

# **DBMS PROJECT (UCS310)**

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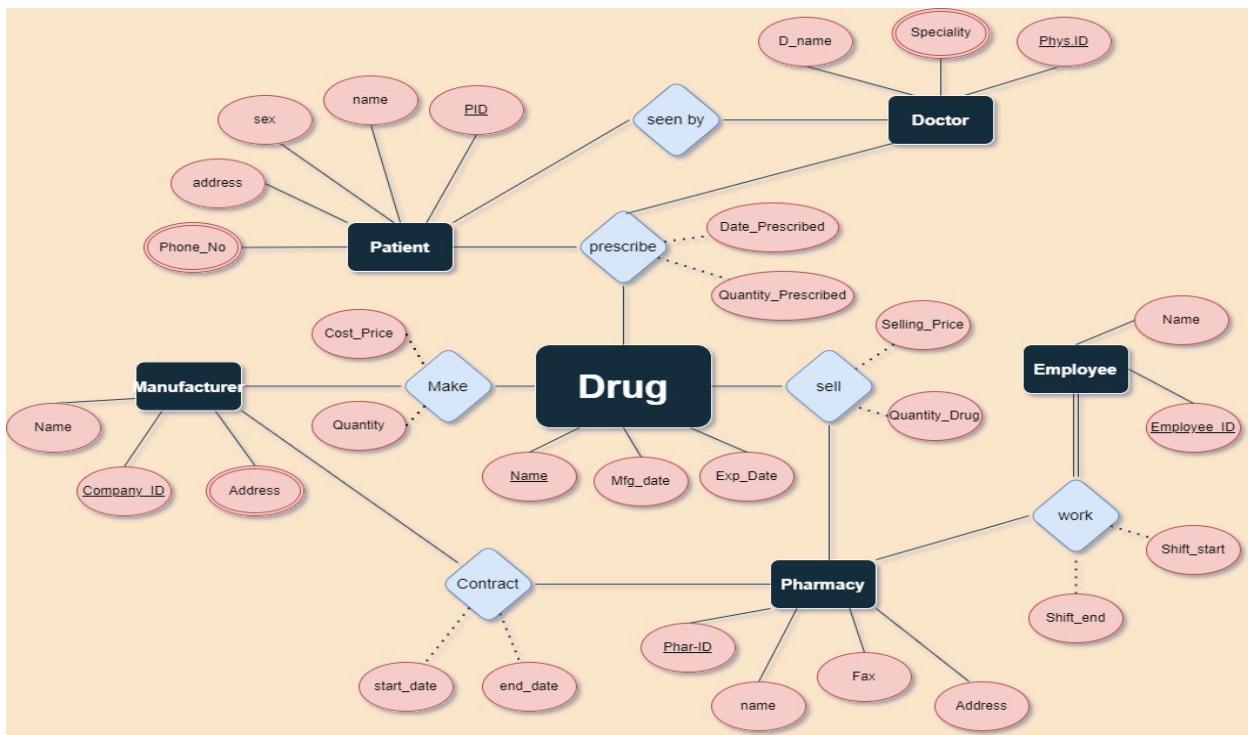
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## **Problem Statement:**

**The recording pattern of PHARMACY COUNCIL OF INDIA has changed, we have more drugs, Pharmacies and Manufacturers. We need to have a clear way of recording status and prescriptions by licenced Doctors that will be used by the drug manufacturers, employees, doctors, so that we can work effectively and provide the correct drugs at correct time to the patients. Create a Database of DRUGS and show the relationship of drugs with the rest of the members of the pharmaceutical network to easily share information and carry out the work in the most efficient way.**

# ER DIAGRAM



## **ER to Table:**

Here we show an E-R Diagram that corresponds to manufacturing and selling of drugs and the way it reaches the patients.

The main entity set is DRUGS along with other entity set like Manufacturer, Doctor , Patient and Employee.

### **DESCRIPTION:**

#### **1 DRUG**

The entity set drug includes attributes:

#### **ATTRIBUTES:**

##### **NAME**

It represents the name of the drug by which it is sold. It is the PRIMARY KEY for the Drug entity since no two drugs have the same name.

It will be a varchar type attribute with alphabet limit 100, it will be unique and not null.

##### **MFG\_DATE**

It represents the date of manufacturing of the medicine printed on the packet.

The format of this will be date type.

## **EXP\_DATE**

It represents the date of expiry of the medicine or the drug as per the print but can be considered a derived attribute too if the information about best before how many months is provided.

The format will be date type.

## **2 MANUFACTURER**

The entity manufacturer includes attributes

### ATTRIBUTES

#### NAME

It is the name of the company that manufactures the drug.

It will be a varchar type attribute with alphabet limit 100.

#### ADDRESS

It is the address of the head office or the manufacturing unit of the company where whole of the production and supply is maintained.

Since being a composite attribute, the data type will be varchar and will have a 100 character limit.

#### COMPANY\_ID

It is the unique ID given to the company which manufacturers the medicine and it acts as the PRIMARY KEY for the table containing information of the manufacturers.

It will be number type, will be unique and not null.

## **3 EMPLOYEE**

The entity employee has the following attributes,

### ATTRIBUTES:

#### NAME

The name gives the name of the employee.

