FACULTY OF COMPUTING
UTM Johor Bahru

Lab 2: DML 1 Part 1

SECD2523 - 08 Database

SEMESTER I, SESSION 2023/2024

Lecturer: Dr. Noor Hidayah Zakaria

TAN YUN XI	A22EC0282

Section 6 Lesson 4 Exercise 1: Data Manipulation Language

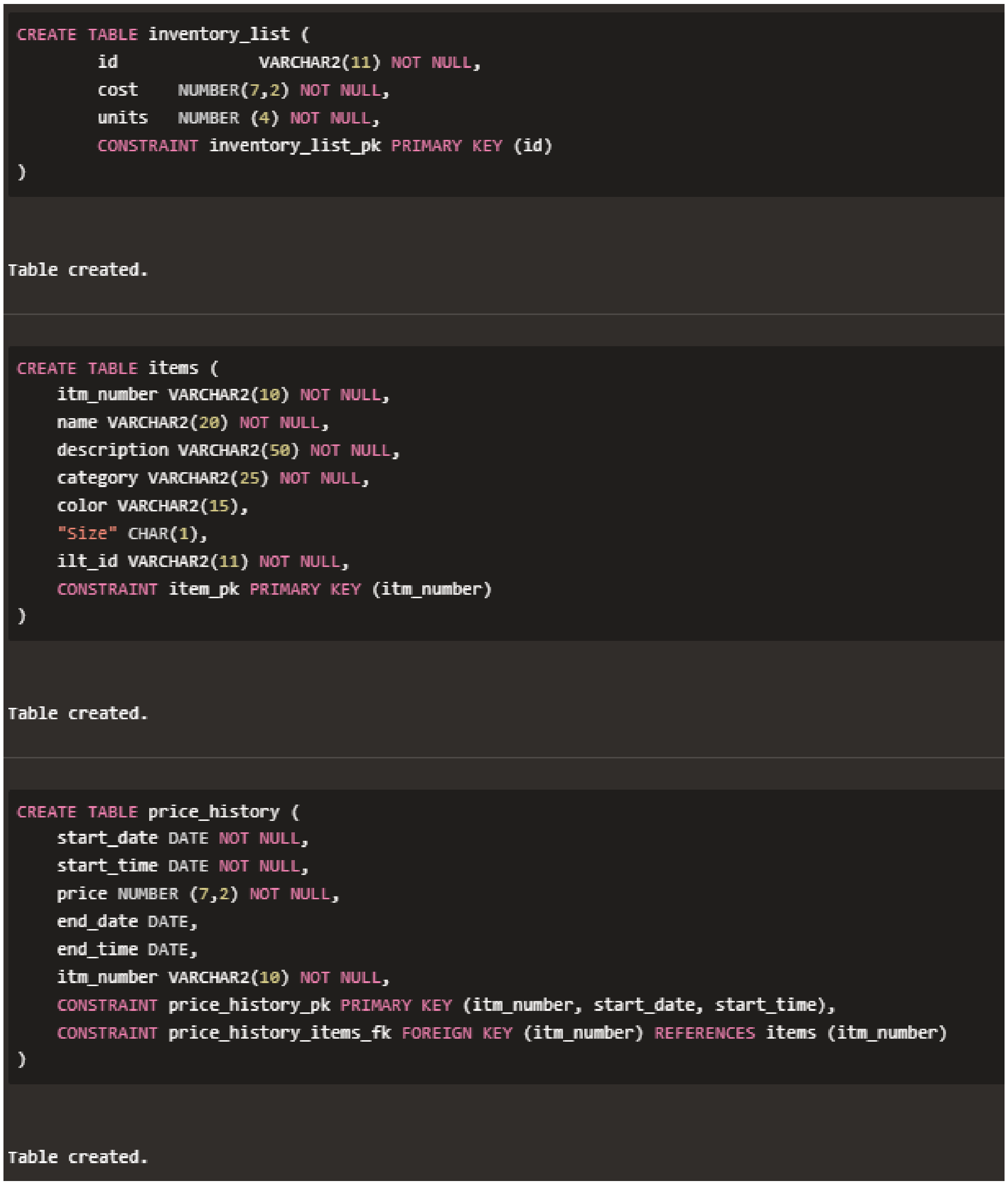
Use DML operations to manage database tables (S6L4 Objective 2)

In this exercise you will populate and work with the data that is stored in the database system tables.

Part 1 : Running a script to populate the tables.

You have to consider the order of the tables when populating them. A table that has a foreign key field cannot be populated before the related table with the primary key.

1. Use the table mapping document and list the order that you would use to populate the tables.



```
CREATE TABLE inventory_list (
        id              VARCHAR2(11) NOT NULL,
        cost    NUMBER(7,2) NOT NULL,
        units   NUMBER (4) NOT NULL,
        CONSTRAINT inventory_list_pk PRIMARY KEY (id)
)
```

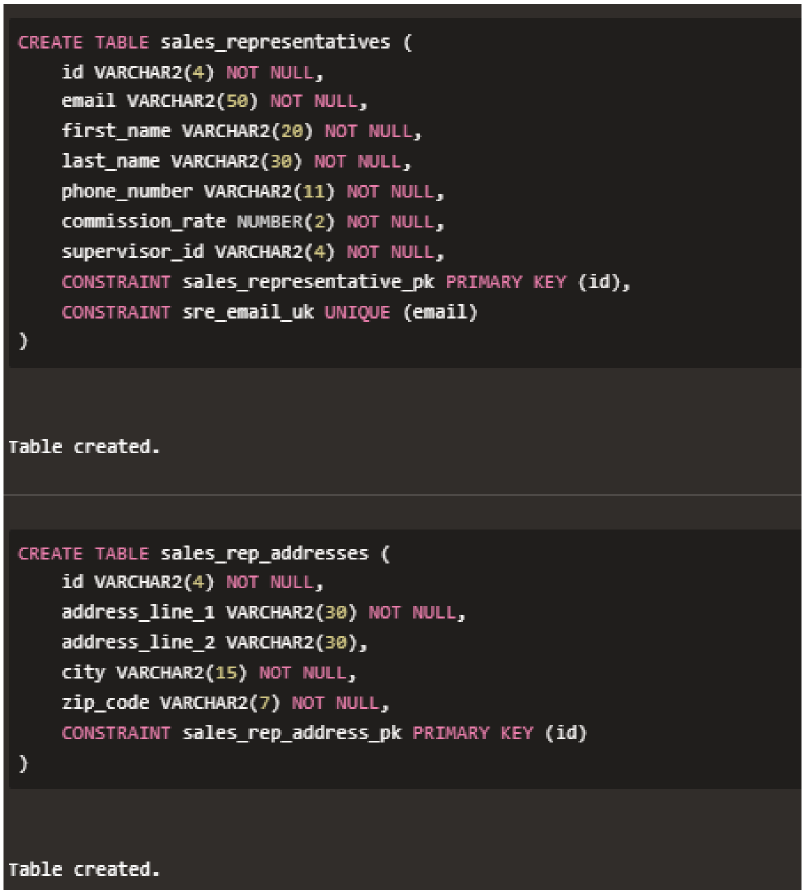
```
Table created.
```

```
CREATE TABLE items (
    itm_number VARCHAR2(10) NOT NULL,
    name VARCHAR2(20) NOT NULL,
    description VARCHAR2(50) NOT NULL,
    category VARCHAR2(25) NOT NULL,
    color VARCHAR2(15),
    "Size" CHAR(1),
    ilt_id VARCHAR2(11) NOT NULL,
    CONSTRAINT item_pk PRIMARY KEY (itm_number)
)
```

```
Table created.
```

```
CREATE TABLE price_history (
    start_date DATE NOT NULL,
    start_time DATE NOT NULL,
    price NUMBER (7,2) NOT NULL,
    end_date DATE,
    end_time DATE,
    itm_number VARCHAR2(10) NOT NULL,
    CONSTRAINT price_history_pk PRIMARY KEY (itm_number, start_date, start_time),
    CONSTRAINT price_history_items_fk FOREIGN KEY (itm_number) REFERENCES items (itm_number)
)
```

```
Table created.
```

