Phase7

Toronto Metropolitan University

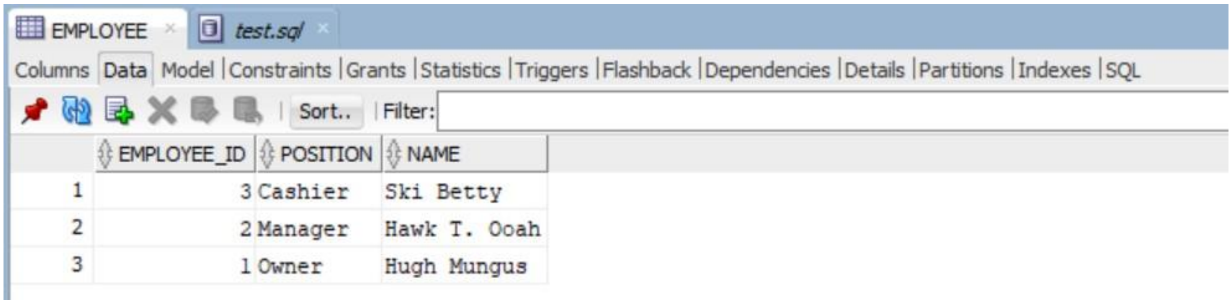
Simon Lin (501103322),
Dylan Ha (501056670),
Enes Polat (501061594)

CPS510 - Database Systems

Point of Sale System for Shopper Drug Marts

Database Normalization:

Employee (Employee_ID#, Position, Name)



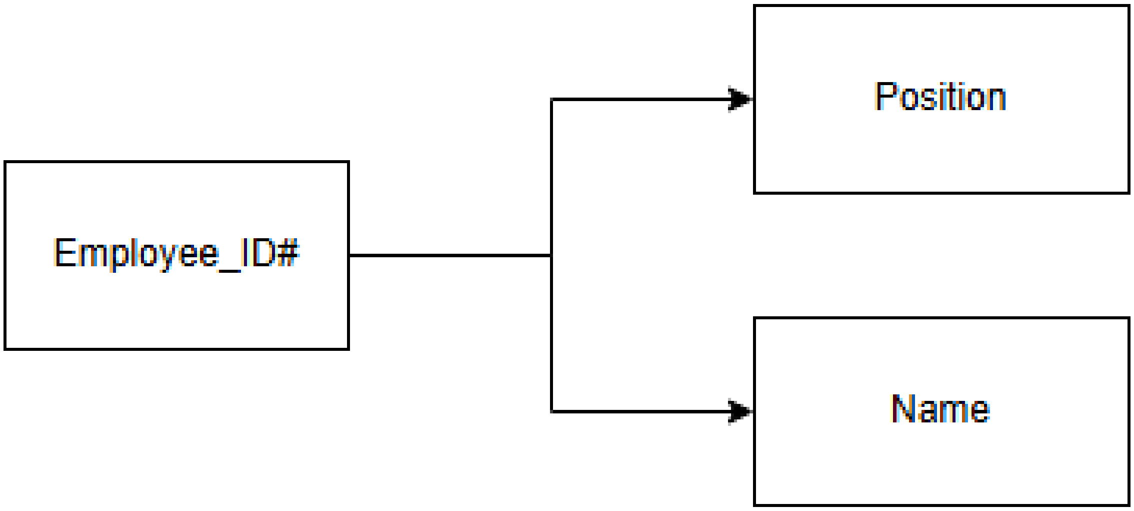
	EMPLOYEE_ID	POSITION	NAME
1	3	Cashier	Ski Betty
2	2	Manager	Hawk T. Ooah
3	1	Owner	Hugh Mungus

