

DBMS EXERCISE : 1

NAME : KAUSHAL BAGHEL

ROLL NO : 21MAI0003

AIM: TO STUDY DATA DEFINITION AND DATA MANIPULATION COMMANDS.

CREATING TABLES FOR EMPLOYEE,DEPARTMENT & PROJECT

```
CREATE TABLE EMPLOYEE (FIRST_NAME VARCHAR(15),
MID_NAME CHAR(2),
LAST_NAME VARCHAR(15),
SSN_NUMBER CHAR(9),
BIRTHDAY DATE,
ADDRESS VARCHAR2(50),
SEX CHAR(1),
SALARY NUMBER(7),
SUPERVISOR_SSN CHAR(9),
DEPT_NUMBER NUMBER(5));
```

The screenshot shows an SQL command window with the following details:

- Header: Home > SQL > SQL Commands
- Autocommit checkbox is checked.
- Display dropdown is set to 10.
- SQL Command area:

```
CREATE TABLE EMPLOYEE (FIRST_NAME VARCHAR(15),
MID_NAME CHAR(2),
LAST_NAME VARCHAR(15),
SSN_NUMBER CHAR(9),
BIRTHDAY DATE,
ADDRESS VARCHAR2(50),
SEX CHAR(1),
SALARY NUMBER(7),
SUPERVISOR_SSN CHAR(9),
DEPT_NUMBER NUMBER(5));
```
- Buttons: Save and Run.
- Bottom navigation bar: Results, Explain, Describe, Saved SQL, History.
- Output area:

Table created.
0.04 seconds

```
CREATE TABLE DEPARTMENT (
    DEPT_NAME VARCHAR2(15),
    DEPT_NO NUMBER(5),
    MANAGERSSN CHAR(9),
    MANAGESTARTDATE DATE);
```

User: SYS
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
CREATE TABLE DEPARTMENT
DEPT_NAME VARCHAR2(15),
DEPT_NO NUMBER(5),
MANAGERSSN CHAR(9),
MANAGESTARTDATE DATE);
Results Explain Describe Saved SQL History
Table created.
0.00 seconds
Language: en-gb Application Express 2.1.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved.

```
CREATE TABLE PROJECT(
    PROJECTNAME VARCHAR2(15),
    PROJECTNUMBER NUMBER(5),
    PROJECTLOCATION VARCHAR2(15),
    DEPT_NO NUMBER(5));
```

Home > SQL > SQL Commands
Autocommit Display 10 Save Run
CREATE TABLE PROJECT
PROJECTNAME VARCHAR2(15),
PROJECTNUMBER NUMBER(5),
PROJECTLOCATION VARCHAR2(15),
DEPT_NO NUMBER(5);
Results Explain Describe Saved SQL History
Table created.
0.03 seconds
Language: en-gb Application Express 2.1.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved.

INSERTING DATA IN TABLES EMPLOYEE,DEPARTMENT & PROJECT.

1. Insert the data given above in employee, department and project tables.
FOR TABLE EMPLOYEE

```
INSERT INTO EMPLOYEE VALUES('DOUG', 'E', 'GILBERT', 123, '09-JUN-1968', 'CHENNAI',  
'M', 80000, NULL, 1);
```

```

INSERT INTO EMPLOYEE VALUES('joyce', NULL, 'PAN', 124, '07-FEB-1973', 'VELLORE', 'F',
70000, NULL , 1);
INSERT INTO EMPLOYEE VALUES('Frankin','T', 'Wong', 125, '08-DEC-1972', 'DELHI', 'M',
40000, 123 , 2);
INSERT INTO EMPLOYEE VALUES('Jennifer','S', 'Wallace', 564, '20-JUN-1983', 'CHENNAI',
'F', 43000, 123 , 2);
INSERT INTO EMPLOYEE VALUES('JOHN','B', 'SMITH', 678, '09-JAN-1987', 'MADURAI', 'M',
30000, 124 , 1);
INSERT INTO EMPLOYEE VALUES('RAMESH','K', 'NARAYAN', 234, '15-SEP-1985',
'BANGALORE', 'M', 38000, 124 , 3);

```

The screenshot shows an SQL command window with the following details:

- URL: Home > SQL > SQL Commands
- Autocommit: Checked
- Display: 10
- Buttons: Save, Run
- SQL Query: `SELECT * FROM EMPLOYEE`
- Results:

FIRST_NAME	MID_NAME	LAST_NAME	SSN_NUMBER	BIRTHDAY	ADDRESS	SEX	SALARY	SUPERVISOR_SSN	DEPT_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
Jennifer	S	Wallace	564	20-JUN-83	CHENNAI	F	43000	123	2
JOHN	B	SMITH	678	09-JAN-87	MADURAI	M	30000	124	1
RAMESH	K	NARAYAN	234	15-SEP-85	BANGALORE	M	38000	124	3
- Message: 6 rows returned in 0.00 seconds
- CSV Export button
- Application Express 21.0.0.0.39

FOR TABLE DEPARTMENT

```

INSERT INTO DEPARTMENT VALUES('ADMINISTRATION', 2, 564, '03-JAN-2012');
INSERT INTO DEPARTMENT VALUES('HEADQUARTER', 1, 678, '16-DEC-2014');
INSERT INTO DEPARTMENT VALUES('FINANCE', 3, 234, '18-MAY-2013');
INSERT INTO DEPARTMENT VALUES('IT', 4, 123, '12-JUN-2015');

```

The screenshot shows an SQL command window with the following details:

- Autocommit: Checked
- Display: 10
- Buttons: Save, Run
- SQL Query: `SELECT * FROM DEPARTMENT`
- Results:

DEPT_NAME	DEPT_NO	MANAGERSSN	MANAGESTARTDATE
ADMINISTRATION	2	564	03-JAN-12
HEADQUARTER	1	678	16-DEC-14
FINANCE	3	234	18-MAY-13
IT	4	123	12-JUN-15
- Message: 4 rows returned in 0.00 seconds
- CSV Export button

FOR TABLE PROJECT

```

INSERT INTO PROJECT VALUES('ProjectA', 3388, 'DELHI', 1 );

```

```

INSERT INTO PROJECT VALUES('ProjectB', 1945, 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectC', 6688, 'CHENNAI', 2 );
INSERT INTO PROJECT VALUES('ProjectD', 2423, 'CHENNAI', 2 );
INSERT INTO PROJECT VALUES('ProjectE', 7745, 'BANGALORE', 3);

```

User: SYSTEM

Home > SQL > **SQL Commands**

Autocommit Display 10

```
SELECT * FROM PROJECT
```

Results [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

PROJECTNAME	PROJECTNUMBER	PROJECTLOCATION	DEPT_NO
ProjectA	3388	DELHI	1
ProjectB	1945	HYDERABAD	1
ProjectC	6688	CHENNAI	2
ProjectD	2423	CHENNAI	2
ProjectE	7745	BANGALORE	3

