```
SQL> cl scr

SQL> DESC USER_OBJECTS
 Name                                                                    Null?
Type
 ----------------------------------------------------------------------- ------
-- -----------------------------------------------
 OBJECT_NAME
VARCHAR2(128)
 SUBOBJECT_NAME
VARCHAR2(30)
 OBJECT_ID
NUMBER
 DATA_OBJECT_ID
NUMBER
 OBJECT_TYPE
VARCHAR2(19)
 CREATED
DATE
 LAST_DDL_TIME
DATE
 TIMESTAMP
VARCHAR2(19)
 STATUS
VARCHAR2(7)
 TEMPORARY
VARCHAR2(1)
 GENERATED
VARCHAR2(1)
 SECONDARY
VARCHAR2(1)
 NAMESPACE
NUMBER
 EDITION_NAME
VARCHAR2(30)

SQL> COL OBJECT_NAME FOR A15
SQL> COL OBJECT_TYPE FOR A15
SQL> SELECT OBJECT_NAME, OBJECT_TYPE
  2  FROM USER_OBJECTS
  3  WHERE OBJECT_TYPE = 'SEQUENCE';

OBJECT_NAME     OBJECT_TYPE
--------------- ---------------
SAMPLESEQ06     SEQUENCE
SAMPLESEQ05     SEQUENCE
SAMPLESEQ04     SEQUENCE
SAMPLESEQ03     SEQUENCE
SAMPLESEQ02     SEQUENCE
SAMPLESEQ01     SEQUENCE
PRODID          SEQUENCE
ORDID           SEQUENCE
CUSTID          SEQUENCE

9 rows selected.

SQL> CREATE SEQUENCE SampleSeq07
  2  INCREMENT BY 1
```

```
  3  START WITH 0
  4  MINVALUE 0
  5  MAXVALUE 10
  6  NOCACHE
  7  NOCYCLE
  8  /

Sequence created.

SQL> CREATE TABLE Sample07
  2  (
  3   SampID           NUMBER(4),
  4   SampName   VARCHAR2(25),
  5   SampDate   DATE
  6  );

Table created.

SQL> INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4  (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05');

1 row created.

SQL> R
  1  INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> SELECT SampleSeq07.NEXTVAL FROM DUAL;

   NEXTVAL
----------
         5

SQL> R
  1* SELECT SampleSeq07.NEXTVAL FROM DUAL
```

```
   NEXTVAL
----------
         6

SQL> R
  1* SELECT SampleSeq07.NEXTVAL FROM DUAL

   NEXTVAL
----------
         7

SQL> INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4  (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05');

1 row created.

SQL> R
  1  INSERT INTO Sample07
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq07.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> SELECT * FROM Sample07;

    SAMPID SAMPNAME                   SAMPDATE
---------- ------------------------- ---------
         1 SAMPLE                    31-AUG-05
         2 SAMPLE                    31-AUG-05
         3 SAMPLE                    31-AUG-05
         4 SAMPLE                    31-AUG-05
         8 SAMPLE                    31-AUG-05
         9 SAMPLE                    31-AUG-05

6 rows selected.

SQL> cl scr

SQL> CREATE SEQUENCE SampleSeq08
  2  INCREMENT BY 1
  3  START WITH 0
  4  MINVALUE 0
  5  MAXVALUE 20
  6  NOCACHE
  7  NOCYCLE
  8  /

Sequence created.

SQL> CREATE TABLE Sample08
  2  (
  3   SampID           NUMBER(4),
  4   SampName   VARCHAR2(25),
  5   SampDate   DATE
  6  );
```

```
Table created.

SQL> ED
Wrote file afiedt.buf

  1  CREATE TABLE Sample08_1
  2  (
  3   SampID           NUMBER(4),
  4   SampName   VARCHAR2(25),
  5   SampDate   DATE
  6* )
SQL> /

Table created.

SQL> ED
Wrote file afiedt.buf

  1  CREATE TABLE Sample08_2
  2  (
  3   SampID           NUMBER(4),
  4   SampName   VARCHAR2(25),
  5   SampDate   DATE
  6* )
SQL> /

Table created.

SQL> INSERT INTO Sample08
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4  (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05');

1 row created.

