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Windows PowerShell
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PS C:\Users\VirtualBox> sqlplus dbms/1234

SQL*Plus: Release 11.2.0.2.0 Production on Tue Jan 17 08:06:09 2023

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Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> set linesize 1000;
SQL> set pagesize 1000;
SQL> CREATE TABLE student(rollno VARCHAR2(9),name VARCHAR2(20),degree VARCHAR2(5),year NUMBER(4),sex VARCHAR2(10),deptno VARCHAR2(3),advisor VARCHAR2(20),phone NUMBER(10));

Table created.

SQL>
SQL> INSERT ALL
  2  INTO student VALUES ('CS21B2018', 'Abhishek', 'BTech', 2021, 'Male', 'D01', 'Preeth', '8732911221')
  3  INTO student VALUES ('CS22M2019', 'John', 'MTech', 2022, 'Male', 'D01', 'James', '8732911222')
  4  INTO student VALUES ('EC21B2020', 'Sophie', 'BTech', 2021, 'Female', 'D02', 'Robert', '8732911223')
  5  INTO student VALUES ('ME21M2021', 'Emily', 'MTech', 2021, 'Female', 'D04', 'Michael', '8732911224')
  6  INTO student VALUES ('EE21B2022', 'Jacob', 'BTech', 2021, 'Male', 'D03', 'David', '8732911225')
  7  INTO student VALUES ('CV21M2023', 'Isabella', 'MTech', 2021, 'Female', 'D05', 'Christopher', '8732911226')
  8  INTO student VALUES ('CH21B2024', 'Lucas', 'BTech', 2021, 'Male', 'D06', 'Brian', '8732911227')
  9  SELECT 1 FROM dual;

7 rows created.

SQL>
SQL> CREATE TABLE department(deptno varchar2(3),name varchar2(10),hod varchar2(20),phone NUMBER(10));

Table created.

SQL>
SQL> INSERT ALL
  2  INTO department VALUES('D01','CSE','Dr. Sadagopan',8730129912)
  3  INTO department VALUES('D02','ECE','Dr. Srinivasan',8730129913)
  4  INTO department VALUES('D03','EEE','Dr. Mahesh',8730129914)
  5  INTO department VALUES('D04','MECH','Dr. Suresh',8730129915)
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   6  INTO department VALUES('D05','CIVIL','Dr. Ramesh',8730129916)
   7  INTO department VALUES('D06','CHEM','Dr. Sathish',8730129917)
   8  INTO department VALUES('D07','MATH','Dr. Sivakumar',8730129918)
   9  SELECT 1 FROM dual;

7 rows created.

SQL>
SQL> CREATE TABLE professor(empid VARCHAR2(10),name VARCHAR2(20),sex VARCHAR2(10),startyear NUMBER(4),deptno VARCHAR2(3),phone VARCHAR2(10));

Table created.

SQL>
SQL> INSERT ALL
   2  INTO professor VALUES('CS001', 'Dr. Sadagopan', 'Male', 1990, 'D01', '8730129912')
   3  INTO professor VALUES('EC002', 'Dr. Srinivasan','Male', 1993, 'D02', '8730129913')
   4  INTO professor VALUES('CS003', 'Dr. Anuja', 'Female', 1995, 'D01', '8730129814')
   5  INTO professor VALUES('EE004', 'Dr. Mahesh', 'Male', 1996, 'D03', '8730129914')
   6  INTO professor VALUES('ME005', 'Dr. Suresh', 'Male', 1993, 'D04', '8730129915')
   7  INTO professor VALUES('CV003', 'Dr. Ramesh', 'Male', 1995, 'D05', '8730129916')
   8  INTO professor VALUES('CH003', 'Dr. Sathish', 'Male', 2000, 'D06', '8730129916')
   9  SELECT 1 FROM dual;

7 rows created.

SQL>
SQL> CREATE TABLE course(courseid varchar2(5),cname varchar2(20),credits number(2),deptno VARCHAR2(3));

Table created.

