KLE Technological University
Creating Value
Leveraging Knowledge

DATABASE MANAGEMENT SYSTEM (15ECSC208)
Design Phase Presentation
4D01 - IV Semester, 2021

Supermarket Management System

06 May 2021

Aditya Vikram - 01FE19BCS220
Rishab Jain - 01FE19BCS228
Yash Raj - 01FE19BCS229
Harshita Hiremath - 01FE19BCS235

Responsibilities

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

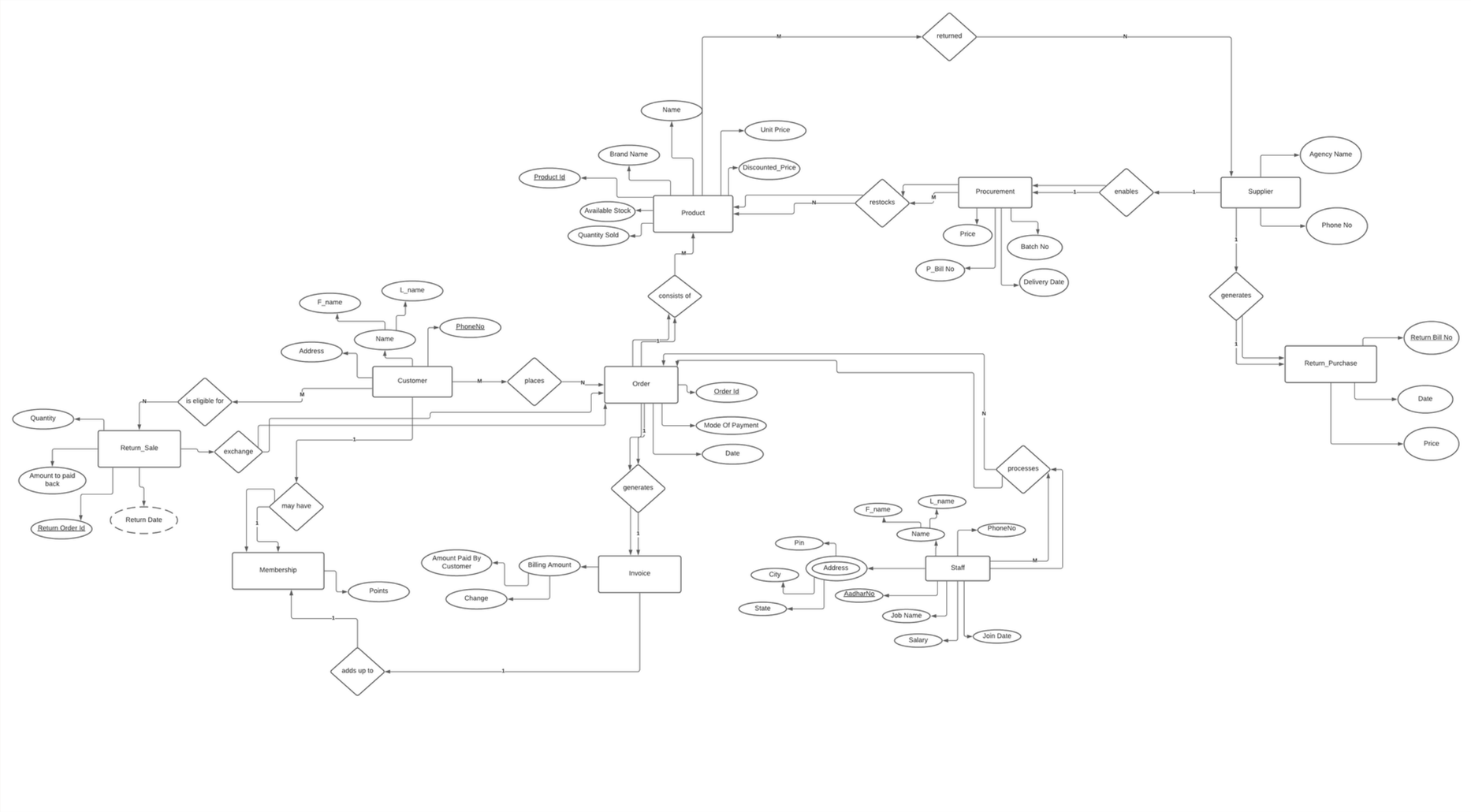
Changes Specified in Reviews

- 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



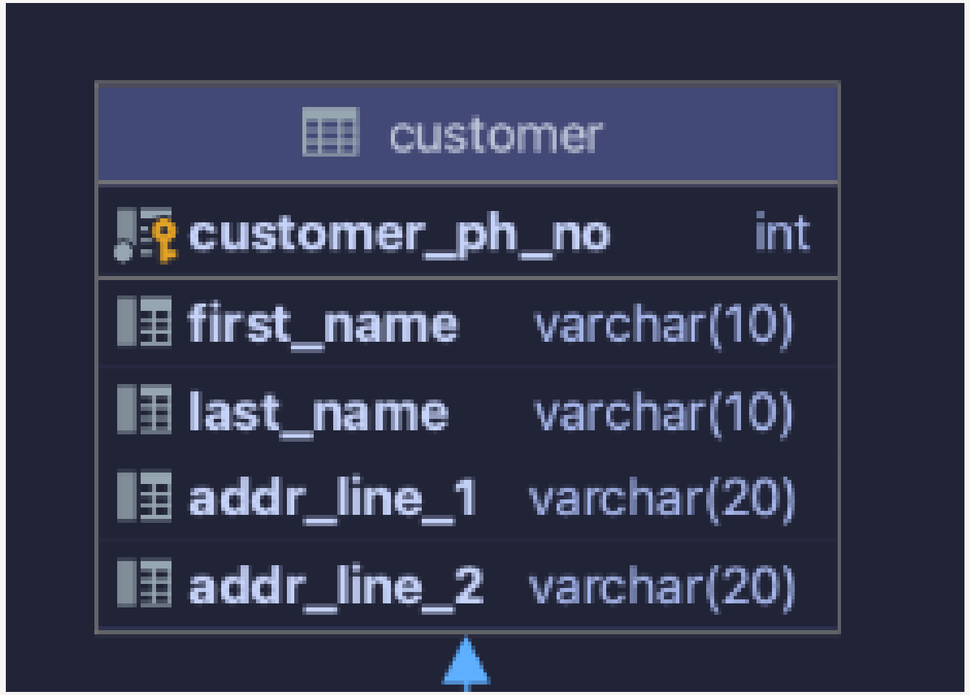
Functional Dependencies Identified

Customer :

Customer_Phone_No → first_name, last_name, addr_line_1, addr_line_2

Observations:

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

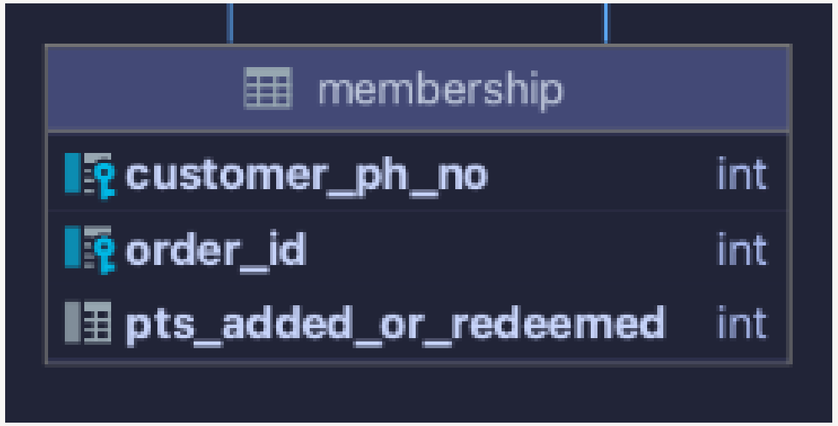


Remark : Customer is in BCNF

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

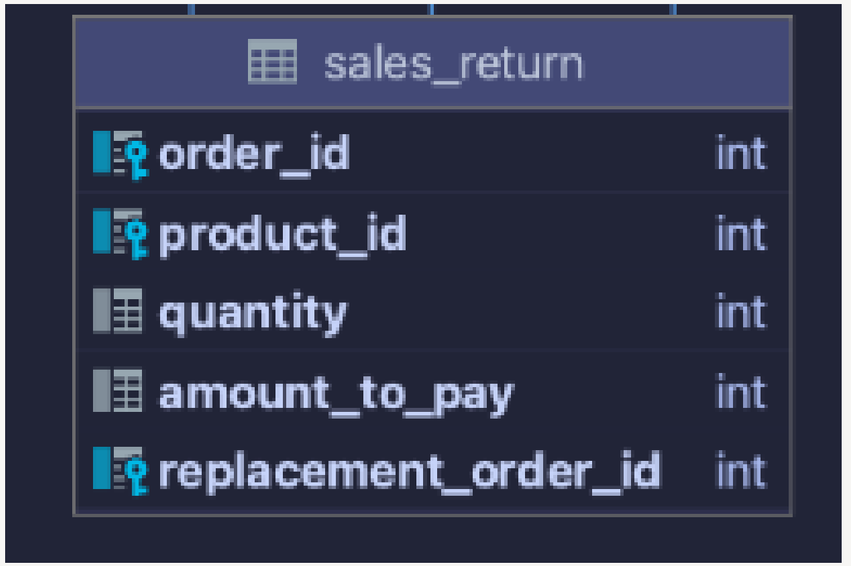


Remark : Membership is in BCNF

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

Ordered Items :
{Order_id, product_id} → quantity

Observations:

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

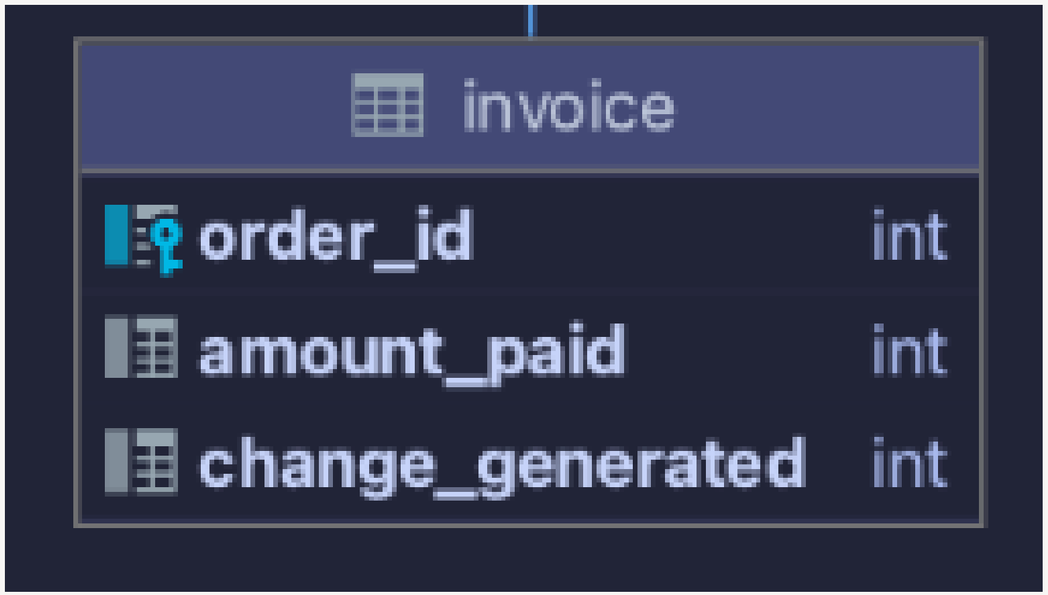
Remark : Ordered Items is in BCNF

Invoice :
Order_id → amount_paid, change_generated

Observations:

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

Remark : Invoice is in BCNF



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

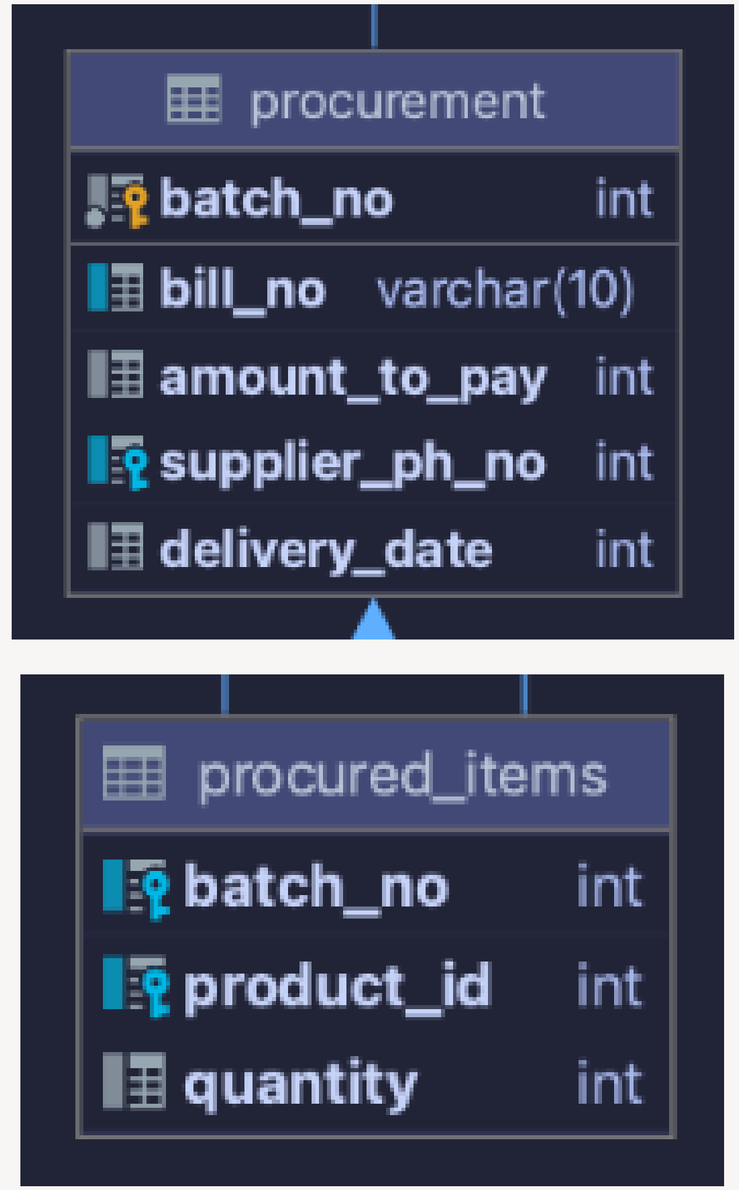
Remark : Procurement is in BCNF

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

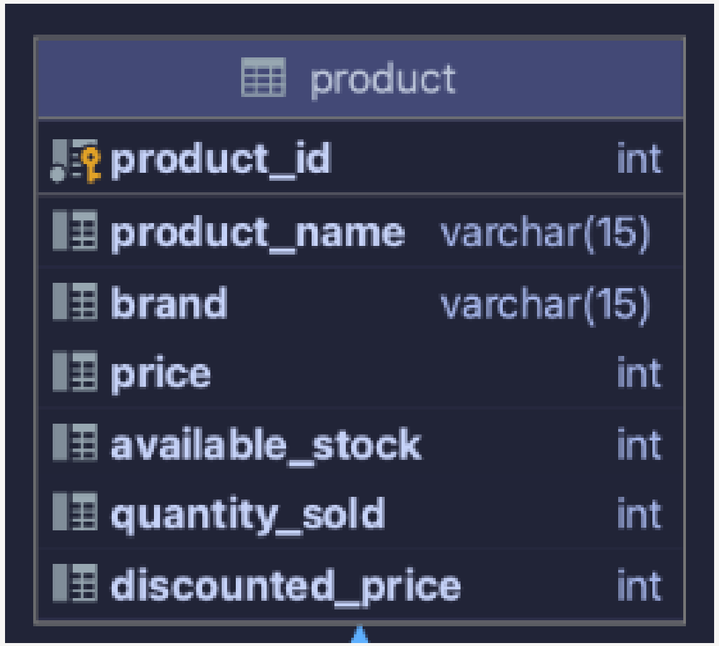


Products :
Product_id → Product_name, price, availability, discounted_price, brand, quantity_sold
{Brand,name} → Product_id

Observations:

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

Remark : Products is in BCNF

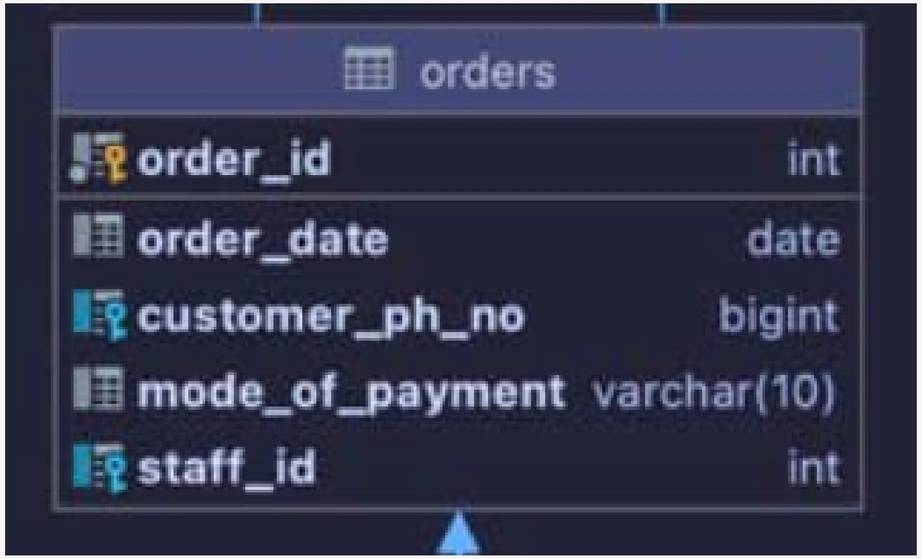


Orders :
Order_id → Order_date, mode_of_payment, customer_ph_no, staff_id

Observations:

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

Remark : Orders is in BCNF



Supplier :
Ph_no → Agency_name, Address

Observations:

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

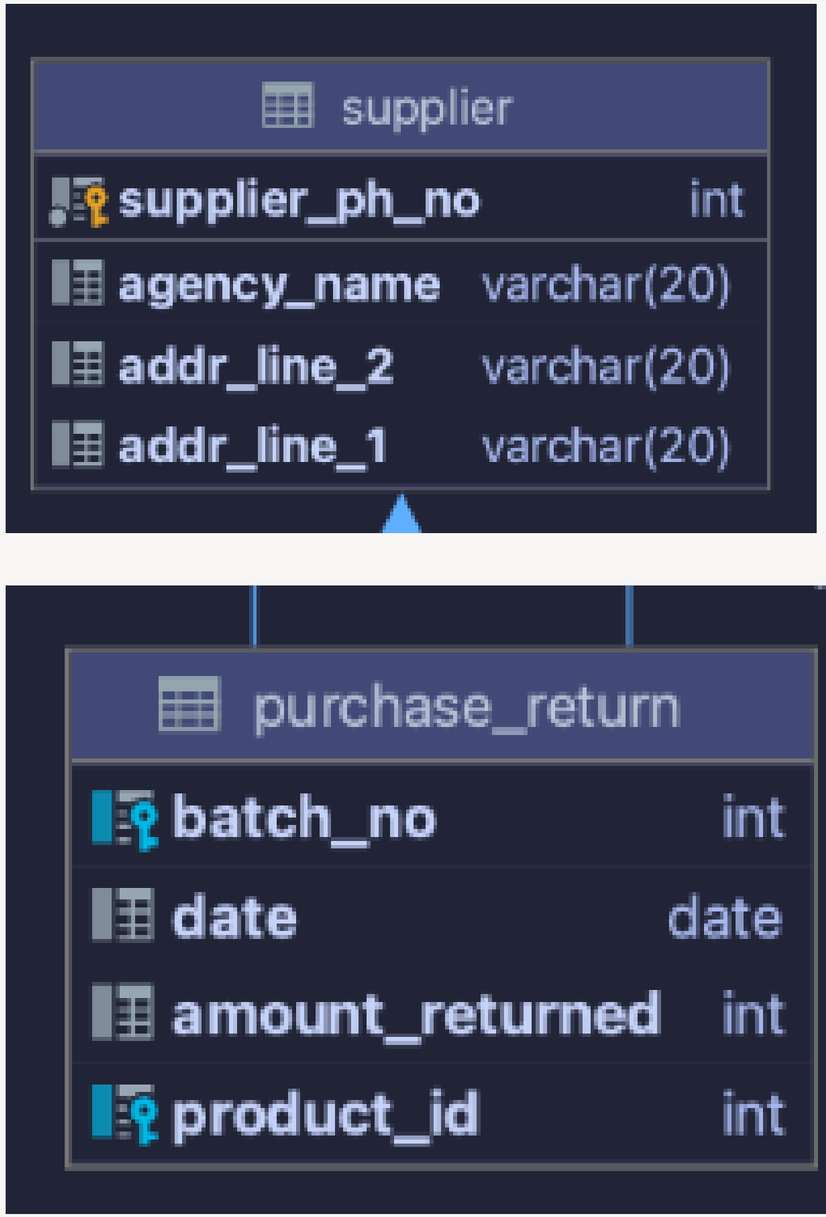
Remark : Supplier is in BCNF

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

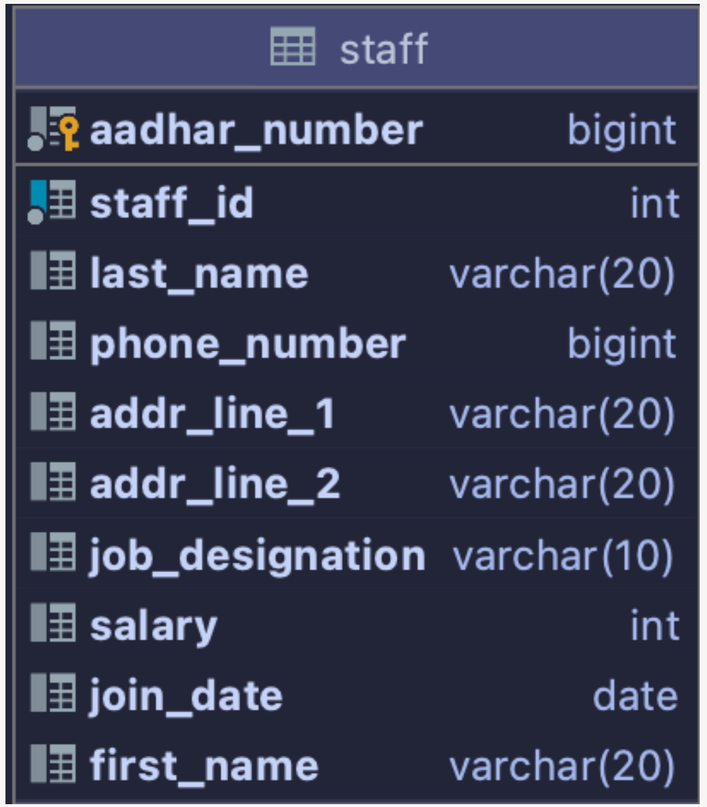


Staff :
Aadhar_no → ID, Name, Join_date, Address, Ph_no, Job_designation, Salary
ID → Aadhar_no
Ph_no → Aadhar_no
Job_designation → Salary

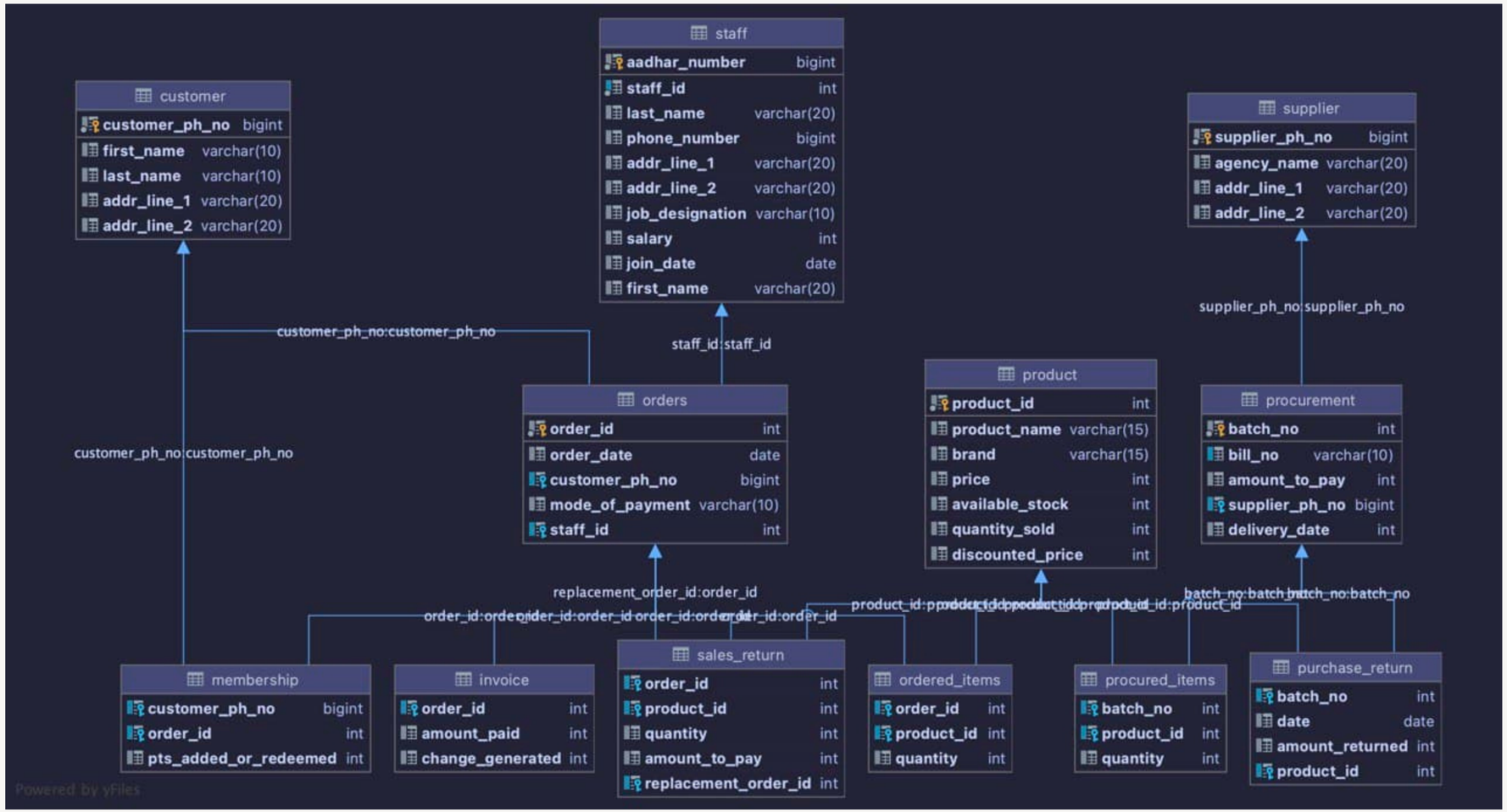
Observations:

- 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



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)