It will be not null since the name of the employee is necessary and will be a varchar type with character limit 100.

#### **EMP\_ID**

The attribute emp\_id gives the unique ID of the employee, which is assigned to each employee by the manager. It acts as the primary key of the table.

It is a number type and is unique and not null.

### **4 PHARMACY**

The entity pharmacy has the following attributes,

#### **ATTRIBUTES**

##### **PHAR\_ID**

Phar\_id gives the unique id of the pharmacy which is used as recognition in the table hence is also designated as the primary key in the table for pharmacy entity.

It will be number type, unique and not null.

##### **NAME**

The name attribute gives the name of the pharmacy.

Since it is a composite attribute, it will be a varchar type with character limit 100. Also it will be not null because it is an important value.

##### **ADDRESS**

The attribute address gives the address of the pharmacy, i.e., the place where it is located. In case of same ownership, the address of the pharmacy can be a multi-valued attribute too.

Being a composite attribute, it is a varchar type with character limit 250.

##### **FAX**

The fax attribute is another identifier in the pharmacy table, it will have the unique value too, but it can be null . It lists the fax number associated to that particular pharmacy.

It is a number type attribute, maybe it cannot be the primary key but still will have a unique value.

## 5 PATIENTS

Patient is another entity in the database which has the following schema,

### ATTRIBUTES

#### NAME

This column gives the name of the patient's name who is being treated by the doctor. This cannot be an identifier because two patients can have the same name.

It is an important value, hence not null, and will be a varchar type with 100-character limit.

#### PID

The attribute PID gives the Id given to the patient by a doctor which is unique and is never null. Hence PID can be used as the primary key for the table.

The data type will be a number format.

#### SEX

It lists whether the patient is male or female.

It is an important constraint and hence is to be filled, the format being a varchar type.

#### ADDRESS

This attribute of the schema lists the place where the person lives. Since the address has parts, it is a composite attribute and not only this, a patient can have more than one address, hence it is a multivalued attribute too.

The format will be varchar type with character limit 250.

#### CONTACT\_NO

Another multivalued attribute, contact number of the person is the mobile number the patients registers in the database of the doctor while visiting.

It will be of a number type format .

## **6 DOCTOR**

Doctor is another entity in the database and is very important, it has the following attributes

### ATTRIBUTES

#### NAME

The name of the doctor, being an important constraint gives the name of the doctor and hence it is not null.

It will be a character type with limit of 100.

#### SPECIALITY

The speciality constraint will list the degree , qualifications of the doctor .It is a worthy constraint determining the area of operation of the doctor, the patients he/she will treat and many more.

It will also be a varchar type constraint with character limit 100.It can be a multi-valued attribute too.

#### PHYSICIAN\_ID

It will give a unique ID as an identifier given to the doctor which will be used as a primary key in the table. Being the primary key, it will be unique and not null.

It will have a number type format.

## **RELATIONSHIPS BETWEEN ENTITIES**

- *The entity drug is related to manufacturer by the relationship **make** i.e. the manufacturer makes the drugs .*

*Make further has the following attributes:*

### **Cost\_price**

*The cost at which medicine is brought from the manufacturer is the cost\_price.*

### **Quantity**

*The amount of drugs brought from the manufacturer is represented by the quantity.*

- *The entity drug is also related directly to the pharmacy by the relation **sell** i.e. the drugs to be supplied to the customers or patients or hospitals can be directly brought from the pharmacy.*

*It has an attributes too, i.e*

### **Selling\_Price**

*The price at which the drug is sold by the Pharmacy.*

### **Quantity\_Drug**

*The quantity of drugs brought from the pharmacy is represented by Quantity\_Drug.*

- *The entity drug is related to the patient as well as doctor together as the doctor **prescribes** the medicine to the patient.*

*It has the following attributes :*

### **Date\_Prescribed**

*It specifies the date on which the medicine was prescribed i.e. the date written on the prescription.*

### **Quantity\_Prescribed**

*It gives the details about the quantity of the medicine to be sold to the patient, the medicine that the patient has to intake according to the prescription.*

- *The entity manufacturer and the pharmacy are related by the relationship **contract** i.e. the manufacturer is given a contact of some particular amount*

*of medicines for a given time by the pharmacy according to the demand there.*

*The relationship has following attributes:*

### ***Start\_date***

*It enlists the date of the start of the contract, that means when did the contract actually came into enforcement.*

### ***End\_Date***

*It enlists the date of the end of contract which actually means all the drugs which were being ordered for a particular time period are delivered well.*

*It can also become a derived attribute if the tenure of a contract is already fixed and is pre-defined.*

*Here an important point to note is that the drugs can be directly brought from the pharmacy or can be taken on contract from the manufacturer too.*

- *Pharmacy is connected to the employee with the relationship **work** i.e. the employees work for the pharmacy.*

*Employee to work is a total participation relationship, which actually means that each employee is assigned atleast one work.*

*The relationship work has following attributes:*

### ***Shift\_Start***

*Shift\_start will be the time at which the shift of an employee at works starts. Since it is the time, the format of data entered will be timestamp .*

### ***Shift\_End***

*Shift\_end will be the time at which the working shift of an employee ends and he/she is free to go home .It too is the time hence will be of timestamp format.*

