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

ENAME   DNAME
------  --------------
CLARK   ACCOUNTING
KING    ACCOUNTING
MILLER  ACCOUNTING
JONES   RESEARCH
FORD    RESEARCH
ADAMS   RESEARCH
SMITH   RESEARCH
SCOTT   RESEARCH
WARD    SALES
TURNER  SALES
ALLEN   SALES

ENAME   DNAME
------  --------------
JAMES   SALES
BLAKE   SALES
MARTIN  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
```

```
ENAME
---------------
OPERATIONS
RESEARCH
SALES
SCOTT
SMITH
TURNER
WARD

18 rows selected.

SQL> SELECT Ename, Job
  2  FROM Emp
  3  UNION
  4  SELECT Dname
  5  FROM Dept;
SELECT Ename, Job
*
ERROR at line 1:
ORA-01789: query block has incorrect number of result columns


SQL> SELECT Ename, Job
  2  FROM Emp
  3  UNION
  4  SELECT Dname, Loc
  5  FROM Dept;

ENAME           JOB
--------------- ----------
ACCOUNTING      NEW YORK
ADAMS           CLERK
ALLEN           SALESMAN
BLAKE           MANAGER
CLARK           MANAGER
FORD            ANALYST
JAMES           CLERK
JONES           MANAGER
KING            PRESIDENT
MARTIN          SALESMAN
MILLER          CLERK

ENAME           JOB
--------------- ----------
OPERATIONS      BOSTON
RESEARCH        DALLAS
```

```
SALES          CHICAGO
SCOTT          ANALYST
SMITH          CLERK
TURNER         SALESMAN
WARD           SALESMAN

18 rows selected.

SQL> SELECT Ename, Sal
  2  FROM Emp
  3  UNION
  4  SELECT Dname, Loc
  5  FROM Dept;
SELECT Ename, Sal
              *
ERROR at line 1:
ORA-01790: expression must have same datatype as corresponding
expression


SQL> SELECT Ename, TO_CHAR(Sal) Sal
  2  FROM Emp
  3  UNION
  4  SELECT Dname, Loc
  5  FROM Dept;

ENAME          SAL
-------------- -----------------------------------------
ACCOUNTING     NEW YORK
ADAMS          1100
ALLEN          1600
BLAKE          2850
CLARK          2450
FORD           3000
JAMES          950
JONES          2975
KING           5000
MARTIN         1250
MILLER         1300

ENAME          SAL
-------------- -----------------------------------------
OPERATIONS     BOSTON
RESEARCH       DALLAS
SALES          CHICAGO
SCOTT          3000
SMITH          800
```

```
TURNER              1500
WARD                1250

18 rows selected.

SQL> SELECT Ename, Job
  2  FROM Emp
  3  ORDER BY Job
  4  UNION
  5  SELECT Dname, Loc
  6  FROM Dept;
UNION
*
ERROR at line 4:
ORA-00933: SQL command not properly ended

SQL> SELECT Ename, Job
  2  FROM Emp
  3  UNION
  4  SELECT Dname, Loc
  5  FROM Dept
  6  ORDER BY Ename;

ENAME           JOB
--------------- ----------
ACCOUNTING      NEW YORK
ADAMS           CLERK
ALLEN           SALESMAN
BLAKE           MANAGER
CLARK           MANAGER
FORD            ANALYST
JAMES           CLERK
JONES           MANAGER
KING            PRESIDENT
MARTIN          SALESMAN
MILLER          CLERK

ENAME           JOB
--------------- ----------
OPERATIONS      BOSTON
RESEARCH        DALLAS
SALES           CHICAGO
SCOTT           ANALYST
SMITH           CLERK
TURNER          SALESMAN
WARD            SALESMAN
```

```
18 rows selected.