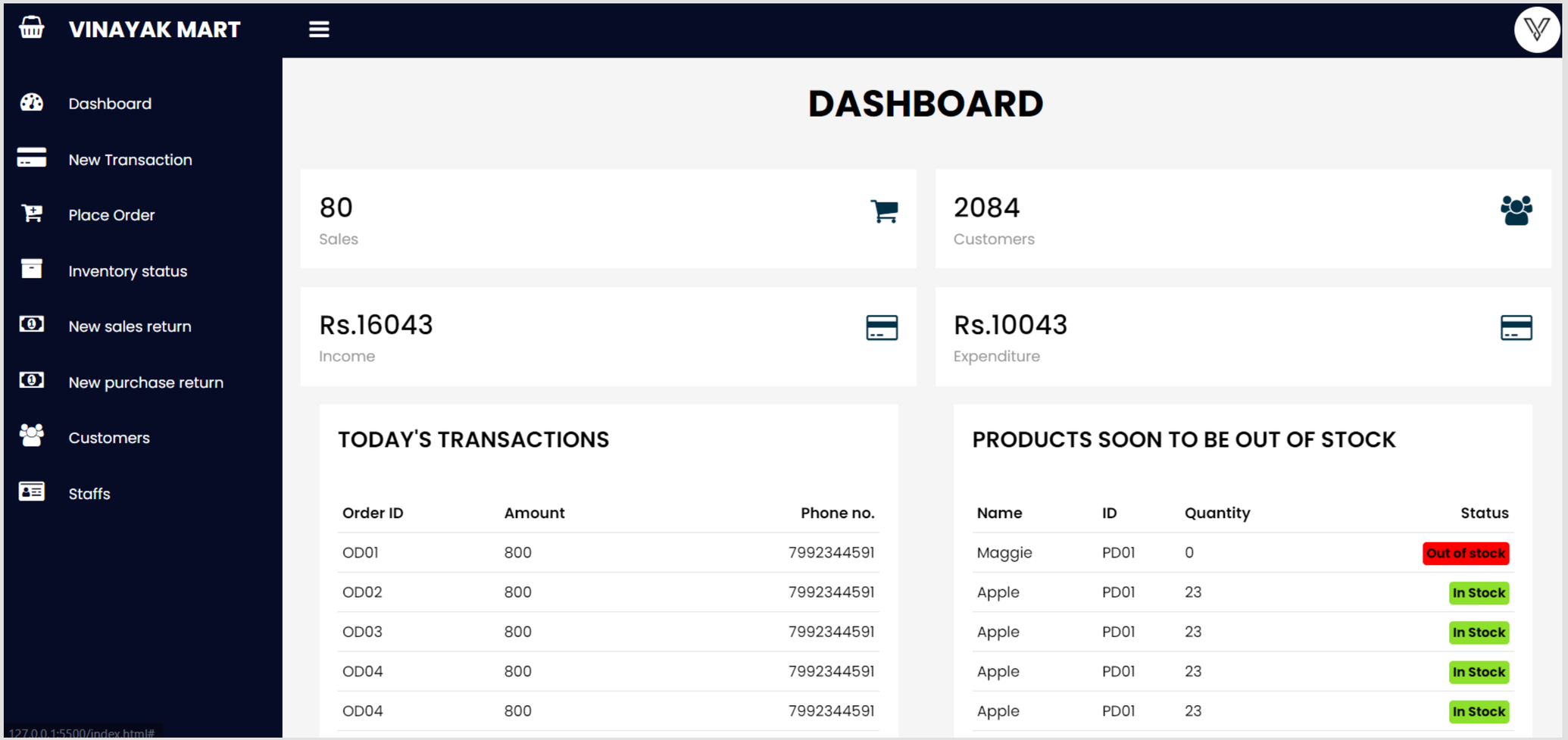
28	28	Shampoo	Dove	430	100	0	0
29	29	Shampoo	Nyle	256	100	0	0
30	30	Hair Dye	Godrej	120	100	0	0
31	31	Lotion	Nivea	192	100	0	0
32	32	Deo	Nivea	156	100	0	0
33	33	Deo	Axe	193	100	0	0
34	34	Sambar masala	Aashirvad	62	100	0	0
35	35	Salt	Tata	18	100	0	0
36	36	Oil	Safola	168	100	0	0
37	37	Cold drink	Minute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

Actual Dataset - Staffs & Suppliers

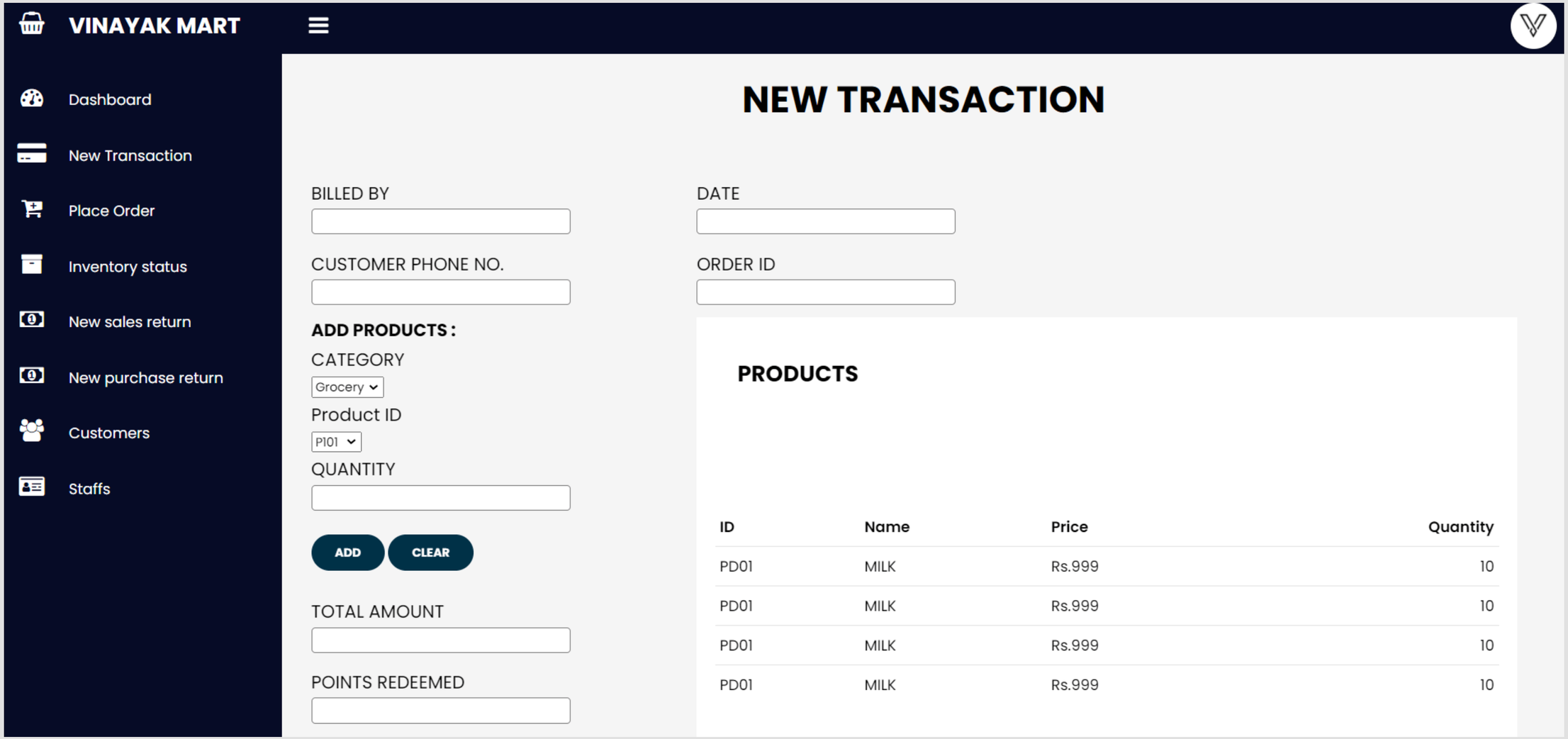
	aadhar_number	staff_id	first_name	last_name	addr_line_1	addr_line_2	job_designation	salary	join_date	phone_number
1	121114849301	2	Rahul	Sharma	Shirupark	Hubli	cashier	10000	2019-09-24	8939949
2	129823838491	3	Vidhi	Sanghvi	Gokul road	Hubli	cashier	10000	2019-05-29	9038381
3	145861663728	1	Vishal	Singh	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

