Point of Sale System for Shopper Drug Marts

Application Description

The Shoppers Drug Mart Database Application is a software solution designed to streamline the operations of retail and pharmacy management. To efficiently manage product inventory, customer data, and prescription services, the Shoppers Drug Mart Database Application offers a comprehensive set of features and functionalities.

Customers can easily browse through a wide range of products from different categories such as health, beauty, and pharmacy items. They can conveniently filter products by brand, price range, and availability, and make purchases online or in-store. The application provides detailed information about each product, including specifications, pricing, availability, and any prescription requirements, allowing customers to make informed choices. Customers can also access a complete record of their past purchases, including order details, products bought, and payment history.

For employees, the Shoppers Drug Mart Database Application offers powerful tools to manage inventory, prescriptions, and customer data. Employees can track and manage their entire product inventory for their respective branches, add new products, and update existing listings. This includes detailed information about each product such as brand, stock levels, pricing, and expiration dates. Pharmacy staff can also handle prescriptions, ensuring customers receive the correct medication as prescribed by their healthcare providers. Additionally, employees can manage customer profiles, register new customers, store essential information such as contact details and loyalty card numbers, and track each customer's purchase and prescription history.

The application is designed to ensure smooth daily operations, providing essential features to optimize both customer experience and store management.

Entities and Attributes for Shoppers Drug Mart Database

Customer

CustomerID	Name	Address	Phone	Email	DateOfBirth	LoyaltyCardNumber

- CustomerID – (Primary Key, Auto-increment, NOT NULL)
- Name
- Address
- Phone
- Email
- DateOfBirth
- LoyaltyCardNumber

Products

ProductID	CategoryID	Name	Brand	Price	StockQuantity	PrescriptionRequired	ExpiryDate

- ProductID (Primary Key)
- CategoryID (Foreign Key)
- Name
- Brand
- Price
- StockQuantity
- PrescriptionRequired (Boolean)
- ExpiryDate (for perishable items)

Categories

CategoryID	Name	Description

- CategoryID (primary key)
- Name (e.g., Health, Beauty, Pharmacy)
- Description

Orders

OrderID	CustomerID	OrderDate	TotalAmount	OrderStatus

- OrderID (Primary Key)
- CustomerID (Foreign Key)
- OrderDate
- TotalAmount
- OrderStatus (Pending, Completed, Canceled)

OrderDetails

OrderDetailsID	OrderID	ProductID	Quantity	Price

- OrderDetailsID (Primary Key)
- OrderID (Foreign Key)
- ProductID (Foreign Key)
- Quantity
- Price

Payments

PaymentID	OrderID	PaymentMethod	PaymentDate	Amount

- PaymentID (Primary Key)
- OrderID (Foreign Key)
- PaymentMethod (Credit Card, Debit Card, Cash)
- PaymentDate
- Amount

Branches

BranchID	Address	Phone	ManagerID

- BranchID (Primary Key)
- Address
- Phone
- ManagerID (Foreign Key referencing Employee table)

Employees

EmployeeID	BranchID	Name	Phone	Role	HireDate

- EmployeeID (Primary Key)
- BranchID (Foreign Key)
- Name
- Phone
- Role (e.g., Pharmacist, Cashier, Manager)
- HireDate

PharmacyPrescriptions

PrescriptionID	CustomerID	ProductID	PrescribingDoctor	PrescriptionDate	DosageInstructions

- PrescriptionID (Primary Key)
- CustomerID (Foreign Key)
- ProductID (Foreign Key referencing Products)
- PrescribingDoctor
- PrescriptionDate
- DosageInstructions

Functionalities

1. Customer Registration and Authentication:
    - Customers can register, log in, and view past orders and prescriptions.

2. Product Inventory Management:
    - Employees can manage products (add/update/remove), track stock levels, and categorize items.

3. Order Placement and Tracking:
    - Customers can place orders, check stock, and receive notifications for order status changes.

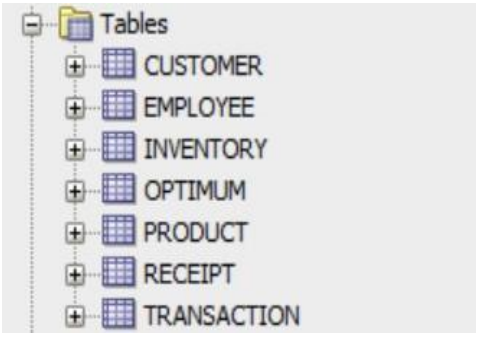
4. Payment System:
    - Supports multiple payment options (credit, debit, cash) and stores payment history.

5. Pharmacy Management:
    - Manage prescriptions, connect customers to prescribed medications, and monitor refills.

6. Branch Management:
    - Each branch tracks its product stock, employee records, and customer transactions.

Point of Sale System for Shopper Drug Marts

ER (Entity-Relationship) Model



1. Creating the Tables

```
CREATE TABLE customer(
            Customer_ID NUMBER UNIQUE,
            Optimum_ID NUMBER REFERENCES optimum(Optimum_ID),
            Name VARCHAR2(25),
            PRIMARY KEY (Customer_ID, Optimum_ID)
);
CREATE TABLE employee(
            Employee_ID NUMBER,
            Position VARCHAR2(25) NOT NULL,
            Name VARCHAR2(25) NOT NULL,
            PRIMARY KEY (Employee_ID)
);
CREATE TABLE optimum(
            Optimum_ID NUMBER,
            Total_Points NUMBER DEFAULT 0 CHECK (Total_Points >= 0),
            Name VARCHAR2(25) NOT NULL,
            PRIMARY KEY (Optimum_ID)
);
CREATE TABLE transaction(
            Transaction_ID NUMBER,
            Employee_ID NUMBER REFERENCES employee(Employee_ID),
            Total_Points NUMBER,
            Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
            Payment_Method VARCHAR2(6),
            PRIMARY KEY (Transaction_ID, Employee_ID)
);
CREATE TABLE receipt(
            Transaction_ID NUMBER REFERENCES transaction(Transaction_ID),
            Transaction_Date DATE,
            Product_List VARCHAR2(255),
            Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
            Payment_Method VARCHAR(6),
            Points_Earned NUMBER,
            PRIMARY KEY (Transaction_ID)
);
CREATE TABLE product(
            Product_ID NUMBER,
            Category VARCHAR2(25),
            Product_Name VARCHAR2(255),
            Price DECIMAL(10,2) CHECK (Price >= 0),
            Shelf_Quantity NUMBER DEFAULT 0 CHECK (Shelf_Quantity >= 0),
            PRIMARY KEY (Product_ID)
);
CREATE TABLE inventory(
            Product_ID NUMBER REFERENCES product(Product_ID),
            Category VARCHAR2(25),
            Product_Name VARCHAR2(255),
            Storage_Quantity NUMBER DEFAULT 0 CHECK (Storage_Quantity >= 0),
            PRIMARY KEY (Product_ID)
);
```

