUE key integrity constraint requires that every value in a column or set of columns (key) be unique—that is, no two rows of a table can have duplicate values in a specified

column or set of columns. UNIQUE constraints can be defined at the column level or table level.

Ques.9.: What is PRIMARY KEY Constraint?

Ans.: The PRIMARY KEY constraint is a column or set of columns that uniquely identifies each row in a table. This constraint enforces uniqueness of the column or column combination and ensures that no column that is part of the primary key can contain a null value.

Ques.10.: What is FOREIGN KEY Constraint?

Ans.: The FOREIGN KEY (or referential integrity) constraint designates a column or combination of columns as a foreign key and establishes a relationship between a primary key or a unique key in the same table or a different table.

Ques.11.: What is CHECK Constraint?

Ans.: The CHECK constraint defines a condition that each row must satisfy. The condition can use the same constructs as query conditions, with the following exceptions:

- References to the CURRVAL, NEXTVAL, LEVEL, and ROWNUM pseudocolumns
- Calls to SYSDATE, UID, USER, and USERENV functions
- Queries that refer to other values in other rows

Ques.12.: What is ALTER TABLE Statement?

Ans.: After creating a table, user may need to change the table structure for any of the following reasons:

- Omitted a column.
- Column definition needs to be changed.
- Need to remove columns.

User can do this by using the ALTER TABLE statement.

Ques.13.:Write down the function of ALTER TABLE Statement.

Ans.: Use the ALTER TABLE statement to:

- Add a new column
- Modify an existing column
- Define a default value for the new column
- Drop a column

Ques.14.: What is droping a table?

Ans.: The DROP TABLE statement removes the definition of an Oracle table. When you drop a

table, the database loses all the data in the table and all the indexes associated with it.

Syntax:

DROP TABLE table

10: Creating Other Schema Objects

- **Write Database Objects ?**

Objects :

- Table : Basic unit of storage; composed of rows
- Index : Improves the performance of some queries
- View : Logically represents subsets of data from one or more tables
- Synonym : Gives alternative names to objects
- v. Sequence : Generates Sequence numeric values

2. What is View ? Write advantages of view.

View : A view is a logical table based on a table or another view. A view contains no data of its own but is like a window through which data from tables can be viewed or changed. It is stored as a SELECT statement in the data dictionary.

Advantages of Views:

- i. To restrict data access
- ii. To make complex queries easy
- iii. To provide data independence
- iv. To present different views of the same data

- **What is NEXTVAL and CURRVAL Pseudocolumns?**

NEXTVAL Pseudocolumns: The NEXTVAL pseudocolumn is used to extract successive sequence numbers from a specified sequence.

CURRVAL Pseudocolumns : The CURRVAL pseudocolumn is used to refer to a sequence number that the current user has just generated.

- **What is Index ? How can it Create ?**

Index : Indexes are database objects that we can create to improve the performance of some queries. Indexes can also be created automatically by the server when we create a primary key or unique constraint.

Ways :

- **Automatically:** A unique index is created automatically when you define a PRIMARY KEY or UNIQUE constraint in a table definition.
 - **Manually:** Users can create nonunique indexes on columns to speed up access to the rows.
-
- **When to Create an Index ?**

Create an Index :

- The column contains a wide range of values
- The column contains a large number of null values
- One or more columns are frequently used together in a WHERE clause or join condition
- The table is large and most queries are expected to retrieve less than 2% to 4% of the rows.

- **What are the Rules for Performing DML Operations on a View ?**

Rules : We cannot remove a row, modify data, add data if the view contains the following:

- Group functions
- A GROUP BY clause
- The DISTINCT keyword

- The pseudocolumn ROWNUM keyword
- Columns defined by expressions
- NOT NULL columns in the base tables that are not selected by the view.
- **Classify the view.How can retrieve data from view ?**

View : Veiw are two types. They are;

- **A simple view :** It derives data from only one table & contains no functions or groups of data. It can perform DML operations through the view
- **A complex view :** It derives data from many tables & contains functions or groups of data. It does not always allow DML operations through the view

Retrieving data from view :

```
SELECT *
FROM ialam_50;
```

11: Managing Objects with Data Dictionary Views

- **What is data dictionary?**

Answer: **Data dictionary** provides information that Oracle needs to perform its tasks. This information consists of definition, allocated and used storage size for database objects, default column values, integrity constraints, names of and privileges granted to users, auditing information and more.

- **What is a synonym?**

Answer: A synonym is an alias for a table, view, sequence or program unit.

- **How can we Add Comments to a Table?**

```
COMMENT ON TABLE employees
IS 'Employee Information';
```

- **Write the function of Data Access Using Views**

When you access data using a view, the Oracle server performs the following operations:

- It retrieves the view definition from the data dictionary table **USER_VIEWS**.
- It checks access privileges for the view base table.
- It converts the view query into an equivalent operation on the underlying base table or tables. In other words, data is retrieved from, or an update is made to, the base tables.

SQL FUNDAMENTALS 2

CHAPTER-1: CONTROLLING USER ACCESS

Q. What are the privileges a database administrator can have in Oracle?

A. An Oracle DBA can have the following types of privileges:

- Database security
 - System security
 - Data security
- System privileges
- Object privileges
- Schemas

MCQ: How many System Privileges are available in Oracle? – More than 100.

Q. What are the high-level system privileges a Database Administrator has?

A. The database administrator has high-level system privileges for tasks such as:
– Creating new users
– Removing users
– Removing tables
– Backing up tables

Q. What are the system privileges an Oracle application developer may have?

A. An application developer may have the following system privileges:
– Create session
– Create table
– Create sequence
– Create view
– Create procedure

Q. What is a Role?

A. The group of privileges a user enjoys defines a Role. Simply speaking, for example, a company director is regarded as a ‘role’ and his administrative powers can be considered as ‘privileges’.

CHAPTER-2: MANAGE SCHEMA OBJECTS

Q. What are the functions of ALTER TABLE statement?

A. The ALTER TABLE statement can:

- Add a new column
- Modify an existing column
- Define a default value for the new column
- Drop a column

Q. Write down the syntax of modifying a column in a table. What effects on the column may modification have?

A. `ALTER TABLE dept80
MODIFY (last_name VARCHAR2(30));`

A particular column's data type, size and default value can be changed through modification.

Q. What are the attributes or characteristics of Constraints?

A. Constraints can have the following attributes:

- Deferrable or not deferrable
- Initially deferred or initially immediate

Q. What is Cascade Constraints? What is the function of this clause?

A. The CASCADE CONSTRAINTS clause is used along with the DROP COLUMN clause. It drops all referential integrity constraints that refer to the primary and unique keys defined on the dropped columns. This clause also drops all multicolumn constraints defined on the dropped columns.

Q. Write down the syntax of Cascading Constraints.

A. `ALTER TABLE emp2
DROP COLUMN employee_id CASCADE CONSTRAINTS;
ALTER TABLE test1
DROP (pk, fk, col1) CASCADE CONSTRAINTS;`

Q. What are the process or ways of creating Indexes?

A. Index creation can be categorized in two main ways each of which contains two sub-categories:

Automatic

- Primary Key creation
- Unique Key creation

Manual

- Create Index statement
- Create Table statement

Q. Describe Function-based Indexes.

A. A function-based index is based on expressions. The index expression is built from table columns, constants, SQL functions, and user-defined functions.

Q. What is function of Flashback Table statement?

A. Flashback Table statement is a repair tool for accidental table modification. It restores a table to an earlier point in time. This statement is easy to use and fast executable.

Syntax example: `FLASHBACK TABLE emp2 TO BEFORE DROP;`

