

SYSTEM DESIGN DOCUMENT
For
Pharmacy management system

Group members:

A VENKATA SAI ADITHYA	B200820CS
P SOMASHEKHAR	B200836CS
L VENTAKA MANOGNA	B200786CS
M RISHITA	B200778CS
K HEMA BHARGAVI	B200776CS

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Revision History

Date	Version	Author	Change
01-11-2022	1	Adithya,Somashekhar,Hema bhargavi,Rishita,Manogana	No changes

1.Purpose:-

The system Design Document discusses converting conceptual data to physical data constructs. The system design Document gives brief information about ER diagram, database schema, the relation between entities, and attributes of the Pharmacy database management system.

1.1 Document Objective:-

To describe the design of a database, that is, a collection of related data stored in one or more computerized files that can be accessed by users or computer developers via a DBMS. PMS provides information about all entities present in the relational schema.

To serve as a basis for implementing the database and related software units. It provides visibility into the design and provides information necessary for software development.

1.2 Intended Audience:-

This document provides detailed information about PMS database which can be read and understood by project designers and project evaluators.

1.3 Acronyms and abbreviations:-

DBMS = Database Management System

SDD = System Design Document

PMS = Pharmacy Management System
ERD = Entity Relational Diagram
Med_ID = Medicine_ID
D.O.J = Date of Joining
M_date = Manufactured Date
M_Company = Manufacturing Company
t_quantity = total Quantity
1NF: First Normal Form
2NF: Second Normal Form
3NF: Third Normal Form

2.Assumptions,Constraints and Dependencies:-

2.1 Assumptions:-

Assumptions we followed to our PMS:-

- PMS deals with only one company and medical shops owned by that company.
- Customers are not regular
- Assigning only one employee(pharmacist) to one shop.
- Manager is also an employee.
- All shops are maintained by a single manager.
- Customer has only one phone number(not a multivalued attribute)

2.2 Constraints:-

- Each staff member has an individual username and password.
- Username for each staff is different.

3 System Overview :-

This database is designed for the Pharmacy shops. This will be replacing the traditional manual based ways to manage the shops. Here the employee will be able to do the work easily and efficiently. This helps the employees, will be able to avoid the mistakes mostly.

This system completely focuses on the pharmacy management system and completely build with MySQL and PHP. In this system, Pharmacy manager will be able to do the following Operation :-

1. Add the medicine
2. Search for the medicine.
3. Delete the medicine.
4. maintaining the arrangement of the medicines
5. Can also do the billings
6. Can also get the weekly report on the sales.
7. will also get notifications about the medicine info.

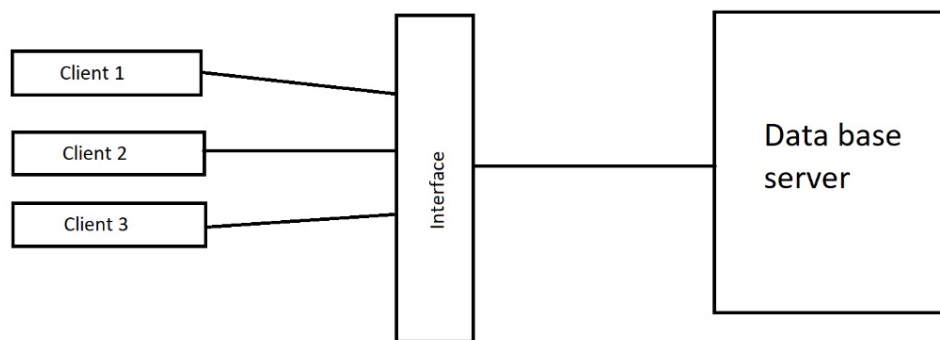
These above operations are detailed discussed in this document, which will be helpful to the designers and developers during the implementation of the database.

