



Institución Universitaria

Acreditada en Alta Calidad

ANDRES
MARTINEZ
GUTIERREZ

2 0 1 8 - 2

DATABASE ADMINISTRATION ADVANCED

AGENDA

- ① Analytics Functions
- ② Views

Analytics Functions

[https://docs.oracle.com/cd/E11882_01/server.112/e41084/
functions004.htm#SQLRF06174](https://docs.oracle.com/cd/E11882_01/server.112/e41084/functions004.htm#SQLRF06174)

<http://bit.ly/2P2bMs3>

ANALYTICS FUNCTIONS

- The group of rows is called a **Window**
 - For each row, a sliding window of rows is defined.
 - The window determines the range of rows used to perform the calculation.

ANALYTICS FUNCTIONS

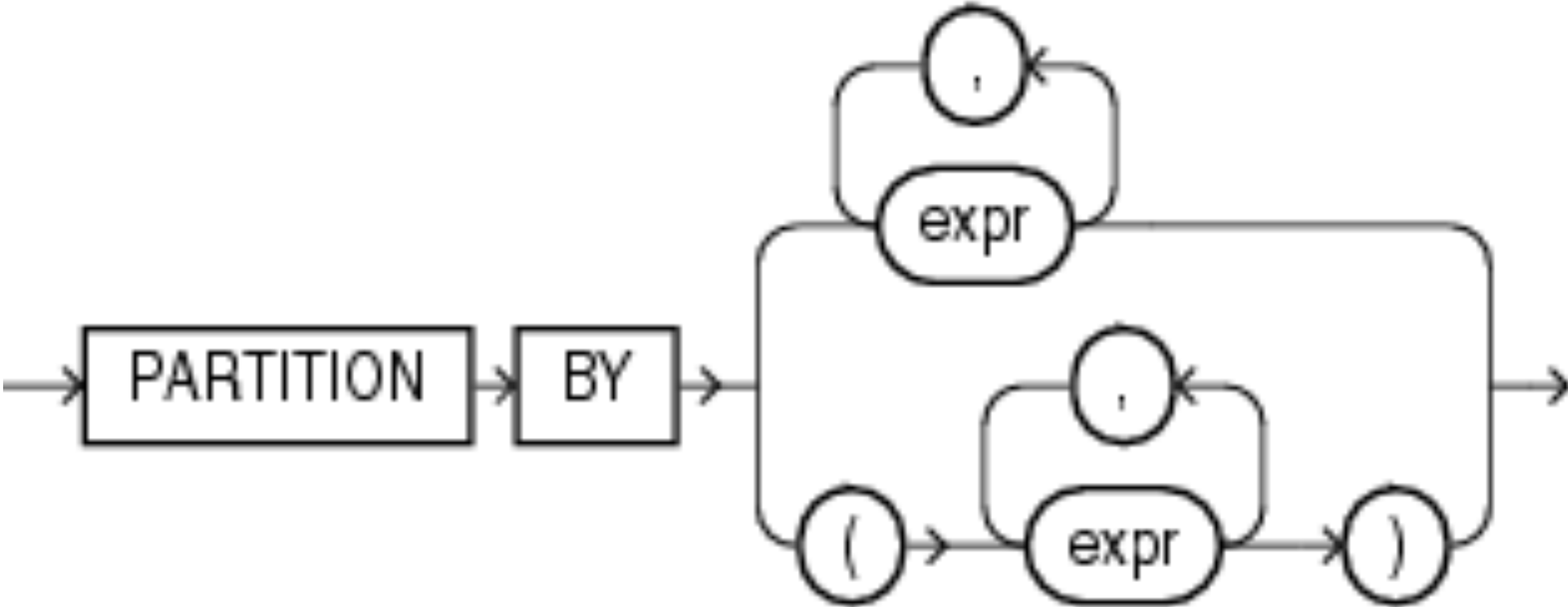
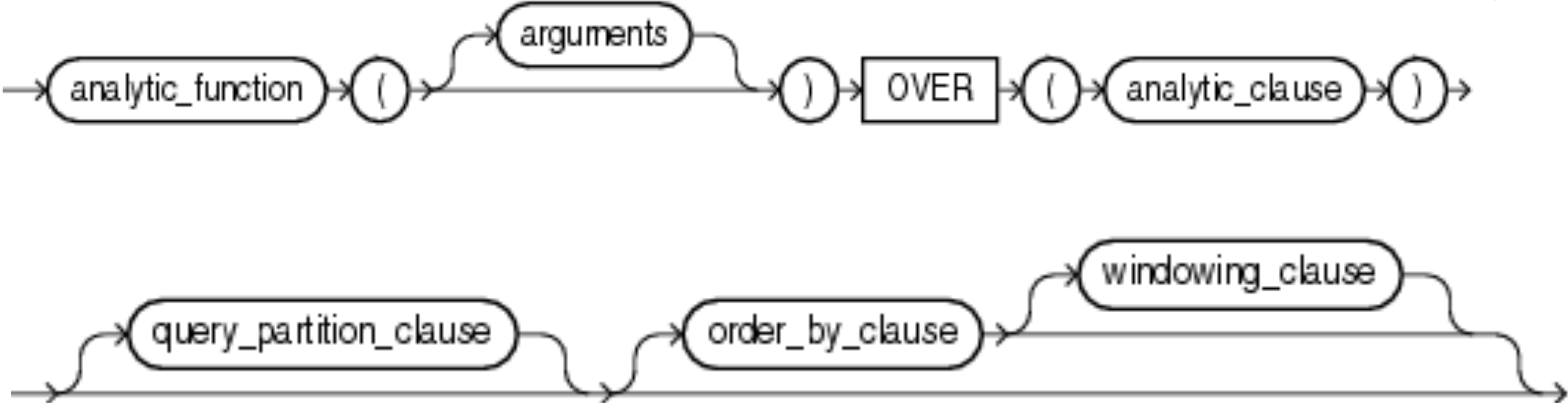
- Compute an aggregate value based on a group of rows
- They differ from aggregate functions in that they return multiple rows for each group
- They are executed just before of **ORDER BY** clause