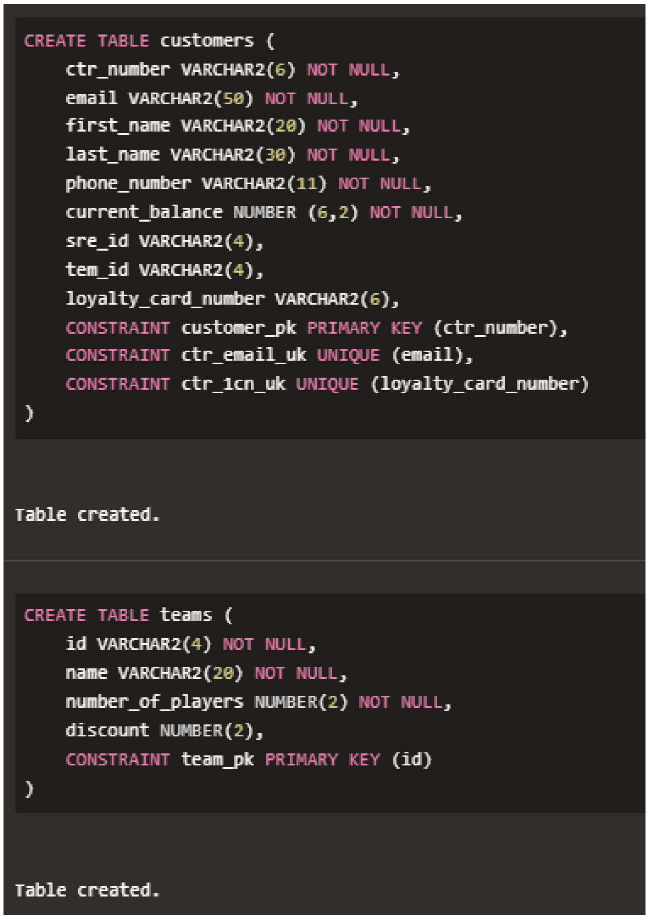


```
CREATE TABLE sales_representatives (
    id VARCHAR2(4) NOT NULL,
    email VARCHAR2(50) NOT NULL,
    first_name VARCHAR2(20) NOT NULL,
    last_name VARCHAR2(30) NOT NULL,
    phone_number VARCHAR2(11) NOT NULL,
    commission_rate NUMBER(2) NOT NULL,
    supervisor_id VARCHAR2(4) NOT NULL,
    CONSTRAINT sales_representative_pk PRIMARY KEY (id),
    CONSTRAINT sre_email_uk UNIQUE (email)
)
```

```
Table created.
```

```
CREATE TABLE sales_rep_addresses (
    id VARCHAR2(4) NOT NULL,
    address_line_1 VARCHAR2(30) NOT NULL,
    address_line_2 VARCHAR2(30),
    city VARCHAR2(15) NOT NULL,
    zip_code VARCHAR2(7) NOT NULL,
    CONSTRAINT sales_rep_address_pk PRIMARY KEY (id)
)
```

```
Table created.
```

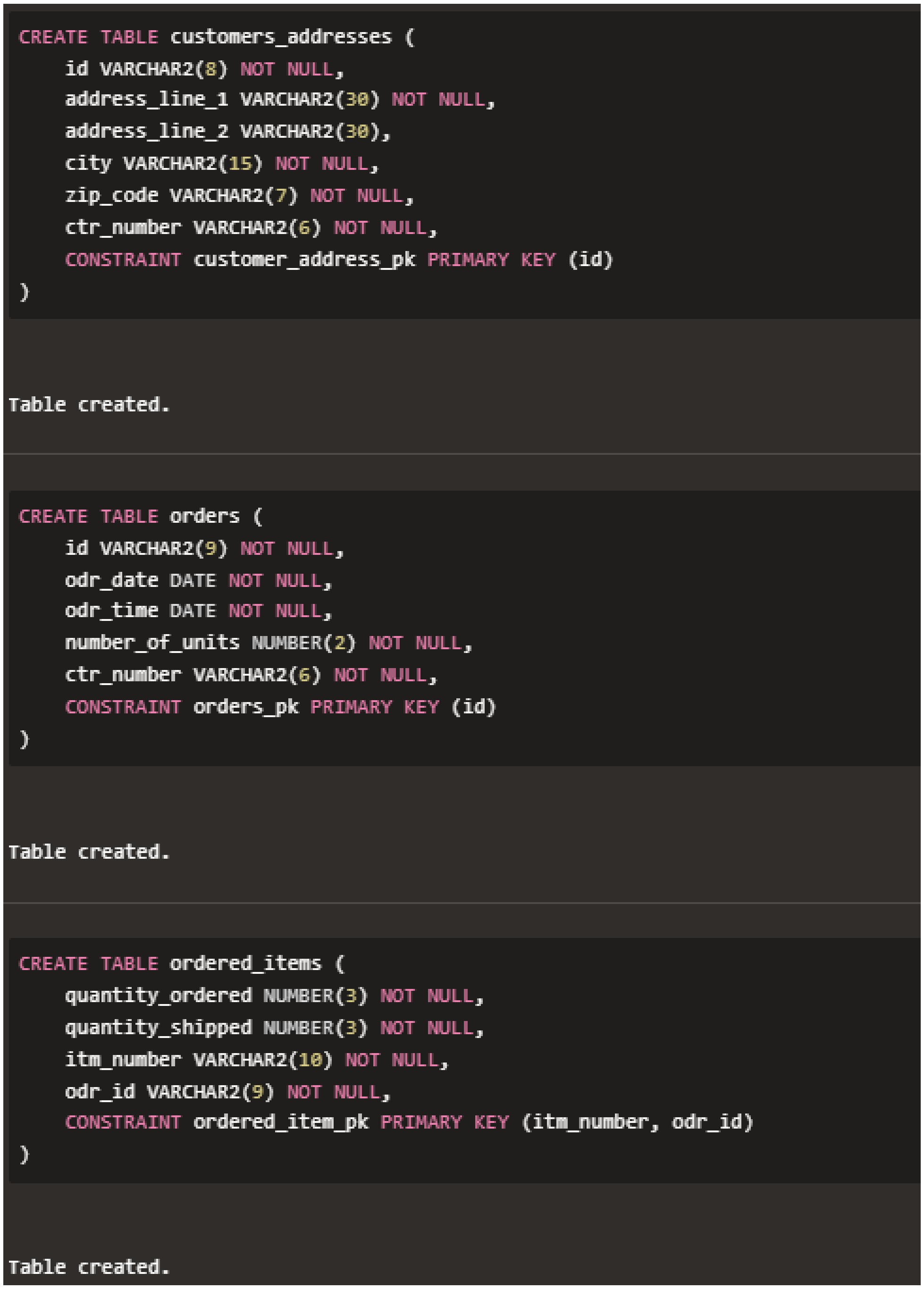


```
CREATE TABLE customers (
    ctr_number VARCHAR2(6) NOT NULL,
    email VARCHAR2(50) NOT NULL,
    first_name VARCHAR2(20) NOT NULL,
    last_name VARCHAR2(30) NOT NULL,
    phone_number VARCHAR2(11) NOT NULL,
    current_balance NUMBER (6,2) NOT NULL,
    sre_id VARCHAR2(4),
    tem_id VARCHAR2(4),
    loyalty_card_number VARCHAR2(6),
    CONSTRAINT customer_pk PRIMARY KEY (ctr_number),
    CONSTRAINT ctr_email_uk UNIQUE (email),
    CONSTRAINT ctr_lcn_uk UNIQUE (loyalty_card_number)
)
```

```
Table created.
```

```
CREATE TABLE teams (
    id VARCHAR2(4) NOT NULL,
    name VARCHAR2(20) NOT NULL,
    number_of_players NUMBER(2) NOT NULL,
    discount NUMBER(2),
    CONSTRAINT team_pk PRIMARY KEY (id)
)
```

```
Table created.
```



```
CREATE TABLE customers_addresses (
    id VARCHAR2(8) NOT NULL,
    address_line_1 VARCHAR2(30) NOT NULL,
    address_line_2 VARCHAR2(30),
    city VARCHAR2(15) NOT NULL,
    zip_code VARCHAR2(7) NOT NULL,
    ctr_number VARCHAR2(6) NOT NULL,
    CONSTRAINT customer_address_pk PRIMARY KEY (id)
)
```

