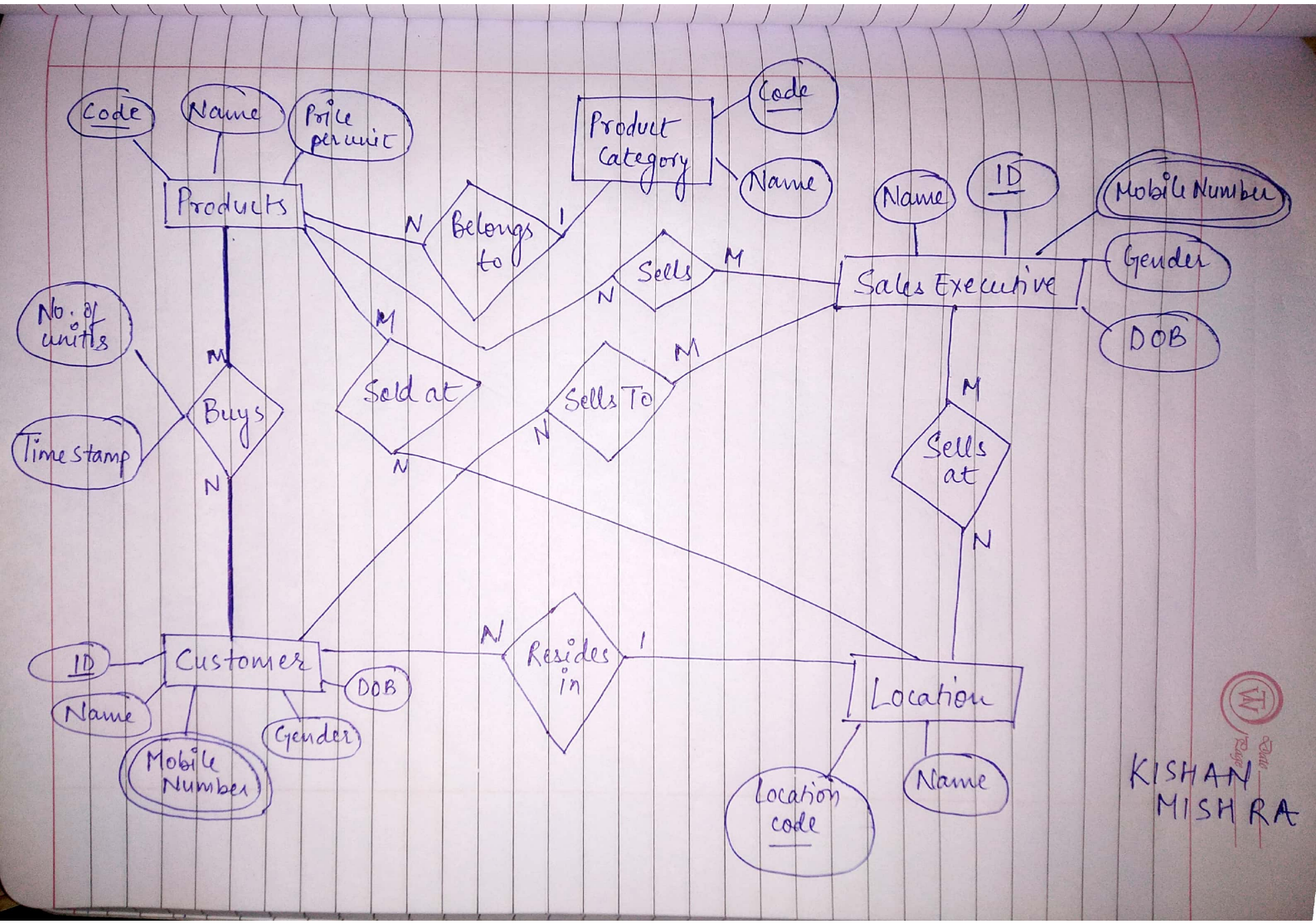

2) We have 5 entities = Products, Customer, Location, Sales Executive, Product category

∴ 5 tables for entities.

For all many to many relation, there has to be a table.

(a) Sales Executive Table.

ID	Name	Mobile No.	Gender	DOB

(b) Products Table

Code	Name	Price per Unit	Prod category code

∴ There is a many to one relation b/w Products & Products category table. Hence we need Prod category code as a FK to join the

(c) Customer Table

Customer to Location is again a many to one relation. ∴ we'll need Location Code in Customer table that'll act as a FK for joining Location Table.

ID	Name	Mobile Number	Gender	DOB	Location Code

(d) Location Table

Code	Name

(e) Product Category Table

Code	Name

(f) Sells Table : Many to many (Product, Sales Exec...)

Product Code	Sales Executive ID

(g) Sold At Table : Many to Many (Product, Location)

Product Code	Location Code

(h) Sells To Table : Many to Many (Customer, Sales Executive)

Customer ID	Sales Executive ID

(i) Sells At : Many to Many (Sales Executive, Location)

Sales Executive ID	Location Code

(j) Buys Table : Many to Many (Product, Customer)

Product Code	Customer ID	No. of Units	Time stamp

3) Normalization : considering Customer's Table.

ID	Name	Mobile	DOB	Gender	Location Code.

we have ID as a primary key ∴ candidate key is also ID.
so ID is the prime attribute, and rest all are non-prime.

I have considered Mobile Number as a Multivalued Attribute ∴ considering a random data.

ID	Name	Mobile	DOB	Gender	Location Code
1	Kishan	8368301555 9807657301	6/11/99	M	LKO

↳ we can repeat this record with different Mobile Numbers it'll look like :

ID	Name	Mobile	DOB	Gender	Location Code
1	Kishan	8368301555	6/11/99	M	LKO
1	Kishan	9807657301	6/11/99	M	LKO

↳ But there'll be a lot of redundant data ∴ we can make a separate table for Multivalued Attributes.

∴ It'll look like:

ID	Name	DOB	Gender	Location Code
1	Kishan	6/11/99	M	LKO

and

Cust_ID	Mobile
1	8368301555
1	9807637301

- Now this table is in 1NF.
- Table is in 2NF as no part of CK determines a non prime attribute.
- Table is in 3NF as no non prime attribute determines a non prime attribute.
- Table is in BCNF, as no attribute is able to determine the prime attribute.
- Similarly, it can be checked for other tables.