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Programme: B.Tech CSE AI&ML (Batch 5)
Course: Advanced Database Management Systems Lab

PRACTICAL 2

Title: 2. To understand and apply the concept of Constraints.
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.
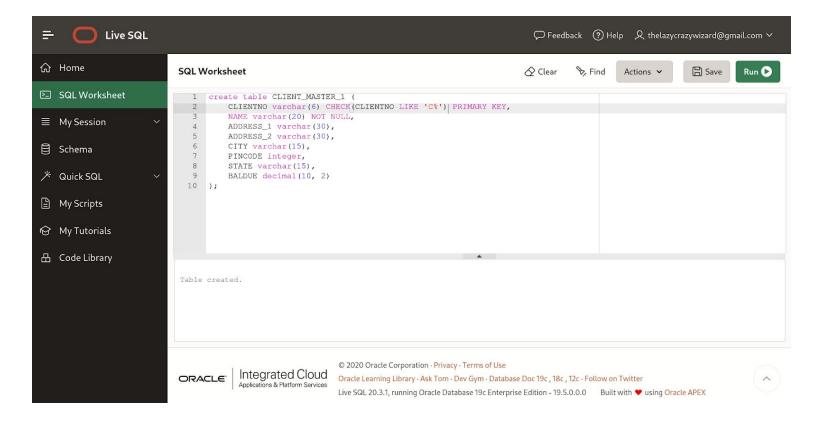
1. Create the tables described below:

1.A. Table name: CLIENT_MASTER_1
    Description: used to store client information

Column Name	Data type	Size	Constrains
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	–	
STATE	varchar	15	
BALDUE	decimal	10, 2	

1.A.(solution)

```
create table CLIENT_MASTER_1 (
   CLIENTNO varchar(6) CHECK(CLIENTNO LIKE 'C%') PRIMARY KEY,
   NAME varchar(20) NOT NULL,
   ADDRESS_1 varchar(30),
   ADDRESS_2 varchar(30),
   CITY varchar(15),
   PINCODE integer,
   STATE varchar(15),
   BALDUE decimal(10, 2)
);
```
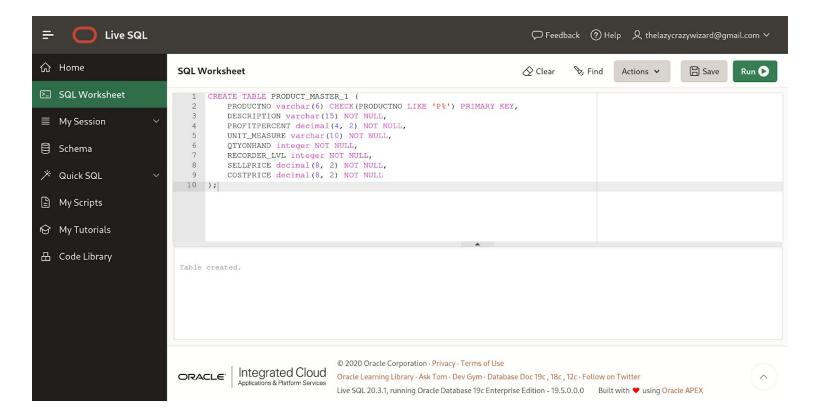
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```
 1   create table CLIENT_MASTER_1 (
 2       CLIENTNO varchar(6) CHECK(CLIENTNO LIKE 'C%') PRIMARY KEY,
 3       NAME varchar(20) NOT NULL,
 4       ADDRESS_1 varchar(30),
 5       ADDRESS_2 varchar(30),
 6       CITY varchar(15),
 7       PINCODE integer,
 8       STATE varchar(15),
 9       BALDUE decimal(10, 2)
10   );
```

Table created.

1.B. Table Name: PRODUCT_MASTER_1
Description: used to store product information

Column Name	Data Type	Size	Constrains
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	–	Not Null
REORDER_VL	integer	–	Not Null
SELLPRICE	decimal	8,2	Not Null
COSTPRICE	decimal	8,2	Not Null

1.B.(solution)