*An important point to note here is that if the duration of the shift is predefined , then the shift\_end can be a derived attribute too.*

- *The doctor and patient are related by the relation **seen by** which means that the doctor sees the patient, treats him/her and prescribes medicines.*

A good entity-relationship does not contain redundant attributes. Hence to verify this, we list the entity sets and attributes below, with primary keys underlined:

- DRUG : with attributes(Name, mfg\_date, exp\_date)
- EMPLOYEE : with attributes(Name, employee\_id)
- PHARMACY : with attributes(Phar\_id, name, fax, address)
- MANUFACTURER : with attributes (Name, Company\_id, Address)
- DOCTOR : with attributes (Phys\_id, D\_Name, Speciality)
- PATIENT : with attributes (PID, contact\_no, sex, name, address)

The relationship sets in our design are listed below:

- SELL : relating drug and pharmacy, with descriptive attributes selling\_price and quantity\_drug.

- WORK : relating employee and pharmacy, with descriptive attributes shift\_start and shift\_end.
- CONTRACT : relating pharmacy and manufacturer, with descriptive attributes start\_date and end\_date.
- MAKE : relating drug and manufacturer with descriptive attributes cost\_price and quantity.
- SEEN BY : relating doctor and patient.
- PRESCRIBES : relating both doctor with the patient as well as the patient with drugs, with descriptive attributes date\_prescribed and quantity\_prescribed.

With the above data we can easily verify that none of the entity sets has any attribute that is made redundant by any of the relationship sets .We can also verify that all the information in the relational schema of our drug database is logical and consistent.

## NORMALISED TABLES:

The screenshot shows the Oracle Live SQL interface. In the top navigation bar, there are tabs for WhatsApp, Oracle Live SQL - SQL Worksheet, and Untitled document - Google Doc. The main area is titled "Live SQL". Below the title, there are buttons for Feedback, Help, and a user account (hrajbars@gmail.com). The toolbar includes Clear, Find, Actions, Save, and Run.

The SQL Worksheet pane contains the following code:

```
1 create table Employee(
2     Name varchar2(100) not null,
3     Employee_ID    varchar2(100),
4     constraint pk_Employee primary key (Employee_ID)
5 );
6 
```

Below the worksheet, a message box displays:

Table created.

At the bottom of the page, there is footer text:

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Screenshot of Oracle Live SQL showing a worksheet with 18 rows of SQL code for inserting data into the Employee table. The rows are numbered 1 through 18, each containing a unique employee name and ID. The results pane shows 18 rows inserted successfully.

```
1 Insert into Employee (Name,Employee_ID) values ('Angela Silva','1');
2 Insert into Employee (Name,Employee_ID) values ('Tammy White','2');
3 Insert into Employee (Name,Employee_ID) values ('David Tyler','3');
4 Insert into Employee (Name,Employee_ID) values ('James Pearson','4');
5 Insert into Employee (Name,Employee_ID) values ('Steven Hoffman','5');
6 Insert into Employee (Name,Employee_ID) values ('Rhonda Nielsen','6');
7 Insert into Employee (Name,Employee_ID) values ('Stephanie Cunningham','7');
8 Insert into Employee (Name,Employee_ID) values ('Alicia Nguyen','8');
9 Insert into Employee (Name,Employee_ID) values ('Diana Stewart','9');
10 Insert into Employee (Name,Employee_ID) values ('Lisa Moore','10');
11 Insert into Employee (Name,Employee_ID) values ('Eric Miller','11');
12 Insert into Employee (Name,Employee_ID) values ('Joel Kramer','12');
13 Insert into Employee (Name,Employee_ID) values ('Scott Dean','13');
14 Insert into Employee (Name,Employee_ID) values ('Teresa Lowe','14');
15 Insert into Employee (Name,Employee_ID) values ('Kim Stone','15');
16 Insert into Employee (Name,Employee_ID) values ('Anthony Caldwell','16');
17 Insert into Employee (Name,Employee_ID) values ('Vanessa Garcia','17');
18 Insert into Employee (Name,Employee_ID) values ('William Cox','18');
19 Insert into Employees (Name,Employee_ID) values ('Christian Miller','19');
```

1 row(s) inserted.  
1 row(s) inserted.

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Screenshot of Oracle Live SQL showing a worksheet with SQL code to create a table named Pharmacy. The table has columns Name, Phar\_ID, Phone, and Fax, all of type VARCHAR2(100). A primary key constraint is defined on the Phar\_ID column. The results pane shows the table was created successfully.

```
1 create table Pharmacy(
2   Name varchar2(100) not null,
3   Phar_ID varchar2(100),
4   Phone varchar2(100),
5   Fax varchar2(100),
6   constraint pk_Pharmacy primary key (Phar_ID)
7 );
```

Table created.

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Oracle Live SQL - SQL Worksheet | Untitled document - Google Docs | (2) WhatsApp

livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success\_msg=MIBkYXRhYmFzZSBvYmplY3RzlGhdmUgYmVlbkcm9wcGVkLiAgU2VzcIvbIBo,aXN0b3...

