



Dhirubhai Ambani University

IT 214

G3_11

Optitrack

(optional crm software)

Group Details

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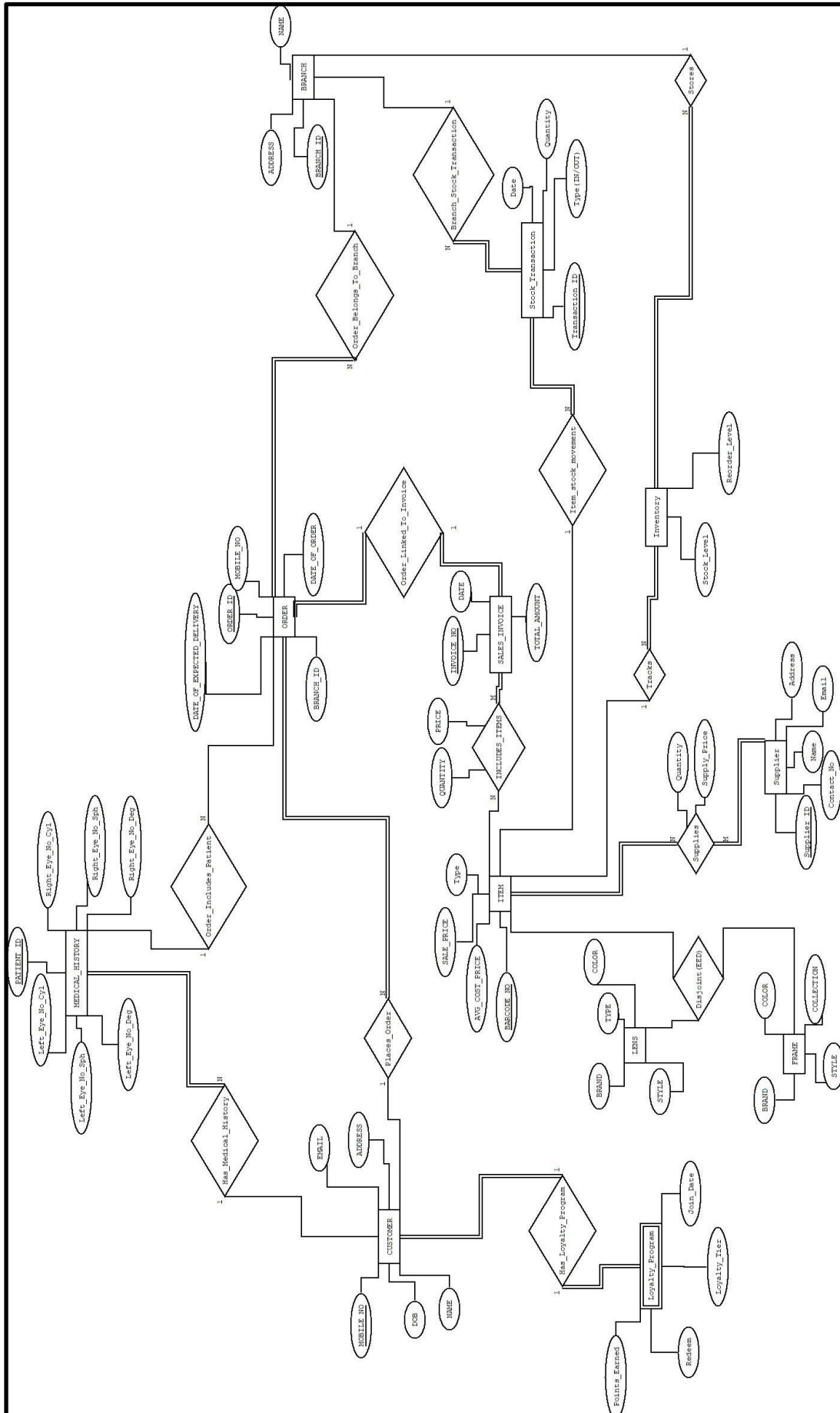
Sneh Shah — 202301134