```
CREATE TABLE PRODUCT_MASTER_1 (
    PRODUCTNO varchar(6) CHECK(PRODUCTNO LIKE 'P%') PRIMARY KEY,
    DESCRIPTION varchar(15) NOT NULL,
    PROFITPERCENT decimal(4, 2) NOT NULL,
    UNIT_MEASURE varchar(10) NOT NULL,
    QTYONHAND integer NOT NULL,
    RECORDER_LVL integer NOT NULL,
    SELLPRICE decimal(8, 2) NOT NULL,
    COSTPRICE decimal(8, 2) NOT NULL
);
```
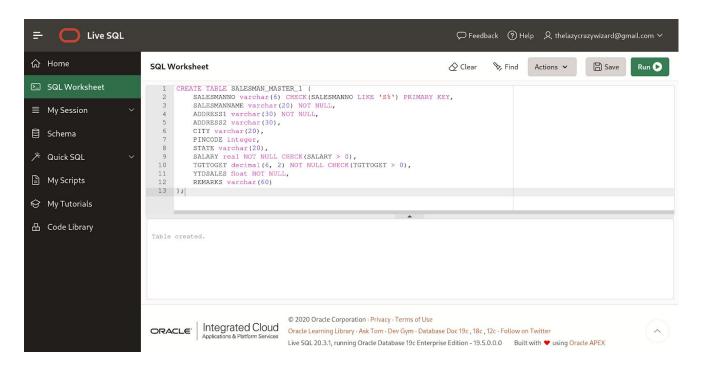

1.C. Table Name: SALESMAN_MASTER_1
Description: Used to store salesman information working for the company.

Column Name	Data type	Size	Constrains
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	-	
STATE	varchar	20	
SALARY	real	-	Not Null, Cannot be 0
TGTTOGET	decimal	-	Not Null, Cannot be 0
YTDSALES	double	6,2	Not Null
REMARKS	varchar	60	

1.C.(solution)

