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SQL WORLD

75 SQL INTERVIEW QUESTIONS

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Contents

1.What is SQL?

Answer:

SQL Stands for Structured Query Language which is specially designed to communicate with databases pronounced as Sequel is very widely used language in most of the database management systems like Oracle, MySQL, PostgreSQL etc.SQL provides us a simple and efficient way of reading,writing,executing the data from the system. This is one of the SQL Interview Question ever asked in interviews

2.What is the use of NVL function in Oracle?

Answer:

NVL function is most important function to replace null value with another value.

Example: select NVL (null, 'Amit') from dual; which will give you output as Amit.

3.What is Unique Key?

Answer:

Unique key is nothing but the columns which are uniquely identifies the values. There are more than one unique keys for each table. The Entry of Null value is allowed in Unique key. Oracle does not permit you to create primary key and unique key on same column.

Syntax:

Create table Table_name
(Column_name1 Datatype[null/not null],
Column_name Datatype[null/not null]......
Constraint constraint_name Unique(uc_col1,uc_col2..))

4.What is difference between Unique Key Constraint and Primary Key Constraint?

Answer:

Primary Key constraint:

1.Primary key will not accept the null values in the table column.

2.Primary is basically used to identify the unique records in the table.

3.We have only one primary key per table.

Unique Key Constraint:

1.Unique key accepts the null values in the table.

2.The main task of unique key is it is used to remove duplicate values from the table with exception of null entry.

3.We will have more than 1 unique keys on a single table.

5.What is difference between varchar and varchar2 datatype?

Answer:

Varchar can store up to 2000 bytes and varchar2 can store up to 4000 bytes of memory space. Varchar will occupy the space for null values whereas varchar2 cannot occupy the space for null values. So varchar2 is good to use not to face performance related problems.varchar2 is faster than varchar datatype.

6.How to represent comments in oracle?

Answer:

There are following 2 ways for commenting in oracle:

1.Single Line comment: Two dashes (–) before beginning of the line

2.Multiline comment/Block comment: When user wants to comment multiple line /* */ operators are used.

7.What is raw datatype?

Answer:

Raw datatype is used to store values in binary data format. There are 2 types of RAW datatype.

1.Raw

2.Long Raw.

Long raw datatype is used to store graphics, sound documents. Raw datatype is variable length datatype like varchar2 but basically it only stores data in 1 's and 0's means binary data format.

8.What is ROWID & ROWNUM?

Answer:

ROWID is nothing but the physical address given to that row which is in hexadecimal format. ROWNUM is nothing but the logical sequence given to the row of that column.

9.What are views in SQL? Explain types of Views in SQL

Answer:

Views:

Views are nothing but the logical structure of the table where we can fetch the data from different tables or same table.

There are 2 types of views in Oracle:

1.Simple View: Simple view has been created on only a single table.

2.Complex view: Views which are created using more than 1 table which has joins clauses are known as complex views.

10.What is Materialized View in SQL?

Answer:

Materialized view is also logical structure of one or more table in which data is stored physically in the view. Data has been stored physically in materialized view so data retrieval is faster as compare to simple view.

11.Why to use SQL?

Answer:

SQL is structured query language which is used for manipulation of data.

There are following reasons why to use SQL:

◆ Allows users to access data in relational database management systems.

◆ Allows users to define the data in database and manipulate that data.

◆ Allows users to create and drop databases and tables.

◆ Allows users to create view, stored procedure, functions in a database.

◆ Allows users to set permissions on tables, procedures, and views.

12.What is difference between Truncate, Drop and DELETE?

Answer:

1.Drop:

1.Drop command is DDL command which is used to delete the object from the database.

2.We cannot use the "ROLLBACK" after using drop command.

3.Drop command frees the space of database object.

4.Drop table table_name;

2.Truncate:

1.Truncate command is DDL command which is used to truncate the data from the database table.

2.We cannot use the "ROLLBACK" after using Truncate command.

