Name:- Sanskriti Gupta

Roll no:- 15

Batch :- D1

PRACTICAL – 01

Aim : Introduction to Oracle 11g database and demonstrate Data Definition Language [DDL] command for the creation of tables.

1. Member's Table

```
CREATE TABLE MEMBERS(
CARDNO NUMBER(5) ,
SURNAME VARCHAR2(15) NOT NULL,
NAME VARCHAR2(15) NOT NULL,
ADDRESS VARCHAR2(150),
BIRTHDAY_DATE DATE NOT NULL,
GENDER CHAR(1),
PHONE_NO NUMBER(15)  ,
CONSTRAINT MEMBERS_CK_GENDER CHECK(GENDER IN ('M' , 'F')),
CONSTRAINT MEMBERS_PK_CARDNO PRIMARY KEY(CARDNO),
CONSTRAINT MEMBERS_PK_PHONE_NO UNIQUE(PHONE_NO)
);
```

```
SQL> INSERT INTO MEMBERS VALUES(&CARDNO , '&SURNAME' , '&NAME'
,'&ADDRESS' , '&BIRTH_DATE' , '&GENDER' , &PHONE_NO);
Enter value for cardno: 1001
Enter value for surname: GUPTA
Enter value for name: SANSKRITI
Enter value for address: SHIVAJI LAYOUT
Enter value for birth_date: 25 OCT 2002
Enter value for gender: F
```

Enter value for phone_no: 7620565090

old 1: INSERT INTO MEMBERS VALUES(&CARDNO , '&SURNAME' , '&NAME' ,'&ADDRESS' , '&BIRTH_DATE' , '&GENDER' , &PHONE_NO)

new 1: INSERT INTO MEMBERS VALUES(1001 , 'GUPTA' , 'SANSKRITI' ,'SHIVAJI LAYOUT' , '25 OCT 2002 ' , 'F' , 7620565090)

1 row created.

Output:-

CARDNO SURNAME NAME ADDRESS

--- --- --- ---

BIRTHDAY_ G PHONE_NO

--- - ---

1001 GUPTA SANSKRITI NAGPUR

25-OCT-02 F 9874563210

1002 AGRAWAL SMRITI BHIWAPUR

31-MAY-02 F 9874561230

1003 GUPTA SHREY TUMSAR

25-APR-02 M 7894561230

1004 ARORA RUPESH NAGPUR

30-MAR-00 M 7896541230

1005 HARDE ARYA BHANDARA

05-SEP-02 F 156487653

1006 KALAMKAR DEVYANI NAGPUR

12-MAR-02 F 3698521470

1007 SHIVHARE RIYA NAGPUR

15-OCT-02 F 7412589630

1008 THAKRE RUTUJA UMRED

01-MAR-02 F 258147690

1009 DUBEY JAY NAGPUR

CARDNO SURNAME NAME ADDRESS

--- --- --- ---

BIRTHDAY_ G PHONE_NO

--- - ---

19-MAR-01 M 1.2874E+10

1010 HATEWAR PIYUSH NAGPUR

11-JAN-02 M 1456320987

10 rows selected.

2. Employees Table

```
CREATE TABLE EMPLOYEES(
EMP_ID NUMBER(5) ,
SURNAME VARCHAR2(15) NOT NULL,
NAME VARCHAR2(15) NOT NULL,
BIRTHDAY_DATE DATE NOT NULL,
EMP_HIRE_DATE DATE NOT NULL,
CONSTRAINT EMPLOYEES_PK_EMP_ID PRIMARY KEY(EMP_ID),
CONSTRAINT EMPLOYEE_CK_BIRTHDAY_DATE CHECK (EMP_HIRE_DATE >
BIRTHDAY_DATE)
)
```

```
SQL> INSERT INTO EMPLOYEES VALUES(&EMP_ID ,'&SURNAME' ,
'&NAME','&BIRTH_DATE','&EMP_HIRE_DATE' )

  2  ;

Enter value for emp_id: 2001

Enter value for surname: GUPTA

Enter value for name: SANSKRITI

Enter value for birth_date: 25 OCT 2002

Enter value for emp_hire_date: 1 JAN 2022

old   1: INSERT INTO EMPLOYEES VALUES(&EMP_ID ,'&SURNAME' ,
'&NAME','&BIRTH_DATE','&EMP_HIRE_DATE' )

new   1: INSERT INTO EMPLOYEES VALUES(2001 ,'GUPTA' , 'SANSKRITI','25 OCT 2002','1
JAN 2022' )


1 row created.
```