5 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

Get Employee name along with his SSN and Supervisor SSN.

```

SELECT FIRST_NAME, MID_NAME, LAST_NAME, SSN_NUMBER, SUPERVISOR_SSN FROM
EMPLOYEE;

```

User: SYSTEM

Home > SQL > **SQL Commands**

Autocommit Display 10

```
SELECT FIRST_NAME, MID_NAME, LAST_NAME, SSN_NUMBER, SUPERVISOR_SSN FROM EMPLOYEE;
```

Results [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

FIRST_NAME	MID_NAME	LAST_NAME	SSN_NUMBER	SUPERVISOR_SSN
Doug	E	Gilbert	123	-
joyce	-	PAN	124	-
Franklin	T	Wong	125	123
Jennifer	S	Wallace	564	123
JOHN	B	SMITH	678	124
RAMESH	K	NARAYAN	234	124

6 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

Retrieve the employee names whose bdate is '20-JUNE-1983'.

```

SELECT FIRST_NAME, LAST_NAME, BIRTHDAY FROM EMPLOYEE WHERE BIRTHDAY='20-
JUNE-1983';

```

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10

```
SELECT FIRST_NAME, LAST_NAME, BIRTHDAY FROM EMPLOYEE WHERE BIRTHDAY='20-JUNE-1983';
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

FIRST_NAME	LAST_NAME	BIRTHDAY
Jennifer	Wallace	20-JUN-83

1 rows returned in 0.02 seconds [CSV Export](#)

Application Express 2.1.0.00.39
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Language: en_gb

Get salaries of the employees without duplications.

SELECT DISTINCT SALARY, FIRST_NAME, LAST_NAME FROM EMPLOYEE;

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10

```
SELECT DISTINCT SALARY, FIRST_NAME, LAST_NAME FROM EMPLOYEE;
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

SALARY	FIRST_NAME	LAST_NAME
70000	Joyce	PAN
38000	RAMESH	NARAYAN
30000	JOHN	SMITH
80000	Doug	Gilbert
40000	Franklin	Wong
43000	Jennifer	Wallace

6 rows returned in 0.00 seconds [CSV Export](#)

Retrieve the MgrSSN, MgrStartDate of the manager of ‘FINANCE’ department.

SELECT MANAGERSSN, MANAGESTARTDATE FROM DEPARTMENT WHERE
DEPT_NAME='FINANCE' ;

Home > SQL > SQL Commands

Autocommit Display 10

```
SELECT MANAGERSSN, MANAGESTARTDATE FROM DEPARTMENT WHERE DEPT_NAME='FINANCE';
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

MANAGERSSN	MANAGESTARTDATE
234	18-MAY-13

1 rows returned in 0.00 seconds [CSV Export](#)

Application Express 2.1.0.00.39

Change the department number of an employee having fname as 'Joyce' to 5
`UPDATE EMPLOYEE SET DEPT_NUMBER=5 WHERE FIRST_NAME='Joyce';`

Home > SQL > SQL Commands

Autocommit Display 10

```
UPDATE EMPLOYEE SET DEPT_NUMBER=5 WHERE FIRST_NAME='Joyce';
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

0 row(s) updated.

0.01 seconds

Application Express 2.1.0.00.39
Copyright © 1999, 2006, Oracle. All rights reserved.

Alter Table department add column ContactNo of NUMBER data type and insert values into this column only.
`ALTER TABLE DEPARTMENT ADD CONTACT_NUMBER NUMBER(10);`

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10

```
ALTER TABLE DEPARTMENT ADD CONTACT_NUMBER NUMBER(10);
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

Table altered.

0.05 seconds

Application Express 2.1.0.00.39
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Alter table department to modify the size of DepartmentPhoneNum.

```
ALTER TABLE DEPARTMENT  
MODIFY CONTACT_NUMBER  
NUMBER(15);
```

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10

```
ALTER TABLE DEPARTMENT  
MODIFY CONTACT_NUMBER  
NUMBER(15);
```

Results Explain Describe Saved SQL History

Table altered.
0.01 seconds

Language: en-gb Application Express 2.1.0.00.39
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Modify the field name DepartmentPhoneNum of departments table to PhNo.

```
ALTER TABLE "DEPARTMENT"  
RENAME COLUMN "CONTACT_NUMBER" TO "PHNO";
```

Home > SQL > SQL Commands

Autocommit Display 10

```
ALTER TABLE "DEPARTMENT"  
RENAME COLUMN "CONTACT_NUMBER" TO "PHNO";
```

Results Explain Describe Saved SQL History

Table altered.
0.02 seconds

Language: en-gb Application Express 2.1.0.00.39
Copyright © 1999, 2005, Oracle. All rights reserved.

Rename Table Department as DEPT.

User: SYSTEM
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
RENAME DEPARTMENT TO DEPT;
Statement processed.
0.00 seconds
Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Alter Table department remove column PhNo.

ALTER TABLE DEPT DROP COLUMN PHNO;

User: SYSTEM
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
ALTER TABLE DEPT DROP COLUMN PHNO;
Table dropped.
0.03 seconds
Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Create a table COPYOFDEPT as a copy of the table DEPT.

CREATE TABLE COPYOFDEPT AS SELECT * FROM DEPT;

User: SYSTEM
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
CREATE TABLE COPYOFDEPT AS SELECT * FROM DEPT;
Table created.
0.02 seconds
Application Express 2.1.0.00.39

Delete all the rows from COPYOF DEPT table.

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10

```
DELETE FROM COPYOFDEPT
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

4 row(s) deleted.

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39
Copyright © 1999, 2006, Oracle. All rights reserved.

. Remove COPYOF DEPT table.

DROP TABLE COPYOFDEPT;

Home > SQL > SQL Commands

Autocommit Display 10

```
DROP TABLE COPYOFDEPT;
```

[Results](#) [Explain](#) [Describe](#) [Saved SQL](#) [History](#)

Table dropped.

0.25 seconds

Language: en-gb Application Express 2.1.0.00.39
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DBMS EXERCISE : 2

NAME : KAUSHAL BAGHEL

ROLL NO 21MAI0003

Aim: To know how the constraints are used to make table is consistent.