4 Architecture:-

This system architecture is the client server architecture. Here the clients are pharmacy manager and employees in the shops. It also provides the fast and direct communication between the clients and servers. The server contains the data about the pharmacy where as the clients will be able to

access the data easily through the system interface. Clients can access the server through Personal Computers or Laptops (Minimum of 4 GB RAM).The interface is built in such a way So that the clients will be able to access the data by the queries. The Software requiements of the computer to access the data for a Computer are Operating system should be any version of windows except XP and 2003.The Complete data is stored on the XAMPP server.

Clients → Personal Computers or Laptop
interface → designed with HTML,CSS,PHP,MySQL.
Server → XAMPP Server.



5 ER Design:-

5.1 Entities and Attributes to ER of PMS:-

- 1.Company
- 2.Shops :- id , name ,address(composite), phone number
- 3.Employee:-id, name, date of joining ,phone number
- 4.Login(employee):- Username,password
- 5.Notification:-id,type,message

6.Medicine:-id,name, expiry date, manufacture date,manufacture company,type,formula, total quantity,price

7.Bills:-id

8.Customer:- name, phone number

9.shelf:- shelf name,shelf quantity

5.2 Cardinality :-

Company to shops:-

One company has many shops -> 1:n

Shops to shelves:-

One shop has many shelves -> 1:n

Shops to employee:-

One employee in one shop (as per assumption)->1:1

Shops to medicine:-

Shops have many medicine and one type of medicine can be in many shops -> m:n

Medicine to shelf:-

One type of medicine can be in many shelves and one shelf has many type of medicines -> m:n

Employee to bill:-

All bills are made by employee and one employee can make many bills -> 1:n

Medicine to bill:-

Each bill contains many medicines and one type of medicine can be in many bills -> m:n

