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Exercise 1

Q1.

```
SQL> create table emp(FIRST_NAME varchar2(15), MID_NAME char(2), LAST_NAME varchar2(15));

Table created.

SQL> alter table emp add SSN_NUMBER char(9);
a
Table altered.

SQL>alter table emp add BIRTHDAY DATE;

Table altered.

SQL> alter table emp add ADDRESS varchar2(15);

Table altered.

SQL> alter table emp add SEX char(1);

Table altered.

SQL> alter table emp add SALARY number(7);

Table altered.

SQL> alter table emp add SUPERVISOR_SSN char(9);

Table altered.

SQL> alter table emp add DEPARTMENT_NUMBER number(5);

Table altered.

SQL>
```

```
Table created.

SQL> alter table emp add SSN_NUMBER char(9);
a
Table altered.

SQL>alter table emp add BIRTHDAY DATE;

Table altered.

SQL> alter table emp add ADDRESS varchar2(15);

Table altered.

SQL> alter table emp add SEX char(1);

Table altered.

SQL> alter table emp add SALARY number(7);

Table altered.

SQL> alter table emp add SUPERVISOR_SSN char(9);

Table altered.

SQL> alter table emp add DEPARTMENT_NUMBER number(5);

Table altered.

SQL> create table dept(DEPARTMENT_NAME varchar2(15), DEPARTMENT_NUMBER number(5), MANAGER_SSN char(9),
MANAGER_START_DATE DATE);

Table created.

SQL> create table project(PROJECT_NAME varchar2(15), PROJECT_NUMBER number(5), PROJECT_LOCATION varchar
2(15), DEPARTMENT_NUMBER number(5));

Table created.

SQL> desc project;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PROJECT_NAME                                       VARCHAR2(15)
 PROJECT_NUMBER                                     NUMBER(5)
 PROJECT_LOCATION                                   VARCHAR2(15)
 DEPARTMENT_NUMBER                                  NUMBER(5)

SQL> desc dept;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPARTMENT_NAME                                    VARCHAR2(15)
 DEPARTMENT_NUMBER                                  NUMBER(5)
 MANAGER_SSN                                        CHAR(9)
 MANAGER_START_DATE                                 DATE

SQL>
```

```
SQL> insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '&ADD
RESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER');
Enter value for first_name: Doug
Enter value for mid_name: E
Enter value for last_name: Gilbert
Enter value for ssn_number: 123
Enter value for birthday: 09-JUN-1968
Enter value for address: Chennai
Enter value for sex: M
Enter value for salary: 80000
Enter value for supervisor_ssn: ''
Enter value for department_number: 1
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('Doug', 'E', 'Gilbert', '123', '09-JUN-1968', 'Chennai', 'M', '80000',
'''', '1')

1 row created.

SQL> /
Enter value for first_name: Joyce
Enter value for mid_name:
Enter value for last_name: PAN
Enter value for ssn_number: 124
Enter value for birthday: 07-FEB-1973
Enter value for address: Vellore
Enter value for sex: F
Enter value for salary: 70000
Enter value for supervisor_ssn: ''
Enter value for department_number: 1
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('Joyce', '', 'PAN', '124', '07-FEB-1973', 'Vellore', 'F', '70000', ''''
, '1')

1 row created.

SQL> /
Enter value for first_name: Frankin
Enter value for mid_name: T
Enter value for last_name: Wong
Enter value for ssn_number: 125
Enter value for birthday: 08-DEC-1972
Enter value for address: Delhi
Enter value for sex: M
Enter value for salary: 40000
Enter value for supervisor_ssn: 123
Enter value for department_number: 2
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('Frankin', 'T', 'Wong', '125', '08-DEC-1972', 'Delhi', 'M', '40000', '1
23', '2')

1 row created.

SQL>
```

```
Enter value for first_name: Jenifer
Enter value for mid_name: S
Enter value for last_name: Wallace
Enter value for ssn_number: 564
Enter value for birthday: 20-JUN-1987
Enter value for address: Chennai
Enter value for sex: F
Enter value for salary: 43000
Enter value for supervisor_ssn: 123
Enter value for department_number: 2
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('Jenifer', 'S', 'Wallace', '564', '20-JUN-1987', 'Chennai', 'F', '43000
', '123', '2')

1 row created.

SQL> /
Enter value for first_name: John
Enter value for mid_name: B
Enter value for last_name: Smith
Enter value for ssn_number: 678
Enter value for birthday: 09-JAN-1987
Enter value for address: Madurai
Enter value for sex: m
Enter value for salary: 30000
Enter value for supervisor_ssn: 30000
Enter value for department_number: 124
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('John', 'B', 'Smith', '678', '09-JAN-1987', 'Madurai', 'm', '30000', '3
0000', '124')

1 row created.

SQL> 1
  1* insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '&ADD
RESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
SQL> /
Enter value for first_name: Ramesh
Enter value for mid_name: K
Enter value for last_name: Narayan
Enter value for ssn_number: 234
Enter value for birthday: 15-SEP-1985
Enter value for address: Bangalore
Enter value for sex: M
Enter value for salary: 38000
Enter value for supervisor_ssn: 124
Enter value for department_number: 3
old   1: insert into emp values('&FIRST_NAME', '&MID_NAME', '&LAST_NAME', '&SSN_NUMBER', '&BIRTHDAY', '
&ADDRESS', '&SEX', '&SALARY', '&SUPERVISOR_SSN', '&DEPARTMENT_NUMBER')
new   1: insert into emp values('Ramesh', 'K', 'Narayan', '234', '15-SEP-1985', 'Bangalore', 'M', '3800
0', '124', '3')

1 row created.

SQL>
```

