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Corelated sub-query (using the Exists operator). (C interviews).

- Exists is a special operator.
- This is the exception when sub-query is faster than join.

Display the dnames that contain employees:-

Solution ①;

- select deptno from emp;

o/p
1
1
1
2
2
=
1
2

- select distinct deptno from emp; o/p
2
1
2

- select dname from dept
  where deptno = any
  (select distinct deptno from emp); o/p - TRN
  Exp.

- select dname from dept
  where deptno in
  (select distinct deptno from emp);

o/p :- TRN
Exp.

- select dname from dept
  where deptno notin
  (select distinct dept no from emp;

o/p MKTG

Solution ②;

- select dname from emp, dept
  where dept.deptno = emp.deptno;

o/p
TRN
TRN
TRN
Exp
Exp

- select distinct dname from emp, dept
  where dept.deptno = emp.deptno;

o/p
TRN
Exp.

Solution ③;

- if you have a join, alongwith distinct, to mak it work faster use corelated sub query (use the exist operater.

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- select dname from dept where exists op TRN
  (select deptno from emp Exp.
  where dept.deptno = emp.deptno);
- First the main query is executed
- For every row returned by main query it will run the sub-query once.
- the sub-query returns a boolean True or false value back to main query.
- if the sub-query returns a True value, then main query is eventually executed for that row
- if sub-query returns false value, then main query is not executed for that row.
- unlike earlier, we do not use distinct here this speeds up.
- unlike a traditional join, the number of full table scans is reduced this further speeds it up.

- select dname from dept where not exists
  (select deptno from emp
  where dept.deptno = emp.deptno); op MKTG.

Set operators:

- based on set theory.

EMP1.

EMPNO	ENAME
1	A
2	B
3	C

EMP2

EMPNO	ENAME
1	A
2	B
4	D
5	E.

- select empno, ename from emp1
  union
  select empno, enam from emp2;

output

EMPNO	ENAME
1	A
2	B
3	C
4	D
5	E

① Union: will combine the output of both the select statements and it will suppress the dublicates

- select empno1, ename from emp1
  union
  select empno2, ename from emp2
  order by 1;

② Union all : dublics are not suppressed

- will combine the output of both the select statement.

  select empno1, ename from emp1
  union all
  select empno2, ename from emp2
  order by 1;

③ intersect : will return what is common in both the select statements and the dublicates are suppressed.

  select empno1, ename from emp1
  intersect
  select empno2, ename from emp2
  order by 1;

④ minus : will return what is present in the first select statement and not present in the second select statement and dublicates are suppressed.

  select empno1, ename from emp1
  minus
  select empno2, ename from emp2
  order by 1;

- select ..... union select ---- minus select ---- interset select ---- union all

  select ---- minus select ---- order by x;

- max upto 255 select statements.

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this limit of SQL can be exceeded using views).

- select job from emp where deptno = 10
  minus
  select job from emp where deptno = 20;

  ~~of~~ Job
  President

- select job from emp where deptno = 10
  intersect
  select job from emp where deptno = 20;

  Job
  clerk
  manager.

Union, union all → supported by all RDBMS.
intersect, minus → not supported by MySQL.

- Multiple slect statements with set operators; brackets for changing the precedence → Not supp. by MySQL.

Pseudo Columns:

- fake columns (virtual columns).

a. Computed columns. (e.g. ANNUAL = sal*12)
b. Expressions (~~sal+~~ e.g. NET_EARNINGS = sal + comm).
c. function-based columns (e.g. Total = sum (sal))

RDBMS supplied pseudo columns:-

- select ename, sal from emp;
- select rowid, ename, sal from emp;

  Rowid (row identifier)
  - Rowid is the row address.
  - Rowid is the actual physical memory location in the DB server HD where that row is stored.
  - Rowid is fixed-length encrypted string of 18 char.
  - when you select from a table, the order of rows in the output depends on the row address. (it will always be in ascending order of rowid) (searching is sequential).