3.It frees the space of database object but the structure remains same and memory of structure also remains same.

4.Truncate table table_name;

3.Delete:

1.Delete command is DML command which is used to delete the records from table.

2.We can use Rollback to Rollback the records from the table.

3.Delete command not frees the memory space.

4.Delete table table_name where condition;

13.Explain About DDL Statements of SQL?

Answer

DDL – DDL stands for Data Definition Language:

Statement Description

CREATE Creates a new table, a view of a table, or other object in database

ALTER Modifies an existing database object, such as a table.

DROP Deletes an entire table, a view of a table or other object in the database.

14.What is DML in SQL. Explain DML Statements in Details?

Answer:

DML stands for Data Manipulation Language:

Statement Description

INSERT Creates a record

UPDATE Modifies records

DELETE Deletes records

15.What is Database?

Answer:

❖ It is a collection of Inter-Related data. Records the data in HDD (Permanent Memory).

❖ Inter-Related data means relation among data values

❖ Objective of DB is to record data & save it for future use.

16.What is RDBMS?

Answer:

RDBMS stands for Relational DataBase Management System. RDBMS is the basis for SQL, and for all modern database systems like MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd.

17. What are tables and Fields?

Answer:

A table is set of data which is organized in to specific structured manner. Table is made up of combination of columns and rows. A table has specified number of column called fields but can have any number of rows which is called record.

Example: Table

Name(Field 1) Salary(Field 2)

Amit S(Record1) 10000(Record1)

18.Explain me about SQL joins?

Answer:

Join is nothing but connecting 2 tables to fetch the records from 2 or more different tables.

There are following types of joins in SQL:

1.Inner join:

Inner join retrieves the records which are common between 2 or more tables.

2.Outer join:

Outer join retrieves the common records from the table as well as uncommon records from Left or right table.

2.1. Left outer join:

When user needs to fetch all data from left table and common records from left and right table then the join is called as left outer join.

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2.2. Right outer join:

When user needs to fetch all data from right table and common records from left and right table then the join is called as right outer join.

2.3. Full Outer Join:

When user needs to fetch the data from both the tables and common records from both of the tables.

3.Cross join/Cartesian join:

When each record is connected to each and every record from other table then it is called as cross join or Cartesian join.

19.What is Views in SQL

Answer:

View is nothing but the virtual structure which is been created from using single table or multiple tables. If the logical structure is created from single table then it is called as Simple view. If logical structure is created using multiple tables using joins then it is called as Complex View.

20.What is index and what are types of indexes?

Answer:

Indexing is nothing but the performance tuning mechanism which allows the fast retrieval of the records from table.
Following are types of indexes:

1.Normal Indexes
2.Bit Map indexes
3.Unique indexes
4.Clustered Indexes
5.NonClustered Indexest

30 Complex SQL Queries

1.Query to find Second Highest Salary of Employee?

Answer:

Select distinct Salary from Employee e1 where 2=Select count(distinct Salary) from Employee e2 where e1.salary<=e2.salary;

Alternative Solution :

select min(salary)from(select distinct salary from emp order by salary desc)where rownum<=2;

2.Query to find duplicate rows in table?

Answer :

Select * from Employee a where rowid <>(select max(rowid) from Employee b where a.Employee_num=b.Employee_num);

3.How to fetch monthly Salary of Employee if annual salary is given?

Answer:

Select Employee_name,Salary/12 as 'Monthly Salary' from employee;

4.What is the Query to fetch first record from Employee table?

Answer:

Select * from Employee where Rownum =1;

Click here to get What is Rownum?

5.What is the Query to fetch last record from the table?