Functional Dependencies:	{Employee_ID} → Position {Employee_ID} → Name

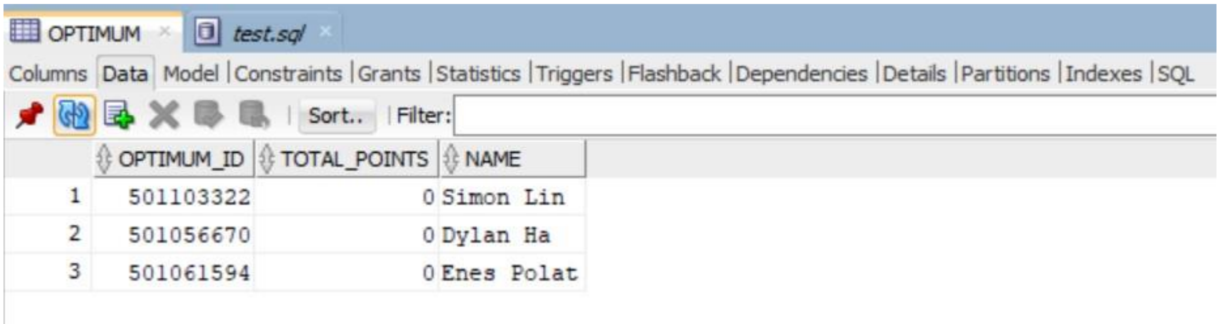
The Employee table relation is in **1NF**, all values contained in the table are atomic.

The Employee table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Employee table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.



Optimum(Optimum_ID#, Total_Points, Name)

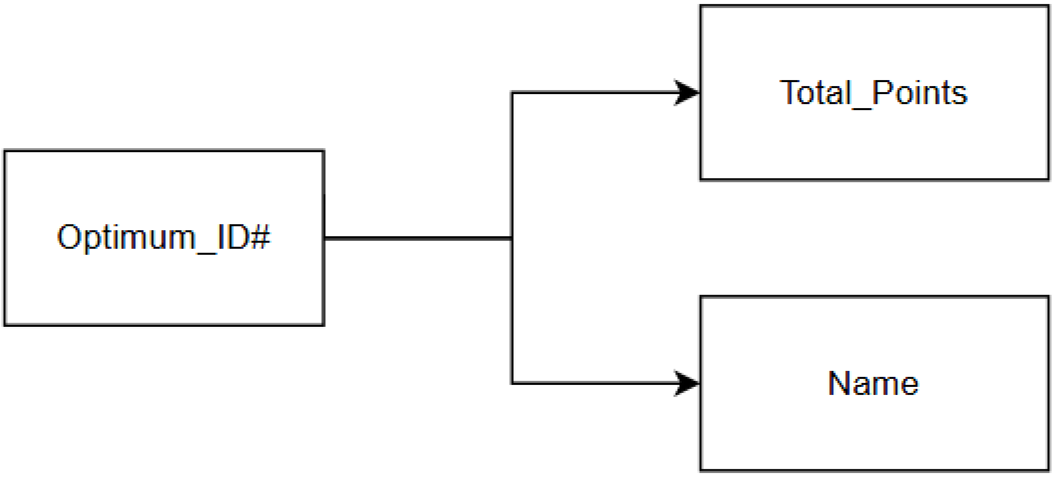


	OPTIMUM_ID	TOTAL_POINTS	NAME
1	501103322	0	Simon Lin
2	501056670	0	Dylan Ha
3	501061594	0	Enes Polat

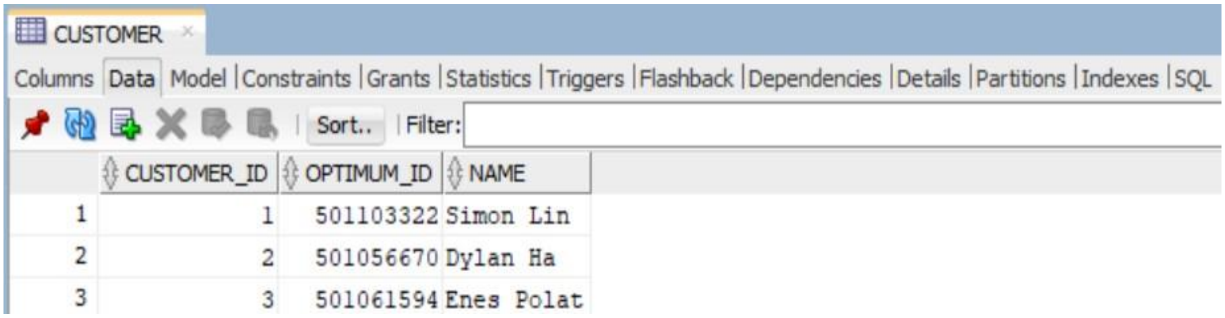
Functional Dependencies:

{Optimum_ID} → Total_Points
{Optimum_ID} → Name

The Optimum table relation is in **1NF**, all values contained in the table are atomic.
The Optimum table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.
The Optimum table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.