Source Code for creating tables:

```
CREATE TABLE employee(
        Employee_ID NUMBER UNIQUE,
        Position VARCHAR2(25) NOT NULL,
        Name VARCHAR2(25) NOT NULL,
        PRIMARY KEY (Employee_ID)
);
CREATE TABLE optimum(
        Optimum_ID NUMBER UNIQUE,
        Total_Points NUMBER DEFAULT 0 CHECK (Total_Points >= 0),
        Name VARCHAR2(25) NOT NULL,
        PRIMARY KEY (Optimum_ID)
);
CREATE TABLE product(
        Product_ID NUMBER UNIQUE,
        Category VARCHAR2(25),
        Product_Name VARCHAR2(255),
        Price DECIMAL(10,2) CHECK (Price >= 0),
        Shelf_Quantity NUMBER DEFAULT 0 CHECK (Shelf_Quantity >= 0),
        PRIMARY KEY (Product_ID)
);
CREATE TABLE customer(
        Customer_ID NUMBER UNIQUE,
        Optimum_ID NUMBER REFERENCES optimum(Optimum_ID),
        Name VARCHAR2(25),
        PRIMARY KEY (Customer_ID, Optimum_ID)
);
CREATE TABLE transaction(
        Transaction_ID NUMBER UNIQUE,
        Employee_ID NUMBER REFERENCES employee(Employee_ID),
        Total_Points NUMBER,
        Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
        Payment_Method VARCHAR2(6),
        PRIMARY KEY (Transaction_ID, Employee_ID)
);
CREATE TABLE receipt(
        Transaction_ID NUMBER REFERENCES transaction(Transaction_ID),
        Transaction_Date DATE,
        Product_List VARCHAR2(255),
        Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
        Payment_Method VARCHAR(6),
        Points_Earned NUMBER,
        PRIMARY KEY (Transaction_ID)
);
```

```
CREATE TABLE inventory(
        Product_ID NUMBER REFERENCES product(Product_ID),
        Category VARCHAR2(25),
        Product_Name VARCHAR2(255),
        Storage_Quantity NUMBER DEFAULT 0 CHECK (Storage_Quantity >= 0),
        PRIMARY KEY (Product_ID));
```

Source code for populating tables

```
INSERT INTO product VALUES(1, 'Fruit', 'Apple', 0.99, 10);
INSERT INTO product VALUES(2, 'Beverage', 'Orange Juice', 2.99, 20);
INSERT INTO product VALUES(3, 'Snack', 'Chips', 1.99, 15);
INSERT INTO product VALUES(4, 'Dairy', 'Milk', 2.49, 25);

INSERT INTO inventory VALUES(1, 'Fruit', 'Apple',  50);
INSERT INTO inventory VALUES(2, 'Beverage', 'Orange Juice', 50);
INSERT INTO inventory VALUES(3, 'Snack', 'Chips',  50);
INSERT INTO inventory VALUES(4, 'Dairy', 'Milk', 50);

INSERT INTO optimum VALUES(501103322, 0, 'Simon Lin');
INSERT INTO optimum VALUES(501056670, 0, 'Dylan Ha');
INSERT INTO optimum VALUES(501061594, 0, 'Enes Polat');

INSERT INTO customer VALUES(1, 501103322, 'Simon Lin');
INSERT INTO customer VALUES(2, 501056670, 'Dylan Ha');
INSERT INTO customer VALUES(3, 501061594, 'Enes Polat');

INSERT INTO employee VALUES(3, 'Cashier', 'Ski Betty');
INSERT INTO employee VALUES(2, 'Manager', 'Hawk T. Ooah');
INSERT INTO employee VALUES(1, 'Owner', 'Hugh Mungus');

INSERT INTO transaction VALUES(1, 3, 500, 23.59, 'Cash', CURRENT_DATE);
INSERT INTO receipt VALUES(1, 3, 500, 23.59, 'Cash', CURRENT_DATE);
```

2. Populating the Tables - Products & Inventory

```
INSERT INTO product VALUES(1, 'Fruit', 'Apple', 0.99, 10);
INSERT INTO product VALUES(2, 'Beverage', 'Orange Juice', 2.99, 20);
INSERT INTO product VALUES(3, 'Snack', 'Chips', 1.99, 15);
INSERT INTO product VALUES(4, 'Dairy', 'Milk', 2.49, 25);
```

PRODUCT | test.sql

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Sort.. | Filter:

	PRODUCT_ID	CATEGORY	PRODUCT_NAME	PRICE	SHELF_QUANTITY
1	1	Fruit	Apple	0.99	10
2	2	Beverage	Orange Juice	2.99	20
3	3	Snack	Chips	1.99	15
4	4	Dairy	Milk	2.49	25

```
INSERT INTO inventory VALUES(1, 'Fruit', 'Apple',  50);
INSERT INTO inventory VALUES(2, 'Beverage', 'Orange Juice',  50);
INSERT INTO inventory VALUES(3, 'Snack', 'Chips',  50);
INSERT INTO inventory VALUES(4, 'Dairy', 'Milk', 50);
```

