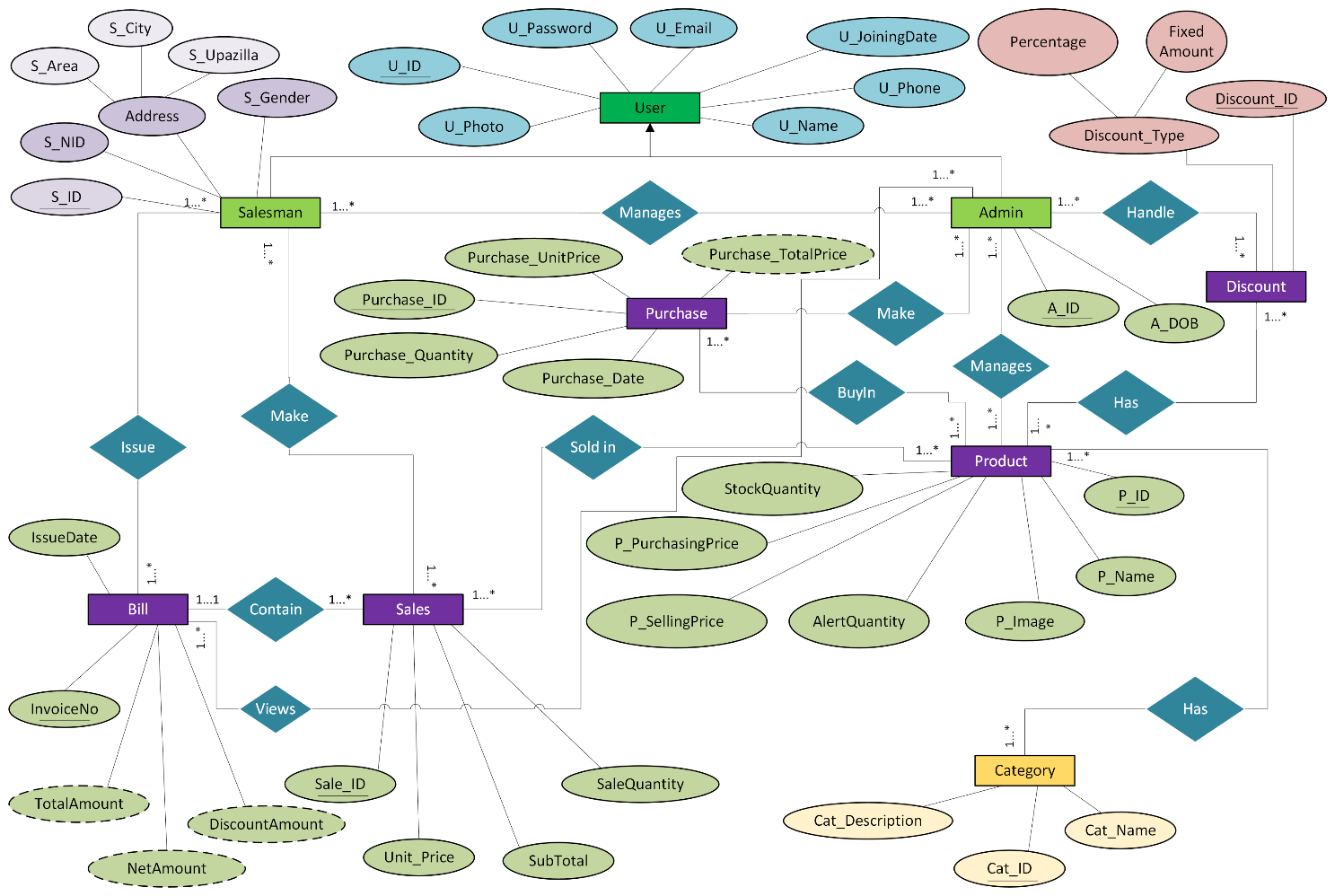
**ER Diagram: Supershop Management System**