Customer(Employee_ID#, Position, Name)



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

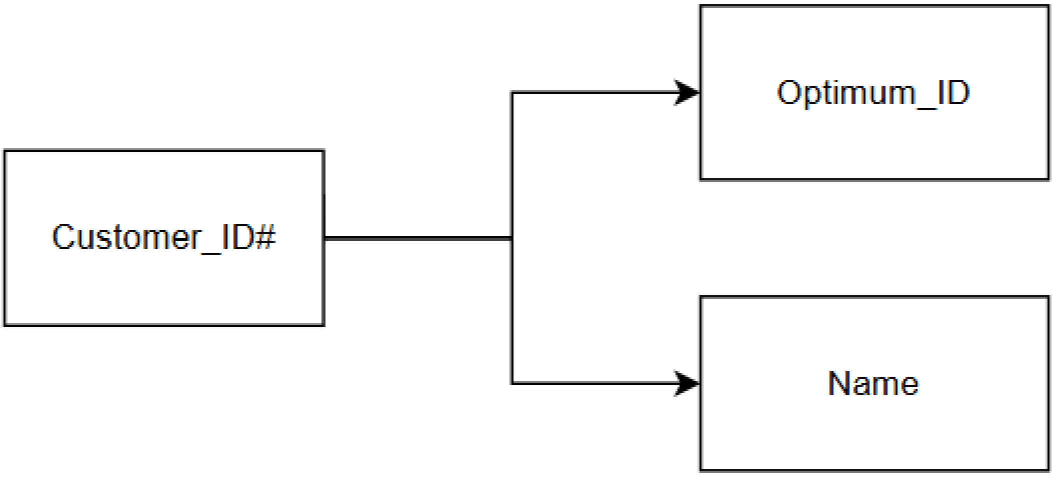
Functional Dependencies:	{Customer_ID} → Optimum_ID {Customer_ID} → Name

The Customer table relation is in **1NF**, all values contained in the table are atomic.

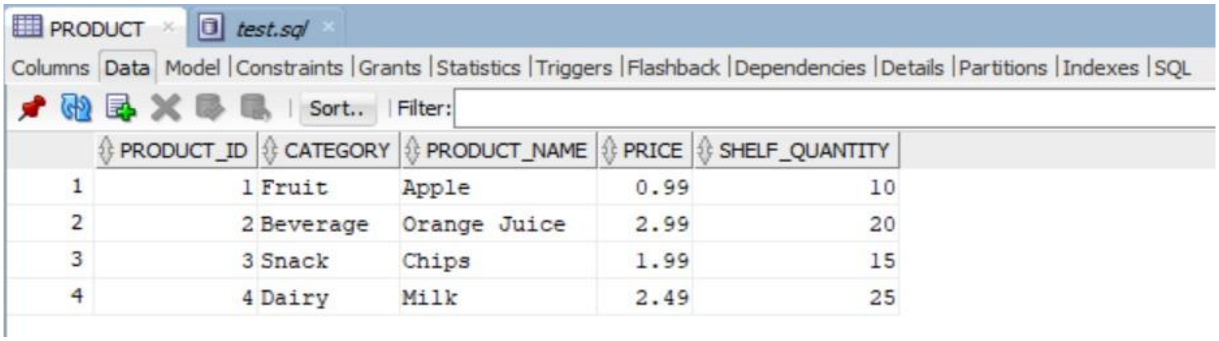
The Customer table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Customer table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.

