

Supermarket Management System

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Responsibilities



- Aditya Vikram : Formulated first normalized solution.
- Rishab Jain : Choose the optimal schema.
- Yash Raj : Design user interface.
- Harshita Hiremath : formulated second normalized solution.

Changes Specified in Reviews



Membership table can maintain history of points added or redeemed

Drop branch table

Drop Discount table



Drop Job Designation Table

Staff Id is introduced in staff entity

Establish relation between staff and order

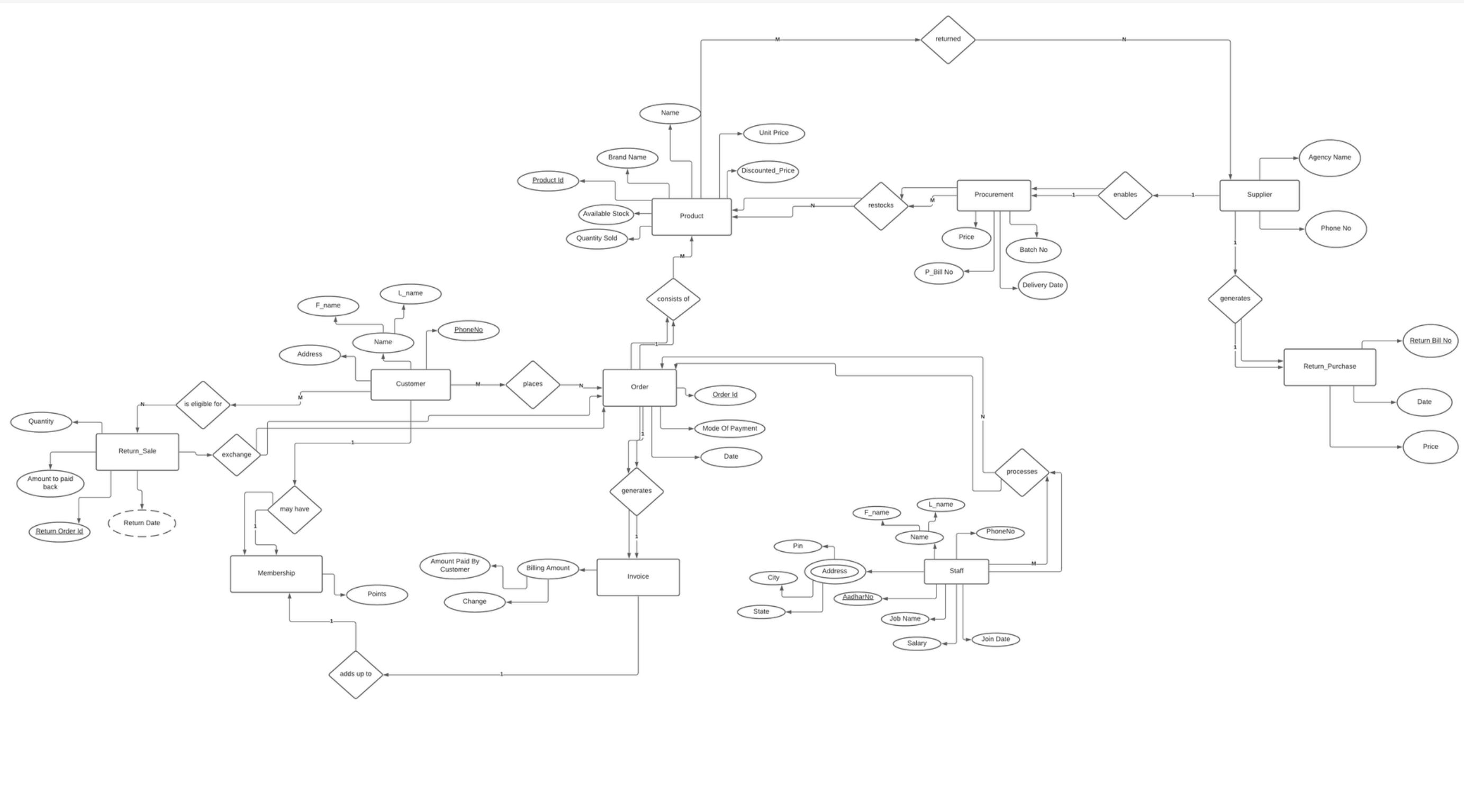


Drop Inventory table, relevant attributes are added to Product table

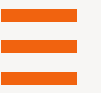
Drop Brand table, include brand in product table