```
CREATE TABLE SALESMAN_MASTER_1 (
    SALESMANNO varchar(6) CHECK(SALESMANNO LIKE 'S%') PRIMARY KEY,
    SALESMANNAME varchar(20) NOT NULL,
    ADDRESS1 varchar(30) NOT NULL,
    ADDRESS2 varchar(30),
    CITY varchar(20),
    PINCODE integer,
    STATE varchar(20),
    SALARY real NOT NULL CHECK(SALARY > 0),
    TGTTOGET decimal(6, 2) NOT NULL CHECK(TGTTOGET > 0),
    YTDSALES float NOT NULL,
    REMARKS varchar(60)
);
```

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

2.(solution)

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
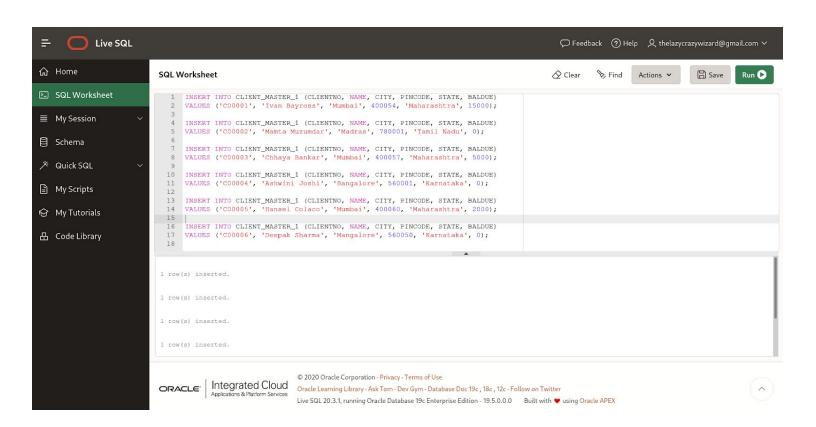VALUES ('C00001', 'Ivan Bayross', 'Mumbai', 400054, 'Maharashtra', 15000);

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
VALUES ('C00002', 'Mamta Muzumdar', 'Madras', 780001, 'Tamil Nadu', 0);

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
VALUES ('C00003', 'Chhaya Bankar', 'Mumbai', 400057, 'Maharashtra', 5000);

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
VALUES ('C00004', 'Ashwini Joshi', 'Bangalore', 560001, 'Karnataka', 0);

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
VALUES ('C00005', 'Hansel Colaco', 'Mumbai', 400060, 'Maharashtra', 2000);

INSERT INTO CLIENT_MASTER_1 (CLIENTNO, NAME, CITY, PINCODE, STATE, BALDUE)
VALUES ('C00006', 'Deepak Sharma', 'Mangalore', 560050, 'Karnataka', 0);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P00001', 'T-Shirt', 5, 'Piece', 200, 50, 350, 250);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P0435', 'Shirts', 6, 'Piece', 150, 50, 500, 350);
INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P06734', 'Cotton Jeans', 5, 'Piece', 100, 20, 600, 450);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P07865', 'Jeans', 5, 'Piece', 100, 20, 750, 500);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P07868', 'Trousers', 2, 'Piece', 150, 50, 850, 550);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P07885', 'Pull Overs', 2.5, 'Piece', 80, 30, 700, 450);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P07965', 'Denim Jeans', 4, 'Piece', 100, 40, 350, 250);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
VALUES ('P07975', 'Lycra tops', 5, 'Piece', 70, 30, 300, 175);

INSERT INTO PRODUCT_MASTER_1 (PRODUCTNO, DESCRIPTION, PROFITPERCENT, UNIT_MEASURE, QTYONHAND, RECORDER_LVL, SELLPRICE, COSTPRICE)
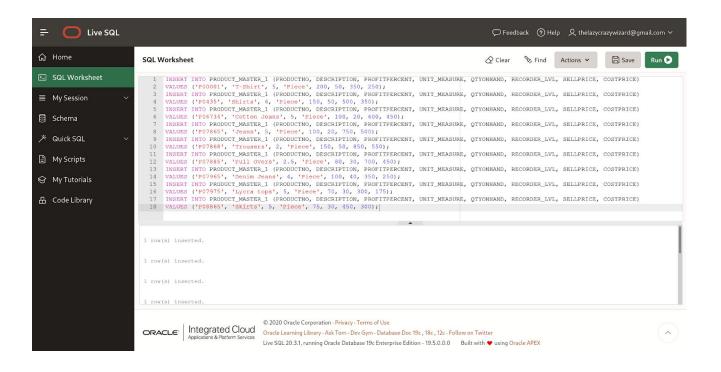VALUES ('P08865', 'Skirts', 5, 'Piece', 75, 30, 450, 300);

INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY, TGTTOGET, YTDSALES)
VALUES ('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 40000, 2000, 1200);

INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY, TGTTOGET, YTDSALES)
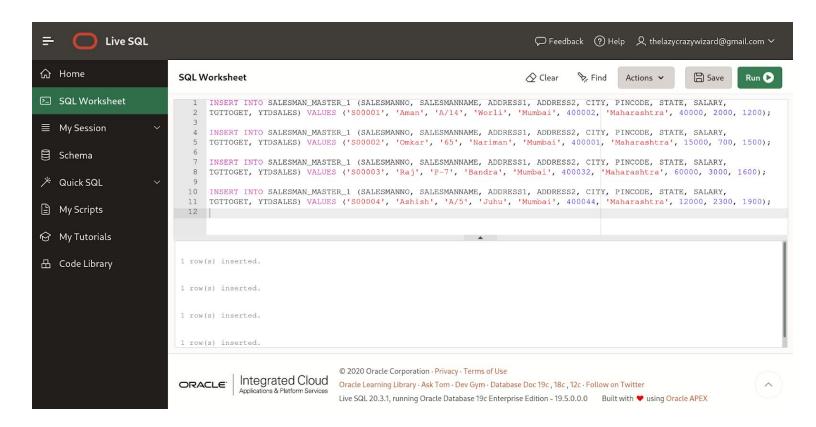VALUES ('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 15000, 700, 1500);

INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY, TGTTOGET, YTDSALES)
VALUES ('S00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 60000, 3000, 1600);

INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY, TGTTOGET, YTDSALES)
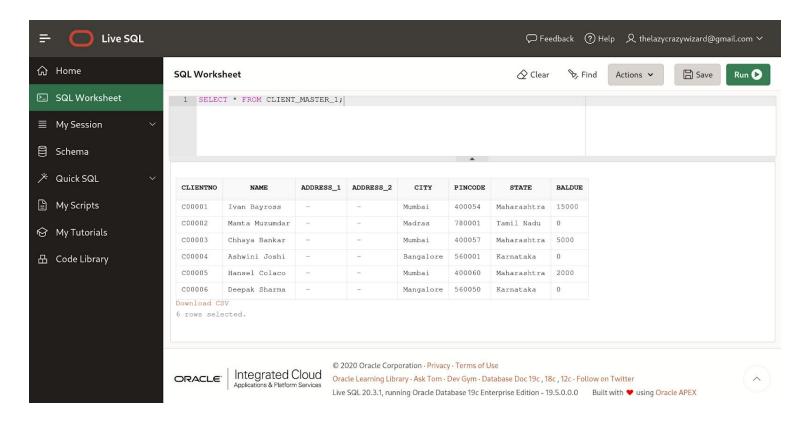VALUES ('S00004', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 12000, 2300, 1900);
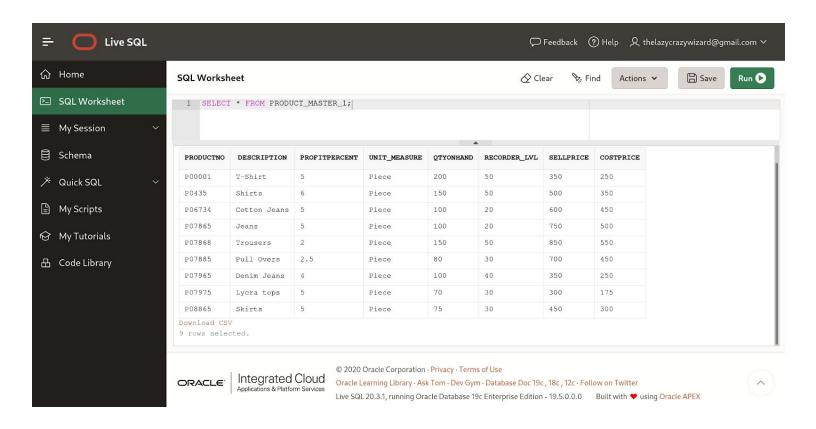