ADDING CONSTRAINT IN EMPLOYEE TABLE.

```
ALTER TABLE EMPLOYEE MODIFY(FIRST_NAME VARCHAR(15) CONSTRAINT FNAME NOT NULL);
```

The screenshot shows the Oracle Application Express interface. In the top navigation bar, it says "Home > SQL > SQL Commands". Below the navigation is a toolbar with "Autocommit" checked, "Display" set to 10, and buttons for "Save" and "Run". The main area contains the SQL command: "ALTER TABLE EMPLOYEE MODIFY(FIRST_NAME VARCHAR(15) CONSTRAINT FNAME NOT NULL);". Below the command, the output shows "Table altered." and "0.04 seconds". At the bottom right, it says "Application Express 2.1.0.00.39".

```
ALTER TABLE EMPLOYEE MODIFY(LAST_NAME VARCHAR(15) CONSTRAINT LNAME NOT NULL);
```

The screenshot shows the Oracle Database Express Edition interface. In the top navigation bar, it says "User: SYSTEM Home > SQL > SQL Commands". Below the navigation is a toolbar with "Autocommit" checked, "Display" set to 10, and buttons for "Save" and "Run". The main area contains the SQL command: "ALTER TABLE EMPLOYEE MODIFY(LAST_NAME VARCHAR(15) CONSTRAINT LNAME NOT NULL);". Below the command, the output shows "Table altered." and "0.02 seconds". At the bottom right, it says "Application Express 2.1.0.00.39". The bottom of the screen shows a Windows taskbar with icons for File Explorer, Task View, File, Print, and Task Manager, along with system status like "31°C", "11:33", and "02-10-2021".

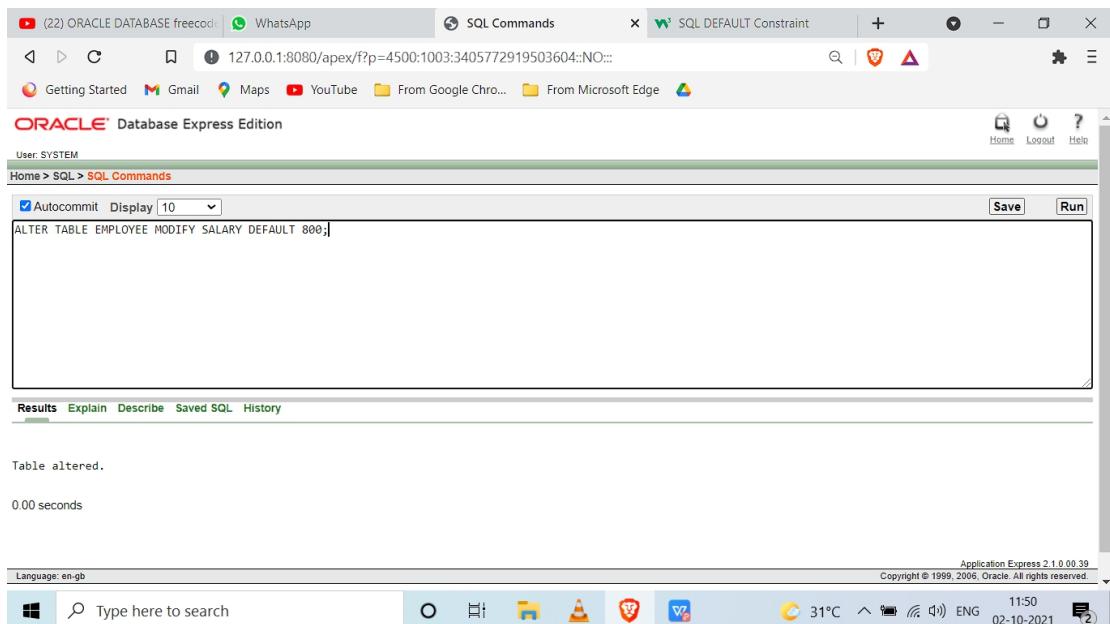
```
ALTER TABLE EMPLOYEE ADD CONSTRAINT CON_SSN PRIMARY KEY(SSN_NUMBER);
```

The screenshot shows a browser window for Oracle Application Express. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The page title is "SQL Commands". The SQL editor contains the command: `ALTER TABLE EMPLOYEE ADD CONSTRAINT CON_SSN PRIMARY KEY(SSN_NUMBER);`. Below the editor, the results show: "Table altered.", "0.02 seconds", and "Language: en-gb". The status bar at the bottom right shows "Application Express 2.1.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved." and the date "02-10-2021".

```
ALTER TABLE EMPLOYEE ADD CONSTRAINT CON_SEX CHECK(SEX IN ('M','F','m','f'));
```

The screenshot shows a browser window for Oracle Application Express. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The page title is "SQL Commands". The SQL editor contains the command: `ALTER TABLE EMPLOYEE ADD CONSTRAINT CON_SEX CHECK(SEX IN ('M','F','m','f'));`. Below the editor, the results show: "Table altered.", "0.00 seconds", and "Language: en-gb". The status bar at the bottom right shows "Application Express 2.1.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved." and the date "02-10-2021".

```
ALTER TABLE EMPLOYEE MODIFY SALARY DEFAULT 800;
```



SQL Commands

SQL DEFAULT Constraint

127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO::

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE EMPLOYEE MODIFY SALARY DEFAULT 800;
```

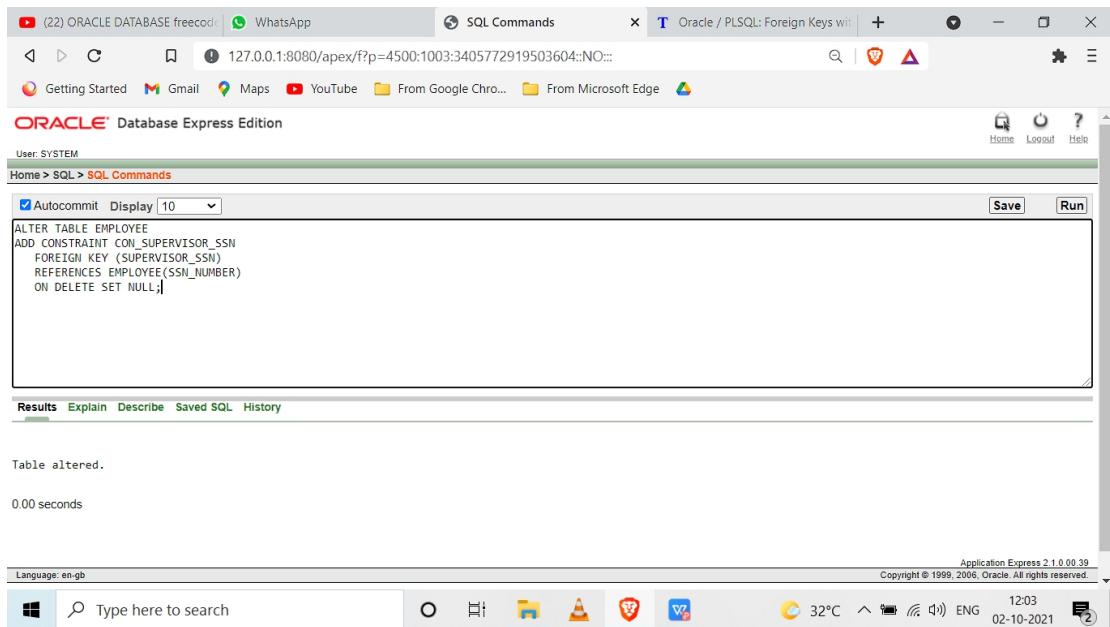
Results Explain Describe Saved SQL History

Table altered.

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT CON_SUPERVISOR_SSN
FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE(SSN_NUMBER)
ON DELETE SET NULL;
```