Q2.

```
SQL> select * from emp;

FIRST_NAME      MI LAST_NAME       SSN_NUMBE BIRTHDAY  ADDRESS         S
--------------- -- --------------- --------- --------- --------------- -
    SALARY SUPERVISO DEPARTMENT_NUMBER
---------- --------- -----------------
Doug            E  Gilbert         123       09-JUN-68 Chennai         M
     80000 '                         1

Joyce              PAN             124       07-FEB-73 Vellore         F
     70000 '                         1

Frankin         T  Wong            125       08-DEC-72 Delhi           M
     40000 123                       2


FIRST_NAME      MI LAST_NAME       SSN_NUMBE BIRTHDAY  ADDRESS         S
--------------- -- --------------- --------- --------- --------------- -
    SALARY SUPERVISO DEPARTMENT_NUMBER
---------- --------- -----------------
Jenifer         S  Wallace         564       20-JUN-87 Chennai         F
     43000 123                       2

John            B  Smith           678       09-JAN-87 Madurai         m
     30000 30000                     124

Ramesh          K  Narayan         234       15-SEP-85 Bangalore       M
     38000 124                       3


6 rows selected.
```

```
SQL> select * from dept;

DEPARTMENT_NAME DEPARTMENT_NUMBER MANAGER_S MANAGER_S
--------------- ----------------- --------- ---------
Administration                  2 564       03-JAN-12
Headquarters                    1 678       16-DEC-14
Finance                         3 234       18-MAY-13
IT                              4 123       12-JUN-15
```

```
SQL> insert into project values('&PROJECT_NAME', '&PROJECT_NUMBER', '&PROJECT_LOCATION', '&DEPARTMENT_NU
MBER');
Enter value for project_name: Projecta
Enter value for project_number: 3388
Enter value for project_location: Delhi
Enter value for department_number: 1
old   1: insert into project values('&PROJECT_NAME', '&PROJECT_NUMBER', '&PROJECT_LOCATION', '&DEPARTMEN
T_NUMBER')
new   1: insert into project values('Projecta', '3388', 'Delhi', '1')

1 row created.

SQL> /
Enter value for project_name: ProjectB
Enter value for project_number: 1945
Enter value for project_location: Hyderabad
Enter value for department_number: 1
old   1: insert into project values('&PROJECT_NAME', '&PROJECT_NUMBER', '&PROJECT_LOCATION', '&DEPARTMEN
T_NUMBER')
new   1: insert into project values('ProjectB', '1945', 'Hyderabad', '1')

1 row created.

SQL> /
Enter value for project_name: ProjectC
Enter value for project_number: 6688
Enter value for project_location: Chennai
Enter value for department_number: 2
old   1: insert into project values('&PROJECT_NAME', '&PROJECT_NUMBER', '&PROJECT_LOCATION', '&DEPARTMEN
T_NUMBER')
new   1: insert into project values('ProjectC', '6688', 'Chennai', '2')

1 row created.

SQL> /
Enter value for project_name: ProjecTD
Enter value for project_number: 2423
Enter value for project_location: Chennai
Enter value for department_number: 2
old   1: insert into project values('&PROJECT_NAME', '&PROJECT_NUMBER', '&PROJECT_LOCATION', '&DEPARTMEN
T_NUMBER')
new   1: insert into project values('ProjecTD', '2423', 'Chennai', '2')

1 row created.

SQL> select * from project;

PROJECT_NAME    PROJECT_NUMBER PROJECT_LOCATIO DEPARTMENT_NUMBER
--------------- -------------- --------------- -----------------
Projecta                  3388 Delhi                           1
ProjectB                  1945 Hyderabad                       1
ProjectC                  6688 Chennai                         2
ProjecTD                  2423 Chennai                         2

SQL>
```