Live SQL

SQL Worksheet

```
1 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('VALLEY HEALTH CENTER - SUNNYVALE','1015','408-992-4839','660 SOUTH FAIR OAKS AVENUE');
2 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('OMNICARE','1016','530-224-3373','5200 CHURN CREEK ROAD');
3 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('SAFeway','1017','925-672-2107','5431 CLAYTON ROAD');
4 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('COMMUNITY PHARMACY','1018','541-388-7731','2500 NORTHEAST NEFF ROAD');
5 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('SAFeway','1019','541-389-7184','320 SOUTHWEST CENTURY DRIVE');
6 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('COSTCO','1020','541-383-2199','2500 NORTHEAST HIGHWAY 20');
7 INSERT INTO Pharmacy(Name,Phar_ID,Fax,Address) values('RITE AID - 5886','1021','408-774-0134','2310 HOMESTEAD ROAD');
```

1 row(s) inserted.

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Oracle Live SQL - SQL Worksheet | Untitled document - Google Docs | (2) WhatsApp

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Live SQL

SQL Worksheet

```
1 create table Work(
2 Employee_ID varchar2(100) not null,
3 Phar_ID varchar2(100),
4 Shift_Start timestamp,
5 Shift_End timestamp,
6 constraint fk_Employee foreign key (Employee_ID)
7 references Employee(Employee_ID),
8 constraint fk_Pharmacy foreign key(Phar_ID)
9 references Pharmacy(Phar_ID)
10 );
11
12
13
```

Table created.

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Live SQL

SQL Worksheet

Clear Find Actions Save Run

```
1 create table Drug(
2 Name varchar2(100),
3 Mfg_Date date not null,
4 Exp_Date date not null,
5 constraint pk_Drug primary key (Name)
6 );
7
```

Table created.

Oracle Live SQL - SQL Worksheet

Untitled document - Google

(2) WhatsApp

livesql.oracle.com/apex/?p=590:1:13722911197595:NO:93::&success\_msg=MiBkYXRhYmFzZSBvYmpjY3RzIghdmUgYmVibiBkcm9wcGvKLiAgU2Vzc2lvbiBo,aXN0b3... hraji8ars@gmail.com

Live SQL

SQL Worksheet

Clear Find Actions Save Run

```
57 INSERT INTO urugu(Name,Mfg_Date,Exp_Date) values('Samsca (tolvaptan)',TO_DATE('10/09/2021','dd/mm/yyyy'),TO_DATE('15/09/2023','dd/mm/yyyy'));  
58 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Tegretol (carbamazepine)',TO_DATE('11/06/2021','dd/mm/yyyy'),TO_DATE('27/01/2023','dd/mm/yyyy'));  
59 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Thorazine (chlorpromazine)',TO_DATE('06/03/2021','dd/mm/yyyy'),TO_DATE('21/11/2023','dd/mm/yyyy'));  
60 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Declomycin (demeclocycline)',TO_DATE('03/01/2021','dd/mm/yyyy'),TO_DATE('04/12/2023','dd/mm/yyyy'));  
61 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Lamicital (clomotrigine)',TO_DATE('17/11/2021','dd/mm/yyyy'),TO_DATE('14/12/2023','dd/mm/yyyy'));  
62 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Lithobid (lithium)',TO_DATE('16/09/2021','dd/mm/yyyy'),TO_DATE('10/04/2023','dd/mm/yyyy'));  
63 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Imodium (loperamide)',TO_DATE('16/03/2021','dd/mm/yyyy'),TO_DATE('09/03/2023','dd/mm/yyyy'));  
64 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Remeron (mirtazapine)',TO_DATE('05/03/2021','dd/mm/yyyy'),TO_DATE('26/05/2023','dd/mm/yyyy'));  
65 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Lexapro (escitalopram)',TO_DATE('13/01/2021','dd/mm/yyyy'),TO_DATE('13/04/2023','dd/mm/yyyy'));  
66 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Effexor (venlafaxine)',TO_DATE('26/02/2021','dd/mm/yyyy'),TO_DATE('12/07/2023','dd/mm/yyyy'));  
67 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Zoloft (sertraline)',TO_DATE('13/07/2021','dd/mm/yyyy'),TO_DATE('09/03/2023','dd/mm/yyyy'));  
68 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Celexa (citalopram)',TO_DATE('05/08/2021','dd/mm/yyyy'),TO_DATE('26/12/2023','dd/mm/yyyy'));  
69 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Wellbutrin (buproprion)',TO_DATE('28/01/2021','dd/mm/yyyy'),TO_DATE('14/08/2023','dd/mm/yyyy'));  
70 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Paxil (paroxetine)',TO_DATE('22/07/2021','dd/mm/yyyy'),TO_DATE('23/06/2023','dd/mm/yyyy'));  
71 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Savella (minocicpran)',TO_DATE('08/06/2021','dd/mm/yyyy'),TO_DATE('08/09/2023','dd/mm/yyyy'));  
72 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Prozac (fluoxetine)',TO_DATE('28/09/2021','dd/mm/yyyy'),TO_DATE('01/06/2023','dd/mm/yyyy'));  
73 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Cymbalta (duloxetine)',TO_DATE('09/11/2021','dd/mm/yyyy'),TO_DATE('05/04/2023','dd/mm/yyyy'));  
74 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Luvox (fluvoxamine)',TO_DATE('10/01/2021','dd/mm/yyyy'),TO_DATE('27/06/2023','dd/mm/yyyy'));  
75 INSERT INTO Drug(Name,Mfg_Date,Exp_Date) values('Vestra (reboxetine)',TO_DATE('14/04/2021','dd/mm/yyyy'),TO_DATE('08/02/2023','dd/mm/yyyy'));
```

1 row(s) inserted.

