CPS 510 - Assignment 6

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Address Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	ADDRESS_ID	NUMBER	No	(null)	1	(null)
2	COUNTRY	VARCHAR2(50 BYTE)	No	(null)	2	(null)
3	PROVINCE	VARCHAR2(50 BYTE)	No	(null)	3	(null)
4	CITY	VARCHAR2(50 BYTE)	No	(null)	4	(null)
5	STREET_ADDRESS	VARCHAR2(100 BYTE)	No	(null)	5	(null)
6	POSTAL_CODE	VARCHAR2(10 BYTE)	No	(null)	6	(null)

Customer Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	CUSTOMERID	NUMBER	No	(null)	1	(null)
2	NAME	VARCHAR2(50 BYTE)	Yes	(null)	2	(null)
3	AGE	NUMBER	Yes	(null)	3	(null)
4	ADDRESS	VARCHAR2(100 BYTE)	Yes	(null)	4	(null)
5	BALANCE	NUMBER(10,2)	Yes	(null)	5	(null)

Driver Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	DRIVERID	NUMBER	No	(null)	1	(null)
2	NAME	VARCHAR2(50 BYTE)	Yes	(null)	2	(null)
3	LICENSENO	VARCHAR2(30 BYTE)	Yes	(null)	3	(null)
4	RATING	NUMBER(2,1)	Yes	(null)	4	(null)

Location Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	LOCATIONID	NUMBER	No	(null)	1	(null)
2	ADDRESS	VARCHAR2(100 BYTE)	Yes	(null)	2	(null)
3	LATITUDE	NUMBER(8,5)	Yes	(null)	3	(null)
4	LONGITUDE	NUMBER(8,5)	Yes	(null)	4	(null)

Merchant Table

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	MERCHANTID	NUMBER	No	(null)	1	(null)
2	NAME	VARCHAR2(50 BYTE)	Yes	(null)	2	(null)
3	LOCATION	VARCHAR2(100 BYTE)	Yes	(null)	3	(null)

Payment Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	PAYMENTID	NUMBER	No	(null)	1	(null)
2	ORDERID	NUMBER	Yes	(null)	2	(null)
3	AMOUNT	NUMBER(10,2)	Yes	(null)	3	(null)
4	METHOD	VARCHAR2(20 BYTE)	Yes	(null)	4	(null)
5	STATUS	VARCHAR2(20 BYTE)	Yes	(null)	5	(null)

Ratings Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	RATINGID	NUMBER	No	(null)	1	(null)
2	ORDERID	NUMBER	Yes	(null)	2	(null)
3	CUSTOMERRATING	NUMBER(2,1)	Yes	(null)	3	(null)
4	DRIVERRATING	NUMBER(2,1)	Yes	(null)	4	(null)
5	COMMENTS	VARCHAR2(200 BYTE)	Yes	(null)	5	(null)

Rating System Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	RATING_ID	NUMBER	No	(null)	1	(null)
2	ORDER_ID	NUMBER	No	(null)	2	(null)
3	CUSTOMER_ID	NUMBER	No	(null)	3	(null)
4	DRIVER_ID	NUMBER	No	(null)	4	(null)
5	CUSTOMER_STARS	NUMBER(1,0)	Yes	(null)	5	(null)
6	CUSTOMER_FEEDBACK	VARCHAR2(255 BYTE)	Yes	(null)	6	(null)
7	DRIVER_STARS	NUMBER(1,0)	Yes	(null)	7	(null)
8	DRIVER_FEEDBACK	VARCHAR2(255 BYTE)	Yes	(null)	8	(null)

Service_Order Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	ORDER_ID	NUMBER	No	(null)	1	(null)
2	CUSTOMER_ID	NUMBER	No	(null)	2	(null)
3	DRIVER_ID	NUMBER	No	(null)	3	(null)
4	MERCHANT_ID	NUMBER	Yes	(null)	4	(null)
5	STATUS	VARCHAR2(20 BYTE)	Yes	'Pending'	5	(null)
6	ORDER_TIME	TIMESTAMP(6)	Yes	CURRENT_TIMESTAMP	6	(null)
7	FARE	NUMBER(10,2)	Yes	(null)	7	(null)
8	PICKUP_LOCATION_ID	NUMBER	No	(null)	8	(null)
9	DROPOFF_LOCATION_ID	NUMBER	No	(null)	9	(null)

Vehicle Table:

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	VEHICLEID	NUMBER	No	(null)	1	(null)
2	DRIVERID	NUMBER	Yes	(null)	2	(null)
3	MAKE	VARCHAR2(30 BYTE)	Yes	(null)	3	(null)
4	MODEL	VARCHAR2(30 BYTE)	Yes	(null)	4	(null)
5	LICENSEPLATE	VARCHAR2(15 BYTE)	Yes	(null)	5	(null)

Functional Dependencies

ADDRESS:
{Address_ID} → Country, Province, City, Street_Address, Postal_Code

CUSTOMER:
{CustomerID} → Name, Age, Address, Balance

DRIVER:
{DriverID} → Name, LicenseNo, Rating

VEHICLE:
{VehicleID} → DriverID, Make, Model, LicensePlate

LOCATION:
{LocationID} → Address, Latitude, Longitude

MERCHANT:
{MerchantID} → Name, Location

PAYMENT:
{PaymentID} → OrderID, Amount, Method, Status

RATING:
{RatingID} → OrderID, CustomerRating, DriverRating, Comments

SERVICE_ORDER:
{OrderID} → CustomerID, DriverID, MerchantID, PickupLocationID, DropoffLocationID, Fare, Status, OrderType, OrderTime

Explanation

In this database, each table has a primary key (PK) that uniquely identifies every record. The concept of a functional dependency (FD) means that the primary key *functionally determines* all the non-key attributes within the same table.
This ensures that for every unique primary-key value, there is exactly one corresponding set of non-key attribute values.

For example:

- In the Customer table, the CustomerID uniquely determines the customer's Name, Age, Address, and Balance. No two customers share the same ID, and knowing the CustomerID allows the system to retrieve all that customer's information.

- In the Driver table, the DriverID determines the Name, LicenseNo, and Rating. This guarantees that each driver's data is stored once and referenced consistently across related tables.

- The Vehicle table links to the driver through DriverID, so VehicleID determines which driver the vehicle belongs to, as well as its make, model, and license plate.

- In the Service_Order table, the OrderID determines all details of that specific order, including which customer, driver, and merchant are involved, pickup and drop-off locations, fare, order status, and time. This single identifier ties together every element of a transaction.

These dependencies prove that each non-key attribute relies *only* on its table's primary key and not on any other non-key field. This eliminates redundancy, avoids update or deletion anomalies, and preserves data integrity. In summary, the primary key determines all non-key attributes in every table. This structure ensures that each table stores one type of information in the most efficient way possible, forming a strong foundation for the normalization and optimization steps that follow in Assignments 7 and 8.