Note: Name in customer and employee table refers to different people, therefore the relationship is 3NF, i.e a Customer cannot be an Employee, vice versa.



Product(Product_ID#, Category, Product_Name, Price, Shelf_Quantity)



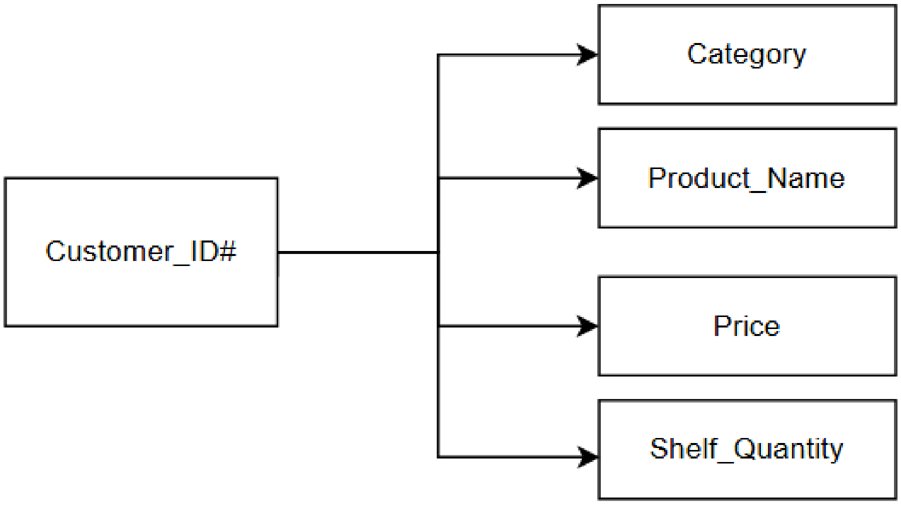
	PRODUCT_ID	CATEGORY	PRODUCT_NAME	PRICE	SHELF_QUANTITY
1	1	Fruit	Apple	0.99	10
2	2	Beverage	Orange Juice	2.99	20
3	3	Snack	Chips	1.99	15
4	4	Dairy	Milk	2.49	25

Functional Dependencies:	{Product_ID} → Category {Product_ID} → Product_Name {Product_ID} → Price {Product_ID} → Shelf_Quantity

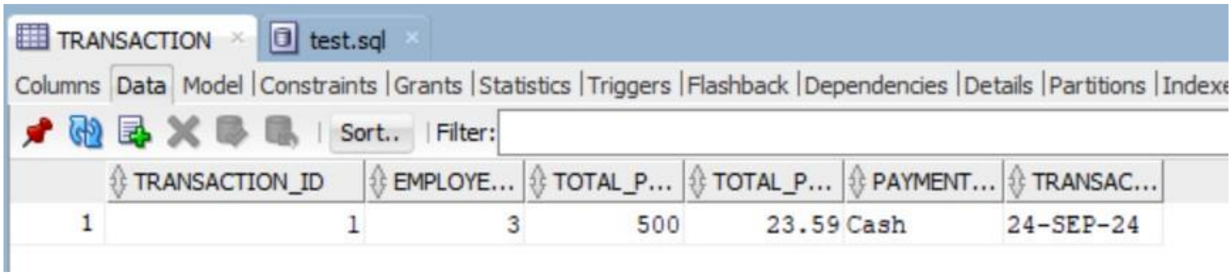
The Product table relation is in **1NF**, all values contained in the table are atomic.

The Product table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Product table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.



Transaction(Transaction_ID#, Employee_ID#, Total_PointsSpent, Total_Price, Payment_Method, Transaction_Date)