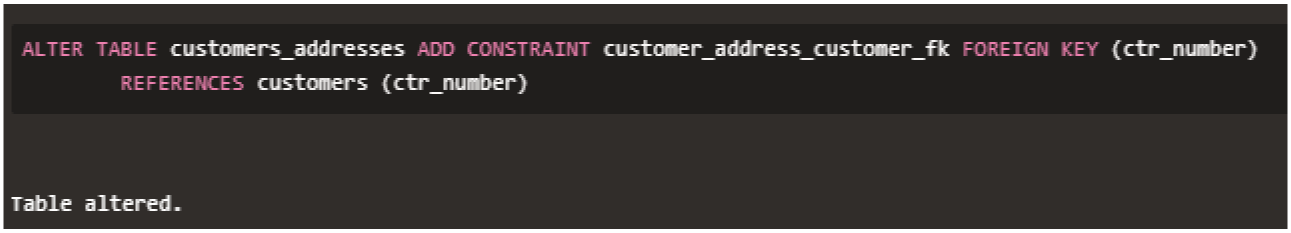
```
Table created.
```

```
CREATE TABLE orders (
    id VARCHAR2(9) NOT NULL,
    odr_date DATE NOT NULL,
    odr_time DATE NOT NULL,
    number_of_units NUMBER(2) NOT NULL,
    ctr_number VARCHAR2(6) NOT NULL,
    CONSTRAINT orders_pk PRIMARY KEY (id)
)
```

```
Table created.
```

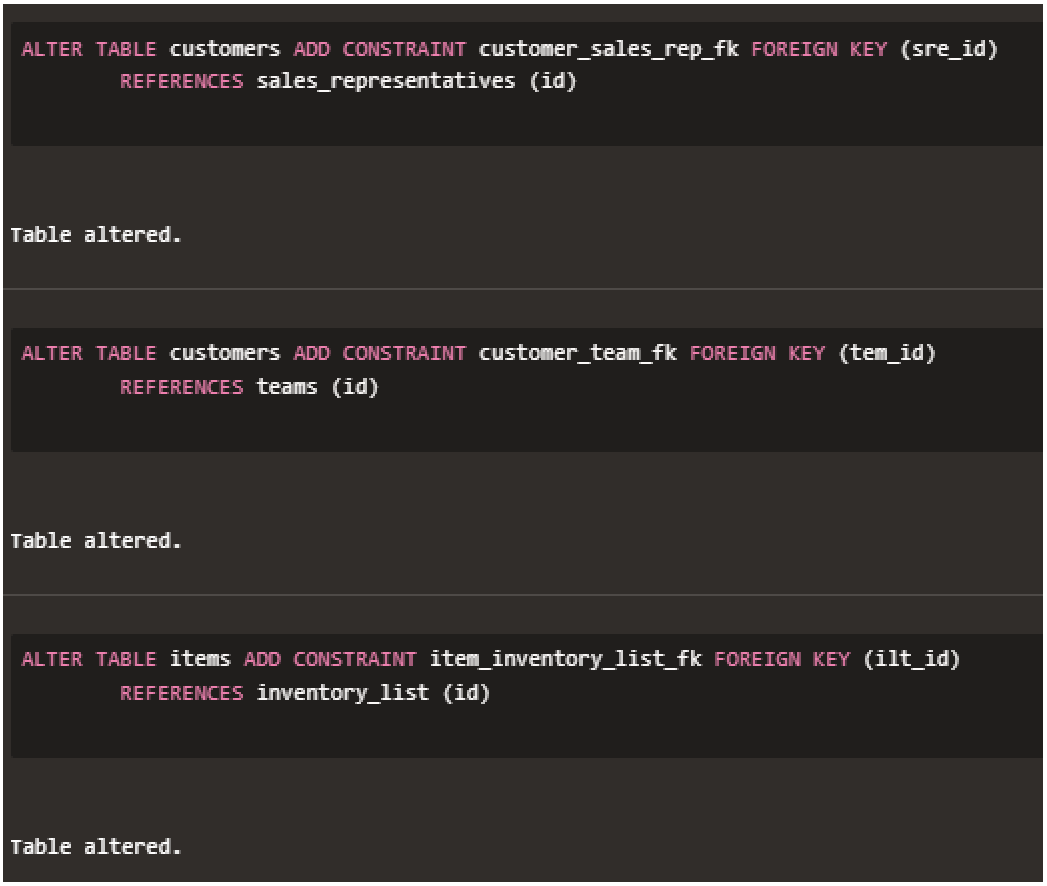
```
CREATE TABLE ordered_items (
    quantity_ordered NUMBER(3) NOT NULL,
    quantity_shipped NUMBER(3) NOT NULL,
    itm_number VARCHAR2(10) NOT NULL,
    odr_id VARCHAR2(9) NOT NULL,
    CONSTRAINT ordered_item_pk PRIMARY KEY (itm_number, odr_id)
)
```

```
Table created.
```



```
ALTER TABLE customers_addresses ADD CONSTRAINT customer_address_customer_fk FOREIGN KEY (ctr_number)
        REFERENCES customers (ctr_number)
```

```
Table altered.
```



```
ALTER TABLE customers ADD CONSTRAINT customer_sales_rep_fk FOREIGN KEY (sre_id)
        REFERENCES sales_representatives (id)
```

