

Spool Generated For Class of Oracle By Satish K Yellanki

SQL> cl scr

```
SQL> SELECT ColumnName
  2 FROM TableName
  3 WHERE ColumnName = Condition
  4 <SET OPERATOR>
  5 SELECT ColumnName
  6 FROM TableName
  7 WHERE ColumnName = Condition
  8
```

```
SQL> SELECT Ename, Dname
  2 FROM Emp, Dept
  3 WHERE Emp.Deptno = Dept.Deptno;
```

ENAME	DNAME
KING	ACCOUNTING
CLARK	ACCOUNTING
MILLER	ACCOUNTING
JONES	RESEARCH
SCOTT	RESEARCH
ADAMS	RESEARCH
SMITH	RESEARCH
FORD	RESEARCH
BLAKE	SALES
MARTIN	SALES
ALLEN	SALES

ENAME	DNAME
TURNER	SALES
JAMES	SALES
WARD	SALES

14 rows selected.

```
SQL> SELECT Ename
  2 FROM Emp
  3 UNION
  4 SELECT Dname
  5 FROM Dept;
```

ENAME
ACCOUNTING
ADAMS
ALLEN
BLAKE
CLARK
FORD
JAMES
JONES
KING
MARTIN
MILLER

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ENAME

OPERATIONS

RESEARCH

SALES

SCOTT

SMITH

TURNER

WARD

18 rows selected.

SQL> ED

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```
1 SELECT Ename, Deptno
```

```
2 FROM Emp
```

```
3 UNION
```

```
4 SELECT Dname, Deptno
```

```
5* FROM Dept
```

SQL> /

ENAME	DEPTNO
-------	--------

ACCOUNTING	10
------------	----

ADAMS	20
-------	----

ALLEN	30
-------	----

BLAKE	30
-------	----

CLARK	10
-------	----

FORD	20
------	----

JAMES	30
-------	----

JONES	20
-------	----

KING	10
------	----

MARTIN	30
--------	----

MILLER	10
--------	----

ENAME	DEPTNO
-------	--------

OPERATIONS	40
------------	----

RESEARCH	20
----------	----

SALES	30
-------	----

SCOTT	20
-------	----

SMITH	20
-------	----

TURNER	30
--------	----

WARD	30
------	----

18 rows selected.

SQL> ED

Wrote file afiedt.buf

```
1 SELECT Ename, Deptno
```

```
2 FROM Emp
```

```
3 UNION
```

```
4 SELECT Dname
```

```
5* FROM Dept
```

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```
SQL> /
SELECT Ename, Deptno
*
ERROR at line 1:
ORA-01789: query block has incorrect number of result columns
```

```
SQL> ED
Wrote file afiedt.buf
```

```
 1 SELECT Ename, Deptno
 2 FROM Emp
 3 UNION
 4 SELECT Deptno, Dname
 5* FROM Dept
```

```
SQL> /
SELECT Ename, Deptno
      *
ERROR at line 1:
ORA-01790: expression must have same datatype as corresponding expression
```

```
SQL> ED
Wrote file afiedt.buf
```

```
 1 SELECT Ename, Deptno
 2 FROM Emp
 3 ORDER BY Ename
 4 UNION
 5 SELECT Dname, Deptno
 6* FROM Dept
```

```
SQL> /
UNION
*
ERROR at line 4:
ORA-00933: SQL command not properly ended
```

```
SQL> ED
Wrote file afiedt.buf
```

```
 1 SELECT Ename, Deptno
 2 FROM Emp
 3 UNION
 4 SELECT Dname, Deptno
 5 FROM Dept
 6* ORDER BY Ename
```

```
SQL> /

ENAME                DEPTNO
-----
ACCOUNTING            10
ADAMS                  20
ALLEN                  30
BLAKE                  30
CLARK                  10
```

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FORD	20
JAMES	30
JONES	20
KING	10
MARTIN	30
MILLER	10

ENAME	DEPTNO
OPERATIONS	40
RESEARCH	20
SALES	30
SCOTT	20
SMITH	20
TURNER	30
WARD	30

18 rows selected.

