

June 2017

28 Wednesday

(179 - 186) Wk 26

DATA CONTROL LANGUAGE

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DATABASE OBJECTS

Data Control Language

Used to create privilege to allow user to access & manipulate the database.

Object privileges → Object privileges vary from object to object
- An owner has all the privileges on the obj.
- An owner can give specific privileges on the owner's objects.

There are 2 main commands:-

- GRANT to grant a privilege to the user.
- REVOKE to revoke (remove) a privilege from a user.

GRANT :- The GRANT commands can be attached to any combinations of SELECT, INSERT, UPDATE, DELETE, ALTER

Syntax:-

• GRANT privilege1, privilege2, privilege3 | ALL ON TABLE | VIEW TO Userid [WITH CHECK OPTION]

May						
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June						
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July						
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27	2	3	4	5	6	7
28	9	10	11	12	13	14
29	16	17	18	19	20	21
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Example :-

- GRANT SELECT ON POLICY TO SAM;
- Grant to ALL users.
- GRANT SELECT ON POLICY TO PUBLIC;

REVOKE :- Gets back the given permission from the user.

Syntax

REVOKE privilege1, privilege2,
privilege3 | ALL ON table | view FROM
user_id

Example.

REVOKE SELECT ON POLICY FROM sam;

DATABASE OBJECTS :- An Oracle DB contains multiple DB objects.

OBJECT	DESCRIPTION
Table	Basic unit of storage; composed of rows & columns.
View	Logically represents subsets of data from one or more tables.
Sequence	Numeric value generator
Index	Improves the performance of some queries.
Synonym	Gives alternative names to objects.

June 2017

May	W	S	M	T	W	T	F	S
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30 Friday

(181 - 184) Wk 26

VIEW :- A view is a virtual table that provides a window through which one can see data stored in a base relation.

- (stored) in a base relation)
 - Views contain no data of their own but can be operated on as real relations.
 - Views can help simplify data access by isolating users from querying details.

Syntax-

`CREATE VIEW viewname AS select query
[WITH CHECK OPTION [CONSTRAINT
constraint]] [WITH READ ONLY
[CONSTRAINT constraint]];`

PID	PName	Period in Years	Min Amount per Month
MBP	Money Back Plan	20	1000
PP	Personal Protect	15	1500

'Virtual table
will point
only to the
selected records.

Create view policy_details
as select pid, pname
from policy;

↳ query to create virtual table

12 Saturday
SEPTEMBER

256-110 Week 37

Querying from views

SELECT * from policy_details;

PId	PName
MBP	Money Back Plan
PP	Personal Protect

Deny DML operations:

To ensure that no DML oprⁿ occur through views, create a view with the read only option.

Create view policy_details as select
pid, pname from policy with read
only;

- ↳ We cannot insert, update or delete the records from the original table using view.

View Types

\searrow

Simple View

Complex View

OCT M T W T F S S M T W T F S S M T W T F S S M T W T F S S
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Sunday 13
SEPTEMBER

Simple View :- Derives data from only one table.

- Contains no func(s) or groups of data.
- Can perform DML opr(s) through the view.

Complex View :-

- Derives data from many tables
- Contains func(s) or groups of data
- Does not allow (always) DML opr(s) through the view

Example - Specify which with CHECK option to indicate that create db is prohibits any changes to the table or view that would produce rows that are not included in the sub query.

Create view customer-policy - details as
Select cname, pname, dueDate
from customer c join policy_enrolment
p on c.cid = p.cid join policy pp
on p.pid = pp.pid;

SEP	M	T	W	T	F	S	S	M	T	W	T	F	S	S
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2020

14 Monday
SEPTEMBER

Create view policy - details as select pid, pname from policy where Min_Amount_PerMonth > 500 with check option;

WITH CHECK OPTION is to ensure that all UPDATE & INSERT satisfy the condition(s) in the view definition.

Rules on Views for DML

- You can perform DML operations on a simple view.
- You cannot remove a row if the view contains
 - GROUP func
 - GROUP BY clause
 - DISTINCT keyword
- You can't modify a row if the view contains
 - Group func
 - GROUP BY clause
 - DISTINCT keyword
 - Columns defined by expressions.
- You can't add a row if the view contains Group func, GROUP BY clause, DISTINCT keyword, Column defined by expressions, NOT NULL columns in the base tables not selected in the view.

Week 38 259-107

Tuesday 15
SEPTEMBER

Inline views

→ SELECT statement

in the front clause of

another select statement.

- Inline views are commonly used to simplify complex queries.
 - The needed select statement should be specified.
 - An inline view is a subquery with an alias that can be used within an SQL statement.
 - A named subquery in the FROM clause of the main query is an example of an inline view.

Removing View → Drop the views from the DB permanently.

Syntax → Drop view viewname;

Example → Drop view policy_details

4

JULY	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F						
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16 Wednesday
SEPTEMBER

260-106 Week 38

Top N Analysis

maximums priced
policy table.