Attach snapshots of all UI pages

Modified ER Diagram



Functional Dependencies Identified



Customer :

Customer_Phone_No \rightarrow first_name, last_name, addr_line_1, addr_line_2

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Customer is in BCNF

The screenshot shows a database schema for a table named 'customer'. The table has five columns: 'customer_ph_no' (int), 'first_name' (varchar(10)), 'last_name' (varchar(10)), 'addr_line_1' (varchar(20)), and 'addr_line_2' (varchar(20)). The 'customer_ph_no' column is marked as the primary key with a key icon. A blue arrow points to the 'addr_line_2' column.

customer	
customer_ph_no	int
first_name	varchar(10)
last_name	varchar(10)
addr_line_1	varchar(20)
addr_line_2	varchar(20)

Membership :

{Order_id, Customer_Phone_No, Points} → Order_id, Customer_Phone_No, Points

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Membership is in BCNF




Sales Return :






{Order_id, Product_id} → quantity, amount, Replacement_id

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Sales Return is in BCNF

membership	
 customer_ph_no	int
 order_id	int
 pts_added_or_redeemed	int

sales_return	
 order_id	int
 product_id	int
 quantity	int
 amount_to_pay	int
 replacement_order_id	int

Ordered Items :

$\{\text{Order_id}, \text{product_id}\} \rightarrow \text{quantity}$

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Ordered Items is in BCNF




Invoice :




$\text{Order_id} \rightarrow \text{amount_paid}, \text{change_generated}$

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Invoice is in BCNF

ordered_items	
 order_id	int
 product_id	int
 quantity	int

invoice	
 order_id	int
 amount_paid	int
 change_generated	int

Procurement :

Bill_No → amount, delivery_date, batch_no, supplier_ph_no

Batch_No → bill_no

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Procurement is in BCNF






Procured Items :




{Batch_no, product_id} → quantity

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Procured Items is in BCNF

procurement	
 batch_no	int
 bill_no	varchar(10)
 amount_to_pay	int
 supplier_ph_no	int
 delivery_date	int

procured_items	
 batch_no	int
 product_id	int
 quantity	int

Products :

Product_id → Product_name, price, availability, discounted_price, brand, quantity_sold
{Brand,name} → Product_id

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Products is in BCNF

Orders :

Order_id → Order_date, mode_of_payment, customer_ph_no, staff_id

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Orders is in BCNF

product	
product_id	int
product_name	varchar(15)
brand	varchar(15)
price	int
available_stock	int
quantity_sold	int
discounted_price	int

orders	
order_id	int
order_date	date
customer_ph_no	bigint
mode_of_payment	varchar(10)
staff_id	int

Supplier :

Ph_no → Agency_name, Address

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Supplier is in BCNF

Purchase Return :

{Product_id, batch_no} → date, amount

Observations:

- Atomic values
- No partial dependency
- No transitive dependency
- Determinant is a candidate key

Remark : Purchase Return is in BCNF

supplier	
supplier_ph_no	int
agency_name	varchar(20)
addr_line_2	varchar(20)
addr_line_1	varchar(20)

purchase_return	
batch_no	int
date	date
amount_returned	int
product_id	int

Staff :