SQL> SELECT Ename, Job
  2  FROM Emp
  3  UNION
  4  SELECT Dname, Loc
  5  FROM Dept
  6  ORDER BY Dname;
ORDER BY Dname
         *
ERROR at line 6:
ORA-00904: "DNAME": invalid identifier


SQL> (
  2     SELECT Ename, Job
  3     FROM Emp
  4     UNION
  5     SELECT Dname, Loc
  6     FROM Dept
  7     )
  8  ORDER BY Job;

ENAME           JOB
--------------- ----------
FORD            ANALYST
SCOTT           ANALYST
OPERATIONS      BOSTON
SALES           CHICAGO
ADAMS           CLERK
JAMES           CLERK
MILLER          CLERK
SMITH           CLERK
RESEARCH        DALLAS
BLAKE           MANAGER
CLARK           MANAGER

ENAME           JOB
--------------- ----------
JONES           MANAGER
ACCOUNTING      NEW YORK
KING            PRESIDENT
ALLEN           SALESMAN
MARTIN          SALESMAN
TURNER          SALESMAN
WARD            SALESMAN
```

18 rows selected.

```
SQL> (
  2      SELECT Ename, Job
  3      FROM Emp
  4      UNION
  5      SELECT Dname, Loc
  6      FROM Dept
  7      )
  8   ORDER BY 1;
```

```
ENAME           JOB
--------------- ----------
ACCOUNTING      NEW YORK
ADAMS           CLERK
ALLEN           SALESMAN
BLAKE           MANAGER
CLARK           MANAGER
FORD            ANALYST
JAMES           CLERK
JONES           MANAGER
KING            PRESIDENT
MARTIN          SALESMAN
MILLER          CLERK

ENAME           JOB
--------------- ----------
OPERATIONS      BOSTON
RESEARCH        DALLAS
SALES           CHICAGO
SCOTT           ANALYST
SMITH           CLERK
TURNER          SALESMAN
WARD            SALESMAN
```

18 rows selected.

```
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

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

JOB
----------
SALESMAN
CLERK
PRESIDENT
MANAGER

SQL> SET AUTOTRACE ON EXPLAIN
SQL> SELECT DISTINCT Job
  2  FROM Emp
  3  WHERE Deptno IN (10,30);

JOB
----------
SALESMAN
CLERK
PRESIDENT
MANAGER


Execution Plan
----------------------------------------------------------------
Plan hash value: 3709190377

--------------------------------------------------------------------
-----------
| Id  | Operation          | Name | Rows  | Bytes | Cost (%CPU)|
Time     |
--------------------------------------------------------------------
-----------
|   0 | SELECT STATEMENT   |      |     5 |    55 |     4  (25)|
00:00:01 |
|   1 |  HASH UNIQUE       |      |     5 |    55 |     4  (25)|
00:00:01 |
|*  2 |   TABLE ACCESS FULL| EMP  |     9 |    99 |     3   (0)|
00:00:01 |
```

```
----------------------------------------------------------------
-----------

Predicate Information (identified by operation id):
---------------------------------------------------------

   2 - filter("DEPTNO"=10 OR "DEPTNO"=30)

SQL>
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
----------------------------------------------------------
Plan hash value: 3774834881

----------------------------------------------------------------
------------
| Id  | Operation          | Name | Rows  | Bytes | Cost
(%CPU)| Time     |
----------------------------------------------------------------
------------
|   0 | SELECT STATEMENT    |      |     9 |    99 |     8
(63)| 00:00:01 |
|   1 |  SORT UNIQUE        |      |     9 |    99 |     8
(63)| 00:00:01 |
|   2 |   UNION-ALL         |      |       |       |
|           |
|*  3 |    TABLE ACCESS FULL| EMP  |     3 |    33 |     3
(0)| 00:00:01 |
|*  4 |    TABLE ACCESS FULL| EMP  |     6 |    66 |     3
(0)| 00:00:01 |
----------------------------------------------------------------
------------
```

```
Predicate Information (identified by operation id):
---------------------------------------------------------

   3 - filter("DEPTNO"=10)
   4 - filter("DEPTNO"=30)

SQL> SET AUTOTRACE OFF EXPLAIN
SQL> SELECT JOB
  2   FROM EMP
  3   WHERE DEPTNO=20
  4   UNION ALL
  5   SELECT JOB
  6   FROM EMP
  7   WHERE DEPTNO=30;

JOB
----------
CLERK
MANAGER
ANALYST
CLERK
ANALYST
SALESMAN
SALESMAN
SALESMAN
MANAGER
SALESMAN
CLERK

11 rows selected.

