

Creating Views

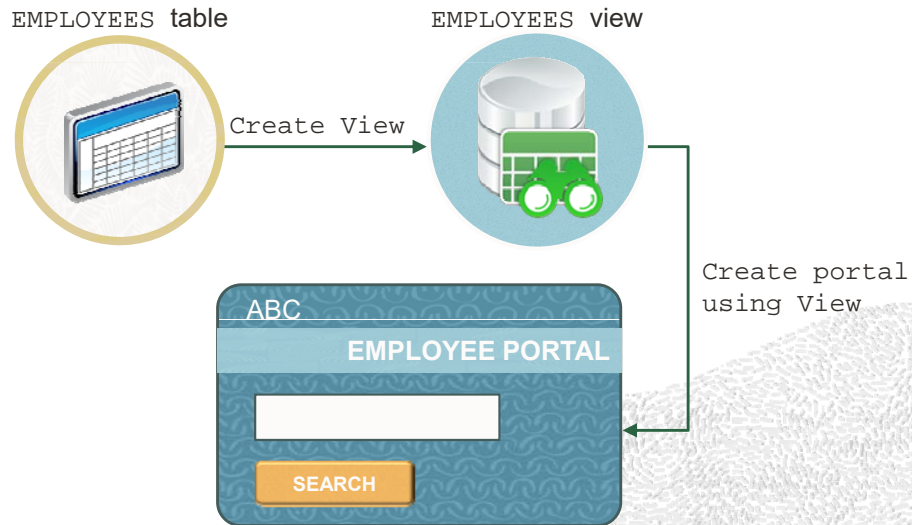


Lesson Agenda

- Overview of views
- Creating, modifying, and retrieving data from a view
- Data manipulation language (DML) operations on a view
- Dropping a view



Why Views?



3



Database Objects

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

4



What Is a View?

EMPLOYEES table

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
100	Steven	King	SKING	515.123.4567	17-JUN-11	AD_PRES	24000
101	Neena	Kochhar	NKOCHHAR	515.123.4568	21-SEP-09	AD_VP	17000
102	Lex	De Haan	LDEHAAN	515.123.4569	13-JAN-09	AD_VP	17000
103	Alexander	Hunold	AHUNOLD	515.124.4469	17-AUG-10	IT_PROG	9000
104	Bruce	Ernst	BERNST	515.124.4469	16-AUG-10	IT_PROG	6000
105	David	Turner	DTURNER	515.124.4469	28-SEP-13	IT_PROG	4800
106	Walter	Clayton	WCLAYTON	515.124.4469	30-SEP-13	IT_PROG	4800
107	Jena	Barban	JBARBAN	515.124.4469	07-MAR-14	IT_PROG	4200
108	Parto	Serres	PSERRES	515.124.4469	07-DEC-15	FI_MGR	12008
109	Russell	Griffin	RGRIFIN	515.124.4469	16-AUG-10	FI_ACCOUNT	9000
110	Den	Raphaely	DRAPHEAL	515.127.4561	28-SEP-13	FI_ACCOUNT	8200
111	Alex	Khoo	AKHOO	515.127.4562	30-SEP-13	FI_ACCOUNT	7700
112	Luis	Popp	LPOPP	515.124.4469	07-MAR-14	FI_ACCOUNT	7800
113	Den	Raphaely	DRAPHEAL	515.127.4561	07-DEC-15	FI_ACCOUNT	6900
114	Den	Raphaely	DRAPHEAL	515.127.4561	07-DEC-10	PU_MAN	11000
115	Alexander	Khoo	AKHOO	515.127.4562	18-MAY-11	PU_CLERK	3100

5



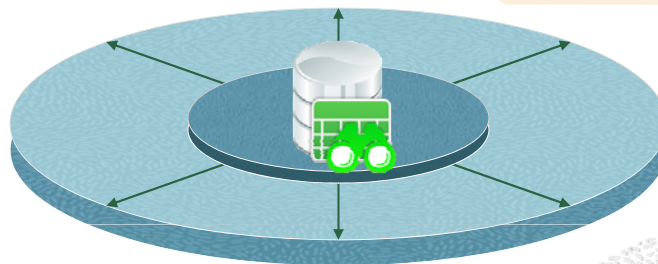
Advantages of Views

To restrict data access

To make complex queries easy

To provide data independence

To present different views of the same data



6



Simple Views and Complex Views

Feature	Simple Views	Complex Views
Number of tables	One	One or more
Contain functions	No	Yes
Contain groups of data	No	Yes
DML operations through a view	Yes	Not always

7



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8



Creating a View

- You embed a subquery in the `CREATE VIEW` statement:

```
CREATE [OR REPLACE] [FORCE|NOFORCE] VIEW view
[(alias[, alias]...)]
AS subquery
[WITH CHECK OPTION [CONSTRAINT constraint]]
[WITH READ ONLY [CONSTRAINT constraint]];
```

- The subquery can contain complex `SELECT` syntax.



9



Creating a View

- Create the `EMPVU80` view, which contains details of the employees in department 80:

```
CREATE VIEW empvu80
AS SELECT employee_id, last_name, salary
FROM employees
WHERE department_id = 80;
```

View EMPVU80 created.