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**Normalization**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | User / Admin / Salesman >> Occur Inheritance | | | User: | U\_ID, U\_Password, U\_Name, U\_Email, U\_Phone, U\_Image, U\_JoiningDate | |
| |  |  | | --- | --- | | Admin Manages Salesman: (m-m) | | | 1NF | 1. A\_ID, A\_DOB, S\_ID, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City. | | 2NF | 1. A\_ID(PK + FK) ref ‘User’, A\_DOB 2. S\_ID(PK + FK) ref ‘User’, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City 3. A\_ID(PK), S\_ID(FK) | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Admin Handle Discount: (m-m) | | | 1NF | 1. A\_ID, A\_DOB, Discount\_ID, Percentage, FixedAmount | | 2NF | 1. A\_ID, A\_DOB, 2. Discount\_ID, Percentage, FixedAmount. 3. A\_ID(PK), Discount\_ID(FK). | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Admin Manages Product: (m-m) | | | 1NF | 1. A\_ID, A\_DOB, P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity | | 2NF | 1. A\_ID, A\_DOB, 2. P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity. 3. A\_ID(PK), P\_ID(FK). | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Admin Make Purchase: (m-m) | | | 1NF | 1. A\_ID, A\_DOB, Purchase\_ID, Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date. | | 2NF | 1. A\_ID(PK), A\_DOB 2. Purchsase\_ID(PK), Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date.A\_ID(PK), P\_ID(FK). 3. A\_ID(PK), P\_ID(FK). | | 3NF | No transitive dependency | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Admin Views Bill: (m-m) | | | 1NF | 1. A\_ID, A\_DOB, InvoiceNo, IssueDate | | 2NF | 1. A\_ID, A\_DOB 2. InvoiceNo(PK), IssueDate. 3. A\_ID(PK), P\_ID(FK). | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Product Has Category: (m-m) | | | 1NF | 1. P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity, Cat\_ID, Cat\_Name, Cat\_Description. | | 2NF | 1. P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity 2. Cat\_ID(PK), Cat\_Name, Cat\_Description. 3. P\_ID(pk), Cat\_ID(FK) | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Product Has Discount: (m-m) | | | 1NF | 1. P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity, Discount\_ID, Percentage, FixedAmount | | 2NF | 1. P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity. 2. Discount\_ID(PK), Percentage, FixedAmount . 3. P\_ID(pk), Discount\_ID(FK) | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Product Buy In Purchase: (m-m) | | | 1NF | 1. P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity, Purchsase\_ID, Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date. | | 2NF | 1. P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity. 2. Purchsase\_ID, Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date. 3. P\_ID(pk), Purchase\_ID(FK) | | 3NF | No transitive dependency | |
|  |
| |  |  | | --- | --- | | Product Sold In Sale: (m-m) | | | 1NF | 1. P\_ID, P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity, Sale\_ID, Unit\_Price, Sale\_Quantity, Sale\_SubTotal. | | 2NF | 1. P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity. 2. Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal. 3. P\_ID(pk), Sale\_ID(FK) | | 3NF | No transitive dependency. Same as 2NF | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | Salesman Make Sales: (M-M) | | | 1NF | 1. S\_ID, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City, Sale\_ID, Unit\_Price, Sale\_Quantity, Sale\_SubTotal. | | 2NF | 1. S\_ID(PK), S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City. 2. Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal. 3. S\_ID(PK), Sale\_ID(FK) | | 3NF | No transitive dependency. Same as 2NF | |
|  |
| |  |  | | --- | --- | | Salesman Issue Bill: (M-M) | | | 1NF | 1. S\_ID, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City, InvoiceNo(PK), IssueDate. | | 2NF | 1. S\_ID(PK), S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City. 2. Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal. 3. S\_ID(PK), InvoiceNO(FK). | | 3NF | No transitive dependency. Same as 2NF | |
|  |
| |  |  | | --- | --- | | Bill Contain Sale: (1-M) | | | 1NF | 1. InvoiceNo(PK), IssueDate, Sale\_ID, Sale\_Quantity, Unit\_Price, SubTotal. | | 2NF | 1. InvoiceNo(PK), Sale\_ID(FK), Sale\_Quantity, Unit\_Price, SubTotal. 2. InvoiceNo(PK), IssueDate | | 3NF | No transitive dependency. Same as 2NF | |
|  |