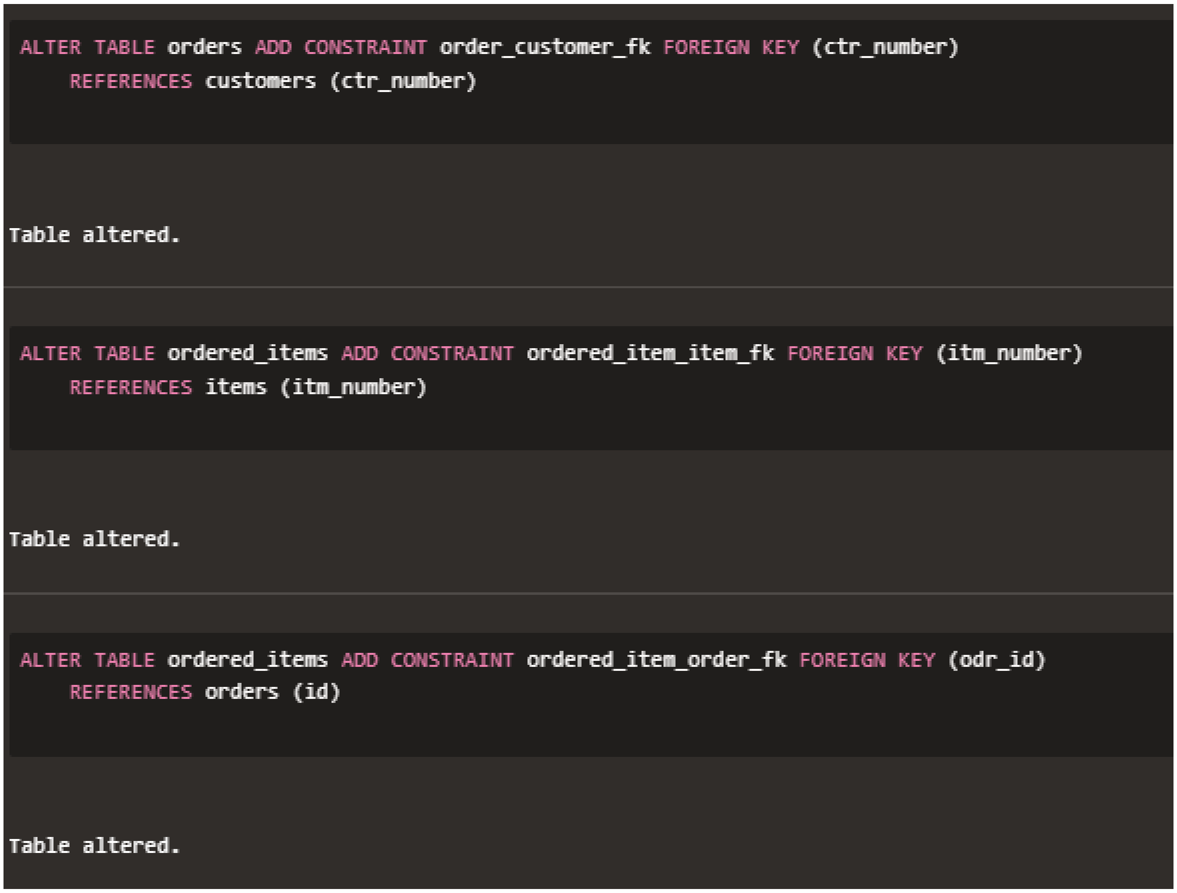
```
Table altered.
```

```
ALTER TABLE customers ADD CONSTRAINT customer_team_fk FOREIGN KEY (tem_id)
        REFERENCES teams (id)
```

```
Table altered.
```

```
ALTER TABLE items ADD CONSTRAINT item_inventory_list_fk FOREIGN KEY (ilt_id)
        REFERENCES inventory_list (id)
```

```
Table altered.
```



```
ALTER TABLE orders ADD CONSTRAINT order_customer_fk FOREIGN KEY (ctr_number)
    REFERENCES customers (ctr_number)
```

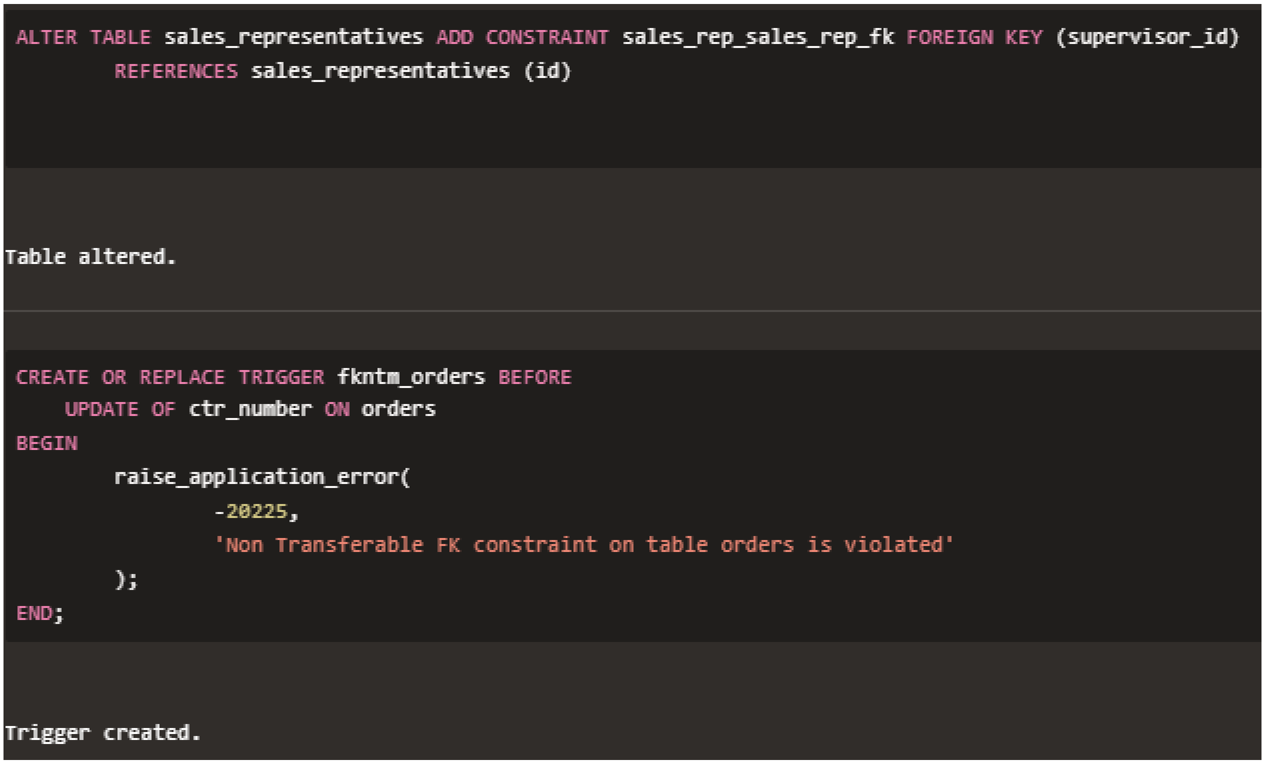
```
Table altered.
```

```
ALTER TABLE ordered_items ADD CONSTRAINT ordered_item_item_fk FOREIGN KEY (itm_number)
    REFERENCES items (itm_number)
```

```
Table altered.
```

```
ALTER TABLE ordered_items ADD CONSTRAINT ordered_item_order_fk FOREIGN KEY (odr_id)
    REFERENCES orders (id)
```

```
Table altered.
```



```sql
ALTER TABLE sales_representatives ADD CONSTRAINT sales_rep_sales_rep_fk FOREIGN KEY (supervisor_id)
        REFERENCES sales_representatives (id)
```

```
Table altered.
```

```sql
CREATE OR REPLACE TRIGGER fkntm_orders BEFORE
    UPDATE OF ctr_number ON orders
BEGIN
        raise_application_error(
                -20225,
                'Non Transferable FK constraint on table orders is violated'
        );
END;
```