Answer:

Select * from Employee where Rowid= select max(Rowid) from Employee;

6. What is Query to display first 5 Records from Employee table?

Answer:

Select * from Employee where Rownum <= 5;

7. What is Query to display last 5 Records from Employee table?

Answer:

Select * from Employee e where rownum <=5

union

select * from (Select * from Employee e order by rowid desc) where rownum <=5;

8. What is Query to display Nth Record from Employee table?

Answer :

select * from (select a.*, rownum rnum from (YOUR_QUERY_GOES_HERE — including the order by) a where rownum <= N_ROWS) where rnum >= N_ROWS

9. How to get 3 Highest salaries records from Employee table?

Answer:

select distinct salary from employee a where 3 >= (select count(distinct salary) from employee b where a.salary <= b.salary) order by a.salary desc;

Alternative Solution:

select min(salary)from(select distinct salary from emp order by salary desc)where rownum<=3;

10. How to Display Odd rows in Employee table?(

Answer:

Select * from(Select rownum as rno,E.* from Employee E) where Mod(rno,2)=1;

11.How to Display Even rows in Employee table?
Answer:

Select * from(Select rownum as rno,E.* from Employee) where Mod(rno,2)=0;

12.How to fetch 3rd highest salary using Rank Function?
Answer:

select * from (Select Dense_Rank() over (order by salary desc) as Rnk,E.* from Employee E) where Rnk=3;

13.How Can i create table with same structure of Employee table?
Answer:

Create table Employee_1 as Select * from Employee where 1=2;

14.Display first 50% records from Employee table?
Answer:

select rownum, e.* from emp e where rownum<=(select count(*)/2 from emp);

15.Display last 50% records from Employee table?
Answer:

Select rownum,E.* from Employee E

minus

Select rownum,E.* from Employee E where rownum<= (Select count(*)/2) from Employee);

16.How Can i create table with same structure with data of Employee table?
Answer:

Create table Employee1 as select * from Employee;

17.How do i fetch only common records between 2 tables.

Answer:

Select * from Employee;

Intersect

Select * from Employee1;

18.Find Query to get information of Employee where Employee is not assigned to the department

Answer:

Select * from Employee where Dept_no Not in(Select Department_no from Employee);

19.How to get distinct records from the table without using distinct keyword.

Answer:

select * from Employee a where rowid = (select max(rowid) from Employee b where a.Employee_no=b.Employee_no);

20.Select all records from Employee table whose name is 'Amit' and 'Pradnya'

Answer:

Select * from Employee where Name in('Amit','Pradnya');

21.Select all records from Employee table where name not in 'Amit' and 'Pradnya'

Answer:

select * from Employee where name Not in ('Amit','Pradnya');

22.How to fetch all the records from Employee whose joining year is 2017?

Answer:

Oracle:

select * from Employee where To_char(Joining_date,'YYYY')='2017';

23.What is SQL Query to find maximum salary of each department?

Answer:

Select Dept_id,max(salary) from Employee group by Dept_id;

24.How Do you find all Employees with its managers? (Consider there is manager id also in Employee table)

Answer:

Select e.employee_name,m.employee name from Employee e,Employee m where e.Employee_id=m.Manager_id;

25.Display the name of employees who have joined in 2016 and salary is greater than 10000?

Answer:

Select name from Employee where Hire_Date like '2016%' and salary>10000;

26.How to display following using query?

```
*
**
***
```

Answer:

We cannot use dual table to display output given above. To display output use any table. I am using Student table.

SELECT lpad ('*', ROWNUM,'*') FROM Student WHERE ROWNUM <4;

27.How to add the email validation using only one query?

Answer :

SELECT

Email

FROM

Employee

where NOT REGEXP_LIKE(Email, '[A-Z0-9._%+-]+@[A-Z0-9.-]+\.[A-Z]{2,4}', 'i');

28.How to display 1 to 100 Numbers with query?
Answer:

Select level from dual connect by level <=100;

29.How to remove duplicate rows from table?
Answer:

First Step: Selecting Duplicate rows from table

Select rollno FROM Student WHERE ROWID <>
(Select max (rowid) from Student b where rollno=b.rollno);
Step 2:
Delete duplicate rows
Delete FROM Student WHERE ROWID <>
(Select max (rowid) from Student b where rollno=b.rollno);

30.How to find count of duplicate rows?
Answer:
Select rollno, count (rollno) from Student
Group by rollno
Having count (rollno)>1
Order by count (rollno) desc;

15 Interview Questions with Advanced SQL

1.What is the latest version of Oracle?
Answer :

Oracle has announced the new version which will come in december 2017 which is Oracle 18c. Oracle 18c is worlds first autonomous database.