INVENTORY | test.sql

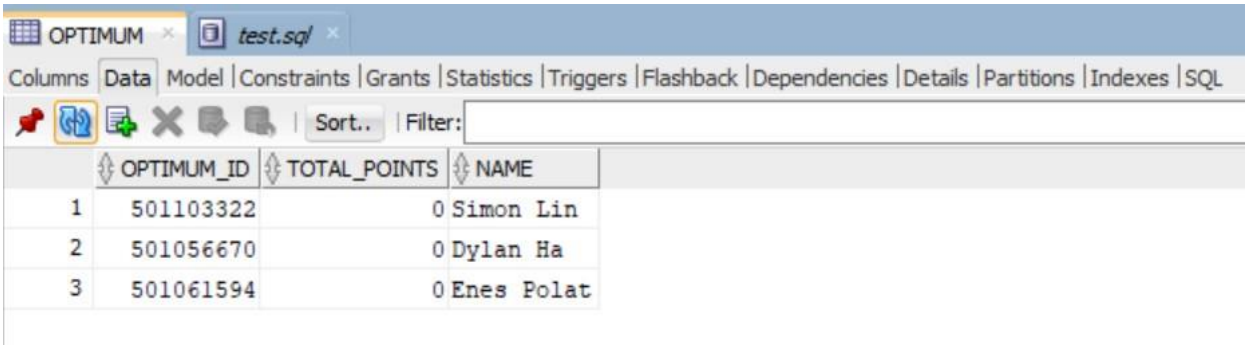
Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Sort.. | Filter:

	PRODUCT_ID	CATEGORY	PRODUCT_NAME	STORAGE_QUANTITY
1	1	Fruit	Apple	50
2	2	Beverage	Orange Juice	50
3	3	Snack	Chips	50
4	4	Dairy	Milk	50

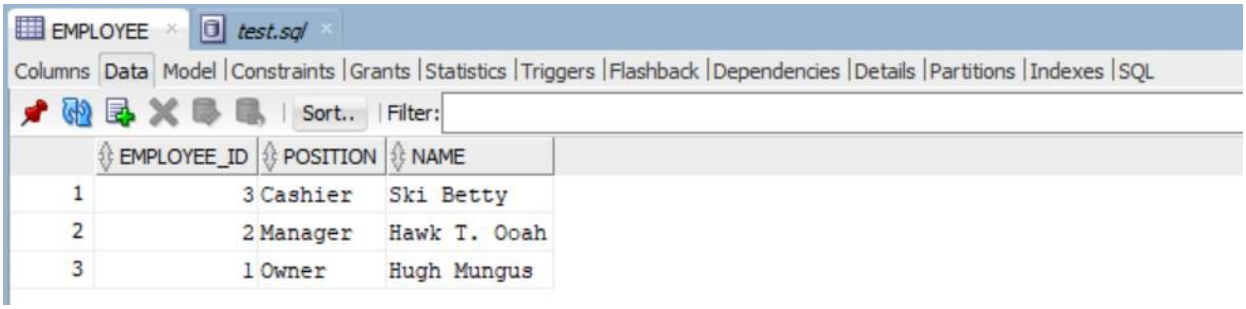
2.1 Populating the Tables - Customers, Optimum & Employees

```
INSERT INTO optimum VALUES(501103322, 0, 'Simon Lin');
INSERT INTO optimum VALUES(501056670, 0, 'Dylan Ha');
INSERT INTO optimum VALUES(501061594, 0, 'Enes Polat');
```



	OPTIMUM_ID	TOTAL_POINTS	NAME
1	501103322	0	Simon Lin
2	501056670	0	Dylan Ha
3	501061594	0	Enes Polat

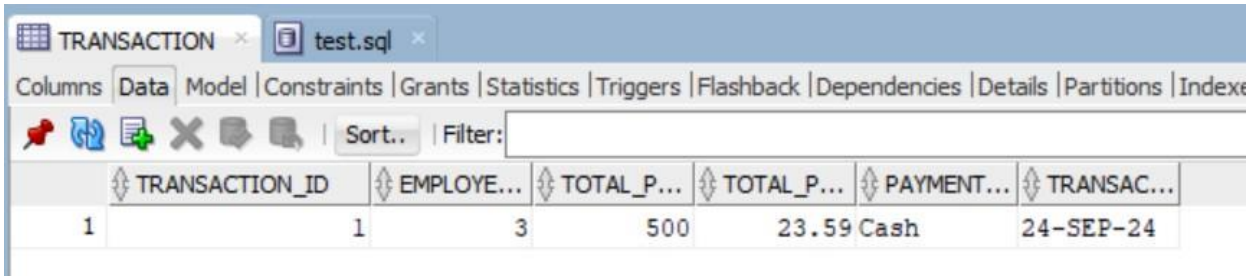
```
INSERT INTO employee VALUES(3, 'Cashier', 'Ski Betty');
INSERT INTO employee VALUES(2, 'Manager', 'Hawk T. Ooah');
INSERT INTO employee VALUES(1, 'Owner', 'Hugh Mungus');
```



	EMPLOYEE_ID	POSITION	NAME
1	3	Cashier	Ski Betty
2	2	Manager	Hawk T. Ooah
3	1	Owner	Hugh Mungus

2.2 Populating the Tables - Transactions and Receipts

```
INSERT INTO transaction VALUES(1, 3, 500, 23.59, 'Cash', CURRENT_DATE);
```



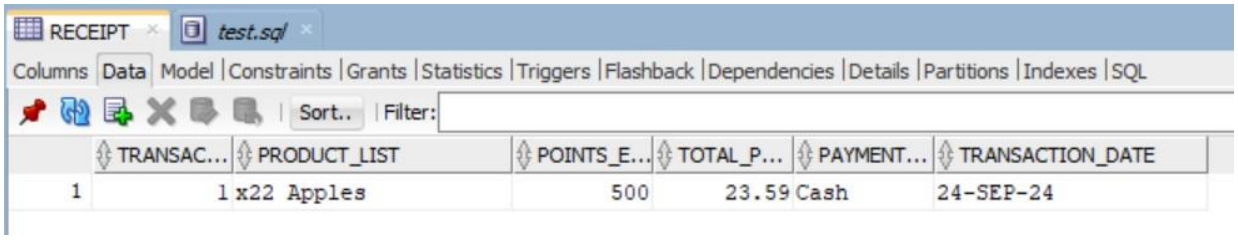
TRANSACTION | test.sql

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexe

Sort.. | Filter:

	TRANSACTION_ID	EMPLOYE...	TOTAL_P...	TOTAL_P...	PAYMENT...	TRANSAC...
1	1	3	500	23.59	Cash	24-SEP-24

```
INSERT INTO receipt VALUES(1,'x22 Apples', 500, 23.59, 'Cash', CURRENT_DATE);
```



RECEIPT | test.sql

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Sort.. | Filter:

	TRANSAC...	PRODUCT_LIST	POINTS_E...	TOTAL_P...	PAYMENT...	TRANSACTION_DATE
1	1	x22 Apples	500	23.59	Cash	24-SEP-24

Point of Sale System for Shopper Drug Marts

Designing Views/ Simple Quarries

4. Simple Queries

Customer:

Query to list all Customers names and Optimum IDs

```
SELECT name ||  '''s Optimum ID is: ' || optimum_id  AS "All Customer Optimum IDs"
FROM customer;
```

```
All Customer Optimum IDs
-----------------------------------------
Simon Lin's Optimum ID is: 501103322
Dylan Ha's Optimum ID is: 501056670
Enes Polat's Optimum ID is: 501061594
```

Employee:

Query to list all employees names and their job positions

```
SELECT name, 'Works as a ' || position || ' for Shoppers Drug Mart' AS "Job Description"
FROM employee;
```

```
NAME                    Job Description
----------------------- ---------------------------------------------------------------
Ski Betty               Works as a Cashier for Shoppers Drug Mart
Hawk T. Ooah            Works as a Manager for Shoppers Drug Mart
Hugh Mungus             Works as a Owner for Shoppers Drug Mart
```

Product:

Query to list all product names ascended by their prices with ORDER BY.

```
SELECT SUBSTR(product_name, 1, 30) AS "Products ascending by price", price
FROM product
ORDER BY price;
```

```
Products ascending by price         PRICE
------------------------------ ----------
Apple                                 .99
Chips                                1.99
Milk                                 2.49
Orange Juice                         2.99
```

Optimum:
Query to list all people who have a total number of points between 10000 and 20000

```
SELECT optimum_id, name || ' has ' || total_points || ' total points'  AS "Points"
FROM optimum
WHERE total_points BETWEEN 10000 AND 20000;
```

```
OPTIMUM_ID Points
---------- ----------------------------------------
 501056670 Dylan Ha has 15000 total points
```

Receipt:
Query to list the sum of all total sales grouped by each payment method.

```
SELECT payment_method AS "Payment_Method", SUM(total_price) AS "Total Sales"
FROM receipt
GROUP BY payment_method;
```

```
Payment_Method   Total Sales
---------------- -----------
Debit                   4.98
Cash                   47.18
Credit                 11.94
```

Transaction:
Query to list the sum of all total sales completed by each employee ID

```
SELECT employee_id AS "Employee ID", COUNT(total_price) AS "Total Sales"
FROM transaction
GROUP BY employee_id;
```

```
Employee ID Total Sales
----------- -----------
          1           2
          2           2
          3           3
```

Inventory:
Query to list all products that are out of stock (zero in storage quantity)

```
SELECT SUBSTR(product_name, 1, 30) AS "Out of Stock:"
FROM inventory
WHERE storage_quantity = 0

Out of Stock:
------------------------------
Potato
```

Source Code:

```
SELECT name ||  "'s Optimum ID is: ' || optimum_id  AS "All Customer Optimum IDs"
FROM customer;

SELECT name, 'Works as a ' || position || ' for Shoppers Drug Mart' AS "Job Description"
FROM employee;

SELECT SUBSTR(product_name, 1, 30) AS "Products ascending by price", price
FROM product
ORDER BY price;

SELECT optimum_id, name || ' has ' || total_points || ' total points' AS "Points"
FROM optimum
WHERE total_points BETWEEN 10000 AND 20000;

SELECT payment_method AS "Payment_Method", SUM(total_price) AS "Total Sales"
FROM receipt
GROUP BY payment_method;

SELECT employee_id AS "Employee ID", COUNT(total_price) AS "Total Sales"
FROM transaction
GROUP BY employee_id;

SELECT SUBSTR(product_name, 1, 30) AS "Out of Stock:"
FROM inventory
WHERE storage_quantity = 0
```

Point of Sale System for Shopper Drug Marts

Advanced Queries by Unix shell Implementation

Interesting Advanced Queries:

Union:

Description: Returns a list of customers and their corresponding optimum ids with points ranging from 8000 to 20000.
Combines two tables using UNION, will delete the duplicate values

```
SELECT name || '''s Optimum ID is: ' || optimum_id AS "Total points and Optimum IDs"
FROM customer
UNION
SELECT name || ' has ' || total_points || ' total points' AS "Total points and Optimum IDs"
FROM optimum
WHERE total_points BETWEEN 8000 AND 20000;
```

```
Total points and Optimum IDs
----------------------------------------
Dylan Ha has 13000 total points
Dylan Ha's Optimum ID is: 501056670
Enes Polat has 8001 total points
Enes Polat's Optimum ID is: 501061594
Simon Lin has 10000 total points
Simon Lin's Optimum ID is: 501103322

6 rows selected.
```

Exists:

Description: Retrieves the Employee_ID, Employee_Name, and Position of employees who have processed transactions resulting in receipts with points over 300. It uses the EXISTS operator to check if there are any related transactions for each employee, ensuring they are only included if at least one corresponding receipt meets the specified points condition. (select 1 = checks if one row exists that matches))

```
SELECT e.Employee_ID, e.Name AS Employee_Name, e.Position
FROM employee e
WHERE EXISTS (
    SELECT 1
    FROM transaction t
    WHERE t.Employee_ID = e.Employee_ID
    AND EXISTS (
        SELECT 1
        FROM receipt r
        WHERE r.Transaction_ID = t.Transaction_ID
        AND r.Points_Earned > 300
    )
);
```

```
EMPLOYEE_ID EMPLOYEE_NAME           POSITION
----------- ----------------------- -----------------------
          3 Ski Betty               Cashier
```