Bill to customer:-

Each customer has one bill -> 1:1

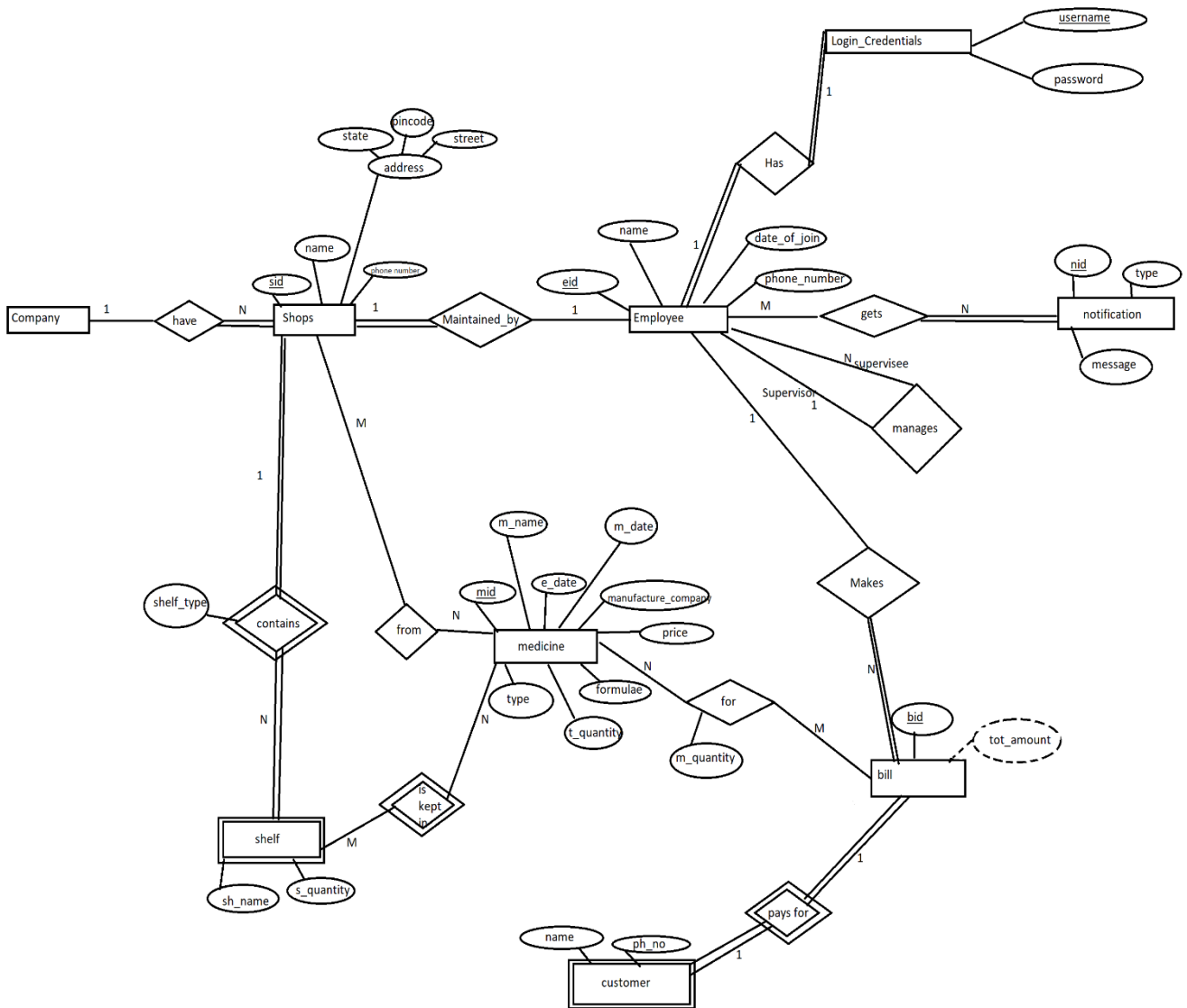
Employee to notification:-

Employee can receive many notification and each notification can be received by both employee of the shop and manager -> m:n