SQL> R
  1  INSERT INTO Sample08
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> ED
Wrote file afiedt.buf

  1  INSERT INTO Sample08_2
  2  (SampID, SampName,  SampDate)
  3  VALUES
```

```
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')
SQL> /

1 row created.

SQL> R
  1  INSERT INTO Sample08_2
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_2
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_2
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> ED
Wrote file afiedt.buf

  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')
SQL> /

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
```

```
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> R
  1  INSERT INTO Sample08_1
  2  (SampID, SampName,  SampDate)
  3  VALUES
  4* (SampleSeq08.NEXTVAL, 'SAMPLE', '31-AUG-05')

1 row created.

SQL> SELECT * FROM Sample08;

    SAMPID SAMPNAME                   SAMPDATE
---------- ------------------------- ---------
         1 SAMPLE                    31-AUG-05
         2 SAMPLE                    31-AUG-05
         3 SAMPLE                    31-AUG-05

SQL> SELECT * FROM Sample08_2;

    SAMPID SAMPNAME                   SAMPDATE
---------- ------------------------- ---------
         5 SAMPLE                    31-AUG-05
         6 SAMPLE                    31-AUG-05
         7 SAMPLE                    31-AUG-05
         8 SAMPLE                    31-AUG-05

SQL> SELECT * FROM Sample08_1;

    SAMPID SAMPNAME                   SAMPDATE
---------- ------------------------- ---------
        10 SAMPLE                    31-AUG-05
        11 SAMPLE                    31-AUG-05
        12 SAMPLE                    31-AUG-05
        13 SAMPLE                    31-AUG-05
        14 SAMPLE                    31-AUG-05
        15 SAMPLE                    31-AUG-05
        16 SAMPLE                    31-AUG-05
```

```
7 rows selected.

SQL> cl scr

SQL> DROP SEQUENCE SampleSEQ08;

Sequence dropped.

SQL> SELECT SampleSEQ08.CURRVAL FROM DUAL;
SELECT SampleSEQ08.CURRVAL FROM DUAL
       *
ERROR at line 1:
ORA-02289: sequence does not exist


SQL> cl scr

SQL> DESC USER_SEQUENCES
 Name                                                                    Null?
Type
 ----------------------------------------------------------------------- ------
-- -----------------------------------------
 SEQUENCE_NAME                                                           NOT
NULL VARCHAR2(30)
 MIN_VALUE
NUMBER
 MAX_VALUE
NUMBER
 INCREMENT_BY                                                            NOT
NULL NUMBER
 CYCLE_FLAG
VARCHAR2(1)
 ORDER_FLAG
VARCHAR2(1)
 CACHE_SIZE                                                              NOT
NULL NUMBER
 LAST_NUMBER                                                             NOT
NULL NUMBER

SQL> COL SEQNAME FOR A15
SQL> COL MINVAL FOR 999
SQL> COL MAXVAL FOR 999
SQL> COL INCRBY 99
SP2-0158: unknown COLUMN option "99"
SQL> COL INCRBY FOR 99
SQL> COL LASTNUM FOR 999
SQL> SELECT
  2
SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  SEQUENCE_NAME SeqName,
  3  MIN_VALUE MinVal,
  4  MAX_VALUE MaxVal,
  5  INCREMENT_BY IncrBy,
  6  LAST_NUMBER LastNum
```

```
  7  FROM USER_SEQUENCES
  8* WHERE SEQUENCE_NAME = 'SAMPLESEQ0'||'&GiveNum'
SQL> /
Enter value for givenum: 1

SEQNAME         MINVAL MAXVAL INCRBY LASTNUM
--------------- ------ ------ ------ -------
SAMPLESEQ01          0      5      1       6

SQL> /
Enter value for givenum: 2

SEQNAME         MINVAL MAXVAL INCRBY LASTNUM
--------------- ------ ------ ------ -------
SAMPLESEQ02          0      5      1       4

SQL> SELECT SAMPLESEQ02.NEXTVAL FROM DUAL;

   NEXTVAL
----------
         4

SQL> SELECT
  2  SEQUENCE_NAME SeqName,
  3  MIN_VALUE MinVal,
  4  MAX_VALUE MaxVal,
  5  INCREMENT_BY IncrBy,
  6  LAST_NUMBER LastNum
  7  FROM USER_SEQUENCES