2.What are advantages of Oracle 18c?
Answer :

Oracle CTO has announced that new database version of Oracle will come till December 2017 which is Oracle 18c.Oracle 18c is worlds first autonomous database which will do lot of tasks will be automated using Artificial Intelligence Engine.
Following are some advantages of Oracle 18c :
1. Oracle 18c uses adaptive machine learning which will reduce the human errors.
2. It reduces the complexity of database
3. It is highly relible and secure database
4. It reduces the operational cost
5. Self Driving database
6. Self Tuning database
7. Most efficient consumption of resources
8. Less human intervention

3.What are different database Environments used in any project?

Answer:

The Project to project database environment varies.But the following is basic environment structure used for projects.

1.Development Environment:
In Development Environment all developer works and development work is been done on development environment.

2.Test Environment:
Developers does not have access of test environment.After development is done the code is migrated to Test Environment.Testing team is working on Test environment and execute black box as well as white box test cases on this Environment.Sometimes System Integration Testing (SIT) is also done on this Environment.

3.UAT Environment:
UAT stands for User Acceptance Testing.On this Environment the Customer side testers tests the software and executes User Acceptance Test Cases.

4.Performance Testing Environment:
On this environment the performance tester tests all performance related issues on this environment. This environment contains very huge data and performance tester will try to break the system using that big data.

5.Production Environment:
On this Environment actual user works and uses the software

4.What is mean by Sequence in database?

Answer:

Use the CREATE SEQUENCE statement to create a sequence, which is a database object from which multiple users may generate unique integers. You can use sequences to automatically generate primary key values.

When a sequence number is generated, the sequence is incremented, independent of the transaction committing or rolling back.

Once a sequence is created, you can access its values in SQL statements with the CURRVAL Pseudo Column, which returns the current value of the sequence, or the NEXTVAL Pseudo Column, which increments the sequence and returns the new value.

5.What are 3 different imporatant features of Oracle 18c?
Answer :
1. Self Driving Database :
1.1. Oracle 18 c is self driving database in which patching,upgrades and backups can be done automatically.

1.2.No delay waiting for human process and downtime.

1.3.Automated treat detection and remediation.

1.4. All database maintenance tasks will be done without human interventions.

2. Reliable :

2.1. It is very reliable database as it has self recovering capability of detecting and applying corrective actions.

2.2.Oracle Autonomous Database Cloud automatically implements Oracle Real Application Cluster(RAC).

2.3.No downtime required for upgrades,patching or adding storage capacity.

3.Lower Cost :

3.1.It eliminates the costly downtime

3.2.Self Tuning uses adaptive machine learning which automatically activates caching,indexing,storage of indexes.

3.3.It avoids costly overprovisioning.

3.4. It also helps to cut the labour cost as Oracle 12c is automated self driving database.

3.5. Oracle 18c is 5x to 13x less expensive than AWS (Amazon Web Services).

6.What are functions of Parser?

Answer:

1.Syntax Analysis:

The parser checks for SQL statement syntaxs.If the syntax is incorrect then parser gives the incorrect syntax error.

2.Semantic Analysis:

This checks for references of object and object attributes referenced are correct.

7.What is Null in SQL?
Answer:

A NULL value in a table is a value in a field that appears to be blank, which means a field with a NULL value is a field with no value.

It is very important to understand that a NULL value is different than a zero value or a field that contains spaces. A field with a NULL value is one that has been left blank during record creation.