Count & Having:
Description: Returns a table of employees that have completed at least two sales, averaging the price of their total sales price.
Tables are grouped by employee names.

```
SELECT e.Name AS Employee_Name,
       COUNT(t.Transaction_ID) AS Transaction_Count,
       AVG(t.Total_Price) AS Average_Total_Price
FROM employee e
JOIN transaction t ON e.Employee_ID = t.Employee_ID
GROUP BY e.Name
HAVING COUNT(t.Transaction_ID) > 2;
```

EMPLOYEE_NAME	TRANSACTION_COUNT	AVERAGE_TOTAL_PRICE
Ski Betty	3	28.53
Hugh Mungus	3	30.0766667

Count:
Description: Returns the number of customers who have a total points balance greater than 8,000 and calculates the average total points for those customers.

```
SELECT COUNT(c.Customer_ID) AS Customer_Count,
       AVG(o.Total_Points) AS Average_Total_Points
FROM customer c
JOIN optimum o ON c.Optimum_ID = o.Optimum_ID
WHERE o.Total_Points > 8000;
```

CUSTOMER_COUNT	AVERAGE_TOTAL_POINTS
3	10333.6667

NOT EXISTS: Returns the number of products that haven't been sold yet. Uses a NOT EXISTS clause to check receipts for products.

```
SELECT p.Product_ID, SUBSTR(p.Product_Name, 1, 20) AS "PRODUCT_NAME"
FROM product p
WHERE NOT EXISTS (
    SELECT 1
    FROM receipt r
    WHERE r.Product_List LIKE '%' || p.Product_Name || '%'
);
```

PRODUCT_ID	PRODUCT_NAME
6	AirPods Pro
7	Cheese

Source Code for Unix Implementation - Included in the Screenshots

Drop Tables:

```
#!/bin/sh
#export LD_LIBRARY_PATH=/usr/lib/oracle/12.1/client64/lib
sqlplus64 "dbha/12016670@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=oracle.scs.ryerson.ca)(Port=1521))(CONNECT_DATA=(SID=orcl)))" <<EOF
DROP TABLE employee CASCADE CONSTRAINTS;
DROP TABLE customer CASCADE CONSTRAINTS;
DROP TABLE inventory CASCADE CONSTRAINTS;
DROP TABLE optimum CASCADE CONSTRAINTS;
DROP TABLE product CASCADE CONSTRAINTS;
DROP TABLE receipt CASCADE CONSTRAINTS;
DROP TABLE transaction CASCADE CONSTRAINTS;
exit;
EOF
```

Create Tables:

```
#!/bin/sh
#export LD_LIBRARY_PATH=/usr/lib/oracle/12.1/client64/lib
sqlplus64 "dbha/12016670@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=oracle.scs.ryerson.ca)(Port=1521))(CONNECT_DATA=(SID=orcl)))" <<EOF

CREATE TABLE optimum(
            Optimum_ID NUMBER PRIMARY KEY,
            Total_Points NUMBER DEFAULT 0 CHECK (Total_Points >= 0),
            Name VARCHAR2(25) NOT NULL
);
CREATE TABLE customer(
            Customer_ID NUMBER UNIQUE,
            Optimum_ID NUMBER REFERENCES optimum(Optimum_ID),
            Name VARCHAR2(25),
            PRIMARY KEY (Customer_ID, Optimum_ID)
);
CREATE TABLE employee(
            Employee_ID NUMBER PRIMARY KEY,
            Position VARCHAR2(25) NOT NULL,
            Name VARCHAR2(25) NOT NULL
);
CREATE TABLE product(
            Product_ID NUMBER PRIMARY KEY,
            Category VARCHAR2(25),
            Product_Name VARCHAR2(255),
            Price DECIMAL(10,2) CHECK (Price >= 0),
            Shelf_Quantity NUMBER DEFAULT 0 CHECK (Shelf_Quantity >= 0)
);

CREATE TABLE transaction(
            Transaction_ID NUMBER UNIQUE,
            Employee_ID NUMBER REFERENCES employee(Employee_ID),
            Total_Points NUMBER,
            Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
            Payment_Method VARCHAR2(6),
            Transaction_Date DATE,
            PRIMARY KEY (Transaction_ID, Employee_ID)
);

CREATE TABLE receipt(
    Transaction_ID NUMBER,
    Product_List VARCHAR2(255),
    Points_Earned NUMBER,
    Total_Price DECIMAL(10,2) CHECK (Total_Price >= 0),
    Payment_Method VARCHAR(6),
    Transaction_Date DATE
);
```