  8  WHERE SEQUENCE_NAME = 'SAMPLESEQ0'||'&GiveNum';
Enter value for givenum: 2

SEQNAME         MINVAL MAXVAL INCRBY LASTNUM
--------------- ------ ------ ------ -------
SAMPLESEQ02          0      5      1       5

SQL> SELECT SAMPLESEQ02.CURRVAL FROM DUAL;

   CURRVAL
----------
         4

SQL> SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp;
FROM Emp
     *
ERROR at line 2:
ORA-01788: CONNECT BY clause required in this query block


SQL> cl scr

SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp
  3  START WITh Ename = 'KING'
```

```
  4* CONNECT BY PRIOR Empno = MGR
SQL> /

     LEVEL ENAME      JOB              MGR
---------- ---------- --------- ----------
         1 KING       PRESIDENT
         2 JONES      MANAGER         7839
         3 SCOTT      ANALYST         7566
         4 ADAMS      CLERK           7788
         3 FORD       ANALYST         7566
         4 SMITH      CLERK           7902
         2 BLAKE      MANAGER         7839
         3 ALLEN      SALESMAN        7698
         3 WARD       SALESMAN        7698
         3 MARTIN     SALESMAN        7698
         3 TURNER     SALESMAN        7698
         3 JAMES      CLERK           7698
         2 CLARK      MANAGER         7839
         3 MILLER     CLERK           7782

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp
  3  START WITh Ename = 'BLAKE'
  4* CONNECT BY PRIOR Empno = MGR
SQL> /

     LEVEL ENAME      JOB              MGR
---------- ---------- --------- ----------
         1 BLAKE      MANAGER         7839
         2 ALLEN      SALESMAN        7698
         2 WARD       SALESMAN        7698
         2 MARTIN     SALESMAN        7698
         2 TURNER     SALESMAN        7698
         2 JAMES      CLERK           7698

6 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp
  3  START WITh Ename = 'JONES'
  4* CONNECT BY PRIOR Empno = MGR
SQL> /

     LEVEL ENAME      JOB              MGR
---------- ---------- --------- ----------
         1 JONES      MANAGER         7839
         2 SCOTT      ANALYST         7566
         3 ADAMS      CLERK           7788
         2 FORD       ANALYST         7566
         3 SMITH      CLERK           7902
```

```
SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp
  3  START WITH Ename = 'KING'
  4* CONNECT BY PRIOR Empno = MGR
SQL> /

     LEVEL ENAME      JOB              MGR
---------- ---------- --------- ----------
         1 KING       PRESIDENT
         2 JONES      MANAGER         7839
         3 SCOTT      ANALYST         7566
         4 ADAMS      CLERK           7788
         3 FORD       ANALYST         7566
         4 SMITH      CLERK           7902
         2 BLAKE      MANAGER         7839
         3 ALLEN      SALESMAN        7698
         3 WARD       SALESMAN        7698
         3 MARTIN     SALESMAN        7698
         3 TURNER     SALESMAN        7698
         3 JAMES      CLERK           7698
         2 CLARK      MANAGER         7839
         3 MILLER     CLERK           7782

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, Ename, Job, MGR
  2  FROM Emp
  3  START WITH Ename = 'KING'
  4  CONNECT BY PRIOR Empno = MGR
  5* ORDER BY LEVEL
SQL> /

     LEVEL ENAME      JOB              MGR
---------- ---------- --------- ----------
         1 KING       PRESIDENT
         2 JONES      MANAGER         7839
         2 BLAKE      MANAGER         7839
         2 CLARK      MANAGER         7839
         3 FORD       ANALYST         7566
         3 WARD       SALESMAN        7698
         3 JAMES      CLERK           7698
         3 MILLER     CLERK           7782
         3 ALLEN      SALESMAN        7698
         3 SCOTT      ANALYST         7566
         3 MARTIN     SALESMAN        7698
         3 TURNER     SALESMAN        7698
         4 ADAMS      CLERK           7788
         4 SMITH      CLERK           7902

14 rows selected.