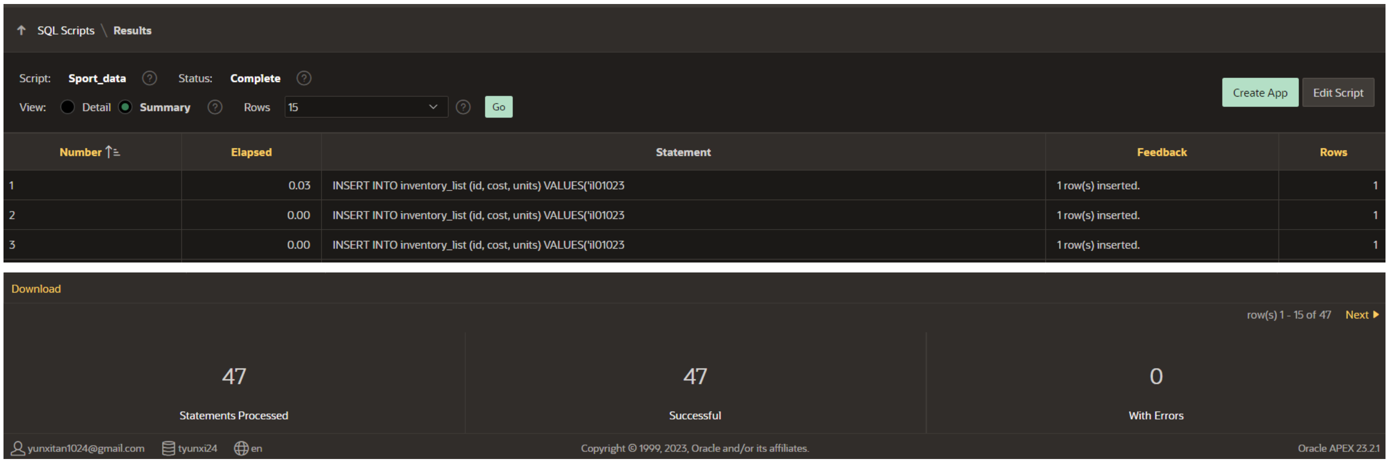
```
Trigger created.
```

2. Open the “sports data.sql” and look at the order the data is being added there, does your list match? This file can be found in the Section 6 Lesson 4 interaction (sports data.zip) and must first be extracted.

A: Yes.

3. Run the “sports data.sql” script in APEX to populate your tables

4. Check that no errors occurred when you ran the script.



SQL Scripts \ Results

Script: **Sport_data** Status: **Complete**

View: ● Detail ● **Summary** Rows 15

Number	Elapsed	Statement	Feedback	Rows
1	0.03	INSERT INTO inventory_list (id, cost, units) VALUES('il01023	1 row(s) inserted.	1
2	0.00	INSERT INTO inventory_list (id, cost, units) VALUES('il01023	1 row(s) inserted.	1
3	0.00	INSERT INTO inventory_list (id, cost, units) VALUES('il01023	1 row(s) inserted.	1

row(s) 1 - 15 of 47 Next

47	47	0
Statements Processed	Successful	With Errors

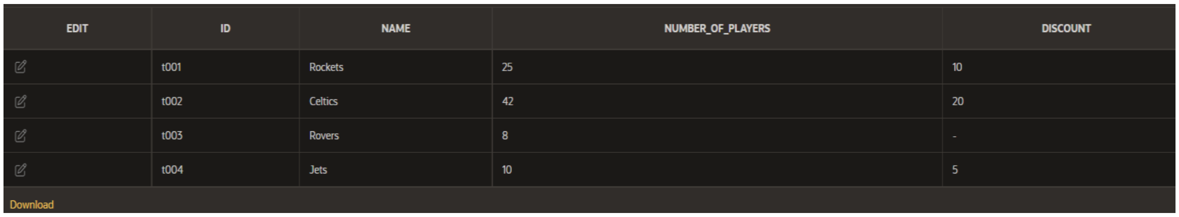
yunxitan1024@gmail.com tyunxi24 en Copyright © 1999, 2023, Oracle and/or its affiliates. Oracle APEX 23.2.1

Part 2- Inserting rows to the system

1. Add a new team to the system

id	name	Number_of_players	discount
t004	Jets	10	5

A: INSERT INTO teams(id, name, Number_of_players, discount) VALUES ('t004', 'Jets', '10', '5')

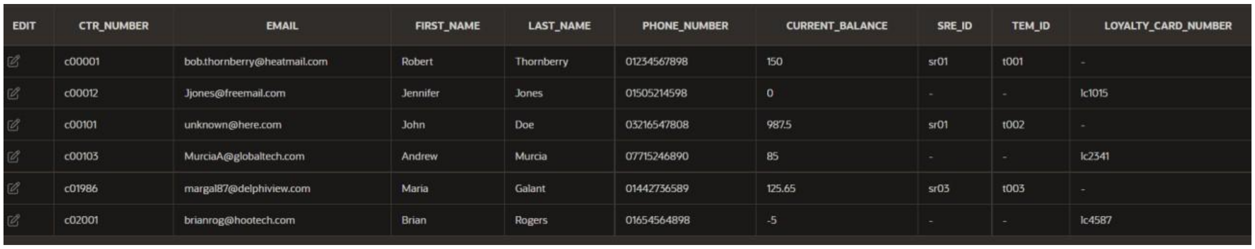


EDIT	ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
✎	t001	Rockets	25	10
✎	t002	Celtics	42	20
✎	t003	Rovers	8	-
✎	t004	Jets	10	5

2. Add a new Customer with the following details to the system

ctr number	email	First name	Last name	Phone number	Current balance	Loyalty card number	tem id	sre id
c02001	brianrog@hootech.com	Brian	Rogers	01654564898	-5	lc4587		

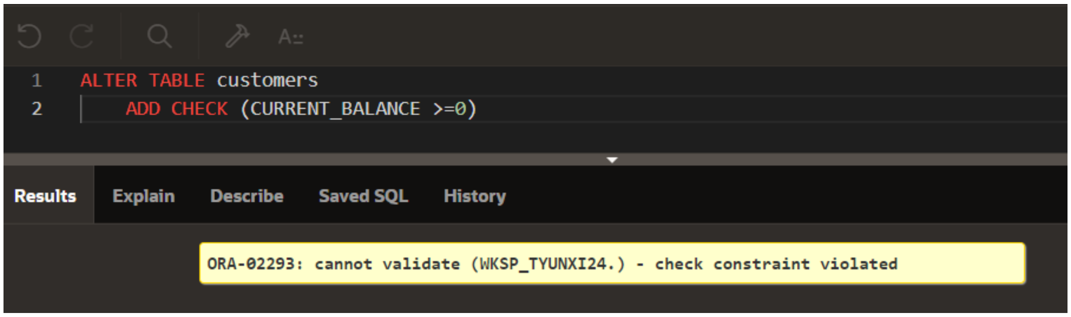
A: INSERT INTO customers (ctr_number,email,first_name,last_name,phone_number,current_balance,loyalty_card_number) VALUES ('c02001','brianrog@hootech.com','Brian','Rogers','01654564898','-5','lc4587')



EDIT	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
✎	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
✎	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
✎	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
✎	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
✎	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
✎	c02001	brianrog@hootech.com	Brian	Rogers	01654564898	-5	-	-	lc4587

3. This information violates the check constraint that the current balance must not be less than zero. Change the current balance to 50 and rerun the query.