SQL> ED

Wrote file afiedt.buf

```
1 (
2  SELECT Ename, Deptno
3  FROM Emp
4  UNION
5  SELECT Dname, Deptno
6  FROM Dept
7 )
8* ORDER BY Ename
SQL> /
```

ENAME	DEPTNO
ACCOUNTING	10
ADAMS	20
ALLEN	30
BLAKE	30
CLARK	10
FORD	20
JAMES	30
JONES	20
KING	10
MARTIN	30
MILLER	10

ENAME	DEPTNO
OPERATIONS	40
RESEARCH	20
SALES	30
SCOTT	20
SMITH	20
TURNER	30
WARD	30

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18 rows selected.

SQL> ED

Wrote file afiedt.buf

```
1 (
2  SELECT Ename, Deptno
3  FROM Emp
4  UNION
5  SELECT Dname, Deptno
6  FROM Dept
7 )
8* ORDER BY Dname
SQL> /
ORDER BY Dname
*
```

ERROR at line 8:
ORA-00904: "DNAME": invalid identifier

SQL> ED

Wrote file afiedt.buf

```
1 (
2  SELECT Ename, Deptno
3  FROM Emp
4  UNION
5  SELECT Dname, Deptno
6  FROM Dept
7 )
8* ORDER BY 1
SQL> /
```

ENAME	DEPTNO
ACCOUNTING	10
ADAMS	20
ALLEN	30
BLAKE	30
CLARK	10
FORD	20
JAMES	30
JONES	20
KING	10
MARTIN	30
MILLER	10

ENAME	DEPTNO
OPERATIONS	40
RESEARCH	20
SALES	30
SCOTT	20
SMITH	20
TURNER	30
WARD	30

Spool Generated For Class of Oracle By Satish K Yellanki

18 rows selected.

```
SQL> cl scr
```

```
SQL> SELECT Ename
  2  FROM Emp
  3  WHERE Deptno = 10
  4  UNION
  5  SELECT Ename
  6  FROM Emp
  7  WHERE Deptno = 30;
```

ENAME

ALLEN
BLAKE
CLARK
JAMES
KING
MARTIN
MILLER
TURNER
WARD

9 rows selected.

```
SQL> SELECT Ename
  2  FROM Emp
  3  WHERE Deptno IN(10, 30);
```

ENAME

KING
BLAKE
CLARK
MARTIN
ALLEN
TURNER
JAMES
WARD
MILLER

9 rows selected.

```
SQL> SET AUTOTRACE ON EXPLAIN
```

```
SQL> SELECT Ename
  2  FROM Emp
  3  WHERE Deptno IN(10, 30);
```

ENAME

KING
BLAKE
CLARK
MARTIN

Spool Generated For Class of Oracle By Satish K Yellanki

ALLEN
TURNER
JAMES
WARD
MILLER

9 rows selected.

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=3 Card=9 Bytes=81)  
1      0      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=9 Bytes=  
          81)
```

```
SQL> SELECT Ename  
2 FROM Emp  
3 WHERE Deptno = 10  
4 UNION  
5 SELECT Ename  
6 FROM Emp  
7 WHERE Deptno = 30;
```

ENAME

```
-----  
ALLEN  
BLAKE  
CLARK  
JAMES  
KING  
MARTIN  
MILLER  
TURNER  
WARD
```

9 rows selected.

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=10 Bytes=90  
          )  
  
1      0      SORT (UNIQUE) (Cost=8 Card=10 Bytes=90)  
2      1      UNION-ALL  
3      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By  
          tes=45)  
  
4      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By  
          tes=45)
```

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```
SQL> ED
Wrote file afiedt.buf

 1  SELECT Ename
 2  FROM Emp
 3  WHERE Deptno = 10
 4  INTERSECT
 5  SELECT Ename
 6  FROM Emp
 7* WHERE Deptno = 30
SQL> /
```

no rows selected

Execution Plan

```
-----
 0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=5 Bytes=90)
 1      0      INTERSECTION
 2      1      SORT (UNIQUE) (Cost=4 Card=5 Bytes=45)
 3      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=45)