```

```
SQL> cl scr

SQL> COLUMN Org_Chart FORMAT A15
SQL> SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1)) Org_Chart,
  3  Ename,
  4  Empno,
  5  Mgr,
  6  Job
  7  FROM Emp
  8  START WITH Job = 'PRESIDENT'
  9  CONNECT BY PRIOR Empno = MGR;

ORG_CHART       ENAME           EMPNO        MGR JOB
--------------- ---------- ---------- ---------- ---------
1               KING             7839            PRESIDENT
  2             JONES            7566       7839 MANAGER
    3           SCOTT            7788       7566 ANALYST
      4         ADAMS            7876       7788 CLERK
    3           FORD             7902       7566 ANALYST
      4         SMITH            7369       7902 CLERK
  2             BLAKE            7698       7839 MANAGER
    3           ALLEN            7499       7698 SALESMAN
    3           WARD             7521       7698 SALESMAN
    3           MARTIN           7654       7698 SALESMAN
    3           TURNER           7844       7698 SALESMAN
    3           JAMES            7900       7698 CLERK
  2             CLARK            7782       7839 MANAGER
    3           MILLER           7934       7782 CLERK

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||'. '||Ename Org_Chart,
  3  Empno,
  4  Mgr,
  5  Job
  6  FROM Emp
  7  START WITH Job = 'PRESIDENT'
  8* CONNECT BY PRIOR Empno = MGR
SQL> /

ORG_CHART            EMPNO        MGR JOB
--------------- ---------- ---------- ---------
1. KING              7839            PRESIDENT
  2. JONES           7566       7839 MANAGER
    3. SCOTT         7788       7566 ANALYST
      4. ADAMS       7876       7788 CLERK
    3. FORD          7902       7566 ANALYST
      4. SMITH       7369       7902 CLERK
  2. BLAKE           7698       7839 MANAGER
    3. ALLEN         7499       7698 SALESMAN
    3. WARD          7521       7698 SALESMAN
    3. MARTIN        7654       7698 SALESMAN
    3. TURNER        7844       7698 SALESMAN
```

```
    3. JAMES          7900       7698 CLERK
  2. CLARK            7782       7839 MANAGER
    3. MILLER         7934       7782 CLERK

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||'. '||Ename Org_Chart,
  3  Empno,
  4  Mgr,
  5  Job
  6  FROM Emp
  7  START WITH Job = 'PRESIDENT'
  8  CONNECT BY PRIOR Empno = MGR
  9* ORDER BY LEVEL
SQL> /

ORG_CHART            EMPNO        MGR JOB
-------------- ---------- ---------- ---------
1. KING               7839            PRESIDENT
  2. JONES            7566       7839 MANAGER
  2. BLAKE            7698       7839 MANAGER
  2. CLARK            7782       7839 MANAGER
    3. FORD           7902       7566 ANALYST
    3. WARD           7521       7698 SALESMAN
    3. JAMES          7900       7698 CLERK
    3. MILLER         7934       7782 CLERK
    3. ALLEN          7499       7698 SALESMAN
    3. SCOTT          7788       7566 ANALYST
    3. MARTIN         7654       7698 SALESMAN
    3. TURNER         7844       7698 SALESMAN
      4. ADAMS        7876       7788 CLERK
      4. SMITH        7369       7902 CLERK

14 rows selected.

SQL> SELECT
  2  LPAD(' ', ((2 * LEVEL) - 1))||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  --WHERE Job != 'ANALYST'
  9  START WITH Job = 'PRESIDENT'
 10  CONNECT BY PRIOR Empno = MGR;

ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
 KING                 7839            PRESIDENT       5000
   JONES              7566       7839 MANAGER         2975
     SCOTT            7788       7566 ANALYST         3000
       ADAMS          7876       7788 CLERK           1100
     FORD             7902       7566 ANALYST         3000
       SMITH          7369       7902 CLERK            800
```

```
   BLAKE              7698       7839 MANAGER         2850
     ALLEN            7499       7698 SALESMAN        1600
     WARD             7521       7698 SALESMAN        1250
     MARTIN           7654       7698 SALESMAN        1250
     TURNER           7844       7698 SALESMAN        1500
     JAMES            7900       7698 CLERK            950
   CLARK              7782       7839 MANAGER         2450
     MILLER           7934       7782 CLERK           1300

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||'. '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  --WHERE Job != 'ANALYST'
  9  START WITH Job = 'PRESIDENT'
 10* CONNECT BY PRIOR Empno = MGR
SQL> /

ORG_CHART            EMPNO        MGR JOB              SAL
--------------- ---------- ---------- --------- ----------