Q3.

```
SQL>
SQL> select FIRST_NAME , SUPERVISOR_SSN from emp;

FIRST_NAME      SUPERVISO
--------------- ---------
Doug            '
Joyce           '
Frankin         123
Jenifer         123
John            30000
Ramesh          124

6 rows selected.
```

Q4.

```
SQL> select FIRST_NAME from emp where BIRTHDAY='20-JUN-1987'
  2  ;

FIRST_NAME
---------------
Jenifer

SQL>
```

Q5.

```
SQL> select distinct salary from emp;

    SALARY
----------
     70000
     80000
     38000
     30000
     40000
     43000

6 rows selected.
```

Q6.

```
SQL> SELECT MANAGER_SSN, MANAGER_START_DATE from dept where DEPARTMENT_NAME='Finance';

MANAGER_S MANAGER_S
--------- ---------
234       18-MAY-13
```

Q7.

```
SQL> update emp set DEPARTMENT_NUMBER='5' where FIRST_NAME='Joyce';

1 row updated.
```

Q8.

```
QL> update dept set DEPARTMENT_PHONE_NUMBER=9637201320 where DEPARTMENT_NAME='Headquarters;
  2

QL> update dept set DEPARTMENT_PHONE_NUMBER=9637201320 where DEPARTMENT_NAME='Headquarters';

 row updated.

QL> update dept set DEPARTMENT_PHONE_NUMBER=1234567890 where DEPARTMENT_NAME='Finance';

 row updated.

QL> update dept set DEPARTMENT_PHONE_NUMBER=0987654321 where DEPARTMENT_NAME='IT';

 row updated.
```

Q9.

```
SQL> alter table dept modify DEPARTMENT_PHONE_NUMBER number(11);

Table altered.
```

Q10.

```
SQL> alter table dept rename column DEPARTMENT_PHONE_NUMBER to PHONE_NUMBER;

Table altered.
```

Q11.

```
SQL> rename dept to DEPARTMENT;

Table renamed.
```

Q12.

```
SQL> alter table DEPARTMENT drop column PHONE_NUMBER;

Table altered.
```

Q13.

```
SQL> create table copydept as select * from DEPARTMENT;

Table created.
```

Q14.

```
SQL> truncate table copydept;

Table truncated.
```

Q15.

```
SQL> drop table copydept;

Table dropped.
```

Exercise 2.