 4      1      SORT (UNIQUE) (Cost=4 Card=5 Bytes=45)
 5      4      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=45)
```

```
SQL> ED
Wrote file afiedt.buf

 1  SELECT Ename
 2  FROM Emp
 3  WHERE Deptno = 10
 4  MINUS
 5  SELECT Ename
 6  FROM Emp
 7* WHERE Deptno = 30
SQL> /
```

ENAME

```
-----
CLARK
KING
MILLER
```

Execution Plan

```
-----
 0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=5 Bytes=90)
 1      0      MINUS
 2      1      SORT (UNIQUE) (Cost=4 Card=5 Bytes=45)
 3      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=45)
```

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```
tes=45)
4 1 SORT (UNIQUE) (Cost=4 Card=5 Bytes=45)
5 4 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By
tes=45)
```

SQL> cl scr

```
SQL> SELECT Job
2 FROM Emp
3 WHERE Deptno = 10
4 UNION
5 SELECT Job
6 FROM Emp
7 WHERE Deptno = 30;
```

JOB

```
-----
CLERK
MANAGER
PRESIDENT
SALESMAN
```

Execution Plan

```
-----
0 SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=10 Bytes=110)
1 0 SORT (UNIQUE) (Cost=8 Card=10 Bytes=110)
2 1 UNION-ALL
3 2 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By
tes=55)
4 2 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By
tes=55)
```

SQL> ED

Wrote file afiedt.buf

```
1 SELECT Job
2 FROM Emp
3 WHERE Deptno = 10
4 UNION ALL
5 SELECT Job
6 FROM Emp
7* WHERE Deptno = 30
SQL> /
```

JOB

Spool Generated For Class of Oracle By Satish K Yellanki

```
-----  
PRESIDENT  
MANAGER  
CLERK  
MANAGER  
SALESMAN  
SALESMAN  
SALESMAN  
CLERK  
SALESMAN
```

9 rows selected.

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=6 Card=10 Bytes=11  
      0)  
  
1      0      UNION-ALL  
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)  
  
3      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)
```

SQL> ED

Wrote file afiedt.buf

```
1  SELECT Job  
2  FROM Emp  
3  WHERE Deptno = 10  
4  INTESECT  
5  SELECT Job  
6  FROM Emp  
7* WHERE Deptno = 30
```

SQL> /

INTESECT

*

ERROR at line 4:

ORA-00933: SQL command not properly ended

SQL> ED

Wrote file afiedt.buf

```
1  SELECT Job  
2  FROM Emp  
3  WHERE Deptno = 10  
4  INTERSECT  
5  SELECT Job  
6  FROM Emp  
7* WHERE Deptno = 30
```

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SQL> /

JOB

CLERK
MANAGER

Execution Plan

0 SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=5 Bytes=110
)

1 0 INTERSECTION
2 1 SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
3 2 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

4 1 SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
5 4 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

SQL> ED

Wrote file afiedt.buf

```
1  SELECT Job
2  FROM Emp
3  WHERE Deptno = 10
4  MINUS
5  SELECT Job
6  FROM Emp
7* WHERE Deptno = 30
SQL> /
```

JOB

PRESIDENT

Execution Plan

0 SELECT STATEMENT Optimizer=ALL_ROWS (Cost=8 Card=5 Bytes=110
)

1 0 MINUS
2 1 SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
3 2 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

4 1 SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
5 4 TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

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SQL> cl scr

```
SQL> SELECT Job
  2 FROM Emp
  3 WHERE Deptno = 10
  4 UNION
  5 SELECT Job
  6 FROM Emp
  7 WHERE Deptno = 20
  8 INTERSECT
  9 SELECT Job
 10 FROM Emp
 11 WHERE Deptno = 30;
```

JOB

CLERK
MANAGER

Execution Plan

```
-----  
 0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=12 Card=5 Bytes=16  
        5)  
  
 1      0      INTERSECTION  
 2      1          SORT (UNIQUE) (Cost=12 Card=5 Bytes=165)  
 3      2          UNION-ALL  
 4      3          TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5  
        Bytes=55)  
  