ANALYTICS FUNCTIONS

- Commonly used to compute cumulative, moving, centered and reporting aggregates.
- A window function performs a calculation across a set of table rows that are somehow related to the current row.

ANALYTICS FUNCTIONS

- Unlike regular aggregate functions, use of a window function does not cause rows to become grouped into a single output row
- Behind the scenes, the window function is able to access more than just the current row of the query result



AVG	CORR	COUNT	COVAR_POP
COVAR_SAMP	CUME_DIST	DENSE_RANK	FIRST
FIRST_VALUE	LAG	LAST	LAST_VALUE
LEAD	LISTAGG	MAX	MEDIAN
MIN	NTH_VALUE	NTILE	PERCENT_RANK

PERCENTILE_CONT	PERCENTILE_DISC	RANK
RATIO_TO_REPORT	REGR_ (Linear Regression) Functions	ROW_NUMBER
STDDEV	STDDEV_POP	STDDEV_SAMP
SUM	VAR_POP	VAR_SAMP
VARIANCE		

**1. Count the number of
employees by
department order by
department**



```
1 select department, count(department)
2 from salaries
3 group by department order by department;
```

```
4
5 DEPARTMENT                                COUNT( DEPARTMENT )
6 -----
7 Accounting                                87
8 Business Development                      76
9 Engineering                               82
10 Human Resources                          85
11 Legal                                    80
12 Marketing                                91
13 Product Management                      85
14 Research and Development                89
15 Sales                                    73
16 Services                                88
17 Support                                 76
18 Training                                88
```

**2. List salaries and
count the number of
employees by
department order by
department**

```

1 SELECT id, first_name, last_name, department,
2 COUNT(*) OVER (PARTITION BY
3 department) department_count
4 FROM salaries
5 order by department;

```

	ID	FIRST_NAME	DEPARTMENT	DEPARTMENT_COUNT
7				
8				
9				
10	780	Roz	Accounting	87
11	786	Bowie	Accounting	87
12	788	Shannan	Accounting	87
13	790	Marlon	Accounting	87
14	799	Pinchas	Accounting	87
15	807	Gib	Accounting	87
16	816	Trude	Accounting	87
17	819	Mick	Accounting	87
18	821	Sharline	Accounting	87
19	844	Charity	Accounting	87
20	849	Garwin	Accounting	87
21	822	Haroun	Business Development	76
22	848	Minna	Business Development	76
23	882	Darin	Business Development	76
24	894	Dilly	Business Development	76
25	904	Bessie	Business Development	76
26	913	Daile	Business Development	76
27	914	Sascha	Business Development	76
28	923	Devondra	Business Development	76
29	944	Hendrik	Business Development	76
30	977	Manny	Business Development	76
31	994	Baillie	Business Development	76