SQL Commands

T Oracle / PLSQL: Foreign Keys will be displayed

127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO::

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT CON_SUPERVISOR_SSN
FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE(SSN_NUMBER)
ON DELETE SET NULL;
```

Results Explain Describe Saved SQL History

Table altered.

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

```

ALTER TABLE EMPLOYEE
ADD CONSTRAINT CON_DNO
FOREIGN KEY (DEPT_NUMBER)
REFERENCES DEPARTMENT(DEPT_NO)
ON DELETE CASCADE;

```

The screenshot shows the Oracle SQL Commands interface in a browser window. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The SQL command entered is:

```

ALTER TABLE EMPLOYEE
ADD CONSTRAINT CON_DNO
FOREIGN KEY (DEPT_NUMBER)
REFERENCES DEPARTMENT(DEPT_NO)
ON DELETE CASCADE;

```

The results pane displays the error message: "ORA-02270: no matching unique or primary key for this column-list". The status bar at the bottom right shows "Application Express 2.1.0.00.39" and "Copyright © 1999, 2006, Oracle. All rights reserved.".

ADDING CONSTRAINT IN DEPARTMENT TABLE.

```
ALTER TABLE DEPT MODIFY(DEPT_NAME VARCHAR2(15) CONSTRAINT DNAME NOT NULL);
```

The screenshot shows the Oracle SQL Commands interface in a browser window. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The SQL command entered is:

```

ALTER TABLE DEPT MODIFY(DEPT_NAME VARCHAR2(15) CONSTRAINT DNAME NOT NULL);

```

The results pane displays the message "Table altered.". The status bar at the bottom right shows "Application Express 2.1.0.00.39" and "Copyright © 1999, 2006, Oracle. All rights reserved.".

```
ALTER TABLE DEPT ADD CONSTRAINT CON_DEPT_NO PRIMARY KEY(DEPT_NO);
```

SQL Commands

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE DEPT ADD CONSTRAINT CON_DEPT_NO PRIMARY KEY(DEPT_NO);
```

Results Explain Describe Saved SQL History

Table altered.

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

```
ALTER TABLE DEPT
ADD CONSTRAINT CON_FK_MANAGER_SSN
FOREIGN KEY (MANAGERSSN)
REFERENCES EMPLOYEE(SSN_NUMBER)
ON DELETE SET NULL;
```

SQL Commands

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE DEPT
ADD CONSTRAINT CON_FK_MANAGER_SSN
FOREIGN KEY (MANAGERSSN)
REFERENCES EMPLOYEE(SSN_NUMBER)
ON DELETE SET NULL;
```

Results Explain Describe Saved SQL History

Table altered.

0.02 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

ADDING CONSTRAINT IN PROJECT TABLE.

```
ALTER TABLE PROJECT MODIFY(PROJECTNAME VARCHAR2(15) CONSTRAINT PNAME NOT NULL);
```

The screenshot shows the Oracle SQL Commands interface in a web browser. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The page title is "SQL Commands". The SQL command entered is:

```
ALTER TABLE PROJECT MODIFY(PROJECTNAME VARCHAR2(15) CONSTRAINT PNAME NOT NULL);
```

The results show "Table altered." and "0.01 seconds". The status bar at the bottom right indicates "Application Express 2.1.0.00.39" and "Copyright © 1999, 2006, Oracle. All rights reserved.". The system tray shows icons for file, search, and other system status.

```
ALTER TABLE PROJECT ADD CONSTRAINT CON_PK PRIMARY KEY(PROJECTNUMBER);
```

The screenshot shows the Oracle SQL Commands interface in a web browser. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO:::. The page title is "SQL Commands". The SQL command entered is:

```
ALTER TABLE PROJECT ADD CONSTRAINT CON_PK PRIMARY KEY(PROJECTNUMBER);
```

The results show "Table altered." and "0.01 seconds". The status bar at the bottom right indicates "Application Express 2.1.0.00.39" and "Copyright © 1999, 2006, Oracle. All rights reserved.". The system tray shows icons for file, search, and other system status.

```
ALTER TABLE PROJECT  
ADD CONSTRAINT CON_PROJECT_FK  
FOREIGN KEY (DEPT_NO)  
REFERENCES DEPT(DEPT_NO)
```

ON DELETE SET NULL;

The screenshot shows a browser window with the URL `127.0.0.1:8080/apex/f?p=4500:1003:3405772919503604::NO::`. The title bar says "SQL Commands". The page header includes links for "Getting Started", "Gmail", "Maps", "YouTube", "From Google Chrome", "From Microsoft Edge", "Home", "Logout", and "Help". A user session is shown as "User: SYSTEM". The main content area contains the following SQL code:

```
ALTER TABLE PROJECT
ADD CONSTRAINT CON_PROJECT_FK
FOREIGN KEY (DEPT_NO)
REFERENCES DEPT(DEPT_NO)
ON DELETE SET NULL;
```

Below the code, there are buttons for "Save" and "Run". The status bar at the bottom indicates "Language: en-gb", "Application Express 2.1.0.00.39", and "Copyright © 1999, 2006, Oracle. All rights reserved.". The taskbar at the bottom of the screen shows various icons and the date/time as "02-10-2021 12:31".

CREATING NEW TABLES DEPARTMENT_LOCATIONS,WORKS_ON, AND DEPENDENT WITH CONSTRAINTS.

CREATE TABLE DEPT_LOCATIONS(DEPT_NO NUMBER(5),DEPT_LOCATION VARCHAR (15) ,CONSTRAINT CON_DELETE FOREIGN KEY(DEPT_NO) REFERENCES DEPT(DEPT_NO) ON DELETE CASCADE);

The screenshot shows a browser window with the URL `127.0.0.1:8080/apex/f?p=4500:1003:3269718448321381::NO::`. The title bar says "Data Structures - Full Course Using C". The page header includes links for "Getting Started", "Gmail", "Maps", "YouTube", "From Google Chrome", "From Microsoft Edge", "Home", "Logout", and "Help". A user session is shown as "User: SYSTEM". The main content area contains the following SQL code:

```
CREATE TABLE DEPT_LOCATIONS( DEPT_NO NUMBER(5),DEPT_LOCATION VARCHAR (15) ,CONSTRAINT CON_DELETE FOREIGN KEY(DEPT_NO) REFERENCES DEPT(DEPT_NO) ON DELETE CASCADE);
```

Below the code, there are buttons for "Save" and "Run". The status bar at the bottom indicates "Language: en-gb", "Application Express 2.1.0.00.39", and "Copyright © 1999, 2006, Oracle. All rights reserved.". The taskbar at the bottom of the screen shows various icons and the date/time as "03-10-2021 11:50".