SQL> SELECT JOB
  2   FROM EMP
  3   WHERE DEPTNO IN(10,30);

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

```
9 rows selected.

SQL> SELECT JOB
  2  FROM EMP
  3  WHERE DEPTNO =10
  4  INTERSECT
  5  SELECT JOB
  6  FROM EMP
  7  WHERE DEPTNO =30;

JOB
----------
CLERK
MANAGER


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

JOB
----------
PRESIDENT

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

JOB
----------
CLERK
MANAGER

SQL> (
```

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

JOB
----------
CLERK
MANAGER

SQL> SELECT Job
  2    FROM Emp
  3    WHERE Deptno =10
  4    UNION
  5    (
  6     SELECT Job
  7    FROM Emp
  8    WHERE Deptno =30
  9    INTERSECT
 10    SELECT Job
 11    FROM Emp
 12    WHERE Deptno =20
 13    );

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

SQL> SELECT Dname
  2    FROM Dept
  3    WHERE Deptno = &GDeptno01
  4    UNION
  5    SELECT Ename, Job, Sal
  6    FROM Emp
  7    WHERE Deptno = &GDeptno02;
Enter value for gdeptno01: 10
old   3: WHERE Deptno = &GDeptno01
```

```
new    3: WHERE Deptno = 10
Enter value for gdeptno02: 10
old    7: WHERE Deptno = &GDeptno02
new    7: WHERE Deptno = 10
SELECT Dname
*
ERROR at line 1:
ORA-01789: query block has incorrect number of result columns


SQL> SELECT Dname, NULL Ename, NULL Job, NULL Sal
  2  FROM Dept
  3  WHERE Deptno = &GDeptno01
  4  UNION
  5  SELECT NULL, Ename, Job, Sal
  6  FROM Emp
  7  WHERE Deptno = &GDeptno02;
Enter value for gdeptno01: 10
old    3: WHERE Deptno = &GDeptno01
new    3: WHERE Deptno = 10
Enter value for gdeptno02: 10
old    7: WHERE Deptno = &GDeptno02
new    7: WHERE Deptno = 10


DNAME          ENAME           JOB        SAL
-------------- --------------- ---------- -----
ACCOUNTING
               CLARK           MANAGER    2450
               KING            PRESIDENT  5000
               MILLER          CLERK      1300

SQL> SET VERIFY OFF
SQL> SELECT Dname, NULL Ename, NULL Job, NULL Sal
  2  FROM Dept
  3  WHERE Deptno = &GDeptno01
  4  UNION
  5  SELECT NULL, Ename, Job, Sal
  6  FROM Emp
  7  WHERE Deptno = &GDeptno02
  8  UNION
  9  SELECT NULL,NULL,NULL,SUM(Sal)
 10  FROM Emp
 11  WHERE Deptno = &GDeptno03;
Enter value for gdeptno01: 10
Enter value for gdeptno02: 10
Enter value for gdeptno03: 10
```

```
DNAME            ENAME            JOB          SAL
-------------- --------------- ---------- -----
ACCOUNTING
                 CLARK            MANAGER      2450
                 KING             PRESIDENT    5000
                 MILLER           CLERK        1300
                                               8750

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

DEPTNO SALSUM
------ ------
    30   9400
    20  10875
    10   8750

SQL> SELECT SUM(Sal)
  2   FROM Emp;

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

SQL> SELECT Deptno,SUM(Sal) SalSum, OrgSal
  2   FROM EMP,
  3   (
  4   SELECT SUM(Sal) OrgSal
  5   FROM EMP
  6   )
  7   GROUP BY Deptno, OrgSal;

DEPTNO SALSUM     ORGSAL
------ ------ ----------
    10   8750      29025
    20  10875      29025
    30   9400      29025

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

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

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

9 rows selected.

SQL> 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;

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.

SQL> SPOOL OFF
```