1. KING              7839            PRESIDENT       5000
  2. JONES           7566       7839 MANAGER         2975
    3. SCOTT         7788       7566 ANALYST         3000
      4. ADAMS       7876       7788 CLERK           1100
    3. FORD          7902       7566 ANALYST         3000
      4. SMITH       7369       7902 CLERK            800
  2. BLAKE           7698       7839 MANAGER         2850
    3. ALLEN         7499       7698 SALESMAN        1600
    3. WARD          7521       7698 SALESMAN        1250
    3. MARTIN        7654       7698 SALESMAN        1250
    3. TURNER        7844       7698 SALESMAN        1500
    3. JAMES         7900       7698 CLERK            950
  2. CLARK           7782       7839 MANAGER         2450
    3. MILLER        7934       7782 CLERK           1300

14 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||'. '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  START WITH Job = 'PRESIDENT'
  9  CONNECT BY PRIOR Empno = MGR
 10* AND Job <> 'ANALYST'
```

```
SQL> /

ORG_CHART             EMPNO        MGR JOB              SAL
--------------- ---------- ---------- --------- ----------
1. KING                7839            PRESIDENT       5000
  2. JONES             7566       7839 MANAGER         2975
  2. BLAKE             7698       7839 MANAGER         2850
    3. ALLEN           7499       7698 SALESMAN        1600
    3. WARD            7521       7698 SALESMAN        1250
    3. MARTIN          7654       7698 SALESMAN        1250
    3. TURNER          7844       7698 SALESMAN        1500
    3. JAMES           7900       7698 CLERK            950
  2. CLARK             7782       7839 MANAGER         2450
    3. MILLER          7934       7782 CLERK           1300

10 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||'. '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  WHERE Job <> 'ANALYST'
  9  START WITH Job = 'PRESIDENT'
 10* CONNECT BY PRIOR Empno = MGR
SQL> /

ORG_CHART             EMPNO        MGR JOB              SAL
--------------- ---------- ---------- --------- ----------
1. KING                7839            PRESIDENT       5000
  2. JONES             7566       7839 MANAGER         2975
      4. ADAMS         7876       7788 CLERK           1100
      4. SMITH         7369       7902 CLERK            800
  2. BLAKE             7698       7839 MANAGER         2850
    3. ALLEN           7499       7698 SALESMAN        1600
    3. WARD            7521       7698 SALESMAN        1250
    3. MARTIN          7654       7698 SALESMAN        1250
    3. TURNER          7844       7698 SALESMAN        1500
    3. JAMES           7900       7698 CLERK            950
  2. CLARK             7782       7839 MANAGER         2450
    3. MILLER          7934       7782 CLERK           1300

12 rows selected.

SQL> cl scr

SQL> SELECT
  2  LPAD(' ', ((2 * LEVEL) - 1))||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
```

```
  8  START WITH Job = 'PRESIDENT'
  9  CONNECT BY PRIOR Empno = MGR
 10  AND LEVEL <= 2;

ORG_CHART            EMPNO        MGR JOB              SAL
--------------- ---------- ---------- --------- ----------
 KING                 7839            PRESIDENT       5000
   JONES              7566       7839 MANAGER         2975
   BLAKE              7698       7839 MANAGER         2850
   CLARK              7782       7839 MANAGER         2450

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(' ', ((2 * LEVEL) - 1))||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  START WITH Job = 'PRESIDENT'
  9  CONNECT BY PRIOR Empno = MGR
 10* AND LEVEL <= 3
SQL> /

ORG_CHART            EMPNO        MGR JOB              SAL
--------------- ---------- ---------- --------- ----------
 KING                 7839            PRESIDENT       5000
   JONES              7566       7839 MANAGER         2975
     SCOTT            7788       7566 ANALYST         3000
     FORD             7902       7566 ANALYST         3000
   BLAKE              7698       7839 MANAGER         2850
     ALLEN            7499       7698 SALESMAN        1600
     WARD             7521       7698 SALESMAN        1250
     MARTIN           7654       7698 SALESMAN        1250
     TURNER           7844       7698 SALESMAN        1500
     JAMES            7900       7698 CLERK            950
   CLARK              7782       7839 MANAGER         2450
     MILLER           7934       7782 CLERK           1300

12 rows selected.