```

CREATE TABLE WORKS_ON(EMPLOYEE_SSN CHAR(9),PROJECT_NUMBER INT ,HOURS DECIMAL(3,1)
NOT NULL,CONSTRAINT CON_EMPLOYEE_SSN FOREIGN KEY(EMPLOYEE_SSN) REFERENCES
EMPLOYEE(SSN_NUMBER) ON DELETE CASCADE,CONSTRAINT CON_PROJECT_NUMBER FOREIGN
KEY(PROJECT_NUMBER) REFERENCES PROJECT(PROJECTNUMBER) ON DELETE CASCADE);

```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL editor contains the following code:

```

CREATE TABLE WORKS_ON(EMPLOYEE_SSN CHAR(9),PROJECT_NUMBER INT ,HOURS DECIMAL(3,1)
NOT NULL,CONSTRAINT CON_EMPLOYEE_SSN FOREIGN KEY(EMPLOYEE_SSN) REFERENCES
EMPLOYEE(SSN_NUMBER) ON DELETE CASCADE,CONSTRAINT CON_PROJECT_NUMBER FOREIGN
KEY(PROJECT_NUMBER) REFERENCES PROJECT(PROJECTNUMBER) ON DELETE CASCADE);

```

Below the editor, the results show:

Table created.
0.00 seconds

At the bottom, the operating system taskbar shows the date as 03-10-2021.

```

ALTER TABLE WORKS_ON
ADD CONSTRAINT CON_PK1 PRIMARY KEY (EMPLOYEE_SSN,PROJECT_NUMBER);

```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL editor contains the following code:

```

ALTER TABLE WORKS_ON
ADD CONSTRAINT CON_PK1 PRIMARY KEY (EMPLOYEE_SSN,PROJECT_NUMBER);

```

Below the editor, the results show:

Table altered.
0.08 seconds

At the bottom, the operating system taskbar shows the date as 04-10-2021.

```

CREATE TABLE DEPENDENT(EMPLOYEE_SSN CHAR(9),DEPENDENT_NAME VARCHAR(15) ,SEX
CHAR(1),BIRTHDAY DATE ,RELATIONSHIP VARCHAR(8),CONSTRAINT CON_FK_EMPLOYEE_SSN
FOREIGN KEY(EMPLOYEE_SSN) REFERENCES EMPLOYEE(SSN_NUMBER) ON DELETE
CASCADE,CONSTRAINT CON_SEX_CHECK CHECK(SEX IN('M','F','m','f')),CONSTRAINT CON_PKEY
PRIMARY KEY(EMPLOYEE_SSN,DEPENDENT_NAME));

```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL code entered is:

```
CREATE TABLE DEPENDENT(EMPLOYEE_SSN CHAR(9),DEPENDENT_NAME VARCHAR(15) ,SEX CHAR(1),BIRTHDAY DATE ,RELATIONSHIP VARCHAR(8),CONSTRAINT CON_FK_EMPLOYEE_SSN FOREIGN KEY(EMPLOYEE_SSN) REFERENCES EMPLOYEE(SSN_NUMBER) ON DELETE CASCADE,CONSTRAINT CON_SEX_CHECK CHECK(SEX IN('M','F','m','f')),CONSTRAINT CON_PKEY PRIMARY KEY(EMPLOYEE_SSN,DEPENDENT_NAME));
```

The results pane shows the message "Table created." and "0.03 seconds". The status bar at the bottom right indicates "Application Express 2.1.0.00.39" and the date "03-10-2021".

INSERTING DATA INTO DEPARTMENT LOCATIONS TABLE

```
INSERT INTO DEPT_LOCATIONS VALUES(1,'HOUSTON');
INSERT INTO DEPT_LOCATIONS VALUES(1,'CHICAGO');
INSERT INTO DEPT_LOCATIONS VALUES(2,'NEW YORK');
INSERT INTO DEPT_LOCATIONS VALUES(2,'SAN FRANCISCO');
INSERT INTO DEPT_LOCATIONS VALUES(3,'SALT LAKE CITY');
INSERT INTO DEPT_LOCATIONS VALUES(4,'STAFFORD');
INSERT INTO DEPT_LOCATIONS VALUES(4,'BELLAIRE');
```

```
INSERT INTO DEPT_LOCATIONS VALUES(5,'SUGARLAND');
```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL code entered is:

```
INSERT INTO DEPT_LOCATIONS VALUES(5,'SUGARLAND');
```

The results pane shows the error message "ORA-02291: integrity constraint (SYSTEM.CON_DELETE) violated - parent key not found" and "0.01 seconds". The status bar at the bottom right indicates "Application Express 2.1.0.00.39" and the date "03-10-2021".

```
INSERT INTO DEPT_LOCATIONS VALUES(5,'HOUSTON');
```

The screenshot shows a browser window for Oracle Database Express Edition. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:3269718448321381::NO::. The SQL Commands page is displayed, showing the error message: ORA-02291: integrity constraint (SYSTEM.CON_DELETE) violated - parent key not found. The command entered was INSERT INTO DEPT_LOCATIONS VALUES(5,'HOUSTON');.

TO RESOLVE THIS PROBLEM WE NEED TO ADD DUMMY DATA WITH DEPT NO=5 IN DEPT TABLE.

```
INSERT INTO DEPT VALUES('UNSPECIFIED', 5, 123, '12-JUN-2015');
```

The screenshot shows a browser window for Oracle Database Express Edition. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:40233459507263::NO::. The SQL Commands page is displayed, showing the message: 1 row(s) inserted. The command entered was INSERT INTO DEPT VALUES('UNSPECIFIED', 5, 123, '12-JUN-2015');.

```
INSERT INTO DEPT_LOCATIONS VALUES(5,'SUGARLAND');
```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL command `INSERT INTO DEPT_LOCATIONS VALUES(5,'SUGARLAND');` is entered in the main query window. After execution, the message "1 row(s) inserted." is displayed. The system status bar at the bottom indicates "0.02 seconds" for the operation.

