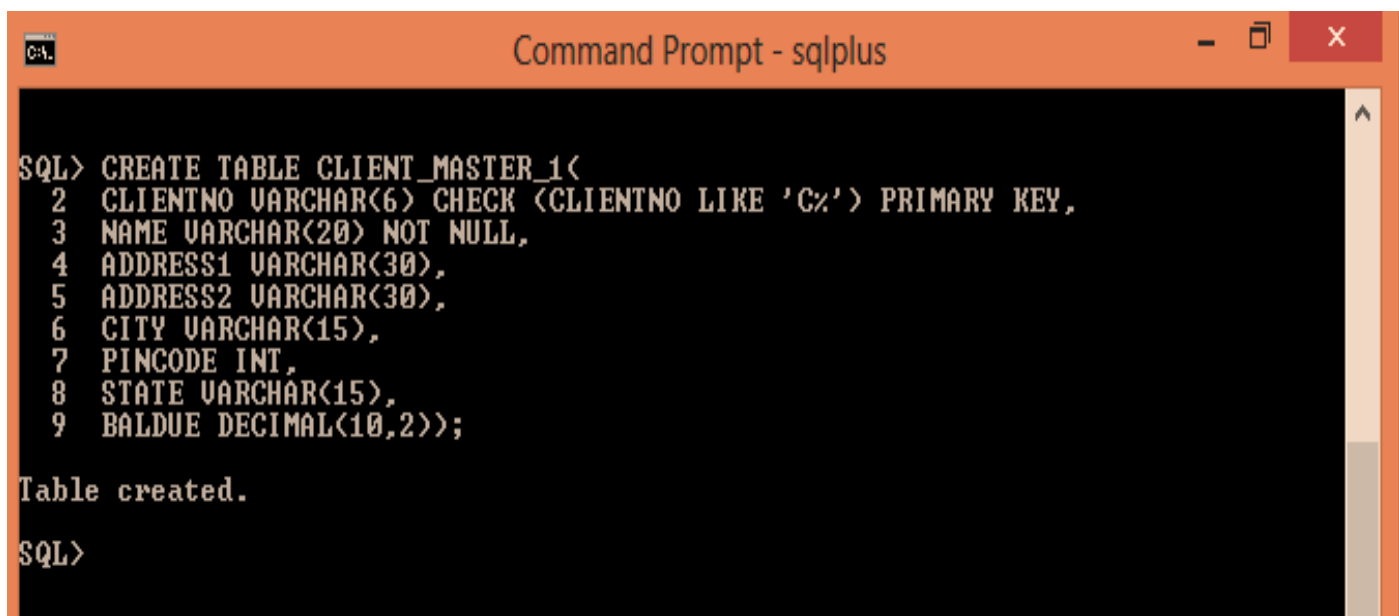## EXPERIMENT NO:- 02

OBJECTIVE: To understand the concept of data constraints that is enforced on data being stored in the table. Focus on Primary Key and the Foreign Key.

- **CREATE THE TABLE DESCRIBED:**

    Table name: **CLIENT_MASTER_1**

    Description: used to store client information.

Column name	data type	Size	Constraints
CLIENTNO	Varchar	6	Primary key / first letter must start with 'C'
NAME	Varchar	20	Not Null
ADDRESS 1	Varchar	30	
ADDRESS 2	Varchar	30	
CITY	Varchar	15	
PINCODE	Integer	8	
STATE	Varchar	15	
BALDUE	Decimal	10,2	

```
SQL> CREATE TABLE CLIENT_MASTER_1(
  2  CLIENTNO VARCHAR(6) CHECK (CLIENTNO LIKE 'C%') PRIMARY KEY,
  3  NAME VARCHAR(20) NOT NULL,
  4  ADDRESS1 VARCHAR(30),
  5  ADDRESS2 VARCHAR(30),
  6  CITY VARCHAR(15),
  7  PINCODE INT,
  8  STATE VARCHAR(15),
  9  BALDUE DECIMAL(10,2));

Table created.

SQL>
```