```
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▶ SQL Worksheet        1   INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY,
                       2   TGTTOGET, YTDSALES) VALUES ('S00001', 'Aman', 'A/14', 'Worli', 'Mumbai', 400002, 'Maharashtra', 40000, 2000, 1200);
☰ My Session    ⌄      3
                       4   INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY,
🗄 Schema              5   TGTTOGET, YTDSALES) VALUES ('S00002', 'Omkar', '65', 'Nariman', 'Mumbai', 400001, 'Maharashtra', 15000, 700, 1500);
                       6
⚡ Quick SQL    ⌄      7   INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY,
                       8   TGTTOGET, YTDSALES) VALUES ('S00003', 'Raj', 'P-7', 'Bandra', 'Mumbai', 400032, 'Maharashtra', 60000, 3000, 1600);
📄 My Scripts          9
                      10   INSERT INTO SALESMAN_MASTER_1 (SALESMANNO, SALESMANNAME, ADDRESS1, ADDRESS2, CITY, PINCODE, STATE, SALARY,
🎓 My Tutorials       11   TGTTOGET, YTDSALES) VALUES ('S00004', 'Ashish', 'A/5', 'Juhu', 'Mumbai', 400044, 'Maharashtra', 12000, 2300, 1900);
                      12   |
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```

3. Display the contents of each table.
3.(solution)

SELECT * FROM CLIENT_MASTER_1;

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```
1   SELECT * FROM CLIENT_MASTER_1;
```

CLIENTNO	NAME	ADDRESS_1	ADDRESS_2	CITY	PINCODE	STATE	BALDUE
C00001	Ivan Bayross	–	–	Mumbai	400054	Maharashtra	15000
C00002	Mamta Muzumdar	–	–	Madras	780001	Tamil Nadu	0
C00003	Chhaya Bankar	–	–	Mumbai	400057	Maharashtra	5000
C00004	Ashwini Joshi	–	–	Bangalore	560001	Karnataka	0
C00005	Hansel Colaco	–	–	Mumbai	400060	Maharashtra	2000
C00006	Deepak Sharma	–	–	Mangalore	560050	Karnataka	0

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SELECT * FROM PRODUCT_MASTER_1;

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```
1   SELECT * FROM PRODUCT_MASTER_1;
```

PRODUCTNO	DESCRIPTION	PROFITPERCENT	UNIT_MEASURE	QTYONHAND	RECORDER_LVL	SELLPRICE	COSTPRICE
P00001	T-Shirt	5	Piece	200	50	350	250
P0435	Shirts	6	Piece	150	50	500	350
P06734	Cotton Jeans	5	Piece	100	20	600	450
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
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

Download CSV
9 rows selected.