Populate Tables:

```
#!/bin/sh
#export LD_LIBRARY_PATH=/usr/lib/oracle/12.1/client64/lib
sqlplus64 "dbha/12016670@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=oracle.scs.ryerson.ca)(Port=1521))(CONNECT_DATA=

INSERT INTO product VALUES(1, 'Fruit', 'Apple', 0.99, 10);
INSERT INTO product VALUES(2, 'Beverage', 'Orange Juice', 2.99, 20);
INSERT INTO product VALUES(3, 'Snack', 'Chips', 1.99, 15);
INSERT INTO product VALUES(4, 'Dairy', 'Milk', 2.49, 25);
INSERT INTO product VALUES(5, 'Vegetable', 'Potato', 1, 20);
INSERT INTO product VALUES(6, 'Technology', 'AirPods Pro', 199.99, 10);
INSERT INTO product VALUES(7, 'Dairy', 'Cheese', 8.99, 50);

INSERT INTO inventory VALUES(1, 'Fruit', 'Apple',  50);
INSERT INTO inventory VALUES(2, 'Beverage', 'Orange Juice',  50);
INSERT INTO inventory VALUES(3, 'Snack', 'Chips',  50);
INSERT INTO inventory VALUES(4, 'Dairy', 'Milk', 50);

INSERT INTO optimum VALUES(501103322, 10000, 'Simon Lin');
INSERT INTO optimum VALUES(501056670, 13000, 'Dylan Ha');
INSERT INTO optimum VALUES(501061594, 8001, 'Enes Polat');

INSERT INTO customer VALUES(1, 501103322, 'Simon Lin');
INSERT INTO customer VALUES(2, 501056670, 'Dylan Ha');
INSERT INTO customer VALUES(3, 501061594, 'Enes Polat');

INSERT INTO employee VALUES(3, 'Cashier', 'Ski Betty');
INSERT INTO employee VALUES(2, 'Manager', 'Hawk T. Ooah');
INSERT INTO employee VALUES(1, 'Owner', 'Hugh Mungus');

INSERT INTO transaction VALUES(1, 3, 500, 23.59, 'Cash', CURRENT_DATE);
INSERT INTO transaction VALUES(2, 2, 300, 20, 'Debit', CURRENT_DATE);
INSERT INTO transaction VALUES(3, 3, 600, 60, 'Credit', CURRENT_DATE);
INSERT INTO transaction VALUES(4, 1, 100, 20.23, 'Credit', CURRENT_DATE);
INSERT INTO transaction VALUES(5, 3, 200, 2, 'Debit', CURRENT_DATE);
INSERT INTO transaction VALUES(6, 2, 200, 50, 'Cash', CURRENT_DATE);
INSERT INTO transaction VALUES(7, 1, 300, 20, 'Cash', CURRENT_DATE);
INSERT INTO transaction VALUES(8, 1, 300, 50, 'Cash', CURRENT_DATE);

INSERT INTO receipt VALUES(1, '22 Apples', 500, 23.59, 'Cash', CURRENT_DATE);
INSERT INTO receipt VALUES(2, '10 Chips', 300, 20.00, 'Debit', CURRENT_DATE);
INSERT INTO receipt VALUES(3, '15 Apples', 600, 60.00, 'Credit', CURRENT_DATE);
INSERT INTO receipt VALUES(4, '8 Milk', 100, 20.23, 'Credit', CURRENT_DATE);
INSERT INTO receipt VALUES(5, '2 Potatoes', 200, 2.00, 'Debit', CURRENT_DATE);
INSERT INTO receipt VALUES(6, '16 Orange Juice', 200, 50.00, 'Cash', CURRENT_DATE);
INSERT INTO receipt VALUES(7, '20 Apples', 300, 20.00, 'Cash', CURRENT_DATE);
INSERT INTO receipt VALUES(8, '50 Apples', 300, 50.00, 'Cash', CURRENT_DATE);

exit;
EOF
```

```
SQL> SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL> SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL>
1 row created.

SQL> SQL>
1 row created.
```

Query Tables:

```
#!/bin/sh
#export LD_LIBRARY_PATH=/usr/lib/oracle/12.1/client64/lib
sqlplus64 "s1lin/09183322@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=oracle.scs.ryerson.ca)(Port=1521))(CONNECT_DATA=(SID=orcl)))" <<EOF

SELECT name || '''s Optimum ID is: ' || optimum_id AS "Total points and Optimum IDs"
FROM customer
UNION
SELECT name || ' has ' || total_points || ' total points' AS "Total points and Optimum IDs"
FROM optimum
WHERE total_points BETWEEN 8000 AND 20000;


SELECT e.Employee_ID, e.Name AS Employee_Name, e.Position
FROM employee e
WHERE EXISTS (
    SELECT 1
    FROM transaction t
    WHERE t.Employee_ID = e.Employee_ID
    AND EXISTS (
        SELECT 1
        FROM receipt r
        WHERE r.Transaction_ID = t.Transaction_ID
        AND r.Points_Earned > 300
    )
);


SELECT e.Name AS Employee_Name,
       COUNT(t.Transaction_ID) AS Transaction_Count,
       AVG(t.Total_Price) AS Average_Total_Price
FROM employee e
JOIN transaction t ON e.Employee_ID = t.Employee_ID
GROUP BY e.Name
HAVING COUNT(t.Transaction_ID) > 2;

SELECT COUNT(c.Customer_ID) AS Customer_Count,
       AVG(o.Total_Points) AS Average_Total_Points
FROM customer c
JOIN optimum o ON c.Optimum_ID = o.Optimum_ID
WHERE o.Total_Points > 8000;

SELECT p.Product_ID, SUBSTR(p.Product_Name, 1, 30) AS "PRODUCT_NAME"
FROM product p
WHERE NOT EXISTS (
    SELECT 1
    FROM receipt r
    WHERE r.Product_List LIKE '%' || p.Product_Name || '%'
);
read -p "Press any key to continue:"

exit;
EOF
```

Menu:

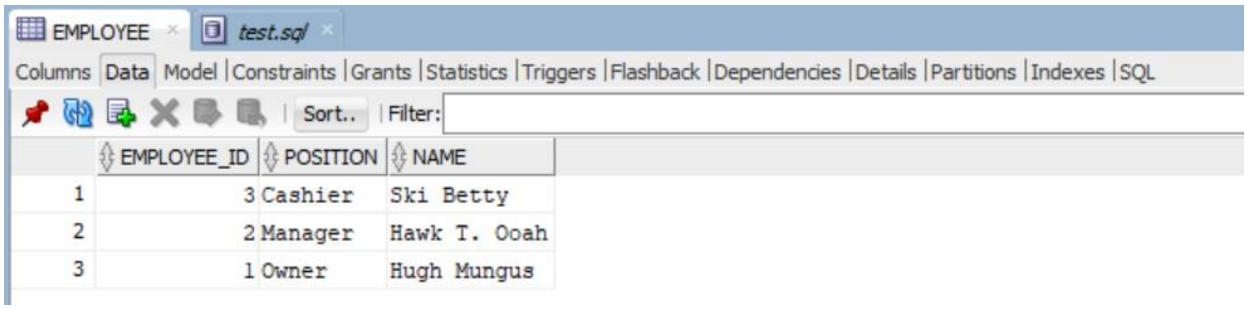
```
#!/bin/sh
MainMenu() {
    while [ "$CHOICE" != "START" ]
    do
        clear
        echo "=============================================================================="
        echo "|                  POS SHOPPERS SYSTEM - CPS 510                             |"
        echo "|              Main Menu - Select Desired Operation(s):                      |"
        echo "|           <CTRL-Z Anytime to Enter Interactive CMD Prompt>                 |"
        echo "------------------------------------------------------------------------------"
        echo " $IS_SELECTEDM M) View Manual"
        echo " "
        echo " $IS_SELECTED1 1) Drop Tables"
        echo " $IS_SELECTED2 2) Create Tables"
        echo " $IS_SELECTED3 3) Populate Tables"
        echo " $IS_SELECTED4 4) Query Tables"
        echo " "
        echo " $IS_SELECTEDX X) Force/Stop/Kill Oracle DB"
        echo " "
        echo " $IS_SELECTEDE E) End/Exit"
        echo "Choose: "
        read CHOICE
        if [ "$CHOICE" == "0" ]; then
            echo "Nothing Here"
            read -p "Press any key to continue..."
        elif [ "$CHOICE" == "1" ]; then
            bash drop_tables.sh
            read -p "Press any key to continue..."
        elif [ "$CHOICE" == "2" ]; then
            bash create_tables.sh
            read -p "Press any key to continue..."
        elif [ "$CHOICE" == "3" ]; then
            bash populate_tables.sh
            read -p "Press any key to continue..."
        elif [ "$CHOICE" == "4" ]; then
            bash queries.sh
            read -p "Press any key to continue..."
        elif [ "$CHOICE" = "E" ]; then
            exit
        elif [ "$CHOICE" = "X" ]; then
            exit
        fi
    done
}
ProgramStart() {
    StartMessage
    while [ 1 ]
    do
        MainMenu
    done
}

ProgramStart
```