Table Name: **PRODUCT_MASTER_1**

Description: used to store product information

Column name	data type	Size	Attributes
PRODUCTNO	Varchar	6	Primary Key/ first letter must start with 'P'
DESCRIPTION	Varchar	15	Not Null
PROFITPERCENT	Decimal	4,2	Not Null
UNIT MEASURE	Varchar	10	Not Null
QTYONHAND	Integer	8	Not Null
REORDERL VL	Integer	8	Not Null
SELLPRICE	Decimal	8,2	Not Null
COSTPRICE	Decimal	8,2	Not Null

```
SQL> CREATE TABLE PRODUCT_MASTER_1(
  2   PRODUCTNO VARCHAR(6) CHECK (PRODUCTNO LIKE 'P%') PRIMARY KEY,
  3   DESCRIPTION VARCHAR(15) NOT NULL,
  4   PROFITPERCENT DECIMAL(4,2) NOT NULL,
  5   UNITMEASURE VARCHAR(10) NOT NULL,
  6   QTYONHAND INT NOT NULL,
  7   REORDERVL INT NOT NULL,
  8   SELLPRICE DECIMAL(8,2) NOT NULL,
  9   COSTPRICE DECIMAL(8,2) NOT NULL);

Table created.

SQL>
```

Table Name: **SALESMAN_MASTER _1**

Description: used to store salesman information working for the company.

Column name	data type	Size	Attributes
SALESMANNO	Varchar	6	Primary Key/ first letter must start with 'S'
SALESMANNAME	Varchar	20	Not Null
ADDRESS 1	Varchar	30	Not Null
ADDRESS 2	Varchar	30	

CITY	Varchar	20	
PINCODE	Integer	8	
STATE	Varchar	20	
SALAMT	Real	8,2	Not Null , Cannot be 0
TGTTOGET	Decimal	6,2	Not Null , Cannot be 0
YTDSALES	Double	6,2	Not Null
REMARKS	Varchar	60	

```
SQL> CREATE TABLE SALESMAN_MASTER_1(
  2   SALESMANNO VARCHAR(6) CHECK (SALESMANNO LIKE 'S%') PRIMARY KEY,
  3   SALESMANNAME VARCHAR(20) NOT NULL,
  4   ADDRESS1 VARCHAR(30) NOT NULL,
  5   ADDRESS2 VARCHAR(30),
  6   CITY VARCHAR(20),
  7   PINCODE INT,
  8   STATE VARCHAR(20),
  9   SALAMT DECIMAL(8,2) CHECK (SALAMT>0) NOT NULL,
 10   TGTTOGET DECIMAL(6,2) CHECK (TGTTOGET>0) NOT NULL,
 11   YTDSALES DECIMAL(6,2) NOT NULL,
 12   REMARKS VARCHAR(60));

Table created.

SQL>
```

- **Reinsert the data in these two tables based upon Lab 1.**

Data for **CLIENT_MASTER_1** table:

```
SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00001','IVAN BAYROSS','MUMBAI','400054','MAHARASTRA','15000');

1 row created.

SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00002','MAMTA MUZUMDAR','MADRAS','780001','TAMIL NADU','0');

1 row created.

SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00003','CHHAYA BANKAR','MUMBAI','400057','MAHARASTRA','5000');

1 row created.

SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00004','ASHWINI JOSHI','BANGALORE','560001','KARNATAKA','0');

1 row created.

SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00005','HANSEL COLACO','MUMBAI','400060','MAHARASTRA','2000');

1 row created.

SQL> INSERT INTO CLIENT_MASTER_1(CLIENTNO,NAME,CITY,PINCODE,STATE,BALDUE) VALUES
('C00006','DEEPAK SHARMA','MANGALORE','560050','KARNATAKA','0');

1 row created.

SQL>
```

Data for **PRODUCT_MASTER_1** table:

```
SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P00001','T-Shirt','5','PIECE'
,'200','50','350','250');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P0345','ShirtS','6','PIECE','
150','50','500','350');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P06734','COTTON JEANS','5','P
IECE','100','20','600','450');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P07865','JEANS','5','PIECE','
100','20','750','500');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P07868','TROUSERS','2','PIECE
','150','50','850','550');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P07885','PULL OVERS','2.5','P
IECE','80','30','700','450');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P07965','DENIM JEANS','4','PI
ECE','100','40','350','250');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P07975','LYCRA TOPS','5','PIE
CE','70','30','300','175');

1 row created.

SQL> INSERT INTO PRODUCT_MASTER_1(PRODUCTNO,DESCRIPTION,PROFITPERCENT,UNITMEASUR
E,QTYONHAND,REORDERVL,SELLPRICE,COSTPRICE) VALUES('P08865','SKIRTS','5','PIECE',
'75','30','450','300');

1 row created.

SQL>
```