Q1.

```
SQL> desc emp;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 FIRST_NAME                                         VARCHAR2(15)
 MID_NAME                                           CHAR(2)
 LAST_NAME                                          VARCHAR2(15)
 SSN_NUMBER                                         CHAR(9)
 BIRTHDAY                                           DATE
 ADDRESS                                            VARCHAR2(15)
 SEX                                                CHAR(1)
 SALARY                                             NUMBER(7)
 SUPERVISOR_SSN                                     CHAR(9)
 DEPARTMENT_NUMBER                                  NUMBER(5)

SQL> desc DEPARTMENT;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DEPARTMENT_NAME                                    VARCHAR2(15)
 DEPARTMENT_NUMBER                                  NUMBER(5)
 MANAGER_SSN                                        CHAR(9)
 MANAGER_START_DATE                                 DATE

SQL> desc project;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PROJECT_NAME                                       VARCHAR2(15)
 PROJECT_NUMBER                                     NUMBER(5)
 PROJECT_LOCATION                                   VARCHAR2(15)
 DEPARTMENT_NUMBER                                  NUMBER(5)

SQL>
```

Q2.

```
SQL> alter table emp modify(FIRST_NAME varchar2(15) CONSTRAINT nn_1 NOT NULL);

Table altered.

SQL> alter table emp modify(LAST_NAME CONSTRAINT nn_2 NOT NULL);

Table altered.

SQL> alter table emp add constraint pk_1 PRIMARY KEY(SSN_NUMBER);

Table altered.

SQL> alter table emp add constraint in_1 check(SEX IN ('f','F','m','M'));

Table altered.

SQL> alter table emp modify SALARY default 800;

Table altered.

SQL> alter table dept add constraint prk_1 PRIMARY KEY(DEPARTMENT_NUMBER);
alter table dept add constraint prk_1 PRIMARY KEY(DEPARTMENT_NUMBER)
*
ERROR at line 1:
ORA-00942: table or view does not exist


SQL> alter table DEPARTMENT add constraint prk_1 PRIMARY KEY(DEPARTMENT_NUMBER);

Table altered.

SQL> alter table DEPARTMENT modify(DEPARTMENT_NAME CONSTRAINT non_1 NOT NULL);

Table altered.
```

(taken from a different computer in lab)

```
SQL> alter table DEPARTMENT modify(DEPARTMENT_NAME CONSTRAINT non_1 NOT NULL);

Table altered.

SQL> alter table DEPARTMENT add constraint for_1 foreign key(MANAGER_SSN) references EMP(SSN_NUMBER) on
delete set NULL;

Table altered.

SQL> alter table project modify (PROJECT_NAME constraint notn_1 NOT NULL);

Table altered.

SQL> alter table project add constraint prik_1 PRIMARY KEY(PROJECT_NUMBER);

Table altered.

SQL> alter table project add constraint fork_1 FOREIGN KEY(DEPARTMENT_NUMBER) REFERENCES DEPARTMENT(DEPA
RTMENT_NUMBER) on DELETE SET NULL;

Table altered.
```

Q3.

```
SQL> insert into project values('&PROJECT_NAME' , '&PROJECT_NUMBER' , '&PROJECT_LOCATION', '&DEPARTMENT_
NUMBER');
Enter value for project_name: Projecta
Enter value for project_number: 420
Enter value for project_location: Russia
Enter value for department_number: 110
old   1: insert into project values('&PROJECT_NAME' , '&PROJECT_NUMBER' , '&PROJECT_LOCATION', '&DEPARTM
ENT_NUMBER')
new   1: insert into project values('Projecta' , '420' , 'Russia', '110')
insert into project values('Projecta' , '420' , 'Russia', '110')
*
ERROR at line 1:
ORA-00001: unique constraint (DAVID.UN_1) violated
```

Q4 and Q5.

```
SQL> create table copyemp as select * from emp;

Table created.

SQL> alter table emp add DOOR_NO number(3);

Table altered.

SQL> alter table emp add STREET varchar2(10);

Table altered.

SQL> alter table emp add STREET varchar2(10);
alter table emp add STREET varchar2(10)
                      *
ERROR at line 1:
ORA-01430: column being added already exists in table


SQL> alter table emp add CITY varchar2(10);

Table altered.

SQL> alter table emp add CONTINENT varchar2(10);

Table altered.

SQL> alter table emp modify (SALARY REAL);

Table altered.
```