Point of Sale System for Shopper Drug Marts

Normalization of the database/ Functional Dependencies

Functional Dependencies:

Employee Table:

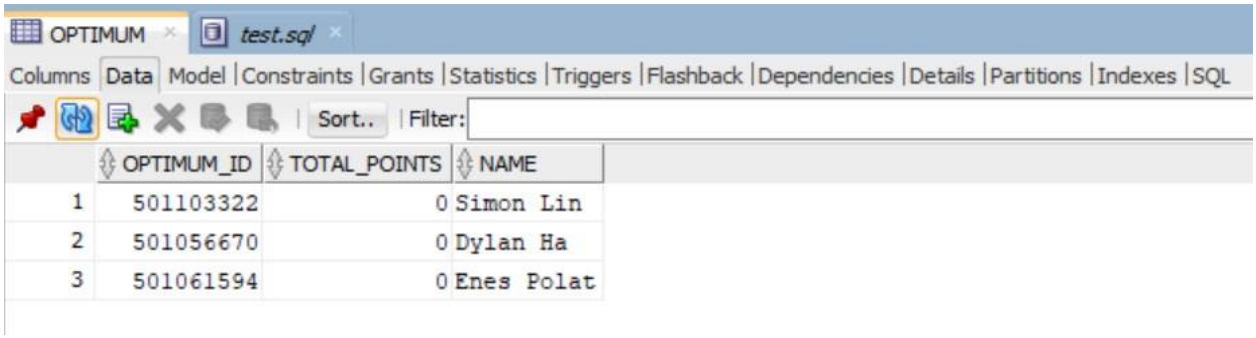


	EMPLOYEE_ID	POSITION	NAME
1	3	Cashier	Ski Betty
2	2	Manager	Hawk T. Ooah
3	1	Owner	Hugh Mungus

{Employee_ID} → Position

{Employee_ID} → Name

Optimum Table:

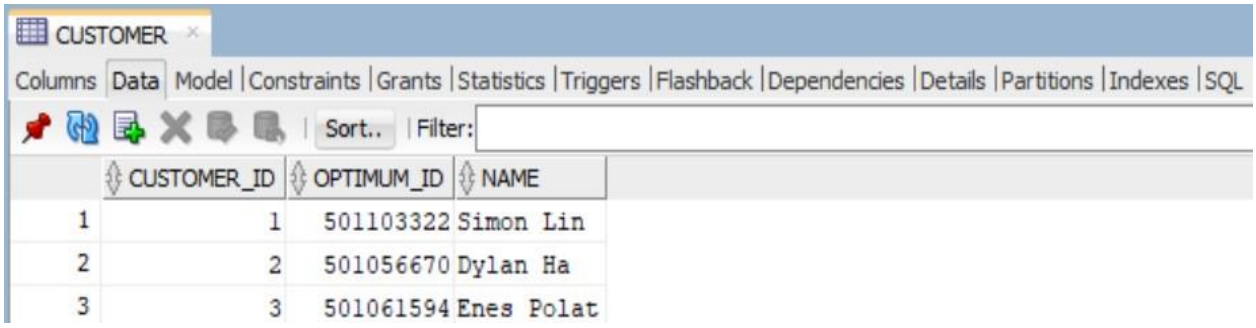


	OPTIMUM_ID	TOTAL_POINTS	NAME
1	501103322	0	Simon Lin
2	501056670	0	Dylan Ha
3	501061594	0	Enes Polat

{Employee_ID} → Total_Points

{Employee_ID} → Name

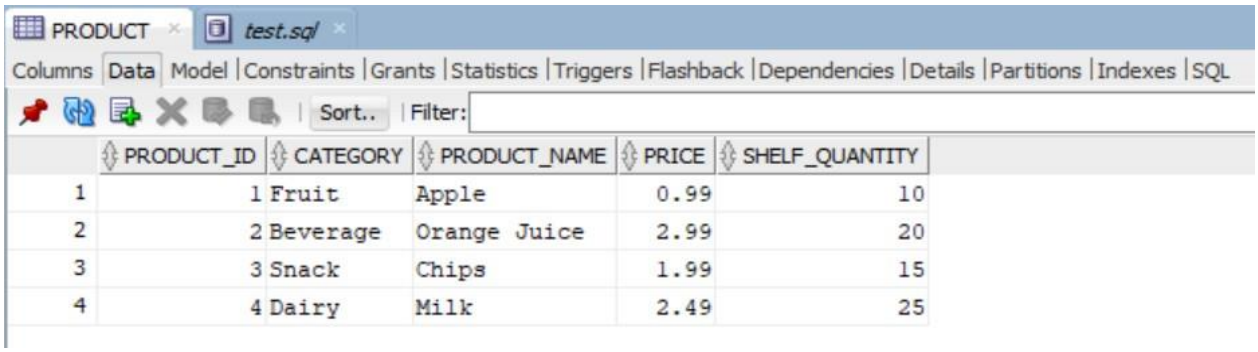
Customer Table:



	CUSTOMER_ID	OPTIMUM_ID	NAME
1	1	501103322	Simon Lin
2	2	501056670	Dylan Ha
3	3	501061594	Enes Polat

{Customer_ID, Optimum_ID} → Name

Product Table:


PRODUCT | test.sql

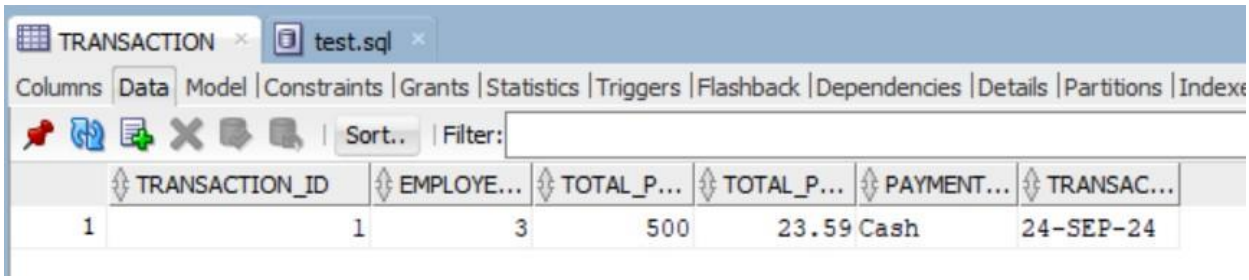
Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Sort.. | Filter:

	PRODUCT_ID	CATEGORY	PRODUCT_NAME	PRICE	SHELF_QUANTITY
1	1	Fruit	Apple	0.99	10
2	2	Beverage	Orange Juice	2.99	20
3	3	Snack	Chips	1.99	15
4	4	Dairy	Milk	2.49	25

{Product_ID} → Category
{Product_ID} → Product_Name
{Product_ID} → Price
{Product_ID} → Shelf_Quantity

Transaction Table:


TRANSACTION | test.sql

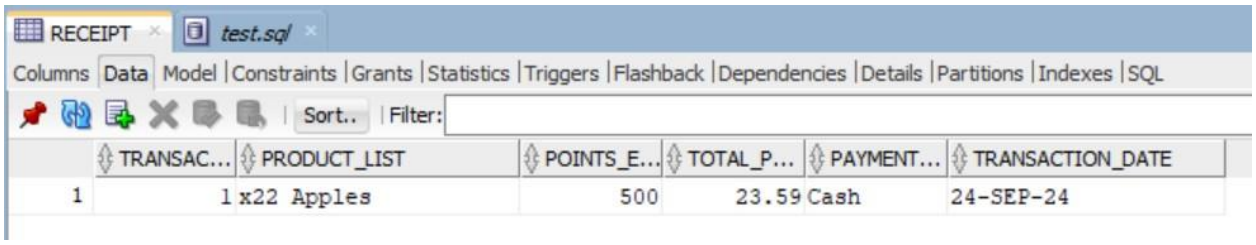
Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexe

Sort.. | Filter:

	TRANSACTION_ID	EMPLOYE...	TOTAL_P...	TOTAL_P...	PAYMENT...	TRANSAC...
1	1	3	500	23.59	Cash	24-SEP-24

{Transaction_ID, Employee_ID} → Points_Earned
{Transaction_ID, Employee_ID} → Total_Price
{Transaction_ID, Employee_ID} → Payment_Method
{Transaction_ID, Employee_ID} → Transaction_Date

Receipt Table:


RECEIPT | test.sql

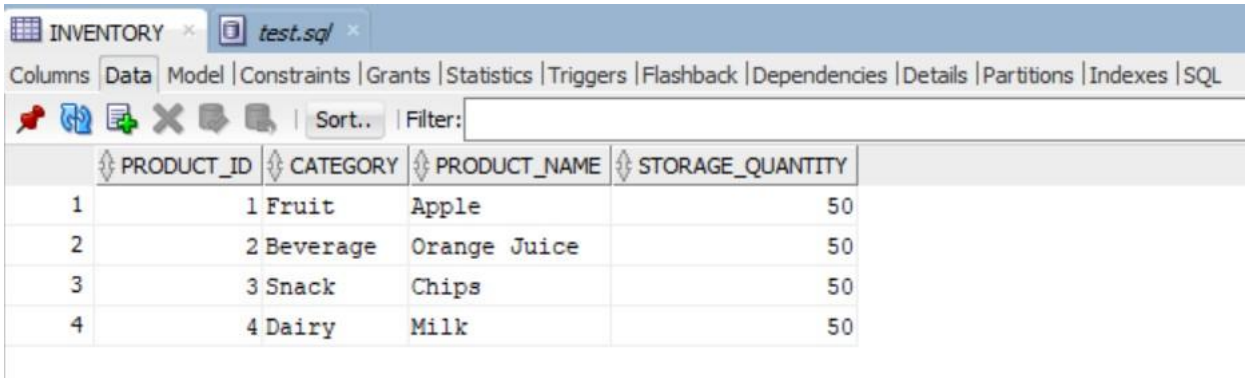
Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Sort.. | Filter:

	TRANSAC...	PRODUCT_LIST	POINTS_E...	TOTAL_P...	PAYMENT...	TRANSACTION_DATE
1	1	x22 Apples	500	23.59	Cash	24-SEP-24

{Transaction_ID} → Product_List
{Transaction_ID} → Points_Earned
{Transaction_ID} → Total_Price
{Transaction_ID} → Payment_Method
{Transaction_ID} → Transaction_Date

Inventory Table:



	PRODUCT_ID	CATEGORY	PRODUCT_NAME	STORAGE_QUANTITY
1	1	Fruit	Apple	50
2	2	Beverage	Orange Juice	50
3	3	Snack	Chips	50
4	4	Dairy	Milk	50

{Product_ID} → Category
{Product_ID} → Product_Name
{Product_ID} → Storage_Quantity