- Data for **SALESMAN_MASTER _1** table:

```
SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CIT
Y,PINCODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00001','AMAN','A/14',
'WORLI','MUMBAI','400002','MAHARASTRA','3000','100','50','GOOD');

1 row created.

SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,NAME,ADDRESS1,ADDRESS2,CITY,PINCOD
E,STATE) VALUES('S00002','OMKAR','65','NARIMAN','MUMBAI','400001','MAHARASTRA','
3000','200','100','GOOD');
INSERT INTO SALESMAN_MASTER_1(SALESMANNO,NAME,ADDRESS1,ADDRESS2,CITY,PINCODE,STA
TE) VALUES('S00002','OMKAR','65','NARIMAN','MUMBAI','400001','MAHARASTRA','3000'
,'200','100','GOOD')
             *
ERROR at line 1:
ORA-00913: too many values


SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CIT
Y,PINCODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00002','OMKAR','65','
NARIMAN','MUMBAI','400001','MAHARASTRA','3000','200','100','GOOD');

1 row created.

SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CIT
Y,PINCODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00002','RAJ','P-7','B
ANDRA','MUMBAI','400032','MAHARASTRA','3000','200','100','GOOD');
INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CITY,PIN
CODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00002','RAJ','P-7','BANDRA
','MUMBAI','400032','MAHARASTRA','3000','200','100','GOOD')
*
ERROR at line 1:
ORA-00001: unique constraint (SYSTEM.SYS_C007040) violated


SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CIT
Y,PINCODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00003','RAJ','P-7','B
ANDRA','MUMBAI','400032','MAHARASTRA','3000','200','100','GOOD');

1 row created.

SQL> INSERT INTO SALESMAN_MASTER_1(SALESMANNO,SALESMANNAME,ADDRESS1,ADDRESS2,CIT
Y,PINCODE,STATE,SALAMT,TGTTOGET,YTDSALES,REMARKS) VALUES('S00004','ASHISH','A/5'
,'JUHU','MUMBAI','400044','MAHARASTRA','3500','200','150','GOOD');

1 row created.

SQL>
```

- **Display the contents of each table.**

- **CLIENT_MASTER_1:**

```
SQL> SELECT * FROM CLIENT_MASTER_1;

CLIENT NAME            ADDRESS1
------- -------------------- --------------------------
ADDRESS2                  CITY            PINCODE STATE
---------------------- --------------- ----------- ----------------
    BALDUE
----------
C00001 IVAN BAYROSS
                          MUMBAI           400054 MAHARASTRA
    15000

C00002 MAMTA MUZUMDAR
                          MADRAS           780001 TAMIL NADU
       0

CLIENT NAME            ADDRESS1
------- -------------------- --------------------------
ADDRESS2                  CITY            PINCODE STATE
---------------------- --------------- ----------- ----------------
    BALDUE
----------

C00003 CHHAYA BANKAR
                          MUMBAI           400057 MAHARASTRA
     5000

C00004 ASHWINI JOSHI
                          BANGALORE        560001 KARNATAKA

CLIENT NAME            ADDRESS1
------- -------------------- --------------------------
ADDRESS2                  CITY            PINCODE STATE
---------------------- --------------- ----------- ----------------
    BALDUE
----------
       0

C00005 HANSEL COLACO
                          MUMBAI           400060 MAHARASTRA
     2000

C00006 DEEPAK SHARMA

CLIENT NAME            ADDRESS1
------- -------------------- --------------------------
ADDRESS2                  CITY            PINCODE STATE
---------------------- --------------- ----------- ----------------
    BALDUE
----------
                          MANGALORE        560050 KARNATAKA
       0

6 rows selected.

SQL>
```

- **PRODUCT_MASTER_1:**

```
SQL> SELECT * FROM PRODUCT_MASTER_1;
PRODUC DESCRIPTION        PROFITPERCENT UNITMEASUR  QTYONHAND   REORDERVL   SELLPRICE
------ ---------------    ------------- ----------  ----------  ----------  ----------
 COSTPRICE
----------
P00001 T-Shirt                       5 PIECE              200          50         350
       250
P0345  ShirtS                        6 PIECE              150          50         500
       350
P06734 COTTON JEANS                  5 PIECE              100          20         600
       450

PRODUC DESCRIPTION        PROFITPERCENT UNITMEASUR  QTYONHAND   REORDERVL   SELLPRICE
------ ---------------    ------------- ----------  ----------  ----------  ----------
 COSTPRICE
----------
P07865 JEANS                         5 PIECE              100          20         750
       500
P07868 TROUSERS                      2 PIECE              150          50         850
       550
P07885 PULL OVERS                  2.5 PIECE               80          30         700
       450

PRODUC DESCRIPTION        PROFITPERCENT UNITMEASUR  QTYONHAND   REORDERVL   SELLPRICE
------ ---------------    ------------- ----------  ----------  ----------  ----------
 COSTPRICE
----------
P07965 DENIM JEANS                   4 PIECE              100          40         350
       250
P07975 LYCRA TOPS                    5 PIECE               70          30         300
       175
P08865 SKIRTS                        5 PIECE               75          30         450
       300

9 rows selected.
```