Aadhar_no → ID, Name, Join_date, Address, Ph_no, Job_designation, Salary

ID → Aadhar_no











Ph_no → Aadhar_no

Job_designation → Salary

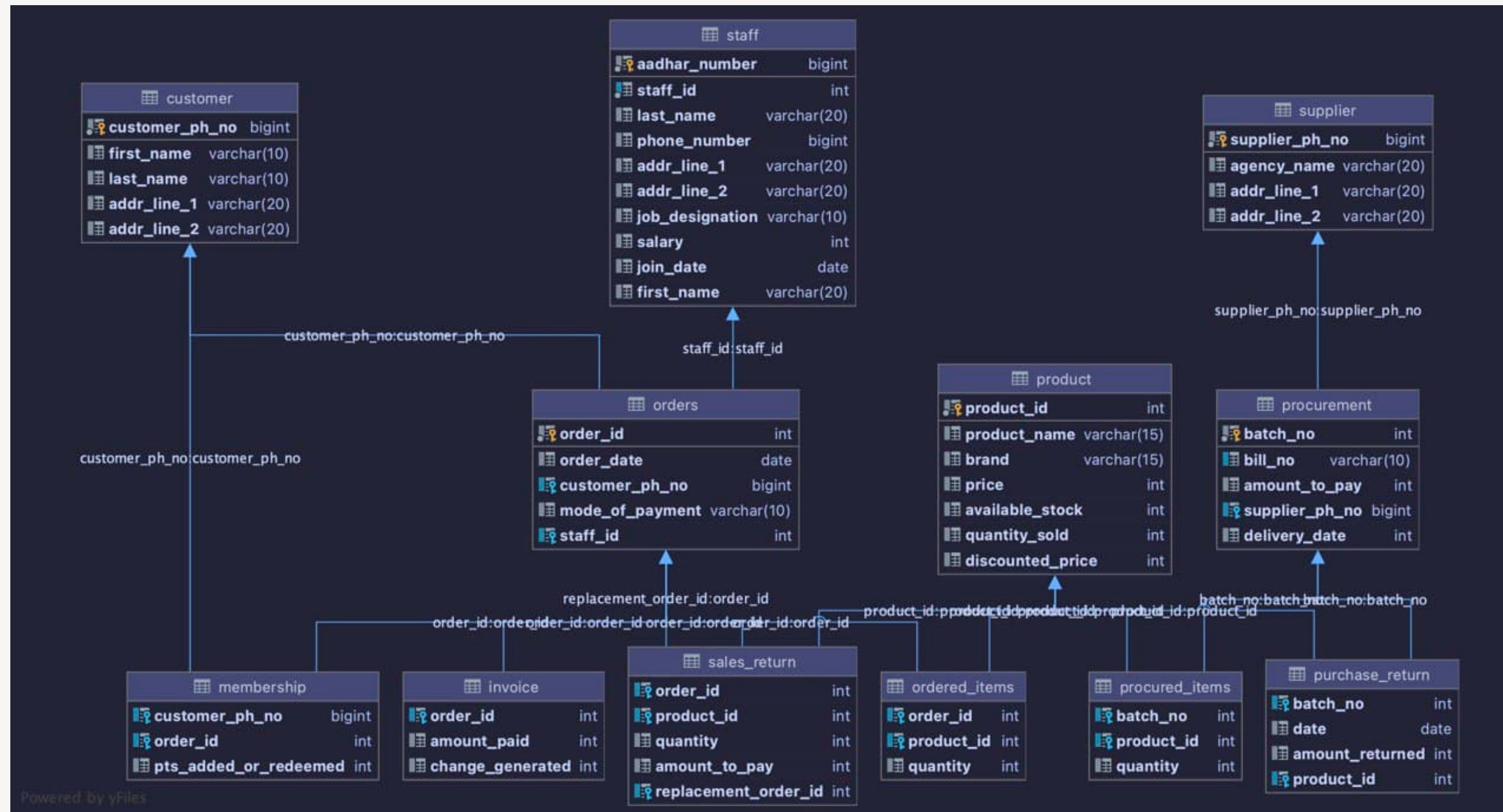
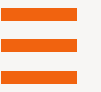
Observations:

- Atomic values
- No partial dependency
- One transitive dependency (Aadhar No → Salary)
- Relation will not be normalized further, as redundancy due to the transitive dependency mentioned will be controlled.

Remark : Staff is in 2NF

staff	
 aadhar_number	bigint
 staff_id	int
 last_name	varchar(20)
 phone_number	bigint
 addr_line_1	varchar(20)
 addr_line_2	varchar(20)
 job_designation	varchar(10)
 salary	int
 join_date	date
 first_name	varchar(20)

Optimal Normalized Solution



Why is it an optimal solution?