```
INSERT INTO DEPT_LOCATIONS VALUES(5,'HOUSTON');
```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. The SQL command `INSERT INTO DEPT_LOCATIONS VALUES(5,'HOUSTON');` is entered in the main query window. After execution, the message "1 row(s) inserted." is displayed. The system status bar at the bottom indicates "0.00 seconds" for the operation.

WhatsApp SQL Commands

Autocommit Display 30 Save Run

```
SELECT * FROM DEPT_LOCATIONS;
```

Results Explain Describe Saved SQL History

DEPT_NO	DEPT_LOCATION
1	HOUSTON
1	CHICAGO
2	NEW YORK
2	SAN FRANCISCO
3	SALT LAKE CITY
4	STAFFORD
4	BELLAIRE
5	SUGARLAND
5	HOUSTON

9 rows returned in 0.00 seconds CSV Export

Type here to search 36°C ENG 04-10-2021 15:25

INSERTING DATA INTO WORKS_ON TABLE

```
INSERT INTO WORKS_ON VALUES('666884444',3388,40.0);
```

WhatsApp SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO WORKS_ON VALUES('666884444',3388,40.0);
```

ORA-02291: integrity constraint (SYSTEM.CON_EMPLOYEE_SSN) violated - parent key not found

Results Explain Describe Saved SQL History

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Type here to search 34°C ENG 04-10-2021 14:41

ADDING DUMMY DATA TO RESOLVE INTEGRITY CONSTRAINTS.

```
INSERT INTO EMPLOYEE VALUES('ALBERT', NULL, 'EINSTEIN', 123456789, '09-JUN-1969', 'CHENNAI', 'M', 80000, NULL, 4);
INSERT INTO EMPLOYEE VALUES('NIKOLA', NULL, 'TESLA', 666884444, '09-JUN-1970', 'CHENNAI', 'M', 90000, NULL, 4);
```

```
INSERT INTO EMPLOYEE VALUES('ELON', NULL, 'MUSK', 453453453, '09-JUN-1970', 'CHENNAI', 'M', 90000, NULL, 4);
```

```
INSERT INTO EMPLOYEE VALUES('JEFF', NULL, 'BEZOS', 333445555, '09-JUN-1971', 'CHENNAI', 'M', 10000, NULL, 4);
```

```

INSERT INTO EMPLOYEE VALUES('STEVE', NULL, 'JOBS',999887777,'09-JUN-1972', 'CHENNAI', 'M',
10000, NULL , 4);

INSERT INTO EMPLOYEE VALUES('BRUCE', NULL, 'WAYNE',543216789,'09-JUN-1973', 'CHENNAI', 'M',
90000, NULL , 4);

INSERT INTO EMPLOYEE VALUES('TONY', NULL, 'STARK',554433221,'09-JUN-1974', 'CHENNAI', 'M',
90000, NULL , 4);

```

ADDING DUMMY DATA TO PROJECT TABLE.

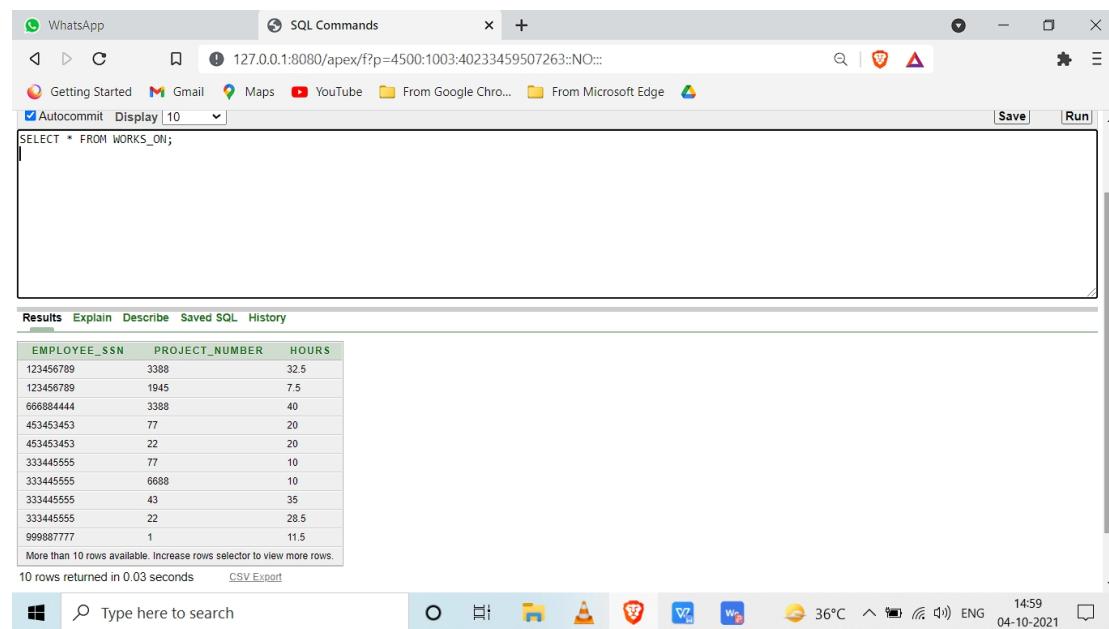
```

INSERT INTO PROJECT VALUES('ProjectB', 77 , 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectB', 12 , 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectB', 22 , 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectB', 43 , 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectB', 1 , 'HYDERABAD', 1 );
INSERT INTO PROJECT VALUES('ProjectB', 12 , 'HYDERABAD', 1 );

```

INSERTING DATA INTO WORKS_ON TABLE.

```
INSERT INTO WORKS_ON VALUES('123456789', 3388 , 32.5 );
```



The screenshot shows a Microsoft Edge browser window. The address bar displays the URL: 127.0.0.1:8080/apex/f?p=4500:1003:40233459507263::NO:::. Below the address bar, there is a toolbar with various icons. The main content area contains an SQL command in the address bar:

```
SELECT * FROM WORKS_ON;
```

Below the command, the results are displayed in a grid:

EMPLOYEE_SSN	PROJECT_NUMBER	HOURS
123456789	3388	32.5
123456789	1945	7.5
666884444	3388	40
453453453	77	20
453453453	22	20
333445555	77	10
333445555	6688	10
333445555	43	35
333445555	22	28.5
999887777	1	11.5

Below the grid, a message indicates: "More than 10 rows available. Increase rows selector to view more rows." and "10 rows returned in 0.03 seconds". There is also a "CSV Export" link. The status bar at the bottom shows the date and time: "04-10-2021 14:59".

INSERTING DATA INTO DEPENDENT TABLE.

```
INSERT INTO DEPENDENT VALUES('333445555','ALICE','F','05-APR-1976','DAUGHTER');
```

```
INSERT INTO DEPENDENT VALUES('987654321','ABNER','M','29-FEB-1932','SPOUSE');
```

WhatsApp SQL Commands

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO DEPENDENT VALUES('987654321','ABNER','M','29-FEB-1932','SPOUSE');
```

Results Explain Describe Saved SQL History

ORA-02291: integrity constraint (SYSTEM.CON_FK_EMPLOYEE_SSN) violated - parent key not found

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Type here to search

ADDING DUMMY DATA TO EMPLOYEE TABLE

```
INSERT INTO EMPLOYEE VALUES('CAPTAIN STEVE', NULL, 'ROGERS',987654321,'09-JUN-1902',  
'CHENNAI', 'M', 90000, NULL , 4);  
INSERT INTO DEPENDENT VALUES('987654321','ABNER','M','29-FEB-1932','SPOUSE');
```

WhatsApp SQL Commands

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO DEPENDENT VALUES('987654321','ABNER','M','29-FEB-1932','SPOUSE');
```

Results Explain Describe Saved SQL History

1 row(s) inserted.

