Customer

Password

Mob Num

User\_id

Cash-on-Delivery

Credit/Debit

Payment Method

Pay Id

User\_Name

Email

Review Id

Comment

Item Description

Item Name

Item id

Quantity

Track Num

Order id

Order Details

Address

DOB

Email

Mob Num

Cus\_Name

Cus\_id

Profile

Create

Write

Payment

Make

Review

Has

Item

Has

Order

Place

1NF (First Normal Form)

The tables in the image are already in 1NF. A table is in 1NF if it follows these rules:

Each cell contains a single value.

There are no repeating groups of columns.

The tables in the image follow these rules. For instance, the “Customer” table doesn’t have a column that contains multiple addresses for a single customer. There’s a separate table, “Customer Address,” to store addresses.

2NF (Second Normal Form)

The tables are also in 2NF. A table is in 2NF if it meets the requirements of 1NF, and all non-key attributes are fully dependent on the primary key.

In the image, all the non-key attributes in each table are fully dependent on the primary key. For instance, in the “Customer” table, attributes like “name,” “address,” and “phone number” are all dependent on the “Cus\_id,” which is the primary key.

3NF (Third Normal Form)

The tables are not in 3NF. A table is in 3NF if it meets the requirements of 2NF and there are no transitive dependencies. A transitive dependency is when a non-key attribute is dependent on another non-key attribute, which is in turn dependent on the primary key.

For instance, in the “Order” table, “order details” is dependent on “Cus\_id,” but “Cus\_id” is also dependent on “Cus-Name” in the “Customer Address” table. This creates a transitive dependency.

Here’s how we can normalize the schema to achieve 3NF:

Remove the “Cus-Name” attribute from the “Customer Address” table. This attribute is not required to determine the address of a customer since the “Customer Address” table is already linked to the “Customer” table via the “Cus\_id” foreign key.

Create a new table, “Order Items,” to link orders with items. This table would have two foreign keys: “Order\_id” referencing the “Order” table and “Item\_id” referencing the “Item” table. We can include the “Order item” attribute in this new table.

**Order items.**

|  |  |  |
| --- | --- | --- |
| Order Id | Item Id | Order item |