Output:-

```
SELECT * FROM  employees ;

EMP_ID SURNAME        NAME           BIRTHDAY_ EMP_HIRE_

---------- --------------- --------------- --------- ---------

2001 GUPTA          SANSKRITI       25-OCT-02 01-JAN-22

2002 AGRAWAL        SMRITI          31-MAY-02 02-JAN-22

2003 GUPTA          SHREY           25-APR-02 03-JAN-22

2004 ARORA          RUPESH          30-MAR-02 04-JAN-22

2005 HARDE          ARYA            05-SEP-02 05-JAN-22

2006 KALAMKAR       DEVYANI         12-MAR-02 06-JAN-22

2007 SHIVHARE       RIYA            15-OCT-02 07-JAN-22

2008 THAKRE         RUTUJA          01-MAR-02 08-JAN-22

2009   2009 DUBEY          JAY             19-MAR-01 09-JAN-22

 2010 HATEWAR        PIYUSH          11-JAN-02 10-JAN-22


10 rows selected.
```

3. Publishers table

```
CREATE TABLE PUBLISHERS(
PUB_ID NUMBER(5)  ,
NAME VARCHAR2(50) NOT NULL ,
CITY VARCHAR2(50) NOT NULL ,
PHONE_NO NUMBER(15) ,
CONSTRAINT PUBLISHERS_PK_PUB_ID PRIMARY KEY(PUB_ID)
);
```

```
SQL> INSERT INTO PUBLISHERS VALUES(&PUB_ID , '&NAME', '&CITY' , &PHONE_NO )
 2  ;
Enter value for pub_id: 3001
Enter value for name: ANUSHKA
Enter value for city: NAGPUR
Enter value for phone_no: 789654123
old   1: INSERT INTO PUBLISHERS VALUES(&PUB_ID , '&NAME', '&CITY' , &PHONE_NO )
new   1: INSERT INTO PUBLISHERS VALUES(3001 , 'ANUSHKA', 'NAGPUR' , 789654123 )

1 row created.
```

Output:-

```
SELECT * FROM PUBLISHERS ;
```

PUB_ID	NAME	CITY	PHONE_NO
3001	CHITRA BANERJEE	MUMBAI	1236547890
3002	ARAVIND ADIGA	BANGALORE	741258630
3003	NIDHI CHANANI	DELHI	3214569870
3004	DIKSHA BASU	CHENNAI	478520369
3005	RAKESH SATYAL	KOLKATA	8520136479
3006	MITALI MEELAN	HYDERABAD	

541237890

3007 NAMITA GHOKLE NAGPUR
3219467210

3008 AMITAV GOSH CHANDIGARH
4587329160

3009 KAVITA KANA JAIPUR 1245789630

3010 GITA MEHTA PUNE 4397610285

10 rows selected.