SELECT * FROM SALESMAN_MASTER_1;

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```
1   SELECT * FROM SALESMAN_MASTER_1;
```

SALESMANNO	SALESMANNAME	ADDRESS1	ADDRESS2	CITY	PINCODE	STATE	SALARY	TGTTOGET	YTDSALES	REMARKS
S00001	Aman	A/14	Worli	Mumbai	400002	Maharashtra	40000	2000	1200	–
S00002	Omkar	65	Nariman	Mumbai	400001	Maharashtra	15000	700	1500	–
S00003	Raj	P-7	Bandra	Mumbai	400032	Maharashtra	60000	3000	1600	–
S00004	Ashish	A/5	Juhu	Mumbai	400044	Maharashtra	12000	2300	1900	–

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4. Create table AUTHOR = {Author_ID , 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

4.(solution)

```
CREATE TABLE AUTHOR(
  Author_ID varchar(5) PRIMARY KEY,
  Lastname varchar(15) NOT NULL,
  Firstname varchar(15) NOT NULL,
  Email varchar(40),
  City varchar(15),
  Country varchar(15)
);
```

5. 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

5.(solution)

```
CREATE TABLE BOOK(
  Book_ID varchar(5) CHECK(Book_ID LIKE 'B%') PRIMARY KEY,
  Book_Title varchar(15) NOT NULL,
  Copies int CHECK(Copies > 2)
);
```

6. Create table AUTHOR_LIST = {Author_ID , Book_ID , Role}

Where:
Author_ID – text data type, 5 characters, referenced by Author_ID from AUTHOR table
Book_ID – text data type, 5 characters
Role – text data type, 15 characters
and primary key is: Author_ID, Book_ID

6.(solution)