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(' ', ((2 * LEVEL) - 1))||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  WHERE LEVEL = 2
  9  START WITH Job = 'PRESIDENT'
 10* CONNECT BY PRIOR Empno = MGR
SQL> /
```

```
ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
   JONES              7566       7839 MANAGER         2975
   BLAKE              7698       7839 MANAGER         2850
   CLARK              7782       7839 MANAGER         2450

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(' ', ((2 * LEVEL) - 1))||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  WHERE LEVEL IN(2, 4)
  9  START WITH Job = 'PRESIDENT'
 10* CONNECT BY PRIOR Empno = MGR
SQL> /

ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
   JONES              7566       7839 MANAGER         2975
       ADAMS          7876       7788 CLERK           1100
       SMITH          7369       7902 CLERK            800
   BLAKE              7698       7839 MANAGER         2850
   CLARK              7782       7839 MANAGER         2450

SQL> cl scr

SQL> SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||' '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  WHERE MOD(LEVEL, 2) = 0
  9  START WITH Job = 'PRESIDENT'
 10  CONNECT BY NOCYCLE PRIOR Empno = MGR;

ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
  2 JONES             7566       7839 MANAGER         2975
      4 ADAMS         7876       7788 CLERK           1100
      4 SMITH         7369       7902 CLERK            800
  2 BLAKE             7698       7839 MANAGER         2850
  2 CLARK             7782       7839 MANAGER         2450

SQL> ED
Wrote file afiedt.buf

  1  SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||' '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
```

```
  6  Sal
  7  FROM Emp
  8  WHERE MOD(LEVEL, 2) = 1
  9  START WITH Job = 'PRESIDENT'
 10* CONNECT BY NOCYCLE PRIOR Empno = MGR
SQL> /

ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
1 KING                7839            PRESIDENT       5000
    3 SCOTT           7788       7566 ANALYST         3000
    3 FORD            7902       7566 ANALYST         3000
    3 ALLEN           7499       7698 SALESMAN        1600
    3 WARD            7521       7698 SALESMAN        1250
    3 MARTIN          7654       7698 SALESMAN        1250
    3 TURNER          7844       7698 SALESMAN        1500
    3 JAMES           7900       7698 CLERK            950
    3 MILLER          7934       7782 CLERK           1300

9 rows selected.

SQL> cl scr

SQL> SELECT
  2  LPAD(LEVEL, ((2 * LEVEL) - 1))||' '||Ename Org_Chart,
  3  Empno,
  4  MGR,
  5  Job,
  6  Sal
  7  FROM Emp
  8  WHERE Sal =
  9   (
 10   SELECT MAX(Sal)
 11   FROM Emp
 12   WHERE LEVEL = 2
 13   START WITH Job = 'PRESIDENT'
 14   CONNECT BY PRIOR Empno = MGR
 15   )
 16  START WITH Job = 'PRESIDENT'
 17  CONNECT BY NOCYCLE PRIOR Empno = MGR;

ORG_CHART            EMPNO        MGR JOB              SAL
-------------- ---------- ---------- --------- ----------
  2 JONES             7566       7839 MANAGER         2975

SQL> cl scr

SQL> SELECT LEVEL, MAX(Sal)
  2  FROM EMP
  3  CONNECT BY PRIOR Sal > Sal
  4  GROUP BY LEVEL
  5  ORDER BY LEVEL;

     LEVEL   MAX(SAL)
---------- ----------
         1       5000
         2       3000
         3       2975
```

```
         4       2850
         5       2450
         6       1600
         7       1500
         8       1300
         9       1250
        10       1100
        11        950
        12        800

12 rows selected.

SQL> SELECT LEVEL, MAX(Sal)
  2  FROM EMP
  3  WHERE LEVEL = &LEVELNO
  4  CONNECT BY PRIOR Sal > Sal
  5  GROUP BY LEVEL;
Enter value for levelno: 1

     LEVEL   MAX(SAL)
---------- ----------
         1       5000

SQL> /
Enter value for levelno: 2

     LEVEL   MAX(SAL)
---------- ----------
         2       3000

SQL> /
Enter value for levelno: 3

     LEVEL   MAX(SAL)
---------- ----------
         3       2975

SQL> SELECT Ename, Sal, Deptno, Job
  2  FROM Emp
  3  WHERE Sal =
  4   (
  5   SELECT MAX(Sal)
  6   FROM EMP
  7   WHERE LEVEL = &LEVELNO
  8   CONNECT BY PRIOR Sal > Sal
  9   GROUP BY LEVEL
 10   );
Enter value for levelno: 1

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
KING              5000         10 PRESIDENT

SQL> /
Enter value for levelno: 2

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
```

```
FORD             3000         20 ANALYST
SCOTT            3000         20 ANALYST

SQL> /
Enter value for levelno: 3

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
JONES            2975         20 MANAGER

SQL> ED
Wrote file afiedt.buf

  1  SELECT LEVEL, MIN(Sal)
  2  FROM EMP
  3  CONNECT BY PRIOR Sal < Sal
  4  GROUP BY LEVEL
  5* ORDER BY LEVEL
SQL> /

     LEVEL   MIN(SAL)
---------- ----------
         1        800
         2        950
         3       1100
         4       1250
         5       1300
         6       1500
         7       1600
         8       2450
         9       2850
        10       2975
        11       3000
        12       5000

12 rows selected.