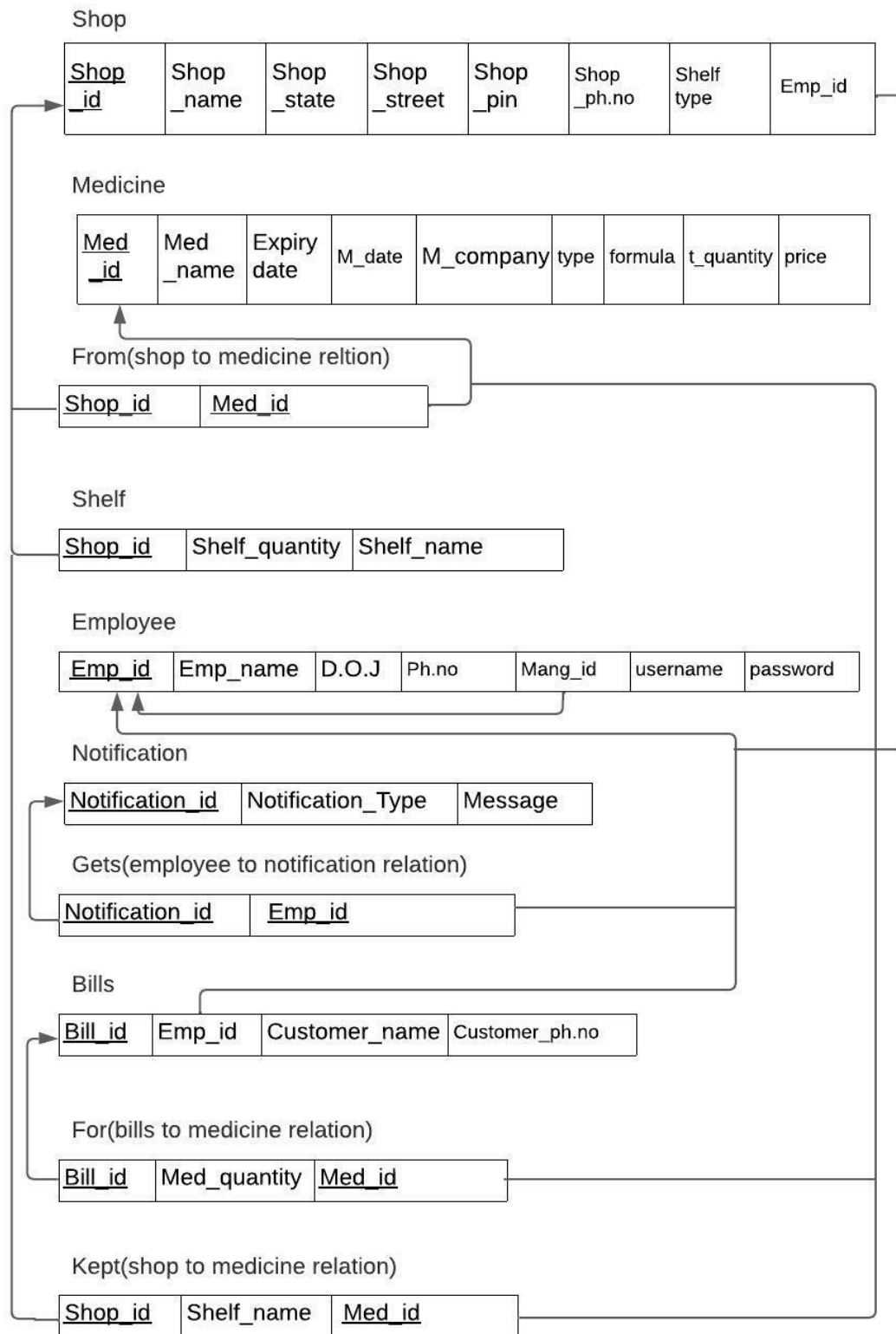
Employee to login:-

Each employee has their own login credentials-> 1:1

5.3 ER Diagram:-



6.Relational Schema :-



7.Normalization:-

Shop:-

Shop_id → {shop_name, shop_state, shop_street, shop_pin, shop_ph.no, emp_id, shelf_type}

Shop_pin → shop_state

Here shop_id is Candidate key and primary key

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

Not in 3NF because in FD Shop_pin → {shop_state} both LHS and RHS are non-prime attributes

<u>Shop_id</u>	Shop_name	Shop_street	Shop_pin	Shop_ph.no	Emp_id	Shelf_type
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<u>Shop_pincode</u>	Shop_state
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Now Shop is in 3NF and in BCNF

Medicine:-

Medicine_id → {med_name, expiry_date, M_date, M_company, type, formula, WH_quantity, price}

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

Employee:-

$\text{Emp_id} \rightarrow \{\text{emp_name}, \text{D.O.J}, \text{Ph.no}, \text{mang_id}, \text{username}, \text{password}\}$

$\text{Username} \rightarrow \{\text{password}\}$

Here Emp_id is Candidate key and primary key

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

Not in 3NF because in FD $\text{Username} \rightarrow \{\text{password}\}$

both LHS and RHS are non-prime attributes

<u>Emp_id</u>	Emp_name	D.O.J	Ph.no	Mang_id	username
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<u>username</u>	password
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Now medicine is in 3NF and in BCNF

Notification:-

$\text{Notification_id} \rightarrow \{\text{notification_type}, \text{message}\}$

Here Notification_id is Candidate key

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

Bills:-

$\text{Bill_id} \rightarrow \{\text{emp_id}, \text{cust_name}, \text{cust_ph.no}, \text{tot_amount}\}$