SALESMAN_MASTER_1:

```
9 rows selected.

SQL> SELECT * FROM SALESMAN_MASTER_1;

SALESM SALESMANNAME          ADDRESS1
------ --------------------- -------------------------
ADDRESS2                      CITY                 PINCODE
----------------------------- -------------------- ----------
STATE                     SALAMT   TGTTOGET   YTDSALES
------------------------- -------- ---------- ----------
REMARKS
-------------------------------------------------------
S00001 AMAN                   A/14
WORLI                         MUMBAI                400002
MAHARASTRA                 3000         100         50
GOOD


SALESM SALESMANNAME          ADDRESS1
------ --------------------- -------------------------
ADDRESS2                      CITY                 PINCODE
----------------------------- -------------------- ----------
STATE                     SALAMT   TGTTOGET   YTDSALES
------------------------- -------- ---------- ----------
REMARKS
-------------------------------------------------------
S00002 OMKAR                  65
NARIMAN                       MUMBAI                400001
MAHARASTRA                 3000         200        100
GOOD


SALESM SALESMANNAME          ADDRESS1
------ --------------------- -------------------------
ADDRESS2                      CITY                 PINCODE
----------------------------- -------------------- ----------
STATE                     SALAMT   TGTTOGET   YTDSALES
------------------------- -------- ---------- ----------
REMARKS
-------------------------------------------------------
S00003 RAJ                    P-7
BANDRA                        MUMBAI                400032
MAHARASTRA                 3000         200        100
GOOD


SALESM SALESMANNAME          ADDRESS1
------ --------------------- -------------------------
ADDRESS2                      CITY                 PINCODE
----------------------------- -------------------- ----------
STATE                     SALAMT   TGTTOGET   YTDSALES
------------------------- -------- ---------- ----------
REMARKS
-------------------------------------------------------
S00004 ASHISH                 A/5
JUHU                          MUMBAI                400044
MAHARASTRA                 3500         200        150
GOOD

SQL>
```

- **Create table AUTHOR = {<u>Author_ID</u> , Lastname, Firstname, Email, City, Country}**

    Where:

    - Author_ID – text data type, 5 characters, primary key

    - Lastname – text data type, 15 characters, not null

- Firstname – text data type, 15 characters, not null

- Email – text data type, 40 characters,

- City – text data type, 15 characters,

- Country – text data type, 15 characters,

```
SQL> CREATE TABLE AUTHOR(
  2   AUTHORID VARCHAR(5) PRIMARY KEY,
  3   LASTNAME VARCHAR(15) NOT NULL,
  4   FIRSTNAME VARCHAR(15) NOT NULL,
  5   EMAIL VARCHAR(40),
  6   CITY VARCHAR(15),
  7   COUNTRY VARCHAR(15));

Table created.

SQL>
```

- **Create Table BOOK={ Book_ID, Book_Title, Copies)**

  Where:

  - Book_ID – text data type, 5 characters Primary Key Start With Character **B**

  - Book_Title - Text   data Type Not Null

  - Copies-   No.of copies Data Type int always greater the 2

```
SQL> CREATE TABLE BOOK(
  2   BOOK_ID   VARCHAR(5) CHECK (BOOK_ID LIKE 'B%') PRIMARY KEY,
  3   BOOK_TITLE VARCHAR(2000) NOT NULL,
  4   COPIES INT CHECK (COPIES>2));

Table created.

SQL>
```

- **Create table AUTHOR_LIST = {Author_ID , Book_ID , Role}**

  Where:

  - Author_ID – text data type, 5 characters, referenced by Author_ID from AUTHOR

  - Book_ID – text data type, 5 characters

  - Role – text data type, 15 characters

  - and primary key is: Author_ID, Book_ID

```
SQL> create table AUTHOR_LIST(
  2  AUTHOR_ID VARCHAR(5) NOT NULL,
  3  FOREIGN KEY (AUTHOR_ID)
  4  REFERENCES AUTHOR(AUTHOR_ID),
  5  Book_ID VARCHAR(5),
  6  ROLE VARCHAR(15) PRIMARY KEY);

Table created.

SQL>
```