SQL> SELECT LEVEL, MIN(Sal)
  2  FROM EMP
  3  WHERE LEVEL = &LEVELNO
  4  CONNECT BY PRIOR Sal < Sal
  5  GROUP BY LEVEL;
Enter value for levelno: 1

     LEVEL   MIN(SAL)
---------- ----------
         1        800

SQL> /
Enter value for levelno: 2

     LEVEL   MIN(SAL)
---------- ----------
         2        950

SQL> /
Enter value for levelno: 3
```

```
     LEVEL   MIN(SAL)
---------- ----------
         3       1100

SQL> SELECT Ename, Sal, Deptno, Job
  2  FROM Emp
  3  WHERE Sal =
  4   (
  5   SELECT MIN(Sal)
  6   FROM EMP
  7   WHERE LEVEL = &LEVELNO
  8   CONNECT BY PRIOR Sal < Sal
  9   GROUP BY LEVEL
 10   );
Enter value for levelno: 1

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
SMITH             800         20 CLERK

SQL> /
Enter value for levelno: 2

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
JAMES             950         30 CLERK

SQL> /
Enter value for levelno: 3

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
ADAMS            1100         20 CLERK

SQL> /
Enter value for levelno: 4

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
MARTIN           1250         30 SALESMAN
WARD             1250         30 SALESMAN

SQL> ED
Wrote file afiedt.buf

  1  SELECT Ename, Sal, Deptno, Job
  2  FROM Emp
  3  WHERE Sal IN
  4   (
  5   SELECT &GiveFunc(Sal)
  6   FROM EMP
  7   WHERE LEVEL &GiveCond
  8   CONNECT BY PRIOR Sal &GiveDirec
  9   GROUP BY LEVEL
 10*  )
SQL> /
Enter value for givefunc: MAX
Enter value for givecond: = 1
```

```
Enter value for givedirec: >
      GROUP BY LEVEL
      *
ERROR at line 9:
ORA-00936: missing expression


SQL> EED
SP2-0042: unknown command "EED" - rest of line ignored.
SQL> ED
Wrote file afiedt.buf

  1  SELECT Ename, Sal, Deptno, Job
  2  FROM Emp
  3  WHERE Sal IN
  4   (
  5   SELECT &GiveFunc(Sal)
  6   FROM Emp
  7   WHERE LEVEL &GiveCond
  8   CONNECT BY PRIOR Sal &GiveDirec Sal
  9   GROUP BY LEVEL
 10*  )
SQL> /
Enter value for givefunc: MAX
Enter value for givecond: = 1
Enter value for givedirec: >

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
KING             5000         10 PRESIDENT

SQL> /
Enter value for givefunc: MIN
Enter value for givecond: = 1
Enter value for givedirec: <

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
SMITH             800         20 CLERK

SQL> /
Enter value for givefunc: MAX
Enter value for givecond: <= 5
Enter value for givedirec: >

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
KING             5000         10 PRESIDENT
SCOTT            3000         20 ANALYST
FORD             3000         20 ANALYST
BLAKE            2850         30 MANAGER
CLARK            2450         10 MANAGER
JONES            2975         20 MANAGER

6 rows selected.

SQL> /
Enter value for givefunc: MIN
```

```
Enter value for givecond: <= 5
Enter value for givedirec: <

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
SMITH              800         20 CLERK
JAMES              950         30 CLERK
WARD              1250         30 SALESMAN
MARTIN            1250         30 SALESMAN
MILLER            1300         10 CLERK
ADAMS             1100         20 CLERK

6 rows selected.