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

Gets (employee to notification relation):-

$\text{Notification_id} \rightarrow \text{emp_id}$

Here notification_id is primary key

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

For(bills to medicine relation):-

$\text{med_id} \rightarrow \text{med_quantity}$

here med_id is primary attribute

No multivalued and composite attributes hence in 1NF

No partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

Kept(shop to medicine relation):-

$\{\text{Shop_id}, \text{med_id}\} \rightarrow \text{shelf_name}$

Here {shop_id,med_id} is primary key

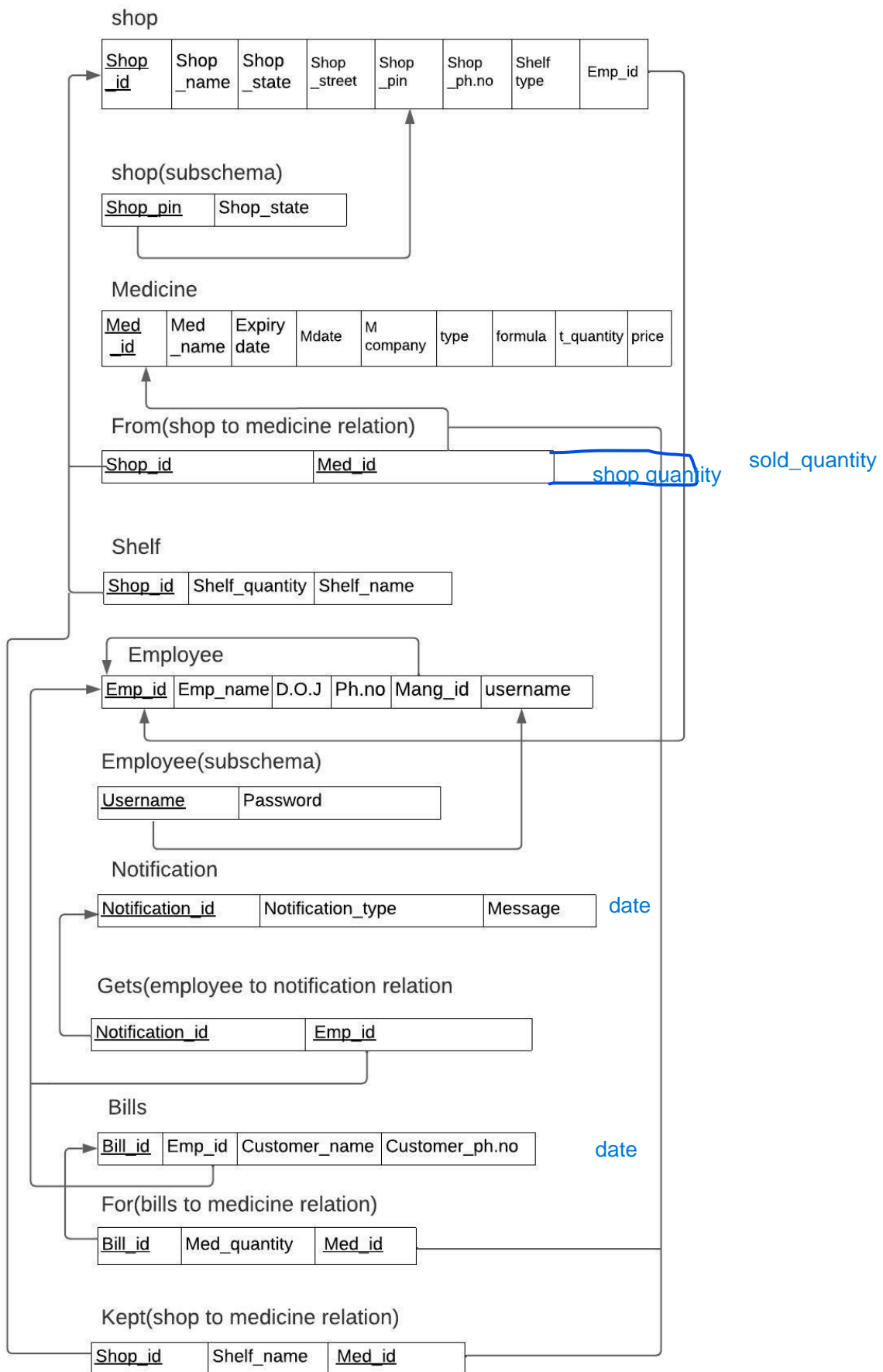
No multivalued and composite attributes hence in 1NF

Here shop_id or med_id alone doesn't determine shelf_name
so no partial functional dependencies hence in 2NF