SQL>
SQL> INSERT ALL
   2  INTO course VALUES('CS101','Intro to CS',4,'D01')
   3  INTO course VALUES('CS102','Data Structures',4,'D01')
   4  INTO course VALUES('CS103','Algorithms',4,'D01')
   5  INTO course VALUES('EC101', 'Intro to ECE', 4, 'D02')
   6  INTO course VALUES('EC102', 'Microprocessors', 4, 'D02')
   7  INTO course VALUES('EC103', 'Digital Logic', 4, 'D02')
   8  INTO course VALUES('ME101', 'Intro to ME', 4, 'D03')
   9  INTO course VALUES('ME102', 'Thermodynamics', 4, 'D03')
  10  INTO course VALUES('ME103', 'Fluid Mechanics', 4, 'D03')
  11  SELECT 1 FROM dual;

9 rows created.
```

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SQL>
SQL>
SQL> CREATE TABLE enrollment(rollno VARCHAR2(9),courseid VARCHAR2(5),sem NUMBER(1),year NUMBER(4),grade VARCHAR2(1));

Table created.

SQL>
SQL> INSERT ALL
  2  INTO enrollment VALUES('CS21B2018', 'CS101', 1, 2021, 'A')
  3  INTO enrollment VALUES('CS21B2018', 'CS102', 2, 2021, 'B')
  4  INTO enrollment VALUES('CS21B2018', 'CS103', 3, 2022, 'S')
  5  INTO enrollment VALUES('EC21B2020', 'EC101', 1, 2021, 'A')
  6  INTO enrollment VALUES('EC21B2020', 'EC102', 2, 2021, 'B')
  7  INTO enrollment VALUES('EC21B2020', 'EC103', 3, 2022, 'S')
  8  INTO enrollment VALUES('ME21M2021', 'ME101', 1, 2021, 'A')
  9  INTO enrollment VALUES('ME21M2021', 'ME102', 2, 2021, 'B')
 10  INTO enrollment VALUES('ME21M2021', 'ME103', 3, 2022, 'S')
 11  SELECT 1 FROM dual;

9 rows created.

SQL>
SQL> CREATE TABLE teaching (empid VARCHAR2(10),courseid VARCHAR2(5),sem NUMBER(1),year NUMBER(4),classroom VARCHAR2(3));

Table created.

SQL>
SQL> INSERT ALL
  2  INTO teaching VALUES('CS001', 'CS101', 1, 2021, 'H01')
  3  INTO teaching VALUES('CS003', 'CS102', 2, 2021, 'H13')
  4  INTO teaching VALUES('EC002', 'EC101', 1, 2021, 'H24')
  5  INTO teaching VALUES('EE004', 'EC102', 3, 2022, 'H21')
  6  INTO teaching VALUES('ME005', 'ME101', 1, 2021, 'H02')
  7  INTO teaching VALUES('ME005', 'ME102', 3, 2022, 'H03')
  8  SELECT 1 FROM dual;

6 rows created.

SQL>
SQL> CREATE TABLE prerequisite (precourseid VARCHAR2(5),courseid VARCHAR2(5));

Table created.

SQL>
SQL> INSERT ALL
```

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  2  INTO prerequisite VALUES('CS101', 'CS102')
  3  INTO prerequisite VALUES('CS101', 'CS103')
  4  INTO prerequisite VALUES('EC101', 'EC102')
  5  INTO prerequisite VALUES('EC101', 'EC103')
  6  INTO prerequisite VALUES('ME101', 'ME102')
  7  INTO prerequisite VALUES('ME101', 'ME103')
  8  SELECT 1 FROM dual;

6 rows created.

SQL>
SQL>
SQL> SELECT * FROM student;

ROLLNO     NAME                 DEGRE      YEAR SEX        DEP ADVISOR                     PHONE
---------- -------------------- ----- ---------- ---------- --- --------------------- ----------
CS21B2018 Abhishek             BTech      2021 Male       D01 Preeth                8732911221
CS22M2019 John                 MTech      2022 Male       D01 James                 8732911222
EC21B2020 Sophie               BTech      2021 Female     D02 Robert                8732911223
ME21M2021 Emily                MTech      2021 Female     D04 Michael               8732911224
EE21B2022 Jacob                BTech      2021 Male       D03 David                 8732911225
CV21M2023 Isabella             MTech      2021 Female     D05 Christopher           8732911226
CH21B2024 Lucas                BTech      2021 Male       D06 Brian                 8732911227

7 rows selected.