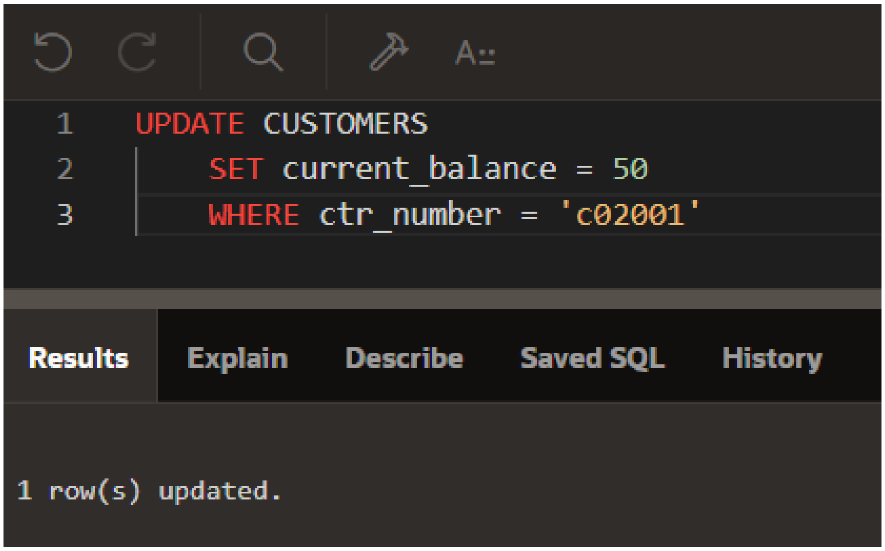
a) Information violates



```
ALTER TABLE customers
    ADD CHECK (CURRENT_BALANCE >=0)
```

```
ORA-02293: cannot validate (WKSP_TYUNXI24.) - check constraint violated
```

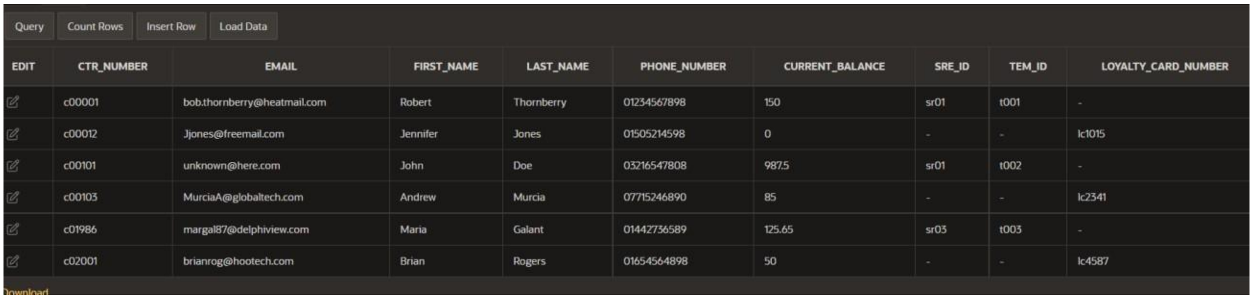
b) Change the current balance to 50



```
UPDATE CUSTOMERS
    SET current_balance = 50
    WHERE ctr_number = 'c02001'
```

```
1 row(s) updated.
```

c) Data updated



EDIT	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
✎	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
✎	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	lc1015
✎	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
✎	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	lc2341
✎	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
✎	c02001	brianrog@hootech.com	Brian	Rogers	01654564898	50	-	-	lc4587

Lab 2: DML1 Part2

SECD2523 - 08 Database

SEMESTER I, SESSION 2023/2024

Lecturer: Dr. Noor Hidayah Zakaria

TAN YUN XI	A22EC0282

Section 6 Lesson 4 Exercise 2: Data Manipulation Language

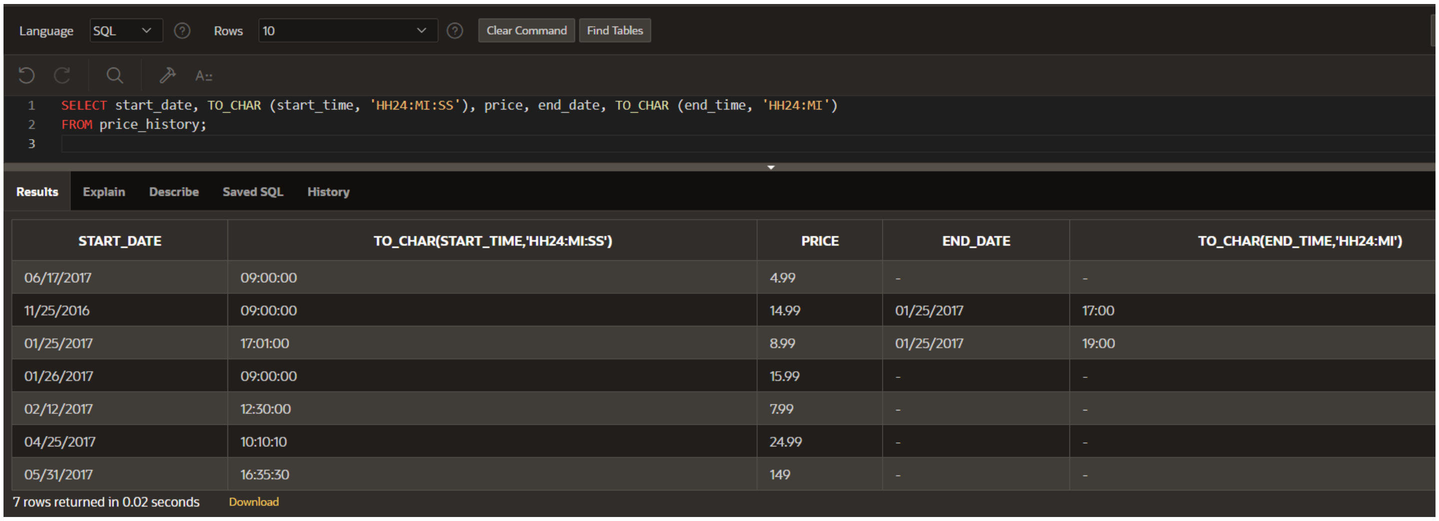
Use DML operations to manage database tables (S6L4 Objective 2)

In this exercise you will populate and work with the data that is stored in the database system.

Part 1- Updating rows to the system

1. Run the following query to view the content of the price_history table:

```
SELECT start_date, TO_CHAR (start_time, 'HH24:MI:SS'), price, end_date, TO_CHAR
(end_time, 'HH24:MI')
FROM price_history;
```



Language SQL

Rows 10

```
SELECT start_date, TO_CHAR (start_time, 'HH24:MI:SS'), price, end_date, TO_CHAR (end_time, 'HH24:MI')
FROM price_history;
```

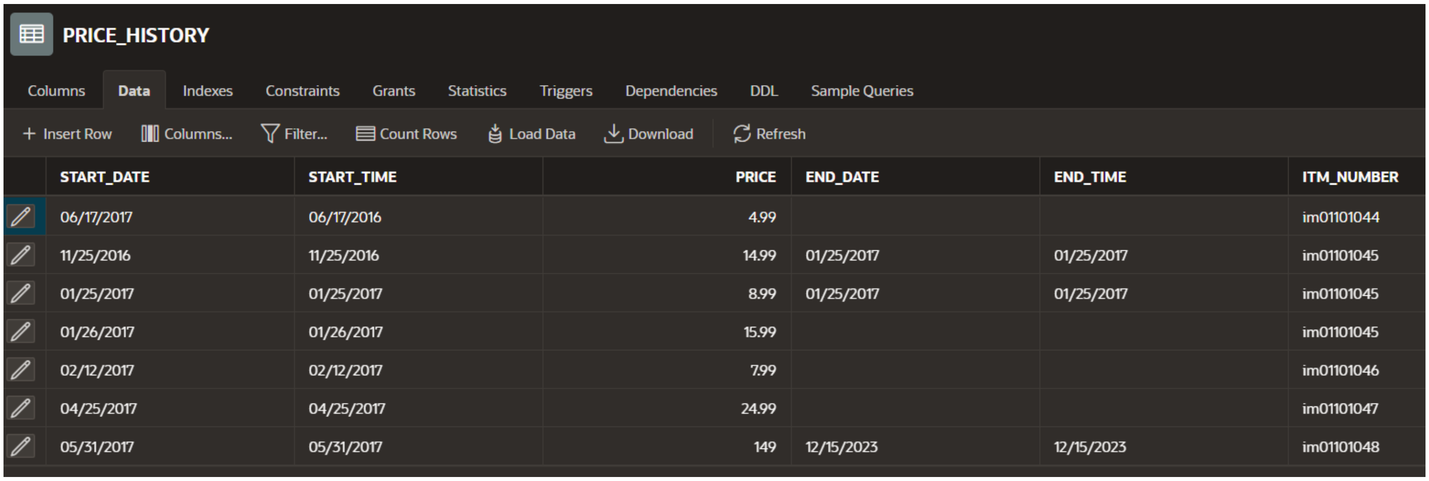
START_DATE	TO_CHAR(START_TIME,'HH24:MI:SS')	PRICE	END_DATE	TO_CHAR(END_TIME,'HH24:MI')
06/17/2017	09:00:00	4.99	-	-
11/25/2016	09:00:00	14.99	01/25/2017	17:00
01/25/2017	17:01:00	8.99	01/25/2017	19:00
01/26/2017	09:00:00	15.99	-	-
02/12/2017	12:30:00	7.99	-	-
04/25/2017	10:10:10	24.99	-	-
05/31/2017	16:35:30	149	-	-