No transitive dependencies hence in 3NF

LHS is primary key hence in BCNF

7.1 Relational Schema after normalisation:-



8 DATA FORMATS:-

Table	Column	Data type	Length	Type of key
Shop	Shop_id	CHAR	5	Primary Key
	name	VARCHAR	20	
	street	VARCHAR	50	
	Pincode	INT	6	
	Ph.no	INT	10	
	Emp_id	CHAR	5	
	Shelf_type	CHAR	1	Foreign Key
Employee	Emp_id	CHAR	5	Primary key
	Name	VARCHAR	20	
	DOJ	DATE	yyyy/mm/dd	
	Ph.no	INT	10	
	Mang_id	CHAR	5	
	Username	VARCHAR	8	Foreign Key

Medicine	Med_id	CHAR	5	Primary key
	Med_name	VARCHAR	20	
	Expiry_date	Date	yyyy/mm/dd	
	M_date	Date	yyyy/mm/dd	
	M_company	VARCHAR	20	
	Formula	VARCHAR	20	
	Type	VARCHAR	20	
	T_quantity	INT	7	
	Price	INT	4	
From	Shop_id	CHAR	5	Foreign and Primary key Foreign and Primary key
	Med_id	CHAR	5	
Shelf	Shop_id	CHAR	5	Foreign key
	Shelf_quantity	INT	5	
	Shelf_name	VARCHAR	10	
Notificati on	Notification_ Id	CHAR	10	Primary key
	Message	VARCHAR	50	

gets	Notification_ Id	CHAR	5	Foreign and primary key
	Emp_id	CHAR	5	Foreign and primary key
Bills	Bill_id	CHAR	5	Primary key
	Emp_id	CHAR	5	Foreign key
	Cust_name	VARCHAR	20	
	Cust_ph.no	INT	10	
For	Bill_id	CHAR	5	Primary key and Foreign key
	Med_quantity	INT	5	
	Med_id	CHAR	5	Primary Key and Foreign key
Kept	Shop_id	CHAR	5	Primary Key and Foreign key
	Shelf_name	VARCHAR	10	
	Med_id	CHAR	5	Primary Key and Foreign key
shop(sub schema)	Shop_ Pincode	VARCHAR	6	Primary key
	Shop_ state	CHAR	20	
Employee	Username	VARCHAR	8	Primary key

(subschema)	Password	VARCHAR	8	
Notification(subschema)	Message	VARCHAR	50	Primary Key
	Notification_type	CHAR	15	

9 INTERFACES AND BEHAVIOUR:-

QUERY/INPUTS	DECISION
Change password	<p>System displays the change password form and by entering both old and new password ,password is changed</p> <p>In case of wrong password system displays an error message</p>
To get bill	System displays bill form and by entering required details, bill is generated
Employee login	<p>Login form is displayed and by using login credentials Employee can login</p>
Search the Medicine	User clicks on medicine record option. Then click on search medicine ,enter Medicine id, it gives the information about medicine.

	<p>If there is no such medicine system displays an error message.</p>
Add Medicine Data	<p>System asks to login,then by clicking add new medicine data ,record form is displayed. Enter details of medicine and click save.</p> <p>In case of entering any wrong data,an error message is displayed.</p>
Delete Medicine data	<p>Employee has to first search medicine and then select the medicine to delete.</p> <p>After deleting ,system displays “successfully deleted” message.</p>
Update Medicine Data	<p>Employee search medicine And by selecting edit option medicine details can be updated.</p> <p>After updating,system displays “successfully updated” message.</p>
To view the arrangement of medicines	<p>Employee search the medicine and shelf number</p>

	is displayed in medicine details.
Get report on medicine data	After login ,employee clicks on report option. System generates a document containing medicine data sold in a month

System also gives notifications to employee

1. when there is shortage of a particular medicine.
2. When a medicine nears the expiry date.

10 Performance:-

10.1 Performance Requirements

The pharmacy management system operates the queries in a small amount of time (in seconds) and it can be accessed by many users at a time or concurrently.

10.2 Safety and Security Requirements

For customer does not need any login details and only deals with one query i.e to search for medicine near his area but employees of the pharmacy company need login details for manipulating the database. So the database can be protected from others.