- **Add four records in each tables AUTHOR, BOOK, AUTHOR_LIST.**

- **AUTHOR table:**

```
SQL> insert into author(Author_ID,lastname,firstname,email,city,country) values(
'id001','rana','ashutosh','rana@outlook.com','roorkee','india');

1 row created.

SQL> insert into author(Author_ID,lastname,firstname,city,country) values('id002
','singh','ravi','ranchi','india');

1 row created.

SQL> insert into author(Author_ID,lastname,firstname,city,country) values('id006
','karki','basant','bareilly','india');

1 row created.

SQL> insert into author(Author_ID,lastname,firstname,email,city,country) values(
'id301','yadav','himanshu','himanshu128@gmail.com','bangalore','india');

1 row created.

SQL>
```

```
SQL> select * from AUTHOR;

AUTHO LASTNAME          FIRSTNAME        EMAIL
----- ---------------   --------------   ----------------------------------
CITY              COUNTRY
----------------  ---------------
id001 rana              ashutosh         rana@outlook.com
roorkee           india

id002 singh             ravi
ranchi            india

id006 karki             basant
bareilly          india


AUTHO LASTNAME          FIRSTNAME        EMAIL
----- ---------------   --------------   ----------------------------------
CITY              COUNTRY
----------------  ---------------
id301 yadav             himanshu         himanshu128@gmail.com
bangalore         india


SQL>
```

- **BOOK table:**

```
SQL> insert into book(book_ID,Book_Title,copies) values('B2861','the invisible m
an','718');

1 row created.

SQL> insert into book(book_ID,Book_Title,copies) values('B3562','THE INFAMOUS AM
ONG US','254');

1 row created.

SQL> insert into book(book_ID,Book_Title,copies) values('B3213','FAR FROM WORLD'
,'756');

1 row created.

SQL> insert into book(book_ID,Book_Title,copies) values('B4543','OXFORD DICTIONA
RY','1728');

1 row created.

SQL>
```

```
SQL> select * from BOOK;

BOOK_
------
BOOK_TITLE
--------------------------------------------------------------------------------
    COPIES
----------
B2861
the invisible man
       718

B3562
THE INFAMOUS AMONG US
       254

BOOK_
------
BOOK_TITLE
--------------------------------------------------------------------------------
    COPIES
----------

B3213
FAR FROM WORLD
       756

B4543
OXFORD DICTIONARY

BOOK_
------
BOOK_TITLE
--------------------------------------------------------------------------------
    COPIES
----------
      1728

SQL>
```

- **AUTHOR_LIST table:**

```
SQL> insert into AUTHOR_LIST(AUTHOR_ID,Book_ID,ROLE) values('id001','B2524','GOO
D/PERFECT');

1 row created.

SQL> insert into AUTHOR_LIST(AUTHOR_ID,Book_ID) values('id002','B6523');
insert into AUTHOR_LIST(AUTHOR_ID,Book_ID) values('id002','B6523')
*
ERROR at line 1:
ORA-01400: cannot insert NULL into ("SYSTEM"."AUTHOR_LIST"."ROLE")


SQL> insert into AUTHOR_LIST(AUTHOR_ID,Book_ID,ROLE) values('id002','B6532','fin
e');

1 row created.

SQL> insert into AUTHOR_LIST(AUTHOR_ID,Book_ID,ROLE) values('id006','B7834','not
hing');

1 row created.

SQL> insert into AUTHOR_LIST(AUTHOR_ID,Book_ID,ROLE) values('id301','B8723','per
fect');

1 row created.

SQL>
```

```
SQL> select * from AUTHOR_LIST;

AUTHO BOOK_ ROLE
----- ----- ----------------
id001 B2524 GOOD/PERFECT
id002 B6532 fine
id006 B7834 nothing
id301 B8723 perfect

SQL>
```

- **Alter structure of table AUTHOR_LIST add the field Publisher data type of 30 Character.**

```
SQL> ALTER TABLE AUTHOR_LIST
  2  ADD PUBLISHER VARCHAR(30);

Table altered.

SQL> DECRIBE AUTHOR_LIST;
SP2-0734: unknown command beginning "DECRIBE AU..." - rest of line ignored.
SQL> DESCRIBE AUTHOR_LIST;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------

 AUTHOR_ID                                 NOT NULL VARCHAR2(5)
 BOOK_ID                                            VARCHAR2(5)
 ROLE                                      NOT NULL VARCHAR2(15)
 PUBLISHER                                          VARCHAR2(30)

SQL>
```