```
CREATE TABLE AUTHOR_LIST(
  Author_ID varchar(5),
  Book_ID varchar(5),
  Role varchar(15),
  FOREIGN KEY (Author_ID) REFERENCES AUTHOR(Author_ID),
  PRIMARY KEY (Author_ID, Book_ID)
);
```

7. Add four records in each tables AUTHOR, BOOK, BOOK_LIST.

7.(solution)

INSERT INTO AUTHOR(Author_ID , Lastname, Firstname, Email, City, Country)
VALUES ('0x342', 'DAVID', 'FRANK', 'david.frank@gmail.com', 'Berlin', 'Germany');

INSERT INTO AUTHOR(Author_ID , Lastname, Firstname, Email, City, Country)
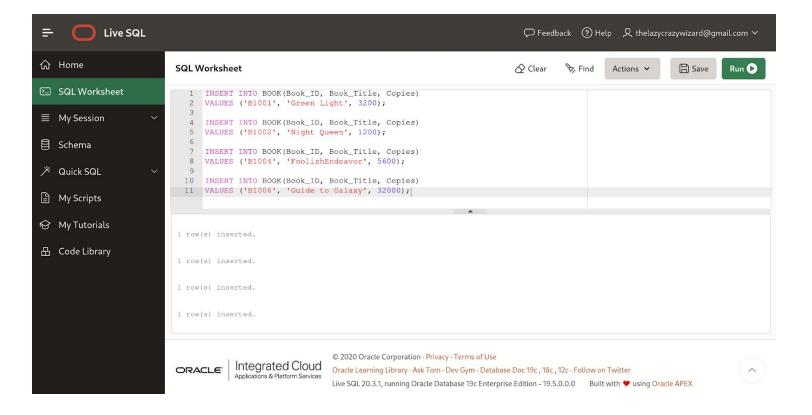VALUES ('0x343', 'GREEN', 'JOHN', 'green.john@gmail.com', 'New York', 'US');

INSERT INTO AUTHOR(Author_ID , Lastname, Firstname, Email, City, Country)
VALUES ('0x344', 'GREEN', 'HANK', 'green.hank@gmail.com', 'California', 'US');

INSERT INTO AUTHOR(Author_ID , Lastname, Firstname, Email, City, Country)
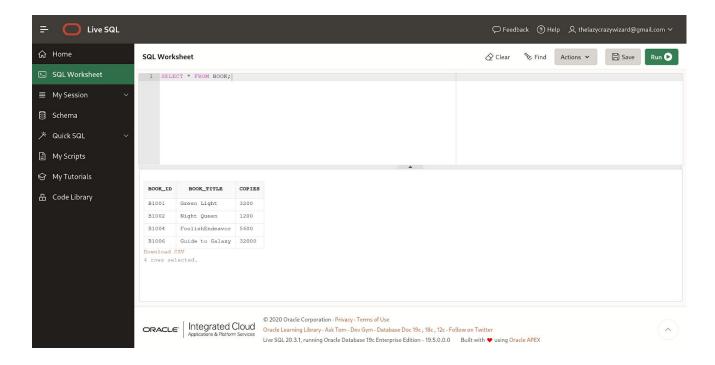VALUES ('0x345', 'ADAMS', 'DOUGLAS', 'adams.douglas@gmail.com', 'California', 'US');
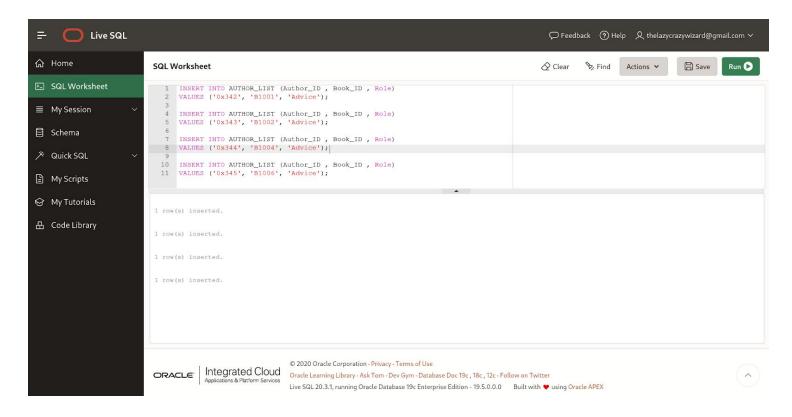

SELECT * FROM AUTHOR;

INSERT INTO BOOK(Book_ID, Book_Title, Copies) VALUES ('B1001', 'Green Light', 3200);

INSERT INTO BOOK(Book_ID, Book_Title, Copies) VALUES ('B1002', 'Night Queen', 1200);

INSERT INTO BOOK(Book_ID, Book_Title, Copies) VALUES ('B1004', 'FoolishEndeavor', 5600);

INSERT INTO BOOK(Book_ID, Book_Title, Copies) VALUES ('B1006', 'Guide to Galaxy', 32000);
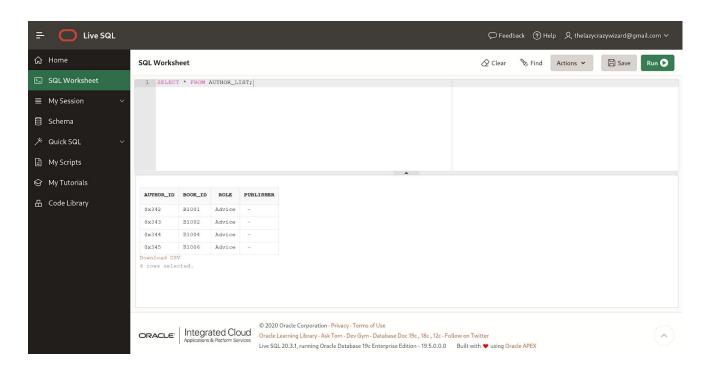
SELECT * FROM BOOK;

INSERT INTO AUTHOR_LIST (Author_ID , Book_ID , Role) VALUES ('0x342', 'B1001', 'Advice');

INSERT INTO AUTHOR_LIST (Author_ID , Book_ID , Role) VALUES ('0x343', 'B1002', 'Advice');

INSERT INTO AUTHOR_LIST (Author_ID , Book_ID , Role) VALUES ('0x344', 'B1004', 'Advice');

INSERT INTO AUTHOR_LIST (Author_ID , Book_ID , Role) VALUES ('0x345', 'B1006', 'Advice');

SELECT * FROM AUTHOR_LIST;

AUTHOR_ID	BOOK_ID	ROLE	PUBLISHER
0x342	B1001	Advice	–
0x343	B1002	Advice	–
0x344	B1004	Advice	–
0x345	B1006	Advice	–

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

8.(solution)

ALTER TABLE AUTHOR_LIST
ADD Publisher varchar(30);