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The screenshot shows the Oracle Live SQL interface with a single tab titled "Live SQL". The SQL Worksheet contains the following DDL code:

```
1 create table Sell(
2 Name varchar2(100) not null,
3 Phar_ID varchar2(100) not null,
4 Selling_Price number not null,
5 Quantity_Drug number not null,
6 constraint fk_Pharmacy1 foreign key(Phar_ID)
7 references Pharmacy (Phar_ID),
8 constraint fk_Drug1 foreign key (Name)
9 references Drug (Name)
10 );
11
```

The status bar at the bottom indicates "Table created."

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Oracle Live SQL - SQL Worksheet

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Live SQL

SQL Worksheet

Clear Find Actions Save Run

```
1 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Lithobid (Lithium)','1015',547,419);
2 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Imodium (loperamide)','1015',471,422);
3 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Remeron (mirtazapine)','1015',507,350);
4 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Lexapro (escitalopram)','1015',626,195);
5 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Effexor (venlafaxine)','1015',237,191);
6 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Zoloft (sertraline)','1015',314,123);
7 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Celexa (citalopram)','1015',709,437);
8 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Wellbutrin (bupropion)','1015',591,288);
9 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Paxil (paroxetine)','1015',329,115);
10 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Savella (milnacipran)','1015',130,411);
11 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Prozac (fluoxetine)','1015',288,393);
12 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Cymbalta (duloxetine)','1015',253,392);
13 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Luvox (fluvoxamine)','1015',769,278);
14 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Vestra (reboxetine)','1015',796,169);
15 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('azithromycin','1016',141,172);
16 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('sulfamethoxazole and trimethoprim','1016',455,410);
17 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('amoxicillin and clavulante','1016',167,363);
18 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('levofloxacin','1016',539,334);
19 INSERT INTO Sell(Name,Phar_ID,Selling_Price,Quantity_Drug) values('Thimerfan','1016',917,370);
```

1 row(s) inserted.

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The screenshot shows a browser window with the following tabs open: Oracle Live SQL - SQL Worksheet, Untitled document - Google Docs, and (2) WhatsApp.

The main content area is titled "Live SQL" and "SQL Worksheet". The SQL code entered is:

```
1 create table Manufacturer (
2 Name varchar2(100) not null,
3 Company_ID number,
4 Address varchar2(100) not null,
5 constraint pk_Manufacturer primary key (Company_ID)
6 );
7
8
```

Below the code, the message "Table created." is displayed.

On the right side of the interface, there are buttons for "Clear", "Find", "Actions", "Save", and "Run". The URL in the address bar is [livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success\\_msg=MiBkYXRhYmFzZSBvYmpIY3RzIWhdmUgYmVibiBkcm9wcGVkLiAgU2Vzc2lvbiBo.,aXN0b3...](https://livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success_msg=MiBkYXRhYmFzZSBvYmpIY3RzIWhdmUgYmVibiBkcm9wcGVkLiAgU2Vzc2lvbiBo.,aXN0b3...).

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Oracle Live SQL - SQL Worksheet | Untitled document - Google Docs | (2) WhatsApp

livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success\_msg=MibkYXRhYmFzZSBvYmplY3RzlGhdmUgYmVlbkcm9wcGVkLiAgU2Vzc2vbIBo,aXN0b3...

Live SQL

SQL Worksheet

```

1 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Sun pharma','Goregaon,Mumbai',102);
2 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Dr. Reddy','Hyderabad',103);
3 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Divis Laboratory','Hyderabad',104);
4 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Cipla','Mumbai',105);
5 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Aurobindo','Hyderabad',106);
6 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Torrent','Ahmedabad',107);
7 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Lupin','Mumbai',108);
8 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Zydus','Ahmedabad',109);
9 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Abbott','Mumbai',110);
10 INSERT INTO Manufacturer(Name,Address,Company_ID) values('Atkem','Mumbai',111);
11
12
13

```

1 row(s) inserted.

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Live SQL

SQL Worksheet

```

1 create table Patient (
2 PID varchar2(100) not null,
3 Name varchar2(100) not null,
4 Sex varchar2(100) check (Sex='male' or Sex='female' or Sex='others') not null,
5 Address varchar2(100) not null,
6 Phone_No number not null,
7 constraint pk_Patient primary key (PID)
8 );
9
10

```

Table created.