8. What is not null constraint?
Answer:

By default, a table column can hold NULL values. The NOT NULL constraint enforces a column to NOT accept NULL values.

The NOT NULL constraint enforces a field to always contain a value. This means that you cannot insert a new record, or update a record without adding a value to this field.

9.How to find all details about Constraint?
Answer:

1.Select * from User_constraints;

or

2.Select * from User_cons_columns;

10.What is Query to display last 5 Records from Employee table?
Answer:

Select * from Employee e where rownum <=5
union
select * from (Select * from Employee e order by rowid desc) where rownum <=5;

11..What is Correlated Subquery?Explain with the steps of execution with example.
Answer:

Correlated query is the query which is executed after the outer query is executed.The outer query is always dependent on inner query.The approach of the correlated subquery is bit different than normal subqueries.In normal subqueries the inner queries are executed first and then the outer query is executed but in Correlated Subquery outer query is always dependent on inner query so first outer query is executed then inner query is executed.Correlated Subqueries always uses operator like Exist,Not Exist,IN,Not IN. (Source-click here)

Example:

Select * from Employee E where Not exist
(Select Department_no From Department D where
E.Employee_id=D.Employee_ID);

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Execution of query:
Step 1:

Select * from Employee E ;

It will fetch the all employees

Step 2:

The First Record of the Employee second query is executed and output is given to first query.

(Select Department_no From Department D where E.Employee_id=D.Employee_ID);

Step 3:

Step 2 is repeated until and unless all output is been fetched.

12.What is raw datatype?
Answer:
Raw datatype is used to store values in binary data format.
There are 2 types of RAW datatype:
1.Raw
2.Long Raw.

Long raw datatype is used to store graphics,sound documents.

Raw datatype is variable length datatype like varchar2 but basically it only stores data in 1 's and 0's means binary data format.

13.What is materialised view and what are its different fields while creating it?
Answer :

Materialized view is also logical structure of one or more table in which data is stored physically in the view.Data has been stored physically in materialized view so data retrieval is faster as compare to simple view.

There are following different options we used to create materialized view or snapshot.

1.Build Immediate:

Means materialized views(mv) created immediately.

2.Build Deferred:

Means materialized views(mv) created after one refresh.

3.Refresh on commit:

This option commited the data in materialized view in SQL immediately after data inserted and committed in table.This option is known as incremental refresh option.View is not fully refreshed with this option

4.Refresh on Demand:

Using this option you can add the condition for refreshing data in materialized views.

14.What is first and last function in SQL?

The FIRST and LAST functions can be used to return the first or last value from an ordered sequence. Say we want to display the salary of each Employee, along with the lowest and highest within their department we may use something like.

Example:

SELECT EmpNo, DeptNo, Sal ,MIN (Sal) KEEP (DENSE_RANK FIRST ORDER BY Sal) OVER (PARTITION BY DeptNo)"Lowest", MAX (Sal) KEEP (DENSE_RANK LAST ORDER BY Sal) OVER (PARTITION BY DeptNo) "Highest"FROM   EMPLOYEE ORDER BY DeptNo, Sal;

15.What is a transaction? What are ACID properties?

Answer:

A Database Transaction is a set of database operations that must be treated as whole, means either all operations are executed or none of them.

An example can be bank transaction from one account to another account. Either both debit and credit operations must be executed or none of them.

ACID (Atomicity, Consistency, Isolation, Durability) is a set of properties that guarantee that database transactions are processed reliably.

10 Interview Questions with PL SQL

1.What is cursor in PL SQL ?

Answer :

Cursor is a buffer area which is used to process multiple records and also record by record tabs.

There are 2 types of cursors :

1.Implicit cursor

2.Explicit cursor

Implicit cursor : Implicit cursor is a buffer area which has been defined and controlled by oracle internally. Implicit cursor will process single record at a time.

example :

declare

v_Ename varchar2(100);

begin

select ename into V_Ename from Employee where empno=101;

dbms_output.put_line(V_Ename);

end;

The above cursor is implicit cursor where all the operations are defined by oracle engine internally like declaring the cursor,fetching values from the cursor and close cursor.