**Finalization**

1. A\_ID(PK + FK) ref ‘User’, A\_DOB
2. S\_ID(PK + FK) ref ‘User’, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City
3. A\_ID(PK), S\_ID(FK)
4. ~~A\_ID(PK), A\_DOB~~
5. Discount\_ID(PK), Percentage, FixedAmount.
6. A\_ID(PK), Discount\_ID(FK).
7. ~~A\_ID, A\_DOB~~
8. P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity.
9. A\_ID(PK), P\_ID(FK).
10. ~~A\_ID(PK), A\_DOB~~
11. Purchsase\_ID(PK), Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date.A\_ID(PK), P\_ID(FK).
12. ~~A\_ID(PK), P\_ID(FK).~~
13. ~~A\_ID, A\_DOB~~
14. InvoiceNo(PK), IssueDate.
15. ~~A\_ID(PK), P\_ID(FK).~~
16. ~~P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity~~
17. Cat\_ID(PK), Cat\_Name, Cat\_Description.
18. P\_ID(pk), Cat\_ID(FK)
19. ~~P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity.~~
20. ~~Discount\_ID(PK), Percentage, FixedAmount .~~
21. P\_ID(pk), Discount\_ID(FK)
22. ~~P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity.~~
23. ~~Purchase\_ID, Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date.~~
24. P\_ID(pk), Purchase\_ID(FK)
25. ~~P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity.~~
26. Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal.
27. P\_ID(pk), Sale\_ID(FK)
28. ~~S\_ID(PK), S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City.~~
29. ~~Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal.~~
30. S\_ID(PK), Sale\_ID(FK)
31. ~~S\_ID(PK), S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City.~~
32. ~~Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal.~~
33. S\_ID(PK), InvoiceNO(FK).
34. InvoiceNo(PK), Sale\_ID(FK), Sale\_Quantity, Unit\_Price, SubTotal.
35. ~~InvoiceNo(PK), IssueDate~~

**Final Table:**

1. **Admin:** A\_ID(PK + FK) ref ‘User’, A\_DOB
2. **Salesman:** S\_ID(PK + FK) ref ‘User’, S\_NID, S\_Gender, S\_Area, S\_Upazilla, S\_City
3. **AdminSalesman:** A\_ID(PK), S\_ID(FK)
4. **Discount:** Discount\_ID(PK), Percentage, FixedAmount.
5. **AdminDiscount:** A\_ID(PK), Discount\_ID(FK).
6. **Product:** P\_ID(PK), P\_Name, P\_Image, P\_PurchasingPrice, P\_SellingPrice, P\_StockQunatity, P\_AlertQuantity.
7. **AdminProduct:** A\_ID(PK), P\_ID(FK).
8. **Purchase:** Purchase\_ID(PK), Purchase\_Quantity, Purchase\_UnitPrice, Purchase\_TotalPrice, Purchase\_Date.
9. **Bill:** InvoiceNo(PK), IssueDate.
10. **Category:** Cat\_ID(PK), Cat\_Name, Cat\_Description.
11. **ProductCategory:** P\_ID(pk), Cat\_ID(FK)
12. **ProductDiscount:** P\_ID(pk), Discount\_ID(FK)
13. **ProductPurchase:** P\_ID(pk), Purchase\_ID(FK)
14. **Sale:** Sale\_ID(PK), Unit\_Price, Sale\_Quantity, Sale\_SubTotal.
15. **ProductSale:** P\_ID(pk), Sale\_ID(FK)
16. **SalesmnSale:** S\_ID(PK), Sale\_ID(FK)
17. **SalesmanBill:** S\_ID(PK), InvoiceNO(FK).
18. **BillSale:** InvoiceNo(PK), Sale\_ID(FK), Sale\_Quantity, Unit\_Price, SubTotal.