7 rows returned in 0.02 seconds Download

2. Obl is going to update the price of the premium bat so you will need to write a query that will close off the current price by adding the system date values to the end_date and end_time fields. To run this query you will need to both match the item number and identify that the end date is null. This ensures that you are updating the latest price.

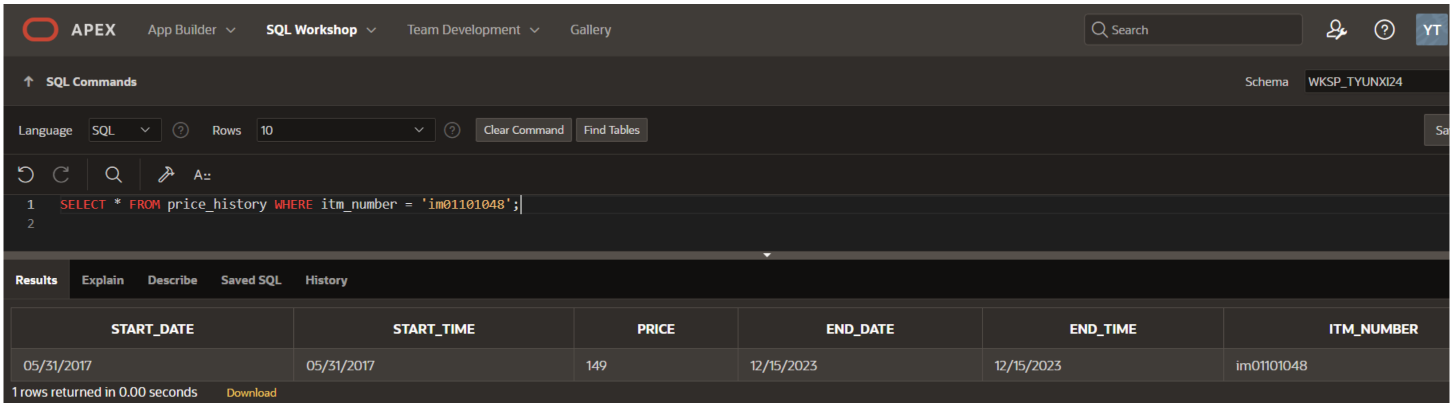
   A:

```
UPDATE price_history
SET end_date = SYSDATE,
    end_time = SYSDATE
WHERE itm_number = 'im01101048'
 AND end_date IS NULL;
```



START_DATE	START_TIME	PRICE	END_DATE	END_TIME	ITM_NUMBER
06/17/2017	06/17/2016	4.99			im01101044
11/25/2016	11/25/2016	14.99	01/25/2017	01/25/2017	im01101045
01/25/2017	01/25/2017	8.99	01/25/2017	01/25/2017	im01101045
01/26/2017	01/26/2017	15.99			im01101045
02/12/2017	02/12/2017	7.99			im01101046
04/25/2017	04/25/2017	24.99			im01101047
05/31/2017	05/31/2017	149	12/15/2023	12/15/2023	im01101048

3. Rerun the select statement on the price_history table to ensure that the statement has been executed.

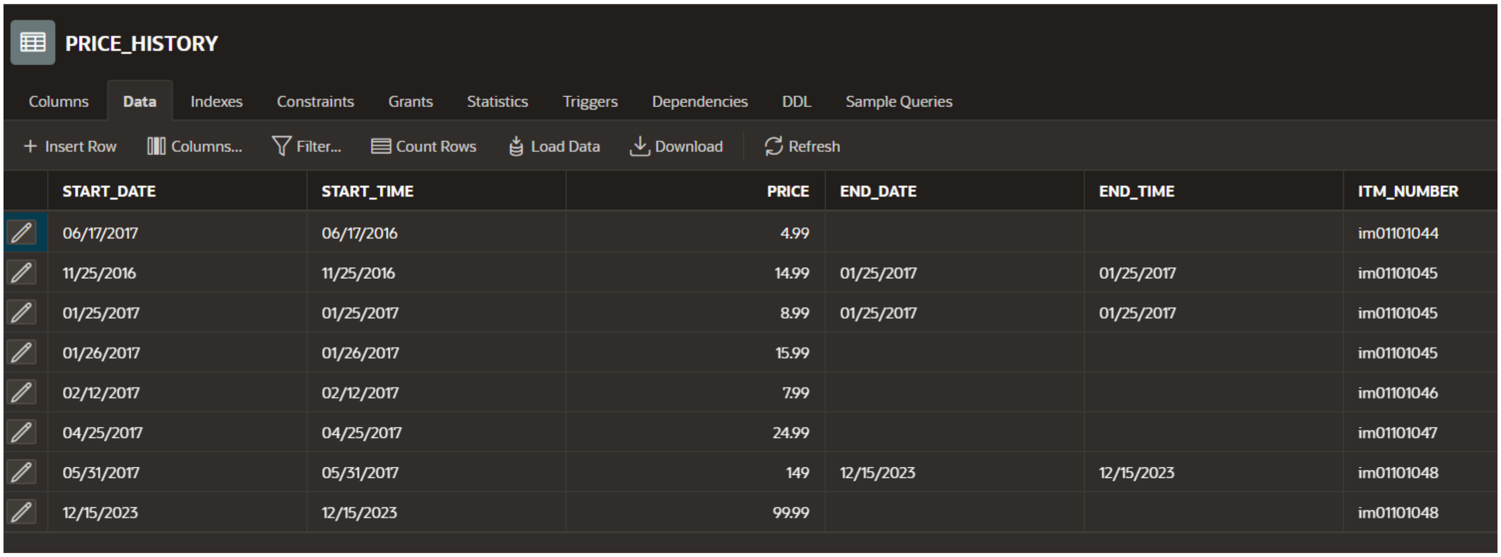


```
SELECT * FROM price_history WHERE itm_number = 'im01101048';
```