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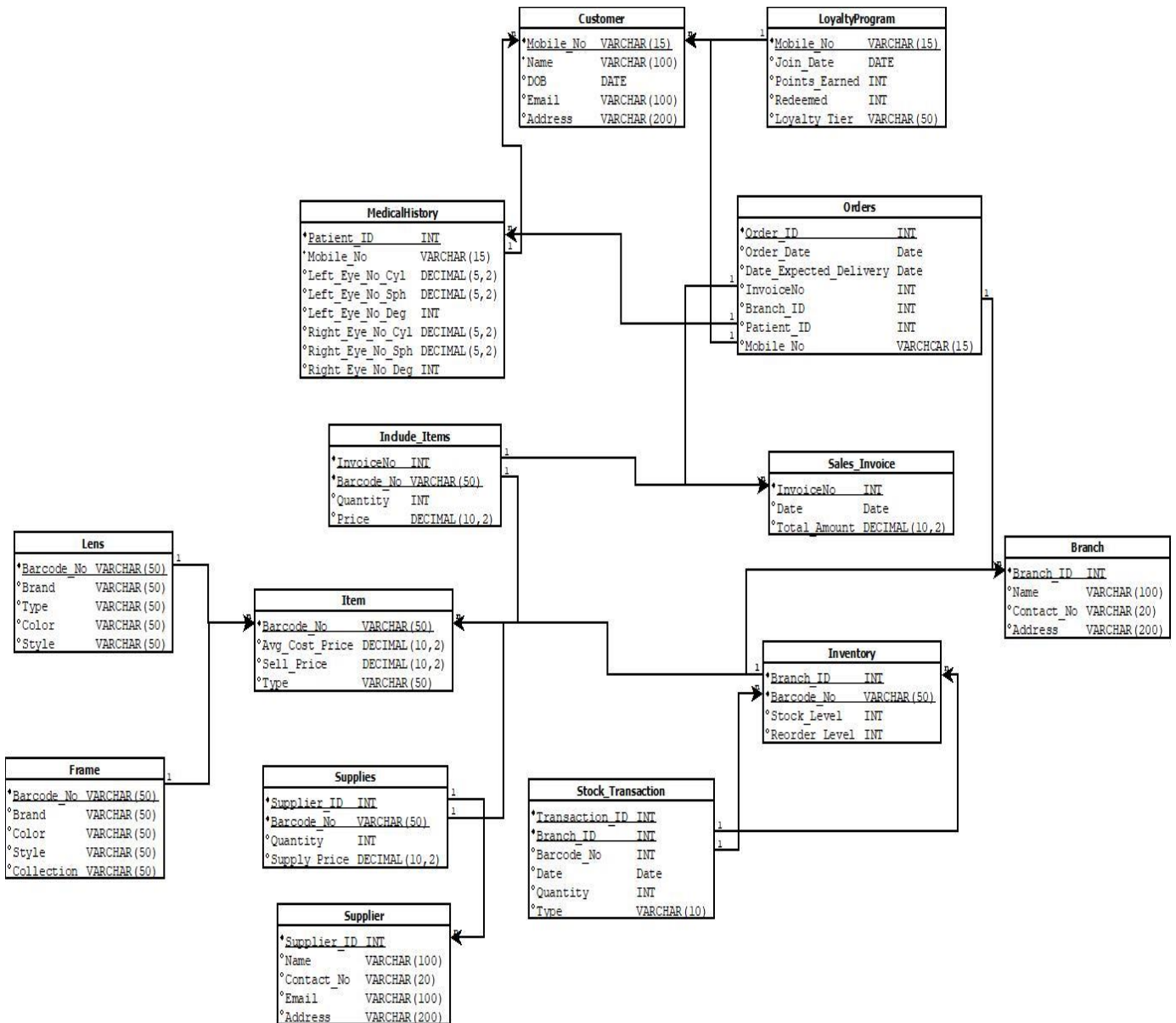
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ER Diagram



Relational Schema



MINIMAL SET + BCNF FORM

Definition of BCNF:

A relation is in Boyce-Codd Normal Form (BCNF) if and only if for every non-trivial functional dependency

$X \rightarrow Y$ in the relation, X is a superkey. In other words, the determinant X must contain a candidate key for the relation.

1. Medical History

- Primary Key: Patient_id, Mobile_No
- Functional Dependencies:
 $\text{Patient_id, Mobile_No} \rightarrow \text{Left_Eye_No_Cyl ,}$
 $\text{Left_Eye_No_Sph , Left_Eye_No_Deg , Right_Eye_No_Cyl}$
 $\text{, Right_Eye_No_Sph , Right_Eye_No_Deg}$
- BCNF Justification: The only determinant is Patient_id , Mobile_No which is the primary key. Therefore, this relation satisfies BCNF.

2. Customer

- Primary Key: Mobile_No
- Functional Dependencies:
 $\text{Mobile_No} \rightarrow \text{Email , Address , DOB , Name}$
- BCNF Justification: The only determinant is Mobile_No , which is the primary key. Therefore, this relation satisfies BCNF.

3. Loyalty Program

- Primary Key: Mobile_No
- Functional Dependencies:
 $\text{Mobile_No} \rightarrow \text{Join_Date , Points_earned , Redeem ,}$
 Loyalty_Tier
- BCNF Justification: The only determinant is Mobile_No , which is the primary key. Therefore, this relation satisfies BCNF.

4. Branch

- Primary Key: Branch_Id
- Functional Dependencies:
Branch_Id \rightarrow Address , Name
- BCNF Justification: The only determinant is Branch_Id , which is the primary key. Therefore, this relation satisfies BCNF.

5. Order

- Primary Key: Order_Id
- Functional Dependencies:
Order_Id \rightarrow Date_Of_Expected_Delivery , Date_Of_Order , Mobile_No , Branch_Id , Invoice_No , Patient_Id
- BCNF Justification: The only determinant is Order_Id , which is the primary key. Therefore, this relation satisfies BCNF.

6. Sales_Invoice

- Primary Key: Invoice_No
- Functional Dependencies:
Invoice_No \rightarrow Date , Total_Amount
- BCNF Justification: The only determinant is Patient_id , which is the primary key. Therefore, this relation satisfies BCNF.

7. Item

- Primary Key: Barcode_No
- Functional Dependencies:
Barcode_No \rightarrow Avg_Cost_Price , Sale_Price , Type(Lens/Frame)
- BCNF Justification: The only determinant is Barcode_No , which is the primary key. Therefore, this relation satisfies BCNF.