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SQL Worksheet

```

15 Insert into Patient (PID,name,sex,Address,Phone_No) values ('1013','Jesus Ferrell','others','jalonanor',918079743055);
14 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1014','Christopher Blevins','male','rajpura',916127955247);
15 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1015','Angela Parker','female','sirhind',916127965394);
16 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1016','Joe Brady','others','patron',916129109802);
17 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1017','Ronald Reed','male','narvana',918917814880);
18 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1018','Christopher Andersen','male','uklana',918700660411);
19 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1019','Stephanie Rodriguez','female','bhatinda',916127943088);
20 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1020','Caitlin Bell','others','botala',916197747624);
21 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1021','Philip Hickmon','male','tondo',918917439877);
22 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1022','Tommy Williams','male','mukerian',91749131135);
23 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1023','Kenneth Thomas','others','ambala',916127975539);
24 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1024','Jeffrey Garcia','male','banga',916127933627);
25 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1025','Barbara Carter','female','nowansheh',917448327578);
26 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1026','Henry Becker','others','lucknow',916127949100);
27 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1027','Allen Cooley','female','rishikesh',917887626537);
28 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1028','Tonya Clark','female','shimla',918700867484);
29 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1029','Ruben Allen','male','gurdaspur',917887457780);
30 Insert into Patient (PID,Name,Sex,Address,Phone_No) values ('1030','Jacob Washington','male','kausauli',916127941953);
31

```

1 row(s) inserted.

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SQL Worksheet

```

1 create table Doctor (
2   D_Name varchar2(100) not null,
3   Speciality varchar(100) not null,
4   Phys_ID varchar2(100) not null,
5   constraint pk_Doctor primary key (Phys_ID)
6 );
7
8
9

```

Table created.

Resize Code Editor

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The screenshot shows a browser window with the Oracle Live SQL - SQL Worksheet tab active. The URL in the address bar is `livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success_msg=MiBkYXRhYmFzZSBvYmpIY3RzlGhhdmUgYmVibiBkcm9wcGVkLiAgU2Vzc2lvbiBo.,aXN0b3...` . The page displays a SQL Worksheet with the following code:

```
1 create table ContractC
2 Company_ID number not null,
3 Phar_ID varchar2(100),
4 start_date date not null,
5 end_date date not null,
6 constraint fk_Manufacturer1 foreign key (Company_ID)
7 references Manufacturer(Company_ID),
8 constraint fk_Pharmacy2 foreign key (Phar_ID)
9 references Pharmacy(Phar_ID)
10 ;|
```

Below the code, the message "Table created." is displayed. On the right side of the interface, there are buttons for Feedback, Help, a user email (hrajit8ars@gmail.com), Clear, Find, Actions, Save, and Run.

Oracle Live SQL - SQL Worksheet

Untitled document - Google

(2) WhatsApp

livesql.oracle.com/apex/?p=590:1:13722911197595:1093:&success\_msg=MiBkYXRhYmFzZSBvYmpY3RzIghdmUgYmVibkcm9wcGVkLiAgU2Vzc2lvbiBo,aXN0b3... hraji8ars@gmail.com

Live SQL

SQL Worksheet

Clear Find Actions Save Run

```
1 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1015',TO_DATE('07/06/2021','dd/mm/yyyy'),TO_DATE('13/12/2024','dd/mm/yyyy'));
2 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1016',TO_DATE('27/06/2021','dd/mm/yyyy'),TO_DATE('15/05/2024','dd/mm/yyyy'));
3 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1017',TO_DATE('22/11/2021','dd/mm/yyyy'),TO_DATE('06/09/2024','dd/mm/yyyy'));
4 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1018',TO_DATE('22/02/2021','dd/mm/yyyy'),TO_DATE('16/04/2024','dd/mm/yyyy'));
5 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1019',TO_DATE('12/08/2021','dd/mm/yyyy'),TO_DATE('05/03/2024','dd/mm/yyyy'));
6 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1020',TO_DATE('11/04/2021','dd/mm/yyyy'),TO_DATE('14/01/2024','dd/mm/yyyy'));
7 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('102','1021',TO_DATE('06/05/2021','dd/mm/yyyy'),TO_DATE('13/11/2024','dd/mm/yyyy'));
8 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1015',TO_DATE('16/03/2021','dd/mm/yyyy'),TO_DATE('27/12/2024','dd/mm/yyyy'));
9 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1016',TO_DATE('22/12/2021','dd/mm/yyyy'),TO_DATE('05/07/2024','dd/mm/yyyy'));
10 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1017',TO_DATE('12/12/2021','dd/mm/yyyy'),TO_DATE('11/08/2024','dd/mm/yyyy'));
11 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1018',TO_DATE('19/12/2021','dd/mm/yyyy'),TO_DATE('10/04/2024','dd/mm/yyyy'));
12 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1019',TO_DATE('22/10/2021','dd/mm/yyyy'),TO_DATE('12/09/2024','dd/mm/yyyy'));
13 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1020',TO_DATE('12/06/2021','dd/mm/yyyy'),TO_DATE('09/05/2024','dd/mm/yyyy'));
14 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('103','1021',TO_DATE('18/11/2021','dd/mm/yyyy'),TO_DATE('08/10/2024','dd/mm/yyyy'));
15 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('104','1015',TO_DATE('06/12/2021','dd/mm/yyyy'),TO_DATE('23/10/2024','dd/mm/yyyy'));
16 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('104','1016',TO_DATE('15/05/2021','dd/mm/yyyy'),TO_DATE('23/12/2024','dd/mm/yyyy'));
17 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('104','1017',TO_DATE('25/01/2021','dd/mm/yyyy'),TO_DATE('11/11/2024','dd/mm/yyyy'));
18 INSERT INTO Contract(Company_ID,Phar_ID,start_date,end_date) values('104','1018',TO_DATE('07/05/2021','dd/mm/yyyy'),TO_DATE('06/05/2024','dd/mm/yyyy'));
19 TMRKT_TMT_ContractComments.Th_Phar.Th_start_date_and_end_date
```

1 row(s) inserted.