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Type here to search

The screenshot shows the Oracle Application Express SQL Commands interface. The URL is 127.0.0.1:8080/apex/f?p=4500:1003:40233459507263::NO:::. The page title is SQL Commands. The SQL command entered is SELECT * FROM DEPENDENT;. The results section displays a grid of data:

EMPLOYEE_SSN	DEPENDENT_NAME	SEX	BIRTHDAY	RELATIONSHIP
333445555	ALICE	F	05-APR-76	DAUGHTER
333445555	THEODORE	M	25-OCT-73	SON
333445555	JOY	F	03-MAY-48	SPOUSE
123456789	ALICE	F	31-DEC-78	DAUGHTER
123456789	ELIZABETH	F	05-MAY-57	SPOUSE
987654321	ABNER	M	29-FEB-32	SPOUSE

6 rows returned in 0.01 seconds. CSV Export.

Language: en-US Application Express 2.1.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved. 15:21 36°C ENG 04-10-2021

Execute the following Query on the Db to display and discuss the integrity constraints violated by any of the following operations

1. Insert ('Robert', 'F', 'Scott', '943775543', '21-JUN-42', '2365 Newcastle Rd, Bellaire, TX', M, 58000, '888665555', 1) into EMPLOYEE.

AS SUPERSSN IS FOREIGN KEY REFERENCING TO SSN

WE DONOT HAVE THE 888665555 IN SSN AS SUPERSSN IS REFERING TO THIS SO WE CANT HAVE 888665555 IN SUPERSSN

New Tab SQL Commands +

127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO::

User: SYSTEM Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO EMPLOYEE VALUES('Robert', 'F', 'Scott', '943775543', '21-JUN-1942', '2365 Newcastle Rd, Bellaire, TX', 'M', 58000, '888665555', 1);
```

ORA-02291: integrity constraint (SYSTEM.CON_SUPERVISOR_SSN) violated - parent key not found

Results Explain Describe Saved SQL History

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

2. Insert ('677678989', null, '40.0') into WORKS_ON.
 PROJECT NUMBER IS PRIMARY KEY AND CANT BE NULL.
 EMPLOYEE 677678989 IS NOT PRESENT IN EMPLOYEE(SSN).

WhatsApp SQL Commands +

127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO::

User: SYSTEM Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO WORKS_ON VALUES('677678989', null, '40.0');
```

ORA-01400: cannot insert NULL into ("SYSTEM"."WORKS_ON"."PROJECT_NUMBER")

Results Explain Describe Saved SQL History

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

3. Insert ('453453453', 'John', M, '12-DEC-60', 'SPOUSE') into DEPENDENT

WhatsApp SQL Commands 127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO::

User: SYSTEM Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
INSERT INTO DEPENDENT VALUES( '453453453', 'John', 'M', '12-DEC-60', 'SPOUSE' );
```

Results Explain Describe Saved SQL History

1 row(s) inserted.
0.00 seconds

Language: en-gb Application Express 2.1.0.00.39
Copyright © 1999, 2006, Oracle. All rights reserved.

4. Delete the WORKS_ON tuples with ESSN= '333445555'.
DELETE FROM WORKS_ON WHERE EMPLOYEE_SSN = '333445555';

WhatsApp SQL Commands 127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO::

User: SYSTEM Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
DELETE FROM WORKS_ON WHERE EMPLOYEE_SSN = '333445555';
```

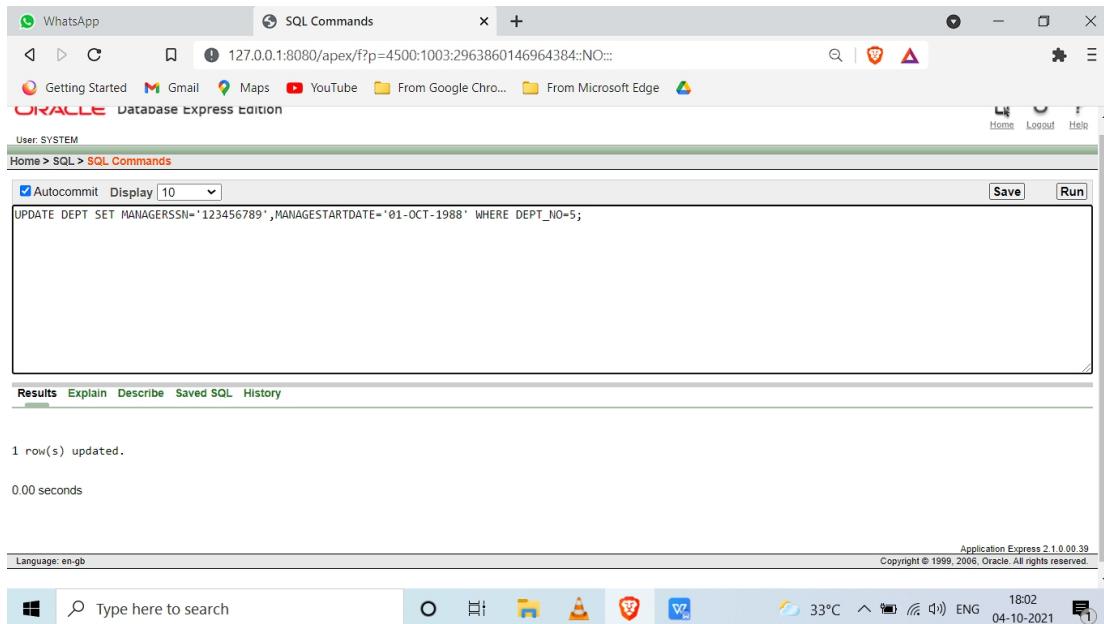
Results Explain Describe Saved SQL History

4 row(s) deleted.
0.02 seconds

Language: en-gb Application Express 2.1.0.00.39
Copyright © 1999, 2006, Oracle. All rights reserved.

5. Modify the MGRSSN and MGRSTARTDATE of the DEPARTMENT tuple with DNUMBER=5 to '123456789' and '01-OCT-88', respectively.