SQL> /
Enter value for givefunc: MAX
Enter value for givecond: IN(1, 3, 6)
Enter value for givedirec: >

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
KING              5000         10 PRESIDENT
ALLEN             1600         30 SALESMAN
JONES             2975         20 MANAGER

SQL> /
Enter value for givefunc: MIN
Enter value for givecond: IN(2, 5, 8)
Enter value for givedirec: <

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
JAMES              950         30 CLERK
MILLER            1300         10 CLERK
CLARK             2450         10 MANAGER

SQL> /
Enter value for givefunc: MAX
Enter value for givecond: BETWEEN 1 AND 5
Enter value for givedirec: >

ENAME             SAL     DEPTNO JOB
---------- ---------- ---------- ---------
KING              5000         10 PRESIDENT
SCOTT             3000         20 ANALYST
FORD              3000         20 ANALYST
BLAKE             2850         30 MANAGER
CLARK             2450         10 MANAGER
JONES             2975         20 MANAGER

6 rows selected.

SQL> /
Enter value for givefunc: MAX
Enter value for givecond: BETWEEN 6 AND 10
Enter value for givedirec: >

ENAME             SAL     DEPTNO JOB
```

```
---------- ---------- ---------- ---------
ALLEN            1600         30 SALESMAN
MILLER           1300         10 CLERK
TURNER           1500         30 SALESMAN
WARD             1250         30 SALESMAN
MARTIN           1250         30 SALESMAN
ADAMS            1100         20 CLERK

6 rows selected.

SQL> cl scr

SQL> COLUMN "Path" FORMAT A30
SQL> SELECT
  2  Ename Employee
  3  FROM Emp
  4  WHERE LEVEL > 1 AND Deptno = &Deptno
  5  CONNECT BY PRIOR Empno = MGR;
Enter value for deptno: 20

EMPLOYEE
----------
SMITH
ADAMS
FORD
SMITH
SCOTT
ADAMS
JONES
FORD
SMITH
SCOTT
ADAMS

11 rows selected.

SQL> COLUMN "Path" FORMAT A30
SQL> SELECT
  2  Ename Employee,
  3  CONNECT_BY_ROOT Ename "Manager",
  4  LEVEL - 1 "Pathlen",
  5  SYS_CONNECT_BY_PATH(Ename, '/') "Path"
  6  FROM Emp
  7  WHERE LEVEL > 1 AND Deptno = &Deptno
  8  CONNECT BY PRIOR Empno = MGR;
Enter value for deptno: 20

EMPLOYEE   Manager       Pathlen Path
---------- ---------- ---------- ------------------------------
SMITH      FORD                1 /FORD/SMITH
ADAMS      SCOTT               1 /SCOTT/ADAMS
FORD       JONES               1 /JONES/FORD
SMITH      JONES               2 /JONES/FORD/SMITH
SCOTT      JONES               1 /JONES/SCOTT
ADAMS      JONES               2 /JONES/SCOTT/ADAMS
JONES      KING                1 /KING/JONES
FORD       KING                2 /KING/JONES/FORD
SMITH      KING                3 /KING/JONES/FORD/SMITH
```

```
SCOTT      KING                2 /KING/JONES/SCOTT
ADAMS      KING                3 /KING/JONES/SCOTT/ADAMS

11 rows selected.

SQL> SELECT
  2  Name,
  3  SUM(Sal) "Total Salary"
  4  FROM
  5   (
  6   SELECT
  7   CONNECT_BY_ROOT Ename AS Name,
  8   Sal
  9   FROM Emp
 10   WHERE Deptno = &GiveDeptno
 11   CONNECT BY PRIOR Empno = MGR
 12   )
 13  GROUP BY Name;
Enter value for givedeptno: 20

NAME       Total Salary
---------- ------------
JONES             10875
FORD               3800
SMITH               800
SCOTT              4100
ADAMS              1100
KING              10875

6 rows selected.

SQL> SELECT Ename, Sal
  2  FROM Emp
  3  WHERE Deptno = 20;

ENAME             SAL
---------- ----------
JONES            2975
FORD             3000
SMITH             800
SCOTT            3000
ADAMS            1100

SQL> ED
Wrote file afiedt.buf

  1  SELECT SUM(Sal)
  2  FROM Emp
  3* WHERE Deptno = 20
SQL> /

  SUM(SAL)
----------
     10875

SQL> SPOOL OFF
```