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Oracle Live SQL - SQL Worksheet Untitled document - Google Docs (2) WhatsApp

livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:93::&success\_msg=MiBkYXRhYmFzZSBvYmpIY3RzIGHhdUmYmVibkcw9wcGVkLiAgU2Vzc2lvbiBo,aXN0b3... Feedback Help hrj18ars@gmail.com

## Live SQL

SQL Worksheet

Actions Clear Find Save Run

```
1 create table Prescribe(
2 Phys_ID varchar2 (100) not null,
3 PID varchar2 (100) not null,
4 Name varchar2 (100) not null,
5 Date_Prescribed date not null,
6 Quantity_Prescribed number not null,
7 constraint fk_Doctor1 foreign key (Phys_ID),
8 references Doctor (Phys_ID),
9 constraint fk_Patient1 foreign key (PID)
10 references Patient (PID),
11 constraint fk_Drug2 foreign key (Name)
12 references Drug (Name)
13 );
14
```

Table created.

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The screenshot shows a browser window with the following tabs: Oracle Live SQL - SQL Worksheet, Untitled document - Google Docs, and (2) WhatsApp.

The main content area is titled "Live SQL". It contains a "SQL Worksheet" section where the following SQL code is written:

```
1 create table Make (
2 Company_ID number not null,
3 Cost_Price number not null,
4 Quantity number not null,
5 Name varchar2(100) not null,
6 constraint fk_Manufacturer foreign key (Company_ID)
7 references Manufacturer (Company_ID),
8 constraint fk_Drug Foreign key (Name)
9 references Drug (Name)
10 );
11
```

Below the worksheet, a message box displays the result: "Table created."

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Oracle Live SQL - SQL Worksheet | Untitled document - Google Docs | (2) WhatsApp

livesql.oracle.com/apex/f?p=590:1:13722911197595::NO:::&success\_msg=MiBkYXRhYmFzZSBvYmplY3RzIChhdUgYmVlbkcm9wcGVkLiAgU2Vzc2lvbiBo,aXN0b3...

Live SQL

SQL Worksheet

Clear Find Actions Save Run

```

59 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(138,89,8000,'omsca (to伐普拉')
```

59 rows inserted.

```

40 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(211,67,9436,'Tegretol (carbamazepine')');
41 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(181,142,1193,'Thorazine (chlorpromazine')');
42 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(209,115,3414,'Declomycin (demeclocycline')');
43 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(147,60,7486,'lomictal (lamotrigine')');
44 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(127,515,8732,'Lithobid (Lithium')');
45 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(143,270,5313,'Imodium (loperamide')');
46 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(168,430,4262,'Remeron (mirtazapine')');
47 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(147,87,5182,'lexapro (escitalopram')');
48 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(134,212,2807,'Effexor (venlafaxine')');
49 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(147,234,5313,' Zoloft (sertraline')');
50 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(153,53,2556,'Lexapro (citalopram')');
51 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(144,547,1481,'Wellbutrin (buproprion')');
52 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(198,186,3220,'Paxil (paroxetine')');
53 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(173,109,6535,'Savella (milnacipran')');
54 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(165,104,2465,'Prozac (fluoxetine')');
55 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(201,137,9290,'Cymbalta (duloxetine')');
56 INSERT INTO Make(Company_ID,Cost_Price,Quantity,Name) values(195,341,3022,'Luvox (fluvoxamine')');

57

```

57 rows inserted.

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## Some PL/SQL Commands for functionality:

### 1) Implicit cursor to increase selling price by 100

The screenshot shows the Oracle Live SQL interface. The SQL Worksheet contains the following PL/SQL code:

```
1 Declare
2   rows number(3);
3 Begin
4   update Sell
5   set Selling_Price=Selling_Price+100;
6   IF sql%notfound THEN
7     dbms_output.put_line('no drugs selected');
8   ELSIF sql%found THEN
9     rows:=sql%rowcount;
10    dbms_output.put_line(rows || 'drugs selected');
11  end If;
12 end;
```

The output window shows the message "Statement processed. 96drugs selected".

At the bottom, the footer reads: © 2022 Oracle - Live SQL 22.1.3. running Oracle Database 19c Enterprise Edition - 19.8.0.0.0 - Database Documentation - Ask Tom - Dev Gym. Built with ❤ using Oracle APEX - Privacy - Terms of Use.

### 2) Explicit cursor to show the doctors having speciality cardiologist

The screenshot shows the Oracle Live SQL interface. The SQL Worksheet contains the following PL/SQL code:

```
1 Declare
2   c_name Doctor.D_name%Type;
3   Cursor c is select D_name from Doctor where speciality='Cardiologist';
4 Begin
5   open c;
6   loop
7     fetch c into c_name;
8     exit when c%notfound;
9     dbms_output.put_line(c_name);
10    end loop;
11   close c;
12 end;
```

The output window shows the names of doctors with the speciality "Cardiologist": DR. D IRKIN, Dr Gardner & Partners, Dr H McKee.