4. Book table

```
CREATE TABLE BOOK (

BOOKID NUMBER(5)  ,

PUB_ID NUMBER(5)  ,

TYPE VARCHAR2(20) NOT NULL ,

PRICE NUMBER(7,2) NOT NULL ,

PAGE_NO NUMBER(4) NOT NULL ,

TILTE VARCHAR2(40) NOT  NULL ,

CONSTRAINT BOOK_FK_PUB_ID FOREIGN KEY(PUB_ID) REFERENCES
PUBLISHERS(PUB_ID),

CONSTRAINT BOOK_CK_TYPE CHECK( TYPE IN ('NOVEL' , 'HISTORICAL' , 'KIDS' ,
'POEM' , 'CRIME STORY' , 'SCIENCE FICTION' , 'SCIENCE')),

CONSTRAINT BOOK_PK_BOOKID PRIMARY KEY(BOOKID)

);
```

```
SQL> INSERT INTO BOOK VALUES(&BOOKID , &PUB_ID , '&TYPE' , &PRICE ,
&PAGE_NO , '&TITLE' )

  2  ;

Enter value for bookid: 4001

Enter value for pub_id: 3001

Enter value for type: KIDS

Enter value for price: 2000.12

Enter value for page_no: 100

Enter value for title: DISNEY
```

old 1: INSERT INTO BOOK VALUES(&BOOKID , &PUB_ID , '&TYPE' , &PRICE , &PAGE_NO , '&TITLE')

new 1: INSERT INTO BOOK VALUES(4001 , 3001 , 'KIDS' , 2000.12 , 100 , 'DISNEY')

1 row created.

Output:-

SELECT * FROM BOOK;

BOOKID	PUB_ID	TYPE	PRICE	PAGE_NO	TILTE
4001	3001	NOVEL	1000.5	500	PALACE OF ILLUSION
4002	3002	NOVEL	2000.6	600	THE WHITE TIGER
4003	3003	POEM	1050.34	3	PASHMINA
4004	3004	CRIME STORY	3040.9	430	THE WINDFALL
4005	3005	NOVEL	4001.2	450	NONE CAN PRONOUNCE MY NAME
4006	3006	SCIENCE	3000.1	500	THE MAGIC OF SCIENCE
4007	3007	KIDS	1005.11	100	RHYMES
4008	3008	NOVEL	2553.14	500	THE HIMALAYAN
4009	3009	NOVEL	412.5	430	THE IRIS TRIOLOGY
4010	3010	NOVEL	3002.1	600	LANKAS PRINCESS

10 rows selected.

5. Book_Loan Table

```
CREATE TABLE BOOK_LOANS(
LOAN_ID INTEGER  ,
CARDNO NUMBER(5) ,
BOOKID NUMBER(5),
EMP_ID NUMBER(5),
DATE_OUT DATE ,
DUE_DATE DATE ,
PENALTY NUMBER(4) DEFAULT 0,
```

```
CONSTRAINT BOOK_LOAN_PK_LOAN_ID PRIMARY KEY(LOAN_ID),

CONSTRAINT BOOK_LOAN_FK_CARDNO FOREIGN KEY(CARDNO) REFERENCES
MEMBERS(CARDNO),

CONSTRAINT BOOK_LOAN_FK_BOOKID FOREIGN KEY(BOOKID) REFERENCES
BOOK(BOOKID),

CONSTRAINT BOOK_LOAN_FK_EMP_ID FOREIGN KEY(EMP_ID) REFERENCES
EMPLOYEES(EMP_ID),

CONSTRAINT BOOK_LOAN_CK_PENALTY CHECK(PENALTY >= 0 ),

CONSTRAINT BOOK_LOAN_CK_DATE_OUT CHECK(DATE_OUT < DUE_DATE)

)


SQL> INSERT INTO BOOK_LOANS VALUES (&LOAN_ID , &CARDNO , &BOOKID ,
&EMP_ID , '&DATE_OUT' , '&DUE_DATE' , &PENALTY);

Enter value for loan_id: 5001

Enter value for cardno: 1001

Enter value for bookid: 4001

Enter value for emp_id: 2001

Enter value for date_out: 13 APR 2002

Enter value for due_date: 15 APR 2022

Enter value for penalty: 0

old   1: INSERT INTO BOOK_LOANS VALUES (&LOAN_ID , &CARDNO , &BOOKID ,
&EMP_ID , '&DATE_OUT' , '&DUE_DATE' , &PENALTY)

new   1: INSERT INTO BOOK_LOANS VALUES (5001 , 1001 , 4001 , 2001 , '13 APR 2002' , '15
APR 2022' , 0)


1 row created.
```