Query to display the first three policy from the

```
- SELECT ROWNUM as RANK, pname,  
MinAmountPerMonth FROM (SELECT pname,  
MinAmountPerMonth FROM policy  
ORDER BY MinAmountPerMonth DESC)  
WHERE ROWNUM <= 3;
```

Top- n queries retrieve the n largest or smallest values of a column.

Sequence

- Schema object that can generate unique sequential values automatically.

- These values are often used for primary & unique keys.

Sequence is a shared object bcz it is not connected to any other object except for convinism of use.

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Thursday 17
SEPTEMBER

Week 38 261-105

Maxvalue :- maximum generated by sequence

Minvalue : minimum sequence value

Cycle :- specifies whether to continue generating sequence value after reaching max val

Cache :- specifies how many values the Oracle server pre-allocates & keeps in memory.

CREATE SEQUENCE seq_name;

[increment by n]

[start with n]

$\{ \text{max value } n \mid \text{no max value} \}$

minvalue n / nome

[cycle | nocycle]
[cache | nocache]

Sequence Pseudocolumns

NEXTVAL returns the next available sequence value.

- It returns a unique value every time it is referenced, even for different uses

18 Friday
SEPTEMBER

262-104 Week 38

CURRENT returns the current sequence value.

- NEXTVAL must be issued for that sequence before CURRVAL contains a value.

Example : create & use sequence

CREATING A SEQUENCE

CREATE SEQUENCE EMP_SEQ START WITH .

NEXTVAL

INSERT INTO EMP VALUES (EMP_SEQ.NEXTVAL,
'MINI');

CURRVAL

SELECT EMP_SEQ.CURRVAL FROM DUAL;

Modifying Sequence

- ALTER statement is used to change all the parameters in a sequence except the starting number.

- To change the starting pt. of a sequence, drop the sequence & recreate it.

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Saturday 19
SEPTEMBER

Week 38 263-103

- Week 38 263-103

 1. Change the increment value, max.value, min. value, cycle option, or cache option.
 2. Maxvalue should not be less than the current value.
 3. Start with cannot be changed.
 4. Future sequence number only be affected.

ALTER SEQUENCE emp_seq INCREMENT
BY 20 MAXVALUE 999999
NO CACHE
NO CYCLE;

USER - SEQUENCES

How to get the sequence information?

Select min_value , max_value ,
increment_by from user_sequence,
where sequence_name = 'EMP-SEQ';

20 Sunday
SEPTEMBER

264-102 Week 38

How to drop the created sequence?

DROP SEQUENCE BOOK-SEQ;

6 User - sequence - a
data dictionary

SYNONYM → Creating an alias Name
A synonym is DB object which provide an alternative name for a table, views, sequence & other schema obj.

How to create it?

CREATE [PUBLIC] SYNONYM SYN_NAME
FOR SCHEMA_OBJ

- CREATE SYNONYM ENROLL FOR POLICYENROLLMENT,
- DROP SYNONYM ENROLL.

INDEX

Reminders

- Used by the Oracle Server to speed up the retrieval of rows by using a pointer.
 - Can reduce disk I/O by using a rapid path access method to locate data quickly.

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Monday 21
SEPTEMBER

Week 39 265-101

You should create an index if :-

- A column contains a wide range of values.
- A column contains a large no. of null values.
- One or more columns are frequently used together in a WHERE clause or a JOIN condition.
- The table is large.

Create Index :-

- CREATE [UNIQUE] INDEX INDEX-NAME
ON TABLE (COLUMN)
- CREATE INDEX POLICY-IND ON
POLICY(PNAME);

Index Types

Index can be created in 2 ways:

- 1.) Automatically by the oracle server i.e., unique index is created automatically when you define a primary key or unique constraint in a table definition.

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2020

22 Tuesday
SEPTEMBER

266-100 Week 39

2). Manually by a user.

↳ to speed up access to the rows.

Clustered index

- Creates an index which sorts the data file in the order of the index file
- Can have only one clustered index
- Automatically gets created for Primary key.
- CREATE CLUSTERED INDEX POLICY-IND1
ON POLICY(PIB);

Non Clustered index

- Can be created for all the columns.
- More than 1 index can be created.
- Data are not sorted according to the order of index file
- CREATE INDEX POLICY-IND 2 ON
POLICY(PNAME);

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Wednesday 23
SEPTEMBER

Week 39 267-099

Unique index

- Makes the column for which the index is created to have a unique data
- Automatically created for columns with unique constraint
- CREATE UNIQUE INDEX CUSTOMER_IND1 ON CUSTOMER (EMAILID);

Function based index

- A function-based index is an index based on expressions.
- CREATE INDEX CUSTOMER_IND2 ON CUSTOMER (UPPER(CNAME));

Viewing Index information

- Data dictionary used:
 - User-indexes
 - User-ind-columns

Reminders

Dropping an index

- DROP INDEX <INDEX_NAME>
- DROP INDEX POLICY-IND;

SEP	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27