- Describe the structure of the view by using the SQL*Plus `DESCRIBE` command:

```
DESCRIBE empvu80;
```

10



Creating a View

- Create a view by using column aliases in the subquery:

```
CREATE VIEW salvu50
AS SELECT employee_id ID_NUMBER, last_name NAME,
          salary*12 ANN_SALARY
FROM employees
WHERE department_id = 50;
```

View SALVU50 created.

- Select the columns from this view by the given alias names.

```
SELECT ID_NUMBER, NAME, ANN_SALARY
FROM salvu50;
```

11



Retrieving Data from a View

```
SELECT *
FROM salvu50;
```

	ID_NUMBER	NAME	ANN_SALARY
1	120	Weiss	96000
2	121	Fripp	98400
3	122	Kaufling	94800
4	123	Vollman	78000
5	124	Mourgos	69600
6	125	Nayer	38400
... 7	126	Mikkilineni	32400



12



Modifying a View

- Modify the EMPVU80 view by using a CREATE OR REPLACE VIEW clause. Add an alias for each column name:

```
CREATE OR REPLACE VIEW empvu80
(id_number, name, sal, department_id)
AS SELECT  employee_id, first_name || ' '
          || last_name, salary, department_id
FROM      employees
WHERE     department_id = 80;
```

View EMPVU80 created.

- Column aliases in the CREATE OR REPLACE VIEW clause are listed in the same order as the columns in the subquery.

13



Creating a Complex View

Create a complex view that contains group functions to display values from two tables:

```
CREATE OR REPLACE VIEW dept_sum_vu
(name, minsal, maxsal, avgsal)
AS SELECT  d.department_name, MIN(e.salary),
          MAX(e.salary), AVG(e.salary)
FROM      employees e JOIN departments d
USING     (department_id)
GROUP BY  d.department_name;
```

View DEPT_SUM_VU created.

14



View Information

DESCRIBE user_views

Name	Null	Type
VIEW_NAME	NOT NULL	VARCHAR2(128)
TEXT_LENGTH		NUMBER
TEXT		LONG
TEXT_VC		VARCHAR2(4000)
TYPE_TEXT_LENGTH		NUMBER
TYPE_TEXT		VARCHAR2(4000)
...		

SELECT view_name FROM user_views;

VIEW_NAME
1 EMP_DETAILS_VIEW
2 SALVU50
3 EMPVU80
4 DEPT_SUM_VU

**SELECT text FROM user_views
WHERE view_name = 'EMP_DETAILS_VIEW';**

TEXT
1 SELECT e.employee_id, e.job_id, e.manager_id, e.department_id, d.location_id, l.co
...
AND c.region_id = r.region_id AND j.job_id = e.job_id WITH READ ONLY

15

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16

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Rules for Performing DML Operations on a View

- You can usually perform DML operations on simple views.
- You cannot remove a row if the view contains:
 - Group functions
 - A GROUP BY clause
 - The DISTINCT keyword
 - The pseudocolumn ROWNUM keyword



17



Rules for Performing Modify Operations on a View

You cannot modify data in a view if it contains:

- Group functions
- A GROUP BY clause
- The DISTINCT keyword
- The pseudocolumn ROWNUM keyword
- Expressions



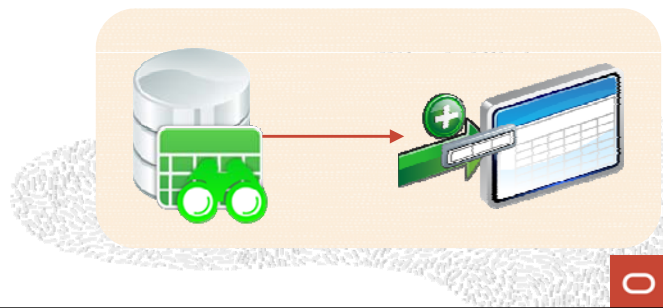
18



Rules for Performing Insert Operations Through a View

You cannot add data in a view if the view includes:

- Group functions
- A `GROUP BY` clause
- The `DISTINCT` keyword
- The pseudocolumn `ROWNUM` keyword
- Columns defined by expressions
- `NOT NULL` columns without default value in the base tables that are not selected by the view



19

Using the WITH CHECK OPTION Clause

```
CREATE OR REPLACE VIEW empvu20
AS SELECT *
   FROM   employees
  WHERE   department_id = 20
  WITH CHECK OPTION CONSTRAINT empvu20_ck ;
```

View EMPVU20 created.

20

Denying DML Operations

- You can ensure that no DML operations occur on your view by adding the `WITH READ ONLY` option to your view definition.
- Any attempt to perform a DML operation on any row in the view results in an Oracle server error.



21

Denying DML Operations

```
CREATE OR REPLACE VIEW empvu10
  (employee_number, employee_name, job_title)
AS SELECT employee_id, last_name, job_id
   FROM   employees
  WHERE   department_id = 10
  WITH READ ONLY ;
```

View EMPVU10 created.



22

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23

Removing a View

You can remove a view without losing data because a view is based on underlying tables in the database.

Syntax:

```
DROP VIEW view;
```

Example:

```
DROP VIEW empvu80;
```

```
View EMPVU80 dropped.
```



24

Summary

In this lesson, you should have learned how to:

- Create, modify, and remove views
- Query the dictionary views for view information