START_DATE	START_TIME	PRICE	END_DATE	END_TIME	ITM_NUMBER
05/31/2017	05/31/2017	149	12/15/2023	12/15/2023	im01101048

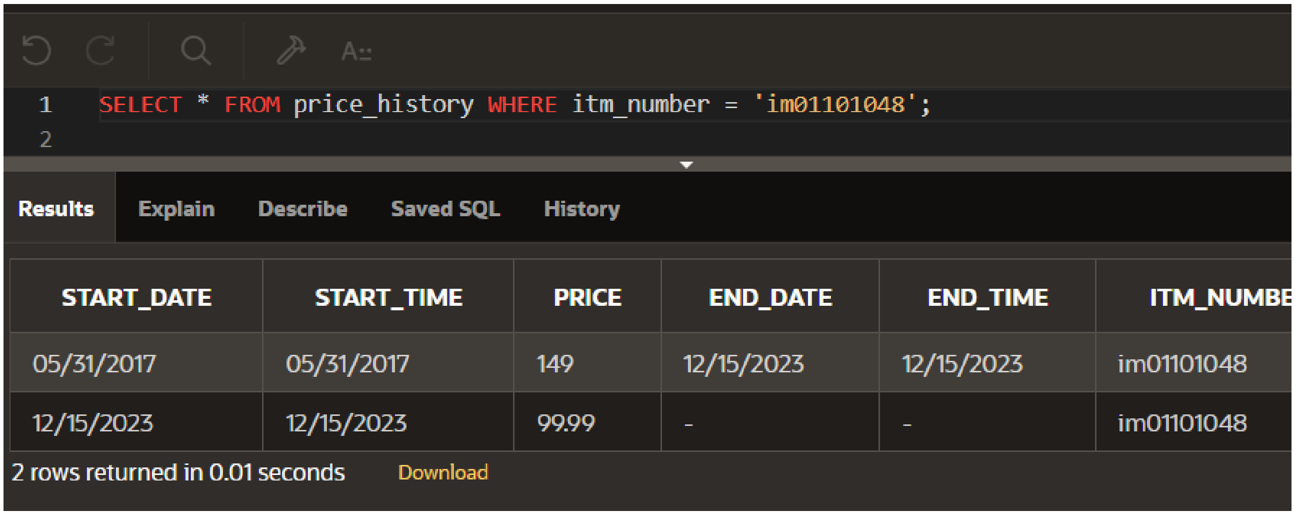
1 rows returned in 0.00 seconds

4. Insert a new row that will use the current date and time to set the new price of the premium bat to be 99.99.
A:
INSERT INTO price_history (start_date, start_time, price, itm_number)
VALUES (CURRENT_DATE, CURRENT_TIMESTAMP, 99.99, 'im01101048');



START_DATE	START_TIME	PRICE	END_DATE	END_TIME	ITM_NUMBER
06/17/2017	06/17/2016	4.99			im01101044
11/25/2016	11/25/2016	14.99	01/25/2017	01/25/2017	im01101045
01/25/2017	01/25/2017	8.99	01/25/2017	01/25/2017	im01101045
01/26/2017	01/26/2017	15.99			im01101045
02/12/2017	02/12/2017	7.99			im01101046
04/25/2017	04/25/2017	24.99			im01101047
05/31/2017	05/31/2017	149	12/15/2023	12/15/2023	im01101048
12/15/2023	12/15/2023	99.99			im01101048

5. Rerun the select statement on the price_history table to ensure that the statement has been executed.



```
SELECT * FROM price_history WHERE itm_number = 'im01101048';
```

START_DATE	START_TIME	PRICE	END_DATE	END_TIME	ITM_NUMBE
05/31/2017	05/31/2017	149	12/15/2023	12/15/2023	im01101048
12/15/2023	12/15/2023	99.99	-	-	im01101048

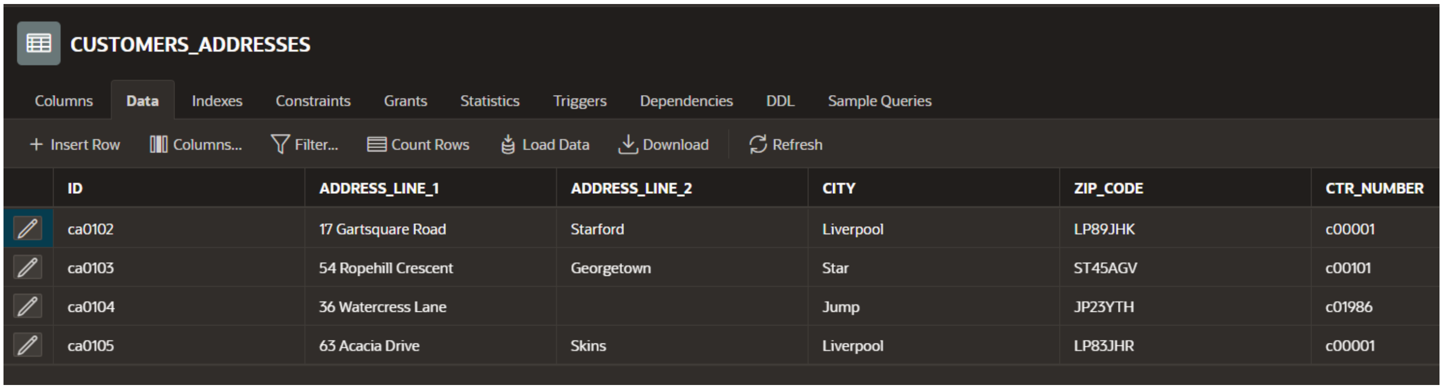
2 rows returned in 0.01 seconds Download

Part 2: Deleting rows from the system

1. Bob Thornberry has contacted Obl to ask that the 83 Barrhill Drive address be removed from the system as he can longer receive parcels at this address. Write a SQL statement that will remove this address from the system.

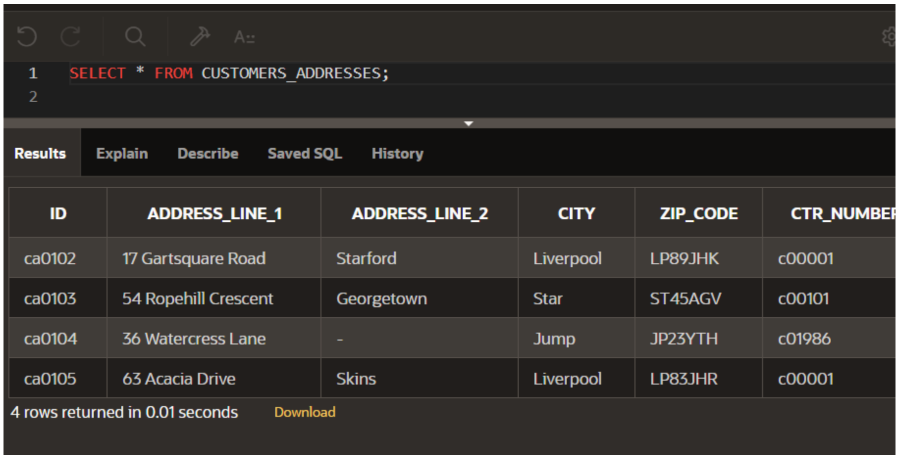
   A:

   DELETE FROM CUSTOMERS_ADDRESSES
   WHERE address_line_1 = '83 Barrhill Drive';



	ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE	CTR_NUMBER
✎	ca0102	17 Gartsquare Road	Starford	Liverpool	LP89JHK	c00001
✎	ca0103	54 Ropehill Crescent	Georgetown	Star	ST45AGV	c00101
✎	ca0104	36 Watercress Lane		Jump	JP23YTH	c01986
✎	ca0105	63 Acacia Drive	Skins	Liverpool	LP83JHR	c00001

2. Run a select statement on the customers_addresses table to ensure that the statement has been executed.



```
SELECT * FROM CUSTOMERS_ADDRESSES;
```

ID	ADDRESS_LINE_1	ADDRESS_LINE_2	CITY	ZIP_CODE	CTR_NUMBE
ca0102	17 Gartsquare Road	Starford	Liverpool	LP89JHK	c00001
ca0103	54 Ropehill Crescent	Georgetown	Star	ST45AGV	c00101
ca0104	36 Watercress Lane	-	Jump	JP23YTH	c01986
ca0105	63 Acacia Drive	Skins	Liverpool	LP83JHR	c00001

4 rows returned in 0.01 seconds Download