Minimizes Redundancy



Removes Unwanted Data
Connections



Optimizes data storage

Actual Dataset - Products (1/2)

















	🔍 product_id ↕	📋 product_name ↕	📋 brand ↕	📋 price ↕	📋 available_stock ↕	📋 quantity_sold ↕	📋 discounted_price ↕
1	1	Jimjam	brittania	10	100	0	0
2	2	Cream & Onion	lays	20	100	0	0
3	3	Toothbrush	Pepsodent	40	100	0	0
4	4	Chakki Atta	Aashirvad	300	100	0	0
5	5	Hairdye	Garnier	180	100	0	0
6	6	Maggi	Nestle	12	100	0	0
7	7	Dishwash	Vim	19	100	0	0
8	8	Toothpaste	Colgate	84	100	0	0
9	9	HealthDrink	Boost	730	100	0	0
10	10	Ketchup	Nestle	120	100	0	0
11	11	Lotion	Himalaya	215	100	0	0
12	12	Atta	Ashirvaad	60	100	0	0
13	13	Handwash	Lifebuoy	99	100	0	0
14	14	Toothbrush	Colgate	101	100	0	0
15	15	Biscuits	DarkFantasy	82	100	0	0
16	16	Biscuits	Oreo	58	100	0	0
17	17	Biscuits	Nice	24	100	0	0
18	18	Bhujia	Haldiram	175	100	0	0
19	19	PotatoChips	Bingo	20	100	0	0
20	20	Coffee	Bru	150	100	0	0
21	21	Tea	Red Label	265	100	0	0
22	22	Noodles	Sunfeast	123	100	0	0
23	23	Vermicelli	Mtr	59	100	0	0
24	24	Pasta	Disano	99	100	0	0
25	25	Honey	Dabur	250	100	0	0
26	26	Choco Spread	Disano	269	100	0	0
27	27	Hair Oil	Parachute	120	100	0	0

Actual Dataset - Products (2/2)


28	28	Shampoo	Dove	430	100	0	0
29	29	Shampoo	Nyle	256	100	0	0
30	30	Hair Dye	Godrej	120	100	0	0
31	31	Lotion	Nivea	192	100	0	0
32	32	Deo	Nivea	156	100	0	0
33	33	Deo	Axe	193	100	0	0
34	34	Sambar masala	Aashirvad	62	100	0	0
35	35	Salt	Tata	18	100	0	0
36	36	Oil	Safola	168	100	0	0
37	37	Cold drink	Minute maid	69	100	0	0
38	38	Cold drink	Pepsi	35	100	0	0


Actual Dataset - Staffs & Suppliers


	 aadhar_number ▾	 staff_id ▾	 first_name ▾	 last_name ▾	 addr_line_1 ▾	 addr_line_2 ▾	 job_designation ▾	 salary ▾	 join_date ▾	 phone_number
1	121114849301	2	Rahul	Sharma	Shirupark	Hubli	cashier	10000	2019-09-24	8939949
2	129823838491	3	Vidhi	Sanghvi	Gokul road	Hubli	cashier	10000	2019-05-29	9038381
3	145861663728	1	Vishal	Singh	Vidyanagar	Hubli	cashier	15000	2017-04-13	8320193
4	346513483739	4	Shlok	Kumar	KIMS	Dharwad	staff	12000	2018-08-12	9828282
5	452314567382	5	Preeti	Sharma	Station road	Dharwad	staff	9000	2020-03-01	8339202


	 supplier_ph_no ▾	 agency_name ▾	 addr_line_1 ▾	 addr_line_2 ▾
1	8383020334	Sri Sai Goods	Dharwad	Arera Road
2	8939292923	Agarwal Goods	Dharwad	Nabad Nagar
3	9288628265	Sudarshan Entp	Dharwad	Teacher's Colony
4	9701001117	Raja wholesale	Hubli	Vidyanagar
5	9837382223	Kishore wholesale	Hubli	KIMS