Output

```
SELECT * FROM BOOK_LOANS;


LOAN_ID    CARDNO    BOOKID    EMP_ID DATE_OUT  DUE_DATE    PENALTY

---------- ---------- ---------- ---------- --------- --------- ----------

5001       1001      4001      2001 13-APR-22 20-APR-22        50

5002       1002      4002      2002 14-APR-22 21-APR-22        60

5003       1003      4003      2003 15-APR-02 22-APR-22        60
```

5004	1004	4004	2004	16-APR-02	21-APR-22	40
5005	1005	4005	2005	16-APR-22	20-APR-22	60
5006	1006	4006	2006	17-APR-22	22-APR-22	70
5007	1007	4007	2007	18-APR-22	23-APR-22	80
5008	1008	4008	2008	19-APR-22	24-APR-22	100
5009	1009	409	2009	15-APR-22	19-APR-22	80
5010	1010	4010	2010	18-APR-22	25-APR-55	100

10 rows selected.

Q2) Create a table COLLEGE with following columns and constraints :
CNAME varchar2(15) not null,
LOCATION varchar2(50) with default value Nagpur
Demonstrate the use of ALTER TABLE statement to:
- **Add a new column**
- **Modify an existing column definition**
- **Define a default value for the new column**
- **Drop a column**
- **Rename a table / column**
- **Add constraints**

• Add a new column

```
SQL> ALTER TABLE COLLEGE
  2  ADD YEAR_OF_ESTB DATE NOT NULL;
```

Table altered.

```
SQL> DESC COLLEGE;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CNAME                                              VARCHAR2(50)
 LOCATION                                             VARCHAR2(50)
 YEAR_OF_ESTB                                       NOT NULL DATE
```

```
SQL> ALTER TABLE COLLEGE
  2   ADD REGION VARCHAR2(40)
  3  ADD PINCODE NUMBER(6);
```

Table altered.

```
SQL> DESC COLLEGE;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
```

```
CNAME                                     VARCHAR2(50)
LOCATION                                   VARCHAR2(50)
YEAR_OF_ESTB                              NOT NULL DATE
REGION                                    VARCHAR2(40)
PINCODE                                    NUMBER(6)
```

• Modify an existing column definition

```
SQL> ALTER TABLE COLLEGE
  2  MODIFY LOCATION VARCHAR2(100) NOT NULL;

Table altered.

SQL> DESC COLLEGE;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CNAME                                              VARCHAR2(50)
 LOCATION                                  NOT NULL VARCHAR2(100)
 YEAR_OF_ESTB                              NOT NULL DATE
 REGION                                             VARCHAR2(40)
 PINCODE                                            NUMBER(6)
```

• Define a default value for the new column

• Drop a column

```
SQL> ALTER TABLE COLLEGE
  2  DROP COLUMN PINCODE;

Table altered.

SQL> DESC COLLEGE;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CNAME                                              VARCHAR2(50)
 LOCATION                                  NOT NULL VARCHAR2(100)
 YEAR_OF_ESTB                              NOT NULL DATE
 REGION                                             VARCHAR2(40)
```

• Rename a table / column

```
SQL> ALTER TABLE COLLEGE
  2  RENAME TO MY_COLLEGE;

Table altered.
```

```
SQL> SELECT*FROM TAB;

TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
ACCOUNT                          TABLE
BOOKS                           TABLE
BOOK_LOAN                        TABLE
EMPLOYEES                        TABLE
HIRE_DATE                       TABLE
MEMBERS                         TABLE
MY_COLLEGE                       TABLE
NEW_MEMBERS                       TABLE
NEW_MEMBERS2                      TABLE
NRW_STU1                        TABLE
PUBLISHERS                       TABLE

TNAME                          TABTYPE  CLUSTERID
------------------------------ ------- ----------
STU                            TABLE
STU1                            TABLE
STUDENT                          TABLE
STUDENT1                         TABLE
STUDENT2                         TABLE
STUDENT3                         TABLE
STUDENT4                         TABLE

18 rows selected.
```