2. List salaries and the average salary by department order by department if the salary is under 150USD (round average to 3 decimals)



```
1 SELECT id, first_name, salary, department,  
2 ROUND(AVG(salary) OVER (PARTITION BY department), 3) as AVG_by_department  
3 FROM salaries  
4 order by department;
```

5	6 ID	FIRST_NAME	SALARY	DEPARTMENT	AVG_BY_DEPARTMENT
7	--	-----	-----	-----	-----
8	780	Roz	591,66	Accounting	544,799
9	786	Bowie	132,52	Accounting	544,799
10	788	Shannan	113,54	Accounting	544,799
11	790	Marlon	520,73	Accounting	544,799
12	799	Pinchas	765,04	Accounting	544,799
13	807	Gib	483,03	Accounting	544,799
14	816	Trude	774,18	Accounting	544,799
15	819	Mick	285,17	Accounting	544,799
16	821	Sharline	505,23	Accounting	544,799
17	844	Charity	656,3	Accounting	544,799
18	849	Garwin	161,36	Accounting	544,799



```
1 SELECT id, first_name, salary, department,  
2 ROUND(AVG(salary) OVER (PARTITION BY department), 3) as AVG_by_department  
3 FROM salaries  
4 order by department;
```

5	6 ID	FIRST_NAME	SALARY	DEPARTMENT	AVG_BY_DEPARTMENT
7	--	-----	-----	-----	-----
8	780	Roz	591,66	Accounting	544,799
9	786	Bowie	132,52	Accounting	544,799
10	788	Shannan	113,54	Accounting	544,799
11	790	Marlon	520,73	Accounting	544,799
12	799	Pinchas	765,04	Accounting	544,799
13	807	Gib	483,03	Accounting	544,799
14	816	Trude	774,18	Accounting	544,799
15	819	Mick	285,17	Accounting	544,799
16	821	Sharline	505,23	Accounting	544,799
17	844	Charity	656,3	Accounting	544,799
18	849	Garwin	161,36	Accounting	544,799

One more example

```
SELECT CARTS.ID,  
CARTS.CUSTOMER_NAME,  
ITEMS.ID AS ITEM_ID,  
ITEMS.PRICE,  
SUM(PRICE) OVER (PARTITION BY CARTS.ID) TOTAL_CART,  
AVG(PRICE) OVER (PARTITION BY CARTS.ID) AVERAGE_PRICE,  
MIN(PRICE) OVER (PARTITION BY CARTS.ID) MIN_PRICE  
FROM CARTS  
INNER JOIN CART_DETAILS ON CARTS.ID = CART_DETAILS.CART_ID  
INNER JOIN ITEMS ON ITEMS.ID = CART_DETAILS.ITEM_ID  
WHERE CARTS.ID IN (2,7);
```