SQL> SELECT * FROM department;

DEP NAME       HOD                       PHONE
--- ---------- -------------------- ----------
D01 CSE        Dr. Sadagopan        8730129912
D02 ECE        Dr. Srinivasan       8730129913
D03 EEE        Dr. Mahesh           8730129914
D04 MECH       Dr. Suresh           8730129915
D05 CIVIL      Dr. Ramesh           8730129916
D06 CHEM       Dr. Sathish          8730129917
D07 MATH       Dr. Sivakumar        8730129918

7 rows selected.

SQL> SELECT * FROM course;

COURS CNAME                   CREDITS DEP
----- -------------------- ---------- ----
CS101 Intro to CS                   4 D01
```

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CS102 Data Structures              4 D01
CS103 Algorithms                   4 D01
EC101 Intro to ECE                 4 D02
EC102 Microprocessors              4 D02
EC103 Digital Logic                4 D02
ME101 Intro to ME                  4 D03
ME102 Thermodynamics               4 D03
ME103 Fluid Mechanics              4 D03

9 rows selected.

SQL> SELECT * FROM professor;

EMPID       NAME                  SEX         STARTYEAR DEP PHONE
----------  --------------------- ----------- --------- --- ----------
CS001       Dr. Sadagopan         Male             1990 D01 8730129912
EC002       Dr. Srinivasan        Male             1993 D02 8730129913
CS003       Dr. Anuja             Female           1995 D01 8730129814
EE004       Dr. Mahesh            Male             1996 D03 8730129914
ME005       Dr. Suresh            Male             1993 D04 8730129915
CV003       Dr. Ramesh            Male             1995 D05 8730129916
CH003       Dr. Sathish           Male             2000 D06 8730129916

7 rows selected.

SQL> SELECT * FROM enrollment;

ROLLNO     COURS       SEM       YEAR G
---------- ----- ----------- ----------- -
CS21B2018  CS101           1       2021 A
CS21B2018  CS102           2       2021 B
CS21B2018  CS103           3       2022 S
EC21B2020  EC101           1       2021 A
EC21B2020  EC102           2       2021 B
EC21B2020  EC103           3       2022 S
ME21M2021  ME101           1       2021 A
ME21M2021  ME102           2       2021 B
ME21M2021  ME103           3       2022 S

9 rows selected.

SQL> SELECT * FROM teaching;

EMPID      COURS       SEM       YEAR CLA
---------- ----- ----------- ----------- ---
```

```
CS001        CS101           1          2021 H01
CS003        CS102           2          2021 H13
EC002        EC101           1          2021 H24
EE004        EC102           3          2022 H21
ME005        ME101           1          2021 H02
ME005        ME102           3          2022 H03

6 rows selected.

SQL> SELECT * FROM prerequisite;

PRECO COURS
----- -----
CS101 CS102
CS101 CS103
EC101 EC102
EC101 EC103
ME101 ME102
ME101 ME103

6 rows selected.

SQL>
SQL>
SQL> -- after two year three student left the college. Update all the tables accordingly
SQL> DELETE FROM student WHERE rollno = 'CV21M2023';

1 row deleted.

SQL> DELETE FROM student WHERE rollno = 'CH21B2024';

1 row deleted.

SQL> DELETE FROM student WHERE rollno = 'EE21B2022';

1 row deleted.

SQL>
SQL>
SQL> -- missing column email-id is added to student, professor table
SQL> ALTER TABLE student ADD email VARCHAR2(30);

Table altered.

SQL> UPDATE student SET email = 'cs21b2018@iiitdm.ac.in' WHERE rollno = 'CS21B2018';
```

```
1 row updated.

SQL> UPDATE student SET email = 'cs22m2019@iiitdm.ac.in' WHERE rollno = 'CS22M2019';

1 row updated.

SQL> UPDATE student SET email = 'ec21b2020@iiitdm.ac.in' WHERE rollno = 'EC21B2020';

1 row updated.

SQL> UPDATE student SET email = 'me21b2021@iiitdm.ac.in' WHERE rollno = 'ME21M2021';

1 row updated.

SQL>
SQL> ALTER TABLE professor ADD email VARCHAR2(30);