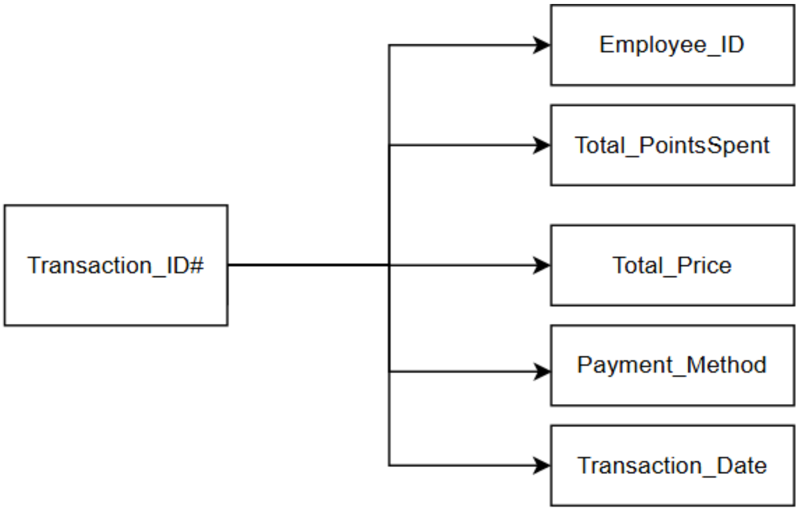
	TRANSACTION_ID	EMPLOYE...	TOTAL_P...	TOTAL_P...	PAYMENT...	TRANSAC...
1	1	3	500	23.59	Cash	24-SEP-24

Functional Dependencies:	{Transaction_ID} → Employee_ID {Transaction_ID} → Total_PointsSpent {Transaction_ID} → Total_Price {Transaction_ID} → Payment_Method {Transaction_ID} → Transaction_Date

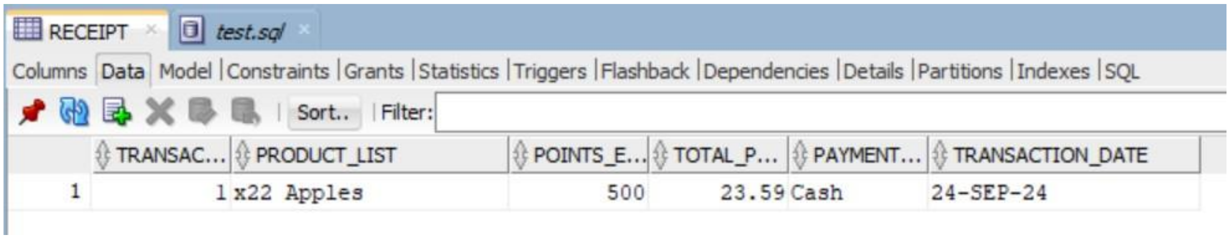
The Transaction table relation is in **1NF**, all values contained in the table are atomic.

The Transaction table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Transaction table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.



Receipt(Transaction_ID#, Product_List, Points_Earned, Total_Price, Payment_Method, Transaction_Date)



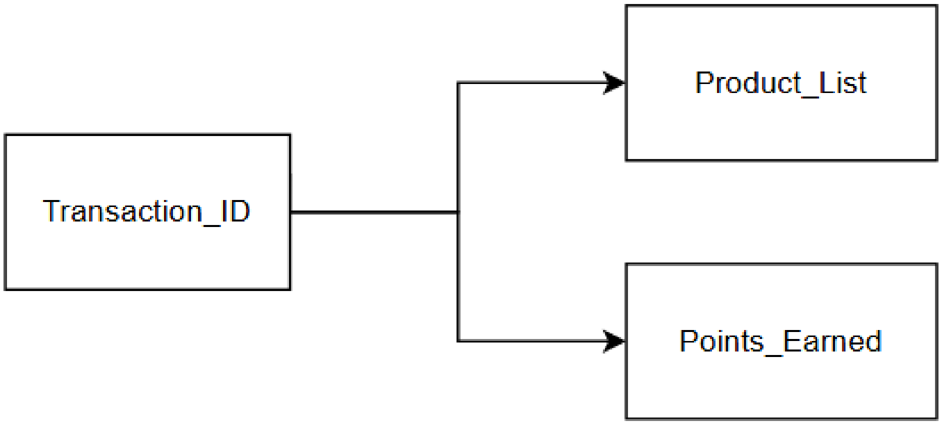
	TRANSAC...	PRODUCT_LIST	POINTS_E...	TOTAL_P...	PAYMENT...	TRANSACTION_DATE
1	1	x22 Apples	500	23.59	Cash	24-SEP-24