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- No two rows of any table in the entire DB server HP can have the ~~the~~ same Rowid
Rowid works as an Unique identifer for every row in the database.
- select rowid, ename, sal from emp
where rowid = 'AAA55MAABAAACG5AAA';
- You can use rowid to update or delete the duplicate rows
- delete from emp where rowid = 'AAA55mAABAAACG5AAA';

When you Update a row, if the row length is increasing, then the Rowid May change.

used:

- Rowid is used internally by MySQL:-
1. To distinguish betn two rows in the database.
2 for row locking.
3. To manage the indexes.
4. To mange the Cursors.
5. Row Management, etc

- In oracle, feature of Rowid is available and you can view it
- In MySQL, feature of Rowid is available but you connot viewit.

Alter table (DDL command)

EMP

EMPNO	ENAME	SAL
1	SCOTT	3000
2	KING	5000

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- rename a table
- add a column.
- drop a column
- Increase width of column.

Indirectly :-

- reduce width of column.
- change datatype of column.
- copy rows from one table to another table.
- Copy a table
- Copy only structure of table.
- rename a column.
- change position of columns in table structure (because of null values, for storage considerations).

① Rename a table:

- rename table emp to employees;

Rename is a DDL command (auto-commit)

② add a column:

- alter table emp add gst float;

③ drop a column:

- alter table emp drop column gst;

④ increase width of column.

- alter table emp modify ename varchar(30);

⑤ reduce width of column:

- alter table emp modify ename varchar(20); (SQL)
  (data will get truncated)

- alter table emp modify ename varchar(20); (oracle)
  - error in oracle.
  - you can reduce the width provided the contents are null.
  - update emp set ename = null;
    alter table emp modify ename varchar(20); (mysql)

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- alter table emp add x varchar(25);
  update emp set x=ename, ename=null;
  alter table emp modify ename varchar(20);

Data testing on x column, check the names <=20char

- update emp set ename=x;
  alter table emp drop column x;
- Above solution will work in mysql also and should be implemented in MySQL also.

- x_1, x_2, x_3 ... add more empty colun
  Extension columns used to extend the table.

⑥ change data type
- alter table emp modify empno char(4);

⑦ copy rows from one table to another table.
we have. EMP2 with

EMPNO	ENAME	SAL
3	C	1000
4	D	2000
5	E	3000

- insert into emp select * from emp2; ✗
- insert into emp
  select * from emp2;

⑧ To copy certain rows;
- insert into emp
  select * from emp2
  where deptno=10;

⑨ copy a table;
- create table emp-copy
  as
  select * from emp;

⑩ to copy contain columns only
- create table emp-copy
  as
  select empno, ename from emp;

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(11) to copy certain rows only.

```
Create table emp_copy
as
select * from emp where dept no = 10;
```

(12) to copy only the structure of table.

Method #1:

- Create table emp_struct
  as
  select * from emp;
- delete from emp_struct
- commit;

Method #2.

- Create table emp_struct
  as
  select * from emp;

truncate table emp_struct;
truncate will delete all the rows and commit also.

Difference between delete / truncate

DELETE	Truncate
(1) common for all RDBMS	(1) Truncate is extra command in mysql & oracle
(2) DML command	(2) DDL command
(3) will delete the rows	(3) will delete all the rows & commit
(4) requires commit	(4) auto commit
(5) Roll back is possible	(5) Rollback not possible.
(6) Delete from emp where ...;	(6) truncate table emp;
(7) where condition possible.	(7) where is not possible.

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⑧ emp (1000 mb)
delet from emp;
commit;
1000 mb free space is not deallocated.

Drop table emp;
1000 mb free space is deallocated.

⑧ emp (1000 mb)
truncate table emp;
truncate will delete all the rows & commit & 1000 mb free space is deallocated.

create table emp ___;

⑨ Delete triggers on table will execute.

⑨ delete triggers on table will not execute.

when you truncate Emp table, if you want to retain the rows of dept no 10;

- Create table emp_copy
  as
  select * from emp where deptno = 10;
- truncate table emp;
- insert into emp select * from emp_copy;
  drop table emp_copy;

Method 3:

- Create table emp_struct
  as
  select from emp where 1=2;

⑬ To rename column. (sal to salary)

- Createtable emp_copy
  as
  select empno, ename, sal salary
  from emp;
- drop table emp;

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(14) change position of columns in table structure.
(because of null values; for storage consideration)

- create table emp-copy
  as
  select sal, ename, empno
  from emp;

- drop table emp;

- rename table emp_copy to emp;