• Add constraints

```
SQL> ALTER TABLE MY_COLLEGE
  2  ADD PRIMARY KEY(COLLEGE_NAME);

Table altered.

SQL> ALTER TABLE MY_COLLEGE
  2  DROP PRIMARY KEY;

Table altered.

SQL> ALTER TABLE MY_COLLEGE
  2  ADD CONSTRAINT COLLEGE_PK_CNAME(CNAME);
ADD CONSTRAINT COLLEGE_PK_CNAME(CNAME)
                *
ERROR at line 2:
ORA-00904: : invalid identifier


SQL> ALTER TABLE MY_COLLEGE
  2  ADD CONSTRAINT COLLEGE_PK_COLLEGE_NAME(COLLEGE_NAME);
```

```
ADD CONSTRAINT COLLEGE_PK_COLLEGE_NAME(COLLEGE_NAME)
                *
ERROR at line 2:
ORA-00904: : invalid identifier

SQL> ALTER TABLE MY_COLLEGE
  2  ADD CONSTRAINT COLLEGE_PK_COLLEGE_NAME PRIMARY
KEY(COLLEGE_NAME);

Table altered.
```

Q3) Using tables SUPPLIERS and PRODUCTS, demonstrate the following Foreign Key constraints :
ON DELETE CASCADE
ON DELETE SET NULL
Also demonstrate dropping of foreign key, enabling and disabling of foreign key.

ON DELETE CASCADE
SUPPLIERS TABLE

```
SQL> CREATE TABLE SUPPLIERS(
  2   SUPPLIER_ID NUMBER(10) NOT NULL ,
  3  SUPPLIER_NAME VARCHAR2(50) NOT NULL ,
  4  CONTACT_NAME VARCHAR2(50) ,
  5  CONSTRAINT SUPPLIER_PK_SUPPLIER_ID PRIMARY KEY (SUPPLIER_ID)
  6  );

SQL> SELECT * FROM SUPPLIERS;

SUPPLIER_ID SUPPLIER_NAME                          CONTACT_NAME
----------- ---------------------------------------------- ----------------------------------------------
       101 ABC                                     XYZ
       102 DEF                                    PQR
       103 GHI                                    MNO
       104 STU                                    POL
```

PRODUCTS TABLE

```
SQL> CREATE TABLE PRODUCTS (
  2  PRODUCT_ID NUMBER(10) NOT NULL ,
  3  SUPPLIER_ID NUMBER(10) NOT NULL ,
  4  CONSTRAINT PRODUCT_FK_SUPPLIER_ID FOREIGN KEY(SUPPLIER_ID)
REFERENCES SUPPLIERS(SUPPLIER_ID) ON DELETE CASCADE
  5  );

Table created.
```

```
SQL> SELECT * FROM PRODUCTS;

PRODUCT_ID SUPPLIER_ID
---------- -----------
       201         101
       202         102
       203         102
       204         104
       205         101

SQL> SELECT * FROM SUPPLIERS;

SUPPLIER_ID SUPPLIER_NAME                                  CONTACT_NAME
----------- ---------------------------------------------- ----------------------------------------------
       102 DEF                                            PQR
       103 GHI                                            MNO
       104 STU                                            POL

SQL> SELECT * FROM PRODUCTS;

PRODUCT_ID SUPPLIER_ID
---------- -----------
       202         102
       203         102
       204         104

SQL> DELETE FROM PRODUCTS WHERE SUPPLIER_ID =104;

1 row deleted.

SQL> SELECT * FROM PRODUCTS;

PRODUCT_ID SUPPLIER_ID
---------- -----------
       202         102
       203         102


SQL> SELECT * FROM SUPPLIERS;

SUPPLIER_ID SUPPLIER_NAME                                  CONTACT_NAME
----------- ---------------------------------------------- ----------------------------------------------
       102 DEF                                            PQR
       103 GHI                                            MNO
       104 STU                                            POL
```