 5      3          TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5  
        Bytes=55)  
  
 6      1          SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)  
 7      6          TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By  
        tes=55)
```

SQL> ED

Wrote file afiedt.buf

```
 1 SELECT Job
 2 FROM Emp
 3 WHERE Deptno = 10
 4 UNION
 5 (
 6 SELECT Job
 7 FROM Emp
 8 WHERE Deptno = 20
 9 INTERSECT
```

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```
10  SELECT Job
11  FROM Emp
12  WHERE Deptno = 30
13* )
SQL> /
```

```
JOB
-----
CLERK
MANAGER
PRESIDENT
```

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=12 Card=10 Bytes=165)

1      0      SORT (UNIQUE) (Cost=12 Card=10 Bytes=165)
2      1          UNION-ALL
3      2          TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

4      2          INTERSECTION
5      4              SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
6      5              TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)

7      4              SORT (UNIQUE) (Cost=4 Card=5 Bytes=55)
8      7              TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=55)
```

```
SQL> cl scr
```

```
SQL> SELECT Deptno, Dname
2  FROM Emp
3  WHERE Deptno = &Gdeptno1
4  UNION
5  SELECT Ename, Sal, HireDate
6  FROM Emp
7  WHERE Deptno = &Gdeptno2;
```

```
Enter value for gdeptno1: 10
```

```
Enter value for gdeptno2: 10
```

```
SELECT Deptno, Dname
```

```
*
```

```
ERROR at line 1:
```

```
ORA-00904: "DNAME": invalid identifier
```

```
SQL> ED
```

```
Wrote file afiedt.buf
```

```
1  SELECT Deptno, Dname
```

Spool Generated For Class of Oracle By Satish K Yellanki

```
2 FROM Dept
3 WHERE Deptno = &GDeptno1
4 UNION
5 SELECT Ename, Sal, HireDate
6 FROM Emp
7* WHERE Deptno = &GDeptno2
SQL>
SQL> 10
SP2-0226: Invalid line number
SQL> 10
SP2-0226: Invalid line number
SQL> /
Enter value for gdeptno1: 10
Enter value for gdeptno2: 10
SELECT Deptno, Dname
*
ERROR at line 1:
ORA-01789: query block has incorrect number of result columns
```

```
SQL> cl scr
```

```
SQL> ED
```

```
Wrote file afiedt.buf
```

```
1 SELECT Deptno, Dname, NULL Ename, NULL Sal, NULL HireDate
2 FROM Dept
3 WHERE Deptno = &GDeptno1
4 UNION
5 SELECT NULL, NULL, Ename, Sal, HireDate
6 FROM Emp
7* WHERE Deptno = &GDeptno2
SQL> /
Enter value for gdeptno1: 10
Enter value for gdeptno2: 10
```

DEPTNO	DNAME	ENAME	SAL	HIREDATE
10	ACCOUNTING	CLARK	2450	09-JUN-81
		KING	5000	17-NOV-81
		MILLER	1300	23-JAN-82

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=6 Card=6 Bytes=118
      )

1      0      SORT (UNIQUE) (Cost=6 Card=6 Bytes=118)
2      1          UNION-ALL
3      2          TABLE ACCESS (BY INDEX ROWID) OF 'DEPT' (TABLE) (Cost=
      1 Card=1 Bytes=13)

4      3          INDEX (UNIQUE SCAN) OF 'DEPT_PRIMARY_KEY' (INDEX (UN
      IQUE)) (Cost=0 Card=1)
```

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```
5      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 Bytes=105)
```

SQL> /

Enter value for gdeptno1: 20

Enter value for gdeptno2: 20

DEPTNO	DNAME	ENAME	SAL	HIREDATE
20	RESEARCH	ADAMS	1100	12-JAN-83
		FORD	3000	03-DEC-81
		JONES	2975	02-APR-81
		SCOTT	3000	09-DEC-82
		SMITH	800	17-DEC-80

6 rows selected.

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=6 Card=6 Bytes=118  
      )  
  
1      0      SORT (UNIQUE) (Cost=6 Card=6 Bytes=118)  
2      1      UNION-ALL  
3      2      TABLE ACCESS (BY INDEX ROWID) OF 'DEPT' (TABLE) (Cost=  
      1 Card=1 Bytes=13)  
  
4      3      INDEX (UNIQUE SCAN) OF 'DEPT_PRIMARY_KEY' (INDEX (UN  
      IQUE)) (Cost=0 Card=1)  
  
5      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By  
      tes=105)
```