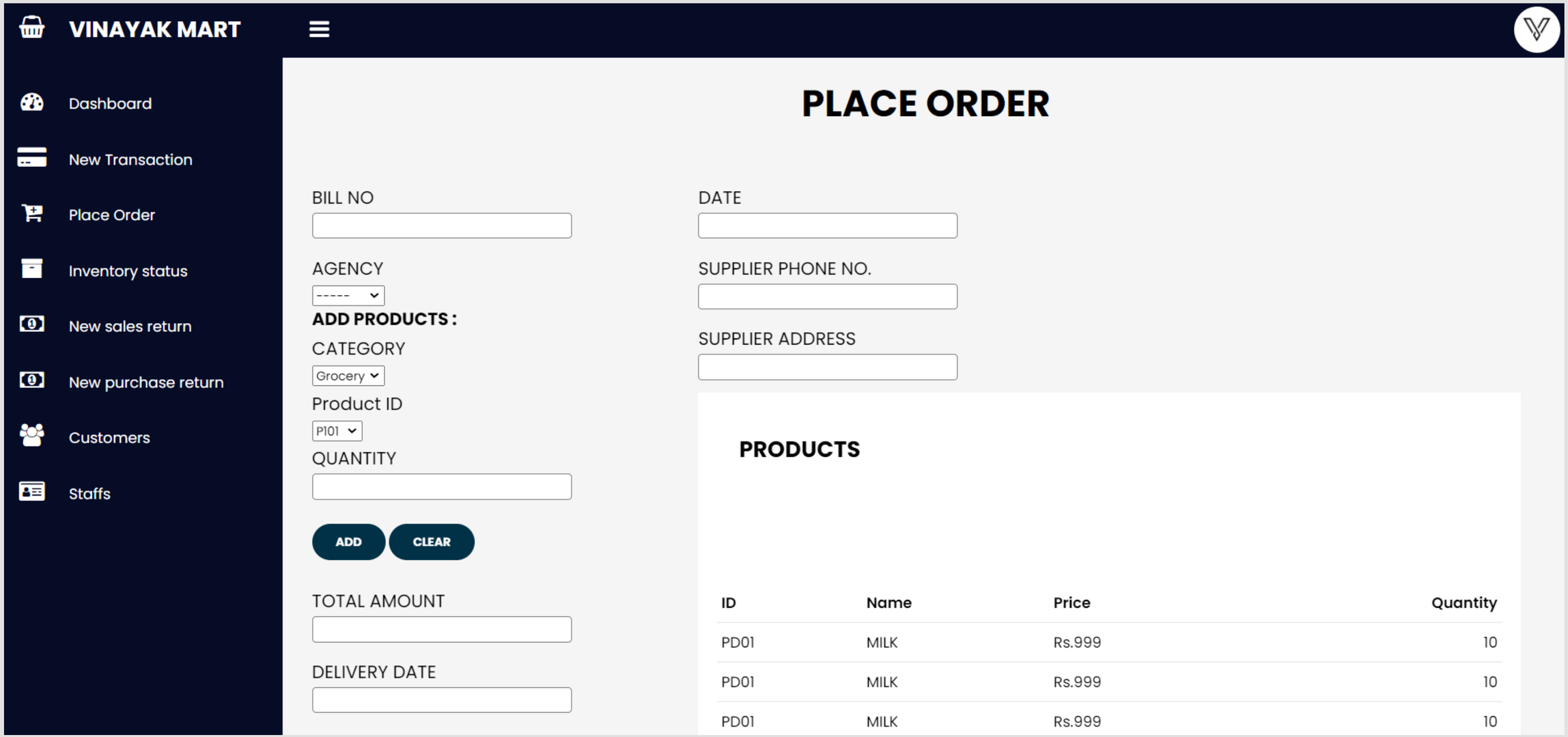
User Interface Design - Dashboard



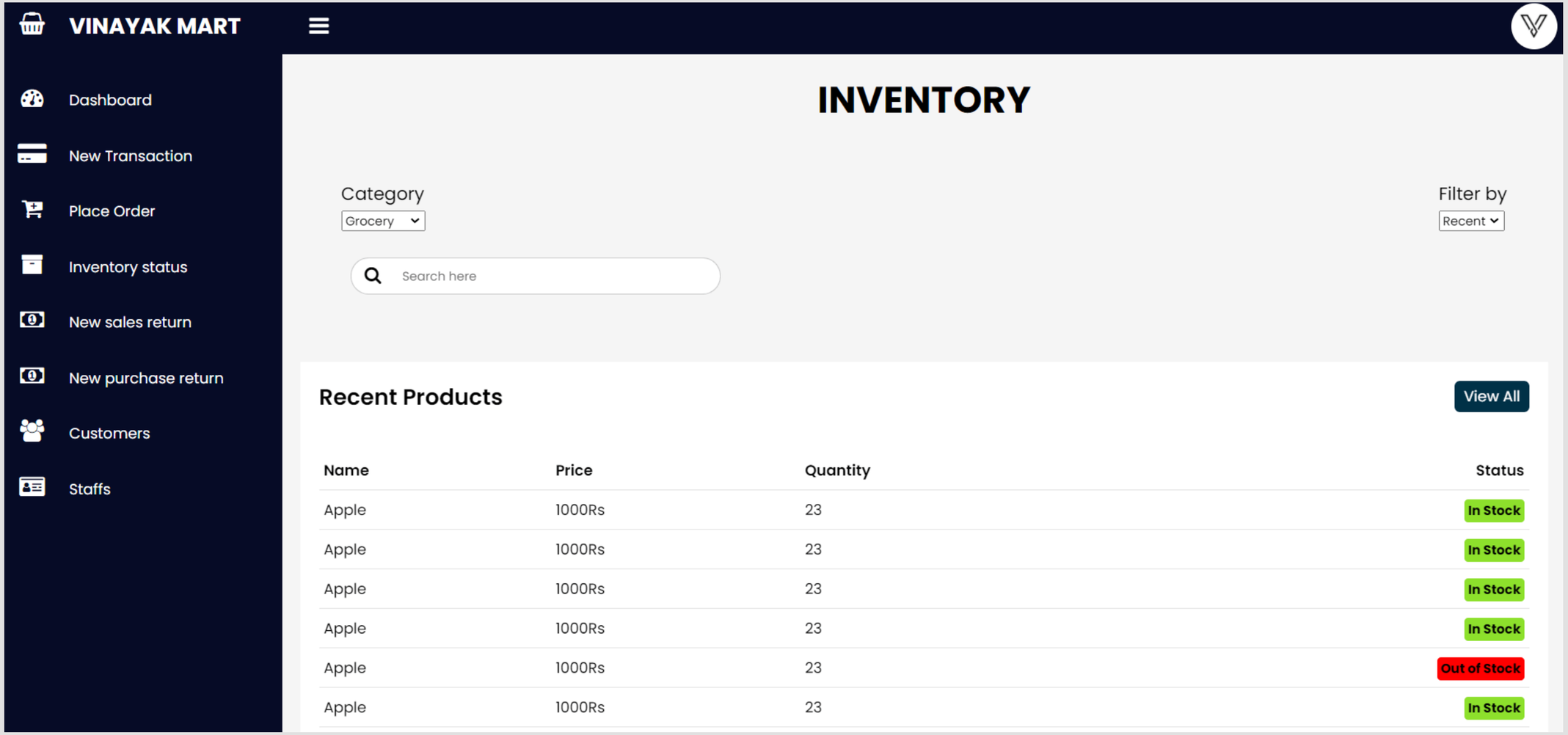
