SQL Assignment 5

1. **Explain how SQL Query keyword statements are executed in order.**
   Ans-

   - **SQL query keyword order as follows:-**
     FROM- Choose and join tables to get base data.
     WHERE- Filter the base data
     GROUP BY- Aggregates the base data.
     HAVING- Filters the aggregated data.
     SELECT- Return the final data.
     ORDER BY- Sort the final data.
     LIMIT- Limits the returned data to a row count.

2. **Explain the advantages of stored procedures and their syntax in relation to recompiling stored procedures.**
   Ans-

   Advantages:
   1. **Better Performance–** The procedure calls are quick and efficient as stored procedures are compiled once and stored in executable form. Hence the response is quick. The executable code is automatically cached, hence lowering the memory requirements.

   2. **Higher Productivity–** Since the same piece of code is used again and again so, it results in higher productivity.

   3. **Ease of Use–** To create a stored procedure, one can use any Java Integrated Development Environment (IDE). Then, they can be deployed on any tier of network architecture.

   4. **Scalability–** Stored procedures increase scalability by isolating application processing on the server.

   5. **Maintainability–** Maintaining a procedure on a server is much easier than maintaining copies on various client machines, this is because scripts are in one location.

   6. **Security–** Access to the Oracle data can be restricted by allowing users to manipulate the data only through stored procedures that execute with their definer's privileges

   - **Syntax of recompiling stored procedure:-**
     - EXEC StoredProcedureName @parameters WITH RECOMPILE
     - EXEC sp_recompile 'StoredProcedureName'

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3. **Give an example of the derived table.**
   Ans-
   - We are going to use two tables Employee Details and Department.
   - The following SQL Query will display all the columns present in the Employees table whose sales amount is greater than 500.
   - **Example-1**

   SELECT * FROM
         (
             SELECT [EmpID], [FirstName], [LastName], [Education], [YearlyIncome], [Sales], [DeptID]
             FROM [EmployeeDetails]
)
          AS [Derived Employee Details]
          WHERE [Sales] > 500

   *(First SELECT * statement is deriving columns from the inner select statement or subquery.)

   - **Example-2**

   SELECT * FROM
         (
             SELECT [EmpID], [FirstName], [LastName], [Education]
                ,[YearlyIncome], [Sales], [DepartmentName]
             FROM [EmployeeDetails]
             INNER JOIN [Department]
             ON [EmployeeDetails].[DeptID] = [Department].[DeptID]
)   AS [Derived Employee Details]
             WHERE [Sales] > 500 AND [YearlyIncome] >= 60000

4. **What is the database's trigger? Explain the different forms of triggers that can be found in the database.**
   Ans-
   - A database trigger is a **procedural code that is automatically executed in response to certain events on a particular table or view in a database**. The trigger is mostly used for maintaining the integrity of the information on the database.
   - **There are two forms of Trigger**
     - **Schema-level triggers**
       - After Creation, Before Alter, After Alter, Before Drop, After Drop, Before Insert.
   - **The four main types of triggers are**

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1. **Row-level trigger:** This gets executed before or after *any column value of a row* changes
2. **Column-level trigger:** This gets executed before or after the *specified column* changes
3. **For each row type:** This trigger gets executed once for each row of the result set affected by an insert/update/delete
4. **For each statement type:** This trigger gets executed only once for the entire result set, but also fires each time the statement is executed.

- **System-level triggers**
  - Database events - logons, logoffs, startups.

5. **What are the benefits and drawbacks of triggers?**
   Ans-

S.No	Benefits	Drawbacks
1	Triggers can be used as an alternative method for implementing referential integrity constraints.	It is easy to view table relationships, constraints, indexes, stored procedures in the database but triggers are difficult to view.
2	By using triggers, business rules, and transactions are easy to store in the database and can be used consistently even if there are future updates to the database	Triggers execute invisible to client-application applications. They are not visible or can be traced in debugging code.
3	It controls which updates are allowed in a database.	It is hard to follow their logic as it can be fired before or after the database insert/update happens.
4	When a change happens in a database a trigger can adjust the change to the entire database.	It is easy to forget about triggers and if there is no documentation it will be difficult to figure out new developers for their existence.
5	Triggers are used for calling stored procedures.	Triggers run every time when the database fields are updated and it is an overhead on the system. It makes the system run slower.

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6. **Create a stored procedure to call other stored procedures.**
   Ans-
   - **1st stored procedure**
     ```
     CREATE procedure Sp_insert
     (
     ID INT,
     TempName VARCHAR(255)
     )
     AS
     BEGIN
     DECLARE SampleTable Table(id INT, Name VARCHAR(255))
     INSERT INTO SampleTable(id, Name) values(ID, TempName)
     SELECT*FROM SampleTable
     END
     ```

   - **2nd stored procedure**
     ```
     CREATE procedure Sp_Call
     (
     SID INT,
     Name VARCHAR(255)
     )
     AS
     BEGIN
     EXEC Sp_insert ID=SID, TempName=Name
     END
     FROM t
     ```

   - **Call   Procedure**
     ```
     Exec  Sp_Call  SID=1, Name='input name '
     ```