

NORMALIZATION

1. Delivery-Order

<u>WorkerSSN</u>	<u>Order_ID</u>	Order_PickupTS	Order_DeliverTS
Varchar(11)	Varchar	Varchar (20)	Varchar (20)

- Table is already in 1NF
- Table is already in 2NF as there is only one PK and 2NF states: Non prime attribute should be fully functionally dependent on all the PK or none
- 3NF: No transitive dependency. Non prime attribute is not dependent on another non prime attribute.
- BCNF: OrderId is a candidate key so it is in BCNF.

Order_ID \rightarrow {Worker_SSN, Order_Pickup_TS, Order_Delivery_TS}

2. Delivery-Mealkit

<u>Mealkit_Id</u>	Worker_SSN
Varchar (20)	Varchar (11)

- Table is completely normalized.
- WorkerSSN is not the Primary key here because something like this could happen where we have a delivery worker deliver multiple meal kits:

Mealkit Id	WorkerSSN
1	100200
2	100201
3	100200

- WorkerSSN is repeating

3. Warehouse-Delivery Vehicle

<u>Vehicle_Id</u>	<u>Warehouse_Id</u>	Distance_Covered_per_hour
Varchar (20)	Varchar (20)	float

- Table is already normalized.

4. Delivery-Worker

<u>Worker_SSN</u>	Warehouse_ID	Licence_no	Vehicle_ID	DOB
Varchar (11)	Varchar (20)	Varchar (20)	Varchar (20)	Varchar (20)

- 2 NF:

<u>Worker_SSN</u>	Warehouse_ID	DOB
Varchar (11)	Varchar (20)	Varchar (20)

<u>Worker_SSN</u>	Licence_No	Vehicle_ID
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Varchar (11)	Varchar (20)	Varchar (20)
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- DOB is a non prime attribute and is dependent on the subset of candidate key(Worker_SSN, Licence_No, Vehicle_ID)

5. Warehouse Worker

<u>Worker SSN</u>	Warehouse_ID	Worker_department
Varchar (11)	Varchar (20)	Varchar (20)

- Table is in 1NF
- Table is in 2NF
- Table is in 3NF
- Table is in BCNF

6. Warehouse

<u>Warehouse_ID</u>	Warehouse_Location	Zip_Code
Varchar (20)	Varchar (20)	INT

Format for Warehouse_Location is <Street number, street address>

Breaking the table to BCNF

- Table is in 1NF
- Table is in 2NF
- Table is in 3NF

<u>Warehouse_ID</u>	Warehouse_Location
Varchar (20)	Varchar (20)

<u>Warehouse_Location</u>	Zip Code
Varchar (20)	INT

7. MealKit

<u>Mealkit_ID</u>	Vendor_ID	Warehouse_ID	MealKit	Cuisine_Type	Meal_Kit_Desc
Varchar (20)	Varchar (20)	Varchar (20)	Varchar (20)	Varchar (20)	Varchar (50)

- Table is in 1NF
- Table is in 2NF
- Table is in 3NF

Cuisine_Type and Mealkit description could have been broken.
Meal_Kit_Description could have the same descriptions.

Frame this description uniquely

8. Vendor

<u>Vendor_ID</u>	Vendor_Location
Varchar (20)	Varchar (20)

Normalized

9. Vendor-Warehouse

<u>Vendor_ID</u>	<u>Warehouse_ID</u>
Varchar (20)	Varchar (20)

Normalized

10. Orders

Order_timestamp	Order_id	<u>Mealkid_id</u>	Customer_id
varchar(20)	Varchar (20)	Varchar (20)	Varchar (20)

CustomerID is not a primary key
Table is in 1NF, 2NF, 3NF

BCNF:

<u>Order_ID</u>	Customer_ID	Order_Timestamp
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Varchar (20)	Varchar (20)	Varchar (20)
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<u>Mealkit_ID</u>	Order_ID
Varchar (20)	Varchar (20)

11. Customer

<u>Customer_ID</u>	Name	DOB	Gender	Email	Address	Occupation	Subscription_ID
Varchar (20)	Varchar (20)	Varchar (20)	CHAR	Email	Varchar (30)	Varchar (20)	Varchar (20)

Table is in 1NF

2NF:

<u>Customer_ID</u>	Email	Subscription_ID
Varchar (20)	Varchar (30)	Varchar (20)

<u>Customer_ID</u>	Name	DOB	Gender	Address	Occupation
Varchar (20)	Varchar (20)	Varchar (20)	CHAR	Varchar (30)	Varchar (20)

Table is in 3NF

Table is in BCNF

12. Customer-Phone no

<u>Customer_ID</u>	<u>Phone no</u>
Varchar (20)	int

Only Phone_no is the primary key here.

Table is in 1NF

Table is in 2NF

Table is in 3NF

Table is in BCNF

13. Customer-Order

<u>Customer_ID</u>	<u>Order_ID</u>
Varchar (20)	INT

Order_ID is the primary key/Candidate key

Table is in 1NF

Table is in 2NF

Table is in 3NF

Table is in BCNF

14. Subscription

<u>Subscription_ID</u>	Customer_ID	Subscription start_Date	Subscription end_Date
Varchar (20)	Varchar (20)	Varchar (20)	Varchar (20)

Table is in 1 NF

2NF

<u>Subscription_ID</u>	Customer_ID
Varchar (20)	Varchar (20)

3NF and BCNF:

<u>Subscription_ID</u>	Subscription start_Date	Subscription end_Date
Varchar (20)	Varchar (20)	Varchar (20)

Table is in 3NF

Table is in BCNF

15. Subscription-mealkit

<u>Subscription_ID</u>	<u>Mealkit_ID</u>
Varchar (20)	Varchar (20)

Mealkit_ID is the primary key/Candidate key

Table is in 1NF

Table is in 2NF
Table is in 3NF
Table is in BCNF