User Interface Design - Dashboard


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return


 New purchase return

 Customers


 Staffs

DASHBOARD


80
Sales




2084
Customers



Rs.16043
Income



Rs.10043
Expenditure



TODAY'S TRANSACTIONS


Order ID	Amount	Phone no.
OD01	800	7992344591
OD02	800	7992344591
OD03	800	7992344591
OD04	800	7992344591
OD04	800	7992344591


PRODUCTS SOON TO BE OUT OF STOCK


Name	ID	Quantity	Status
Maggie	PD01	0	Out of stock
Apple	PD01	23	In Stock
Apple	PD01	23	In Stock
Apple	PD01	23	In Stock
Apple	PD01	23	In Stock


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Transaction


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return

 New purchase return

 Customers

 Staffs

NEW TRANSACTION

BILLED BY

CUSTOMER PHONE NO.

DATE

ORDER ID

ADD PRODUCTS :

CATEGORY

Grocery ▾

Product ID

P101 ▾

QUANTITY

ADD

CLEAR


TOTAL AMOUNT


POINTS REDEEMED


PRODUCTS


ID	Name	Price	Quantity
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10


Placing Order (For Procurement)


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return

 New purchase return

 Customers

 Staffs

PLACE ORDER

BILL NO

AGENCY

----- ▾

ADD PRODUCTS :

CATEGORY

Grocery ▾

Product ID

P101 ▾

QUANTITY

ADD

CLEAR

TOTAL AMOUNT

DELIVERY DATE

DATE


SUPPLIER PHONE NO.


SUPPLIER ADDRESS


PRODUCTS


ID	Name	Price	Quantity
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10


Inventory


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return

 New purchase return


 Customers

 Staffs

INVENTORY

Category
Grocery ▾

Filter by
Recent ▾


 Search here


Recent Products


View All


Name	Price	Quantity	Status
Apple	1000Rs	23	In Stock
Apple	1000Rs	23	In Stock
Apple	1000Rs	23	In Stock
Apple	1000Rs	23	In Stock
Apple	1000Rs	23	Out of Stock
Apple	1000Rs	23	In Stock


Sales Return


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return

 New purchase return

 Customers

 Staffs

SALES RETURN

ORDER ID

DATE

PRODUCTS RETURNED :

Product ID

QUANTITY

Add

Clear

REPLACEMENT ORDER ID

REMARKS


SAVE


DISCARD


PRODUCTS


ID	Name	Price	Quantity
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10


Purchase Return


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status

 New sales return

 New purchase return

 Customers

 Staffs

PURCHASE RETURN

BATCH NO

DATE

ADD PRODUCTS :

CATEGORY

Grocery ▾

Product ID

P101 ▾

QUANTITY

Add

Clear

TOTAL AMOUNT TO BE RECIEVED


SAVE


DISCARD


PRODUCTS


ID	Name	Price	Quantity
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10
PD01	MILK	Rs.999	10


View Customer Data


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status


 New sales return

 New purchase return

 Customers

 Staffs

CUSTOMERS

 Search here


Filter by
Recent ▾


Recent Customers


View All


First Name	Last Name	Phone no.
Rahul	Rahul	7992344591
Rahul	Rahul	7992344591
Rahul	Rahul	7992344591
Rahul	Rahul	7992344591
Rahul	Rahul	7992344591
Rahul	Rahul	7992344591


Staff Data


 VINAYAK MART








 Dashboard


 New Transaction


 Place Order

 Inventory status


 New sales return

 New purchase return

 Customers

 Staffs

STAFFS

 Search here

Filter by
Recent ▾

Recent Staffs

View All

First Name	Last Name	Designation	Phone no.
Rahul	Rahul	Cashier	7992344591
Rahul	Rahul	Manager	7992344591
Rahul	Rahul	Cleaner	7992344591
Rahul	Rahul	Cashier	7992344591

Implementation



- Accounted for most of the requirements with front-end.
- Since, we are yet to link the back-end to the front-end, the requirements are not functional yet.

References & Tools

References :

1. Lucidchart
2. JetBrains DataGrip

Tools :

1. HTML
2. CSS
3. Javascript
4. MySQL

THANK YOU