Transaction



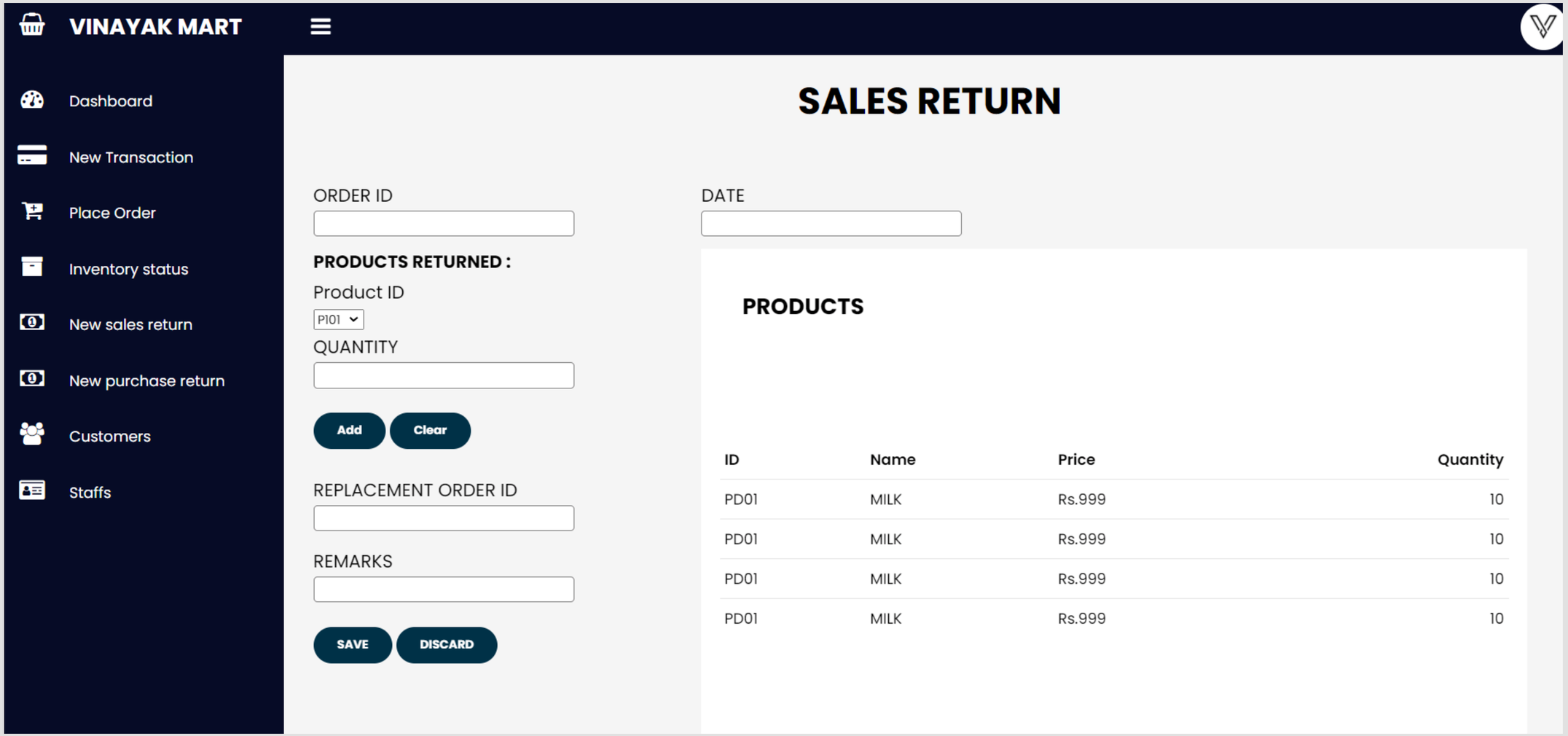
Placing Order (For Procurement)