SQL> ED

Wrote file afiedt.buf

```
1  SELECT Deptno, Dname, NULL Ename, NULL Sal, NULL HireDate  
2  FROM Dept  
3  WHERE Deptno = &GDeptno1  
4  UNION  
5  SELECT NULL, NULL, Ename, Sal, HireDate  
6  FROM Emp  
7  WHERE Deptno = &GDeptno2  
8  UNION  
9  SELECT NULL, NULL, NULL, SUM(Sal), NULL  
10 FROM Emp  
11* WHERE Deptno = &GDeptno3
```

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Spool Generated For Class of Oracle By Satish K Yellanki

```
SQL> /  
Enter value for gdeptno1: 10  
Enter value for gdeptno2: 10  
Enter value for gdeptno3: 10
```

DEPTNO	DNAME	ENAME	SAL	HIREDATE
10	ACCOUNTING	CLARK	2450	09-JUN-81
		KING	5000	17-NOV-81
		MILLER	1300	23-JAN-82
			8750	

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=10 Card=7 Bytes=125)  
      5)  
  
1      0      SORT (UNIQUE) (Cost=10 Card=7 Bytes=125)  
2      1      UNION-ALL  
3      2      TABLE ACCESS (BY INDEX ROWID) OF 'DEPT' (TABLE) (Cost=  
      1 Card=1 Bytes=13)  
  
4      3      INDEX (UNIQUE SCAN) OF 'DEPT_PRIMARY_KEY' (INDEX (UN  
      IQUE)) (Cost=0 Card=1)  
  
5      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5 By  
      tes=105)  
  
6      2      SORT (AGGREGATE) (Cost=4 Card=1 Bytes=7)  
7      6      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=5  
      Bytes=35)
```

```
SQL> cl scr
```

```
SQL> SELECT Deptno, SUM(Sal)  
2 FROM Emp  
3 GROUP BY Deptno;
```

DEPTNO	SUM(SAL)
10	8750
20	10875
30	9400

Execution Plan

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=4 Card=3 Bytes=21)  
1      0      SORT (GROUP BY) (Cost=4 Card=3 Bytes=21)  
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Byt  
      es=98)
```

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```
SQL> SELECT SUM(Sal)
2 FROM Emp;
```

```
SUM(SAL)
-----
29025
```

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=3 Card=1 Bytes=4)
1      0      SORT (AGGREGATE)
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=56)
```

```
SQL> ED
```

```
Wrote file afiedt.buf
```

```
1 SELECT Deptno, SUM(Sal), (SELECT SUM(Sal) FROM Emp) OrgSal
2 FROM Emp
3* GROUP BY Deptno
SQL> /
```

DEPTNO	SUM(SAL)	ORGSAL
10	8750	29025
20	10875	29025
30	9400	29025

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=4 Card=3 Bytes=21)
1      0      SORT (AGGREGATE)
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=56)

3      0      SORT (GROUP BY) (Cost=4 Card=3 Bytes=21)
4      3      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=98)
```

```
SQL> ED
```

```
Wrote file afiedt.buf
```

```
1 SELECT Deptno, SUM(Sal), OrGSal
2 FROM Emp, (
```

Spool Generated For Class of Oracle By Satish K Yellanki

```
3      SELECT
4      SUM(Sal) OrGSal
5      FROM Emp)
6* GROUP BY Deptno, OrGSal
SQL> /
```

DEPTNO	SUM(SAL)	ORGSAL
10	8750	29025
20	10875	29025
30	9400	29025

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=7 Card=3 Bytes=60)
1      0      SORT (GROUP BY) (Cost=7 Card=3 Bytes=60)
2      1      MERGE JOIN (CARTESIAN) (Cost=6 Card=14 Bytes=280)
3      2      VIEW (Cost=3 Card=1 Bytes=13)
4      3      SORT (AGGREGATE)
5      4      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=
14 Bytes=56)

6      2      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 B
ytes=98)
```

```
SQL> SELECT Deptno, SUM(Sal) SalSum
2 FROM Emp
3 GROUP BY Deptno
4 UNION
5 SELECT NULL, SUM(Sal)
6 FROM Emp;
```