UPDATE DEPT SET MANAGERSSN='123456789',MANAGESTARTDATE='01-OCT-1988' WHERE DEPT_NO=5;

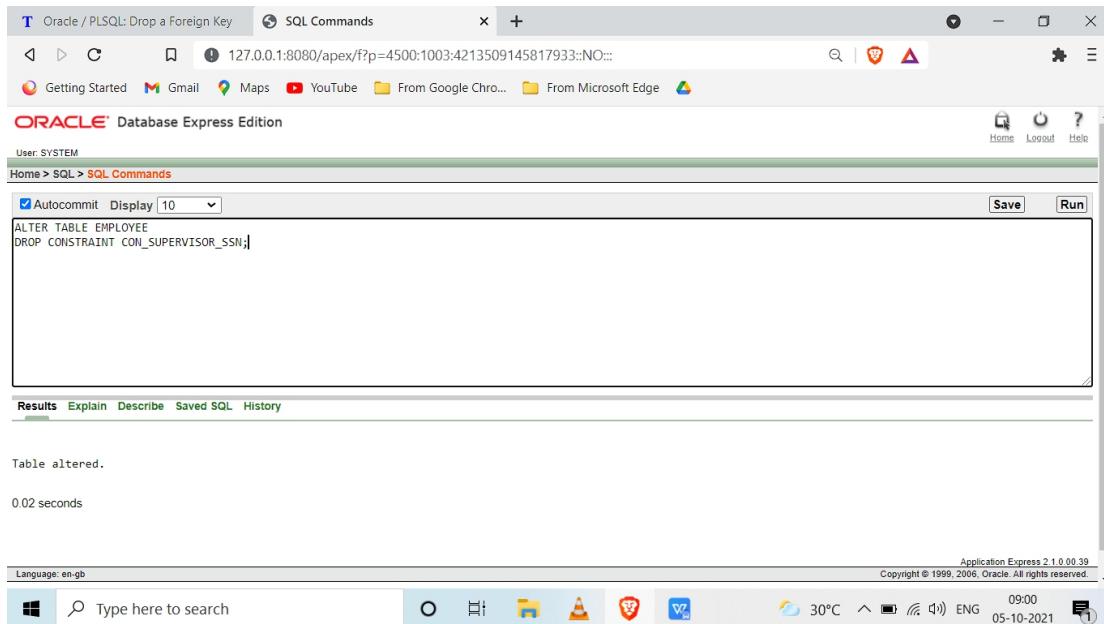


User: SYSTEM
Home > SQL > SQL Commands
 Autocommit Display 10 Save Run
UPDATE DEPT SET MANAGERSSN='123456789',MANAGESTARTDATE='01-OCT-1988' WHERE DEPT_NO=5;
Results Explain Describe Saved SQL History
1 row(s) updated.
0.00 seconds
Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Alter the tables to

2. Drop Foreign key defined on SuperSSN and add it using Alter table command.
ALTER TABLE EMPLOYEE
DROP CONSTRAINT CON_SUPERVISOR_SSN;

```
ALTER TABLE EMPLOYEE  
ADD CONSTRAINT CON_SUPERVISOR_SSN  
FOREIGN KEY (SUPERVISOR_SSN)  
REFERENCES EMPLOYEE(SSN_NUMBER)  
ON DELETE SET NULL;
```



T Oracle / PLSQL: Drop a Foreign Key SQL Commands x +
127.0.0.1:8080/apex/?p=4500:1003:4213509145817933:NO:::
Getting Started Gmail Maps YouTube From Google Chro... From Microsoft Edge Google
ORACLE Database Express Edition User: SYSTEM Home Logout Help
Home > SQL > SQL Commands Autocommit Display 10 Save Run
ALTER TABLE EMPLOYEE
DROP CONSTRAINT CON_SUPERVISOR_SSN;
Results Explain Describe Saved SQL History
Table altered.
0.02 seconds
Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

T Oracle / PLSQL: Drop a Foreign Key SQL Commands × +

127.0.0.1:8080/apex/f?p=4500:1003:4213509145817933::NO::

Getting Started Gmail Maps YouTube From Google Chro... From Microsoft Edge

ORACLE Database Express Edition

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT CON_SUPERVISOR_SSN
FOREIGN KEY (SUPERVISOR_SSN)
REFERENCES EMPLOYEE(SSN_NUMBER)
ON DELETE SET NULL;
```

Results Explain Describe Saved SQL History

Table altered.

0.02 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

3. Make name of Project as Unique and sex of employee as not null.
ALTER TABLE PROJECT ADD CONSTRAINT CON_UNI UNIQUE (PROJECTNAME);

WhatsApp SQL Commands × +

127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO::

Getting Started Gmail Maps YouTube From Google Chro... From Microsoft Edge

Home Logout Help

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
ALTER TABLE PROJECT ADD CONSTRAINT CON_UNI UNIQUE (PROJECTNAME);
```

ORA-02299: cannot validate (SYSTEM.CON_UNI) - duplicate keys found

0.00 seconds

Language: en-gb Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

ALTER TABLE EMPLOYEE MODIFY(SEX CHAR(1) CONSTRAINT CON_SEX1 NOT NULL);

The screenshot shows the Oracle Database Express Edition SQL Commands interface. In the SQL editor, the following command is entered:

```
ALTER TABLE EMPLOYEE MODIFY(SEX CHAR(1) CONSTRAINT CON_SEX1 NOT NULL);
```

The results pane shows the output:

```
Table altered.
```

System status bar at the bottom right shows: Application Express 2.1.0.00.39, Copyright © 1999, 2006, Oracle. All rights reserved., Language: en-gb, 30°C, ENG, 05-10-2021, 09:11.

4. Make Address as a new type containing door no, street, city, State, Continent.

```
ALTER TABLE EMPLOYEE MODIFY ADDRESS VARCHAR(25);
```

The screenshot shows the Oracle Database Express Edition SQL Commands interface. In the SQL editor, the following command is entered:

```
ALTER TABLE EMPLOYEE MODIFY ADDRESS VARCHAR(25);
```

The results pane shows the output:

```
Table altered.
```

System status bar at the bottom right shows: Application Express 2.1.0.00.39, Copyright © 1999, 2006, Oracle. All rights reserved., Language: en-gb, 33°C, ENG, 05-10-2021, 10:56.

5. Make salary of employee to accept real values.

```
alter table
```

```
EMPLOYEE
```

```
modify
```

```
(
```

```
    SALARY  NUMBER
```

```
);
```

WhatsApp SQL Commands x +

127.0.0.1:8080/apex/f?p=4500:1003:2963860146964384::NO:::

Getting Started Gmail Maps YouTube From Google Chro... From Microsoft Edge

User: SYSTEM

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
alter table
EMPLOYEE
modify
(
    SALARY    NUMBER
);
```

Results Explain Describe Saved SQL History

Statement processed.

0.02 seconds

Language: en-gb Application Express 21.0.0.39 Copyright © 1999, 2006, Oracle. All rights reserved.

Type here to search 33°C 18:16 04-10-2021