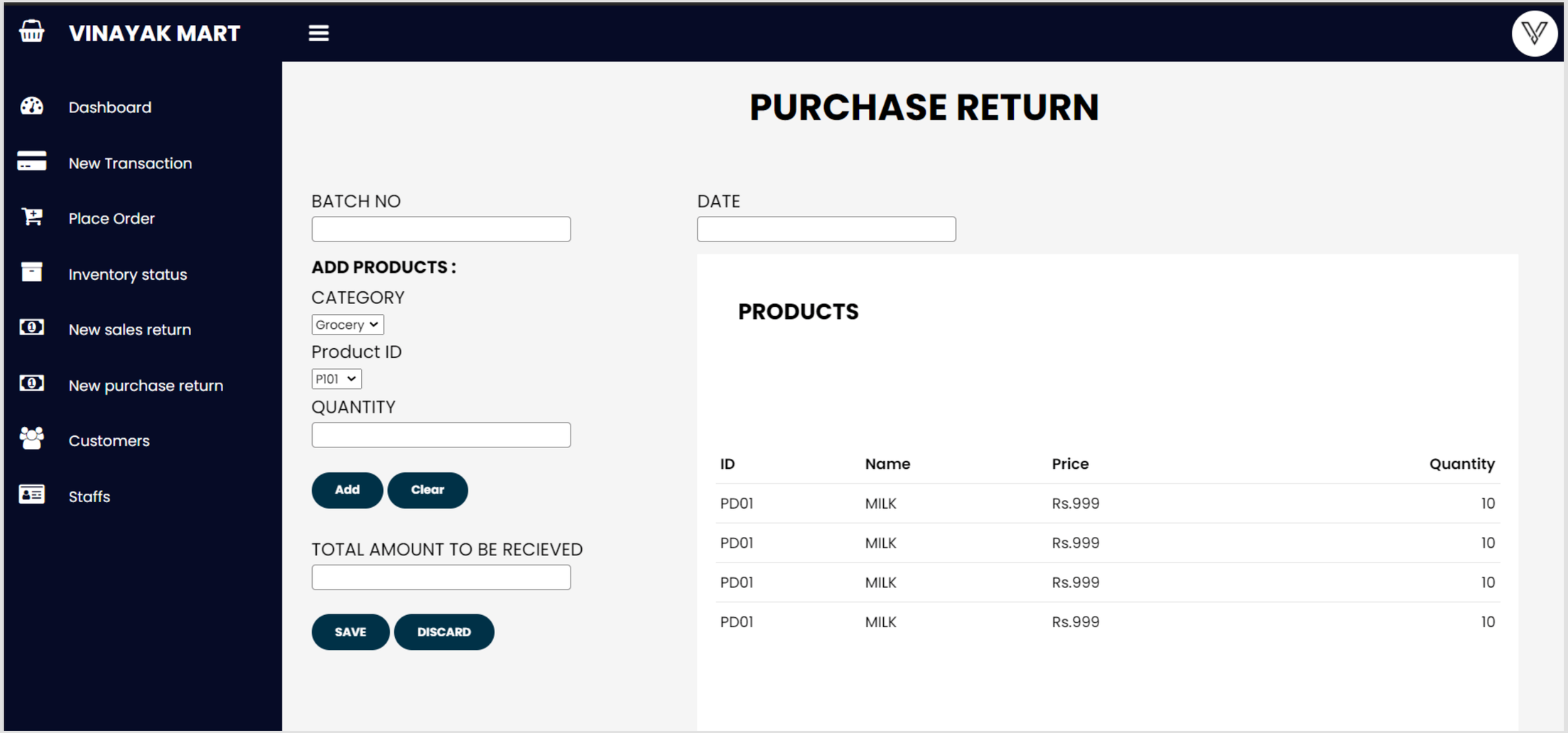
Inventory


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

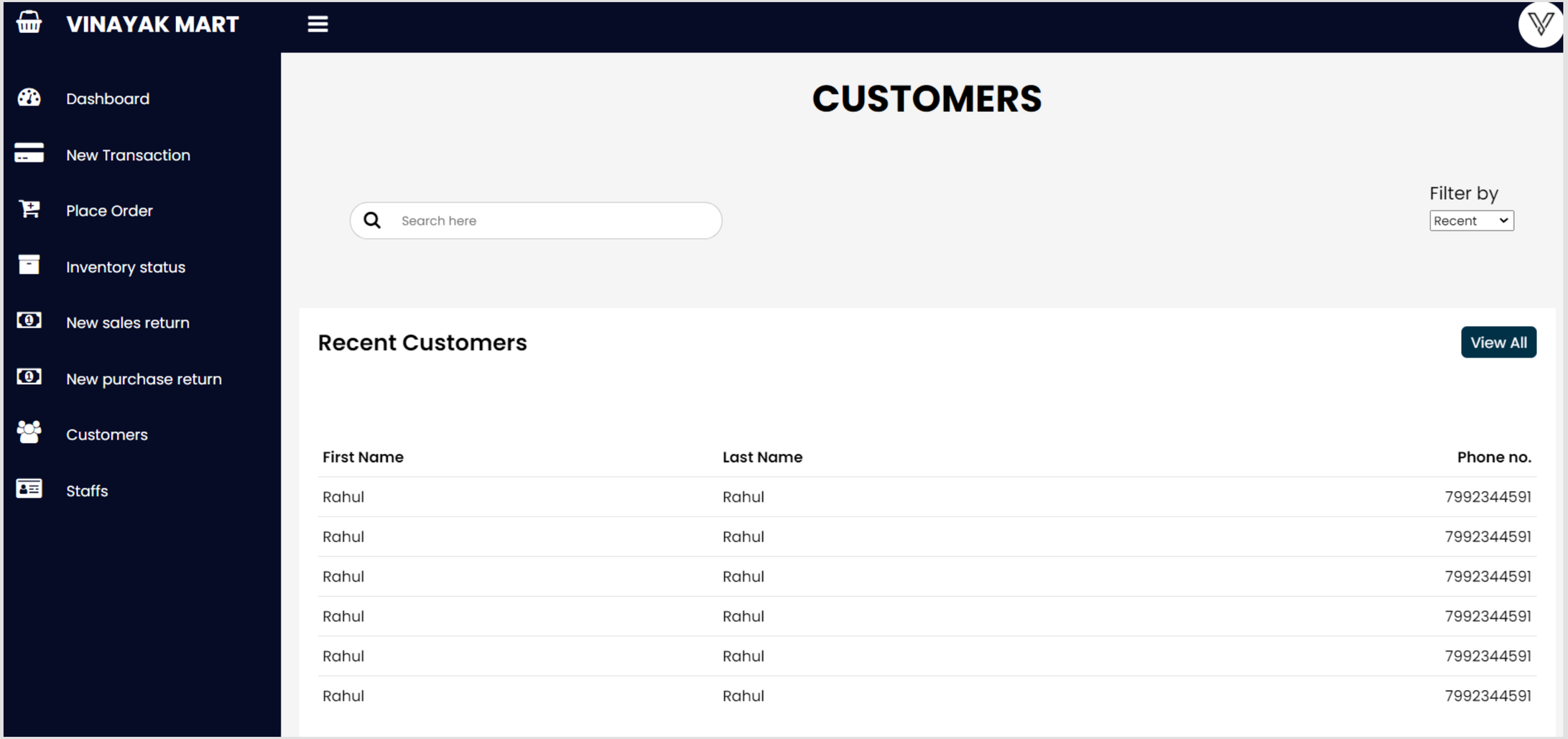
Sales Return



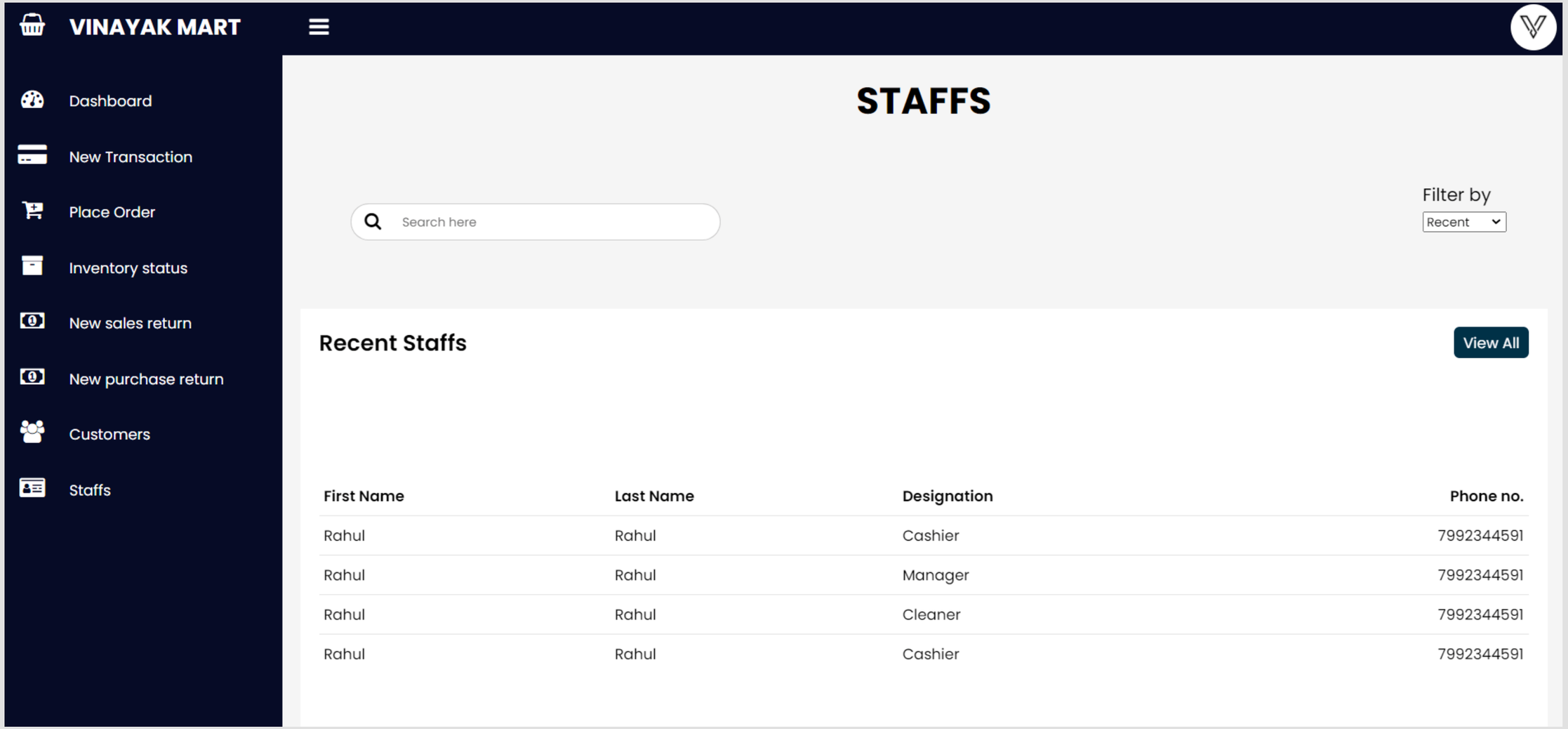
Purchase Return



View Customer Data



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