Table altered.

SQL> UPDATE professor SET email = 'sadagopan@iiitdm.ac.in' WHERE empid = 'CS001';

1 row updated.

SQL> UPDATE professor SET email = 'srinivasan@iiitdm.ac.in' WHERE empid = 'EC002';

1 row updated.

SQL> UPDATE professor SET email = 'anuja@iiitdm.ac.in' WHERE empid = 'CS003';

1 row updated.

SQL> UPDATE professor SET email = 'mahesh@iiitdm.ac.in' WHERE empid = 'EE004';

1 row updated.

SQL> UPDATE professor SET email = 'suresh@iiitdm.ac.in' WHERE empid = 'ME005';

1 row updated.

SQL> UPDATE professor SET email = 'ramesh@iiitdm.ac.in' WHERE empid = 'CV003';

1 row updated.

SQL> UPDATE professor SET email = 'sathish@iiitdm.ac.in' WHERE empid = 'CH003';
```

```
1 row updated.

SQL>
SQL>
SQL> -- after 3 years four hod has changed
SQL> UPDATE department SET hod = 'Dr. Suresh' WHERE deptno = 'D01';

1 row updated.

SQL> UPDATE department SET hod = 'Dr. Ramesh' WHERE deptno = 'D02';

1 row updated.

SQL> UPDATE department SET hod = 'Dr. Sathish' WHERE deptno = 'D03';

1 row updated.

SQL> UPDATE department SET hod = 'Dr. Anuja' WHERE deptno = 'D04';

1 row updated.

SQL>
SQL>
SQL> -- 3 students and 2 professors have changed their phone numbers
SQL> UPDATE student SET phone = '8732911228' WHERE rollno = 'CS21B2018';

1 row updated.

SQL> UPDATE student SET phone = '8732911229' WHERE rollno = 'CS22M2019';

1 row updated.

SQL> UPDATE student SET phone = '8732911230' WHERE rollno = 'EC21B2020';

1 row updated.

SQL> UPDATE professor SET phone = '8730129917' WHERE empid = 'CS001';

1 row updated.

SQL> UPDATE professor SET phone = '8730129918' WHERE empid = 'EC002';

1 row updated.
```

```
SQL> SELECT * FROM student;

ROLLNO     NAME                 DEGRE    YEAR SEX        DEP ADVISOR               PHONE EMAIL
---------- -------------------- ------ ----------- ---------- --- -------------------- ----------- --------------------------------
CS21B2018  Abhishek             BTech     2021 Male       D01 Preeth               8732911228 cs21b2018@iiitdm.ac.in
CS22M2019  John                 MTech     2022 Male       D01 James                8732911229 cs22m2019@iiitdm.ac.in
EC21B2020  Sophie               BTech     2021 Female     D02 Robert               8732911230 ec21b2020@iiitdm.ac.in
ME21M2021  Emily                MTech     2021 Female     D04 Michael              8732911224 me21b2021@iiitdm.ac.in

SQL> SELECT * FROM department;

DEP NAME        HOD                  PHONE
--- ----------- -------------------- -----------
D01 CSE         Dr. Suresh            8730129912
D02 ECE         Dr. Ramesh            8730129913
D03 EEE         Dr. Sathish           8730129914
D04 MECH        Dr. Anuja             8730129915
D05 CIVIL       Dr. Ramesh            8730129916
D06 CHEM        Dr. Sathish           8730129917
D07 MATH        Dr. Sivakumar         8730129918

7 rows selected.

SQL> SELECT * FROM professor;

EMPID      NAME                 SEX          STARTYEAR DEP PHONE       EMAIL
---------- -------------------- ----------- ----------- --- ---------- --------------------------------
CS001      Dr. Sadagopan        Male              1990 D01 8730129917 sadagopan@iiitdm.ac.in
EC002      Dr. Srinivasan       Male              1993 D02 8730129918 srinivasan@iiitdm.ac.in
CS003      Dr. Anuja            Female            1995 D01 8730129814 anuja@iiitdm.ac.in
EE004      Dr. Mahesh           Male              1996 D03 8730129914 mahesh@iiitdm.ac.in
ME005      Dr. Suresh           Male              1993 D04 8730129915 suresh@iiitdm.ac.in
CV003      Dr. Ramesh           Male              1995 D05 8730129916 ramesh@iiitdm.ac.in
CH003      Dr. Sathish          Male              2000 D06 8730129916 sathish@iiitdm.ac.in

7 rows selected.

SQL>
```