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### 3) Before trigger

The screenshot shows the Oracle Live SQL interface. In the top navigation bar, it says "Oracle Live SQL - SQL Worksheet" and the URL is "https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO:::". Below the navigation is a toolbar with "Live SQL" and other icons. The main area is titled "SQL Worksheet" and contains the following PL/SQL code:

```
1  create or replace trigger t
2    before insert or delete or update on Drug
3    for each row
4    when (new.name is not NULL)
5    Declare
6      drugcount number(3);
7    Begin
8      select count(*) into drugcount from Drug;
9      dbms_output.put_line(drugcount);
10   end;
11  |
```

After running the code, the output window shows the message "Trigger created." At the bottom of the interface, there is a footer with copyright information: "© 2022 Oracle - Live SQL 22.1.3, running Oracle Database 19c Enterprise Edition - 19.8.0.0.0 - Database Documentation - Ask Tom - Dev Gym" and "Built with ❤ using Oracle APEX - Privacy - Terms of Use".

The screenshot shows the Oracle Live SQL interface. In the top navigation bar, it says "Oracle Live SQL - SQL Worksheet" and the URL is "https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO:::". Below the navigation is a toolbar with "Live SQL" and other icons. The main area is titled "SQL Worksheet" and contains the following SQL code:

```
1  l_name,Mfg_Date,Exp_Date) values('abc',TO_DATE('08/06/2021','dd/mm/yyyy'),TO_DATE('15/12/2023','dd/mm/yyyy'));
```

After running the code, the output window shows the message "1 row(s) inserted." At the bottom of the interface, there is a footer with copyright information: "© 2022 Oracle - Live SQL 22.1.3, running Oracle Database 19c Enterprise Edition - 19.8.0.0.0 - Database Documentation - Ask Tom - Dev Gym" and "Built with ❤ using Oracle APEX - Privacy - Terms of Use".

## 4)Exception

The screenshot shows a browser window for Oracle Live SQL. The URL is https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO::P1. The title bar says "Oracle Live SQL - SQL Worksheet". The main area is a "SQL Worksheet" tab. The code entered is:

```
1 DECLARE
2   t varchar(20);
3   r date;
4 BEGIN
5   SELECT PID into t FROM Patient where PID=1050;
6   select PID into r from Patient;
7   exception
8     WHEN no_data_found THEN
9       dbms_output.put_line('ERROR');
10    dbms_output.put_line('no data found');
11    WHEN value_error THEN
12      dbms_output.put_line('Error');
13      dbms_output.put_line('Change data type');
14  end;
15 
```

Below the code, the output window shows:

```
Statement processed.
ERROR
no data found
```

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## 5)Functions

The screenshot shows a browser window for Oracle Live SQL. The URL is https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO::P1. The title bar says "Oracle Live SQL - SQL Worksheet". The main area is a "SQL Worksheet" tab. The code entered is:

```
1 create or replace function total
2 return number is
3 total number(3):=0;
4 a number(3);
5 begin
6 select count(*) into total from manufacturer;
7 return total;
8 end;
9 
```

Below the code, the output window shows:

```
Function created.
```

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The screenshot shows the Oracle Live SQL interface. In the top navigation bar, it says "Oracle Live SQL - SQL Worksheet" and the URL is "https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO::RP::". Below the navigation is a toolbar with "Live SQL" and user information "sk.scomp2001@gmail.com". The main area is titled "SQL Worksheet" and contains the following PL/SQL code:

```
1 declare
2   a number(3);
3 begin
4   a:=total();
5   dbms_output.put_line(a);
6 end;
7
```

Below the code, the message "Statement processed." is displayed. At the bottom of the page, there is footer text: "© 2022 Oracle - Live SQL 22.1.3, running Oracle Database 19c Enterprise Edition - 19.8.0.0.0 - Database Documentation - Ask Tom - Dev Gym" and "Built with ❤️ using Oracle APEX - Privacy - Terms of Use".

## 6)Procedure

The screenshot shows the Oracle Live SQL interface. In the top navigation bar, it says "Oracle Live SQL - SQL Worksheet" and the URL is "https://livesql.oracle.com/apex/f?p=590:1:12298317238073::NO::RP::". Below the navigation is a toolbar with "Live SQL" and user information "sk.scomp2001@gmail.com". The main area is titled "SQL Worksheet" and contains the following PL/SQL code:

```
1 create or replace procedure profit(x in Sell.Selling_Price%type,y in Make.Cost_Price%type,z out number)
2 is
3 begin
4   z:=y-x;
5 end;
```

Below the code, the message "Procedure created." is displayed. At the bottom of the page, there is footer text: "© 2022 Oracle - Live SQL 22.1.3, running Oracle Database 19c Enterprise Edition - 19.8.0.0.0 - Database Documentation - Ask Tom - Dev Gym" and "Built with ❤️ using Oracle APEX - Privacy - Terms of Use".