Views

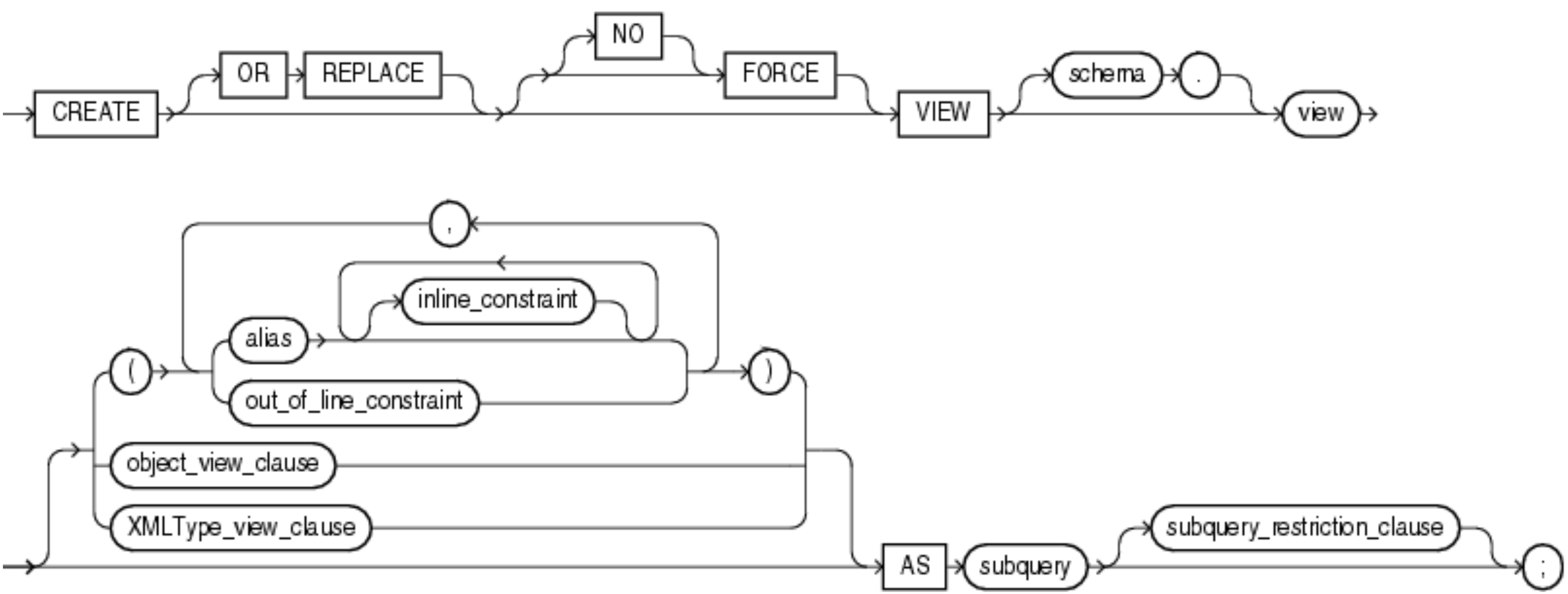
https://docs.oracle.com/cd/B19306_01/server.102/b14200/statements_8004.htm

Views

- *“Logical table based on one or more tables or views. A view contains no data itself. The tables upon which a view is based are called **base tables**”.*

Views (Pre-requisites)

- CREATE VIEW system privilege (**own schema**) or CREATE ANY VIEW (**any schema**)
- Privileges necessary to either select, insert, update, or delete rows from all the tables or views on which the view is based.



Views (To consider)

- Specify **OR REPLACE** to re-create the view if it already exists
- Specify **NOFORCE** if you want to create the view only if the base tables exist and the owner of the schema containing the view has privileges on them. This is the default.

Views (Restrictions)

- **AS subquery** identifies columns and rows of the table(s) that the view is based on. The select list of the subquery can contain up to **1000** expressions.
- The subquery cannot select the **CURRVAL** or **NEXTVAL** pseudocolumns.

Views (Restrictions)

- If the subquery selects the ROWID, ROWNUM, or LEVEL pseudocolumns, then those columns must have aliases in the view subquery

Views (Restrictions)

- If the subquery uses an **asterisk (*)** to select all columns of a table, and you later add new columns to the table, then ***the view will not contain those columns until you re-create the view*** by issuing a **CREATE OR REPLACE VIEW** statement

Updatable Views


- Each column in the view must map to a column of a single table
- If you want a join view to be updatable, the DML statement must affect only one table underlying the join.

Updatable Views

- **Must not contain:**

- A DISTINCT operator
- An aggregate or analytic function
- A GROUP BY, ORDER BY, MODEL, CONNECT BY, or START WITH clause

Updatable Views



```
1 CREATE VIEW clerk AS
2     SELECT employee_id, last_name, department_id, job_id
3     FROM employees
4     WHERE job_id = 'PU_CLERK'
5           or job_id = 'SH_CLERK'
6           or job_id = 'ST_CLERK';
7
8 UPDATE clerk SET job_id = 'PU_MAN' WHERE employee_id = 118;
```

Updatable Views (With Check option)

- You cannot subsequently insert a new row into clerk if the new employee is not a clerk.
- *You can update an employee's job_id from one type of clerk to another type of clerk.*
 - The update in the preceding statement would fail, because the view cannot access employees with non-clerk job_id.

Updatable Views (With Check option)



```
1 CREATE VIEW clerk AS
2     SELECT employee_id, last_name, department_id, job_id
3     FROM employees
4     WHERE job_id = 'PU_CLERK'
5           or job_id = 'SH_CLERK'
6           or job_id = 'ST_CLERK'
7     WITH CHECK OPTION;
```

Thank you!