DEPTNO	SALSUM
10	8750
20	10875
30	9400
	29025

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=9 Card=4 Bytes=25)
1      0      SORT (UNIQUE) (Cost=9 Card=4 Bytes=25)
2      1      UNION-ALL
3      2      SORT (GROUP BY) (Cost=5 Card=3 Bytes=21)
4      3      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14
Bytes=98)

5      2      SORT (AGGREGATE) (Cost=4 Card=1 Bytes=4)
6      5      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14
Bytes=56)
```

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Spool Generated For Class of Oracle By Satish K Yellanki

```
SQL> SELECT Deptno, Job, SUM(Sal)
2 FROM Emp
3 GROUP BY Deptno, Job;
```

DEPTNO	JOB	SUM(SAL)
10	CLERK	1300
10	MANAGER	2450
10	PRESIDENT	5000
20	CLERK	1900
20	ANALYST	6000
20	MANAGER	2975
30	CLERK	950
30	MANAGER	2850
30	SALESMAN	5600

9 rows selected.

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=4 Card=11 Bytes=165)

1      0      SORT (GROUP BY) (Cost=4 Card=11 Bytes=165)
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=210)
```

```
SQL> SELECT Deptno, SUM(Sal)
2 FROM Emp
3 GROUP BY Deptno;
```

DEPTNO	SUM(SAL)
10	8750
20	10875
30	9400

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=4 Card=3 Bytes=21)
1      0      SORT (GROUP BY) (Cost=4 Card=3 Bytes=21)
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=98)
```

Spool Generated For Class of Oracle By Satish K Yellanki

```
SQL> SELECT SUM(Sal)
2 FROM Emp;
```

```
SUM(SAL)
-----
29025
```

Execution Plan

```
-----
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=3 Card=1 Bytes=4)
1      0      SORT (AGGREGATE)
2      1      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14 Bytes=56)
```

```
SQL> ED
```

```
Wrote file afiedt.buf
```

```
1  SELECT Deptno, Job, SUM(Sal) SalSum
2  FROM Emp
3  GROUP BY Deptno, Job
4  UNION
5  SELECT Deptno,NULL, SUM(Sal)
6  FROM Emp
7  GROUP BY Deptno
8  UNION
9  SELECT NULL, NULL, SUM(Sal)
10* FROM Emp
SQL> /
```

DEPTNO	JOB	SALSUM
10	CLERK	1300
10	MANAGER	2450
10	PRESIDENT	5000
10		8750
20	ANALYST	6000
20	CLERK	1900
20	MANAGER	2975
20		10875
30	CLERK	950
30	MANAGER	2850
30	SALESMAN	5600
DEPTNO	JOB	SALSUM
30		9400
		29025

```
13 rows selected.
```

Execution Plan

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Spool Generated For Class of Oracle By Satish K Yellanki

```
-----  
0      SELECT STATEMENT Optimizer=ALL_ROWS (Cost=14 Card=15 Bytes=1  
      90)  
  
1      0      SORT (UNIQUE) (Cost=14 Card=15 Bytes=190)  
2      1      UNION-ALL  
3      2      SORT (GROUP BY) (Cost=5 Card=11 Bytes=165)  
4      3      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14  
      Bytes=210)  
  
5      2      SORT (GROUP BY) (Cost=5 Card=3 Bytes=21)  
6      5      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14  
      Bytes=98)  
  
7      2      SORT (AGGREGATE) (Cost=4 Card=1 Bytes=4)  
8      7      TABLE ACCESS (FULL) OF 'EMP' (TABLE) (Cost=3 Card=14  
      Bytes=56)  
SQL> SPOOL OFF
```