Functional Dependencies:	{Transaction_ID} → Product_List {Transaction_ID} → Points_Earned {Transaction_ID} → Total_Price {Transaction_ID} → Payment_Method {Transaction_ID} → Transaction_Date
Function Dependencies Removed Redundancy:	{Transaction_ID} → Product_List {Transaction_ID} → Points_Earned

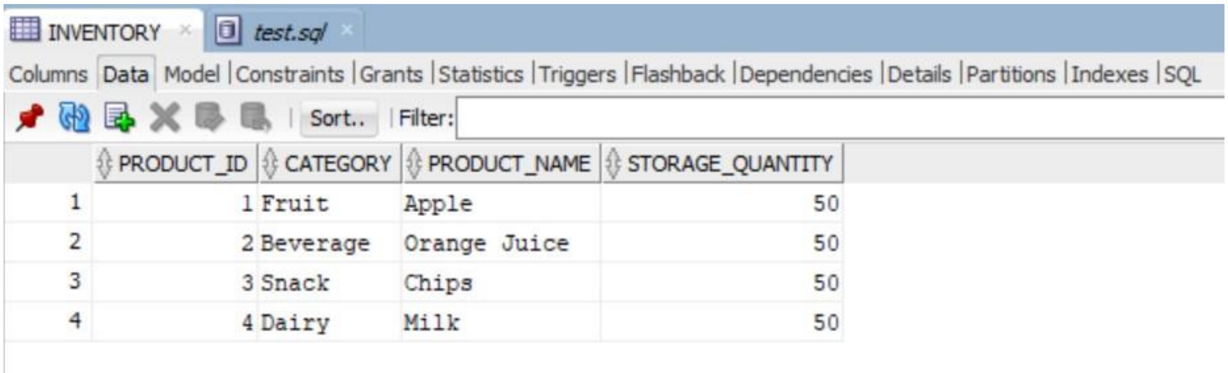
The Receipt table relation is in **1NF**, all values contained in the table are atomic.

The Receipt table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Receipt table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.



Inventory(Product_ID#, Category, Product_Name, Storage_Quantity)



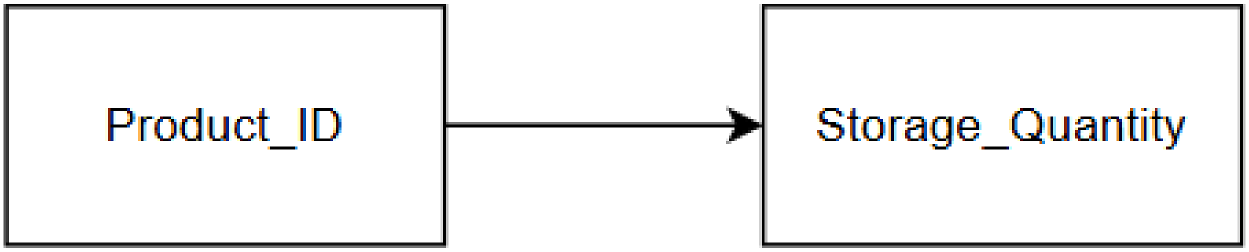
	PRODUCT_ID	CATEGORY	PRODUCT_NAME	STORAGE_QUANTITY
1	1	Fruit	Apple	50
2	2	Beverage	Orange Juice	50
3	3	Snack	Chips	50
4	4	Dairy	Milk	50

Functional Dependencies:	{Product_ID} → Category {Product_ID} → Product_Name {Product_ID} → Storage_Quantity
Function Dependencies Removed Redundancy:	{Product_ID} → Storage_Quantity

The Inventory table relation is in **1NF**, all values contained in the table are atomic.

The Inventory table relation is in **2NF**, all non-key values contained in the table are fully functionally dependent on the primary key, there are no partial dependencies.

The Inventory table relation is in **3NF**, all non-key values contained in the table are non-transitive and dependent on only the primary key.


Product_ID
Storage_Quantity