Explicit Cursor : Explicit cursor is a cursor which is defined by user to process set of records.For multiple records user needs to use explicit cursor.Explicit cursor operations are done by the user.

There are following 4 operations needs to be done by user :

1.Declare cursor

2.Open cursor

3.Fetch all records from the cursor

4.Close cursor.

2.What are different cursor attributes?
Answer :
There are following cursor attributes :
1.%Found
2.%Not Found
3.%Isopen
4.%Rowcount

3.What is ref cursor?Why it is used?
Answer :
As the name suggested ref cursor is a variable which will point to the address or reference of the cursor.Ref cursor is variable not cursor but that variable points to cursor.
There are 2 type of ref cursors :
1.Strong Ref cursor
2.Weak Ref cursor

4.How to write Cursor with for loop?

Answer:

Cursor declares %ROWTYPE as loop index implicitly. It then opens a cursor, gets rows of values from the active set in fields of the record and shuts when all records are processed.Means while using the for loop user dont need to Open the cursor and fetch the values from cursor or close cursor explicitly.

In For loop all cursor operations done implicitly..

Real Example:

FOR Sample_cursor IN C1 LOOP

Total_Salary=Total_Salary + Appraisals;

END LOOP;

5.What is Database Trigger?What is real use of trigger?
Answer :

PL SQL procedure which is used to trigger specific event on specific condition is known as database triggers. Triggers are database objects with specific conditions.

Examples of Trigger :

1)Audit data modifications.

2)Log events transparently.

3)Enforce complex business rules.

4)Maintain replica tables

5)Derive column values

6)Implement Complex security authorizations.

6.What is %ROWTYPE ? Explain this with example.

Answer :

%ROWTYPE is cursor attribute which is used to define the record of the field.Each field assumes it own datatype and %ROWTYPE is used to define the specific record type.

example :

```
CREATE OR REPLACE PROCEDURE
P_Employee_Information
IS
CURSOR Emp_Cur IS SELECT Employee_name,
Employee_Number FROM emp;
variable1 Emp_Cur %ROWTYPE; ---This is cursor variable
name
BEGIN
OPEN Emp_Cur ;
LOOP
FETCH Emp_Cur INTO variable1;
EXIT WHEN Emp_Cur %Notfound; ---When cursor
DBMS_OUTPUT.PUT_LINE( variable1.Employee_name || '
works in department '
|| myvar.Employee_Number);
END LOOP;
CLOSE Emp_Cur ;
END;
```

7.What is Raise_Application_Error?

Answer :

When user wants to insert Error message then user needs to use the Raise_Application_Error procedure.

Raise_Application_Error is the system defined procedure of package named DBMS_STANDARD.

Syntax :

Raise_Application_Error(Error_Code,Error_Message);

Example :

Raise_Application_Error (-20343, 'The balance is too low.');

8.What is commit?RollBack?Savepoint?

Answer :

Commit :

When user commits the data after transaction that changes are permanent changes.

1.Other users can see the data changes made by the transaction.

2.The locks acquired by the transaction are released.

3.The work done by the transaction becomes permanent.

Rollback :

When transaction become wrong user can rollback the data.

1.The work done in a transition is undone as if it was never issued.

2.All locks acquired by transaction are released.

Savepoint :

It undoes all the work done by the user in a transaction. With SAVEPOINT, only part of transaction can be undone.

9.What is mutating error?

Answer :

It occurs when a trigger tries to update a row that it is currently using. It is fixed by using views or temporary tables, so database selects one and updates the other.

10.What is difference between Anonymous block and subprogram?

Answer :

Anonymous block :

Anonymous blocks are programs or unnamed block which is used to check some functionality and which are not stored in database.

Subprograms :

Subprograms are stored blocks which are stored in to database. Subprograms are compiled at runtime

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