ON DELETE SET NULL

PRODUCTS TABLE

```
SQL> CREATE TABLE PRODUCTS (
  2  PRODUCT_ID NUMBER(10)  ,
  3  SUPPLIER_ID NUMBER(10)  ,
  4  CONSTRAINT PRODUCT_FK_SUPPLIER_ID FOREIGN KEY(SUPPLIER_ID)
REFERENCES SUPPLIERS(SUPPLIER_ID) ON DELETE SET NULL
  5  )
  6  ;

SQL> SELECT * FROM PRODUCTS;

PRODUCT_ID SUPPLIER_ID
---------- -----------
       201         102
       202         103
       203         104
       204         102
       205         103

SQL> SELECT * FROM SUPPLIERS;

SUPPLIER_ID SUPPLIER_NAME                                  CONTACT_NAME
----------- -------------------------------------------------- --------------------------------------------------
       102 DEF                                            PQR
       103 GHI                                            MNO
       104 STU                                            POL

SQL> DELETE FROM SUPPLIERS WHERE SUPPLIER_ID = 104 ;

1 row deleted.

SQL> SELECT * FROM SUPPLIERS;

SUPPLIER_ID SUPPLIER_NAME                                  CONTACT_NAME
----------- -------------------------------------------------- --------------------------------------------------
       102 DEF                                            PQR
       103 GHI                                            MNO

SQL> SELECT * FROM PRODUCTS;

PRODUCT_ID SUPPLIER_ID
---------- -----------
       201         102
       202         103
       203
       204         102
       205         103
```

CONSTRAINTS IN PRODUCT TABLE

```
SQL> SELECT TABLE_NAME , CONSTRAINT_NAME , CONSTRAINT_TYPE
  2  FROM USER_CONSTRAINTS
  3  WHERE TABLE_NAME ='PRODUCTS';

TABLE_NAME                     CONSTRAINT_NAME              C
------------------------------ ------------------------------ -
PRODUCTS                       PRODUCT_FK_SUPPLIER_ID       R
```

DISABLE FOREIGN KEY

```
SQL> ALTER TABLE PRODUCTS
  2  DISABLE CONSTRAINT PRODUCT_FK_SUPPLIER_ID;

Table altered.


SQL> INSERT INTO PRODUCTS VALUES(&PRODUCT_ID , &SUPPLIER_ID );
Enter value for product_id: 206
Enter value for supplier_id: 101
old   1: INSERT INTO PRODUCTS VALUES(&PRODUCT_ID , &SUPPLIER_ID )
new   1: INSERT INTO PRODUCTS VALUES(206 , 101 )

1 row created.
```

ENABLE FOREIGN KEY

```
SQL> ALTER TABLE PRODUCTS
  2  ENABLE CONSTRAINT  PRODUCT_FK_SUPPLIER_ID ;
ENABLE CONSTRAINT  PRODUCT_FK_SUPPLIER_ID;

Table altered.

SQL> INSERT INTO PRODUCTS VALUES(&PRODUCT_ID , &SUPPLIER_ID );
Enter value for product_id: 202
Enter value for supplier_id: 106
old   1: INSERT INTO PRODUCTS VALUES(&PRODUCT_ID , &SUPPLIER_ID )
new   1: INSERT INTO PRODUCTS VALUES(202 , 106 )
INSERT INTO PRODUCTS VALUES(202 , 106 )
*
ERROR at line 1:
ORA-02291: integrity constraint (SANSKRITI15.PRODUCT_FK_SUPPLIER_ID) violated - parent
key not found
```