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Documentation On

"CHILD VACCINATION NOTIFIER SYSTEM"
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Submitted By:

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1. INTRODUCTION

Immunization is key to child survival, missing immunization routine can be life threatening for infants and children. More than half of the world's children still miss out the essential vaccines they need to survive and live healthy lives.

In India 1 Million children's die before there 5th birthday[1], among this 1 Million 2/4 die due to infectious cause, this 2/4 deaths can be minimized by intervention of immunization and access to proper treatment. Out of this Immunization is most efficient and cost effective way to protect children's lives and future.

1.1   Existing System:

Existing system for a vaccination is based on traditional way of keeping records and details on paper and registers so it is hard to manage all this system with pen and paper. It gets really tough to maintain the records and then keep track of past records and result of this only 65% of children's in India receive full vaccination during first year of their life.[2]

Some challenges to achieve full vaccination:
- Limited capacity of staff (specially trained staff).
- Gaps in key areas such as predicting demand of vaccines.
- India also lacks robust system to keep track of vaccine records.
- More vaccine wastage.
- No proper logistic and cold chain management.
- Less awareness in parents about vaccination.

Hence this system is proposed to overcome the flaws of the existing system and help parents and government to achieve full vaccination.

1.2 Need For New System:

Kid'sImmunization is an application on Child Vaccination in India that help parents keep track of the vaccination needs of their children. A parent will be register the child on the web application of Kid'sImmunization and a vaccination calendar[3] gets generated for that child. The child will be registered by the parent and vaccination record will updated at any end gets updated on the registered id of the parents.

This system provides following benefits:
- Vaccination records will be thereby digitized making a parent free from keeping manual vaccination records of the child.
- By making this system online, staff requirement is reduced.
- Can predict the demand of vaccines requirement easily as we have DOB of every registered child.
- Vaccine wastage is minimize.
- Parents can easily track the records of vaccines.

2. REQUIRMENT SPECIFICATION

2.1 FUNCTIONAL SPECIFICATION

Admin:
Admin can add a Hospital, Doctor and Vaccine and also view feedback.

Hospital Management:
Hospital can check the availability of vaccine and appointment list.

User:
User can check vaccine schedule, booking vaccination slot, view Doctor Information and also give feedback and generate vaccine certificate.

MODULE SPECIFICATION

User :-
• View Vaccine Schedule:
It is a system design especially for child vaccination. The User can view Available vaccine and find nearby hospital.

• Booking Vaccine:
The User can view Available vaccine and User can book for that vaccine.

• View Booking Details:
The User can see the information of vaccine booking and also delete that booking.

Admin :-
Dashboard:
In this section admin can view the overview of the Vaccination (Like total vaccine, total User, total Hospital)

Hospital:
Admin can create/edit/delete hospital name.

Doctor:

The Admin can add the doctor so that the User can see the available doctor and book the slot. Admin can also edit and delete the doctor.

Vaccine:

Admin can add/delete/update the vaccine information.

Registered User:

Admin can view the registered User.

Hospital Management :-

Vaccine Availability:

Hospital can check the availability of vaccine.

View Appointment List:

Hospital can view the appointment list of User for vaccination.

View Doctor List:

Hospital can view the list of doctors.

2.2 NON-FUNCTIONAL SPECIFICATION :

Following Non-Functional Requirements will be there in the insurance to the internet:

   (i) Secure access to consumer's confidential data.
   (ii) 24X7 availability.
   (iii) Better component design to get better performance at peak time.
   (iv) Flexible service based architecture will be highly desirable for future extension. Non-Functional Requirements define system properties and constraints.

   Various other Non-Functional Requirements are:
   ☐ Security
   ☐ Reliability
   ☐ Maintainability
   ☐ Portability
   ☐ Extensibility

 Reusability
 Compatibility
 Resource Utilization

2.3 Performance Requirements :

 In order to maintain an acceptable speed at maximum number of uploads allowed from a particular customer as any number of users can access to the system at any time. Also the connections to the servers will be based on the attributes of the user like his location and server will be working 24X7 times.

2.4 Hardware Requirment :

 Hardware requirements for insurance on internet will be same for both parties which are as follows:

RAM	2 GB
Hard disk	320 GB
Processor	Dual Core

2.5 Software Requirements :

Client side:

Web Browser	Google Chrome or any compatible browser
Operating System	Windows or any equivalent OS

Server side:

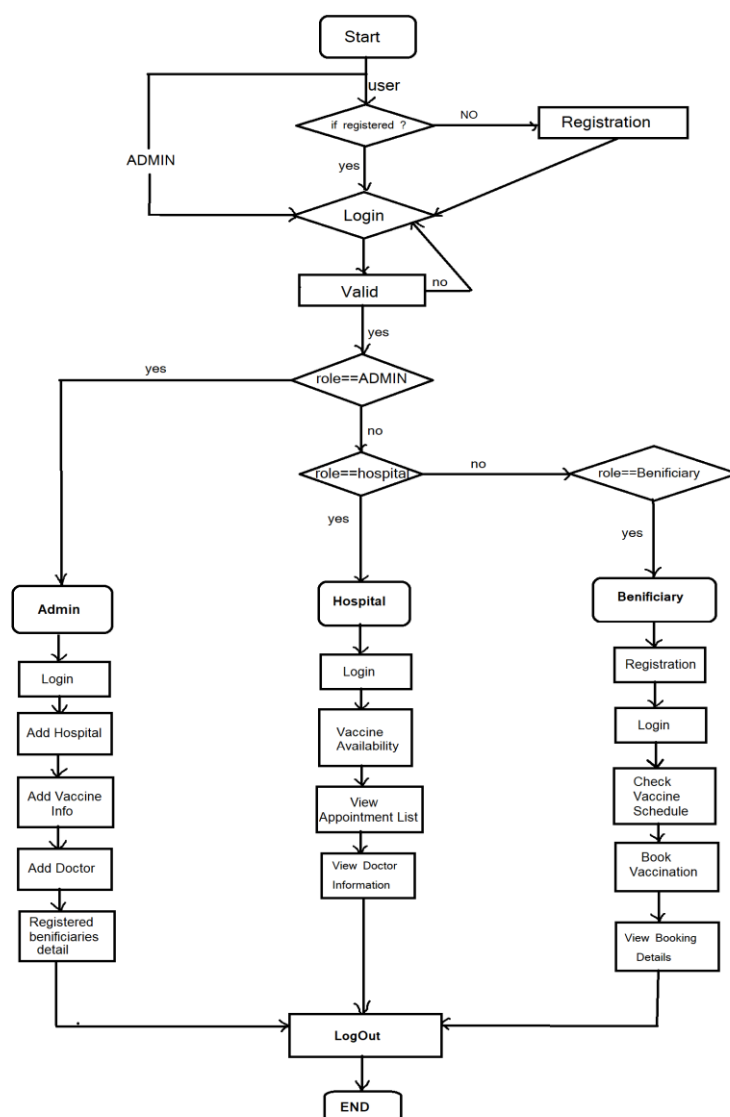| Web Server	TOMCAT
Server side Language	SPRING BOOT
Database Server	MYSQL
Web Browser	Google Chrome or any compatible browser
Operating System	Windows or any equivalent OS

3. SYSTEM DIAGRAM

3.1 System Flow Chart :
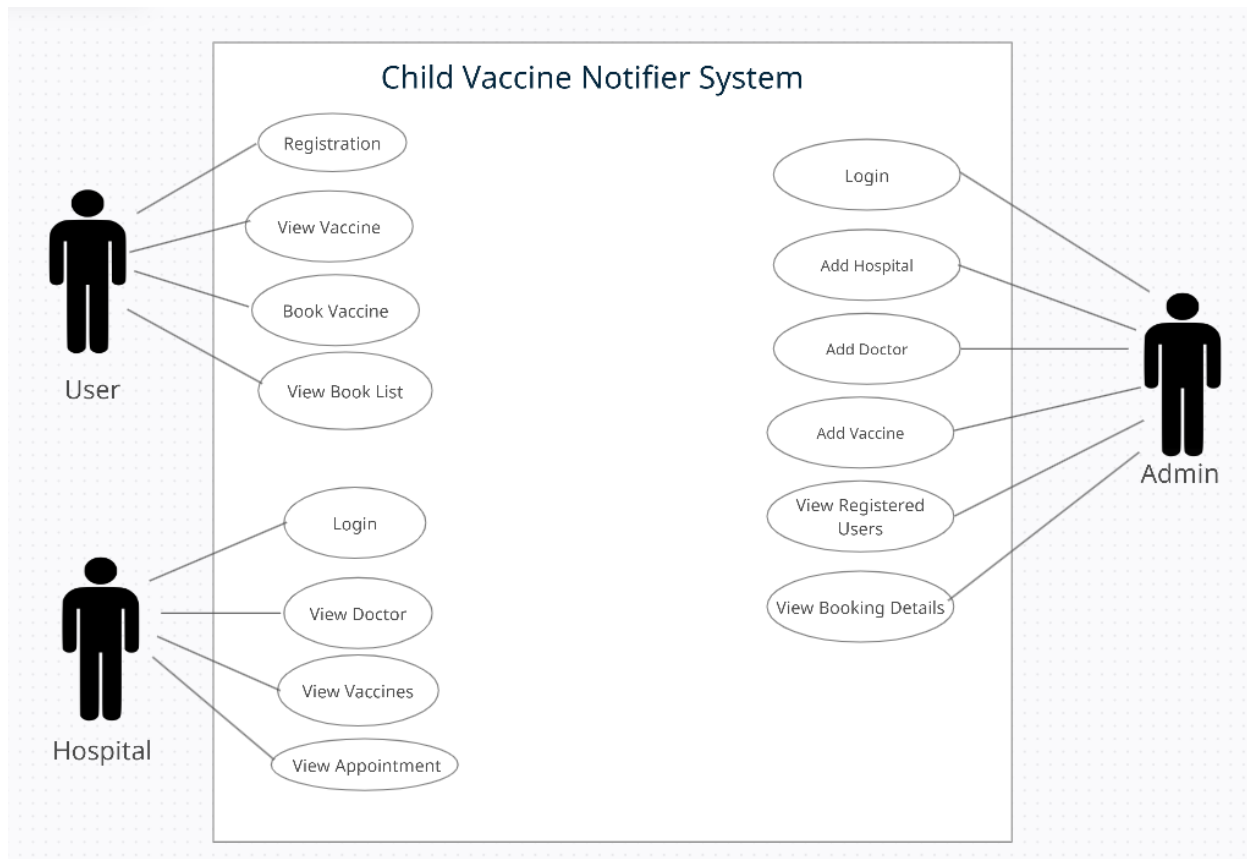

Figure 1. System Flow Chart

3.2 Use Case Diagram

Figure 2. Use Case Diagram

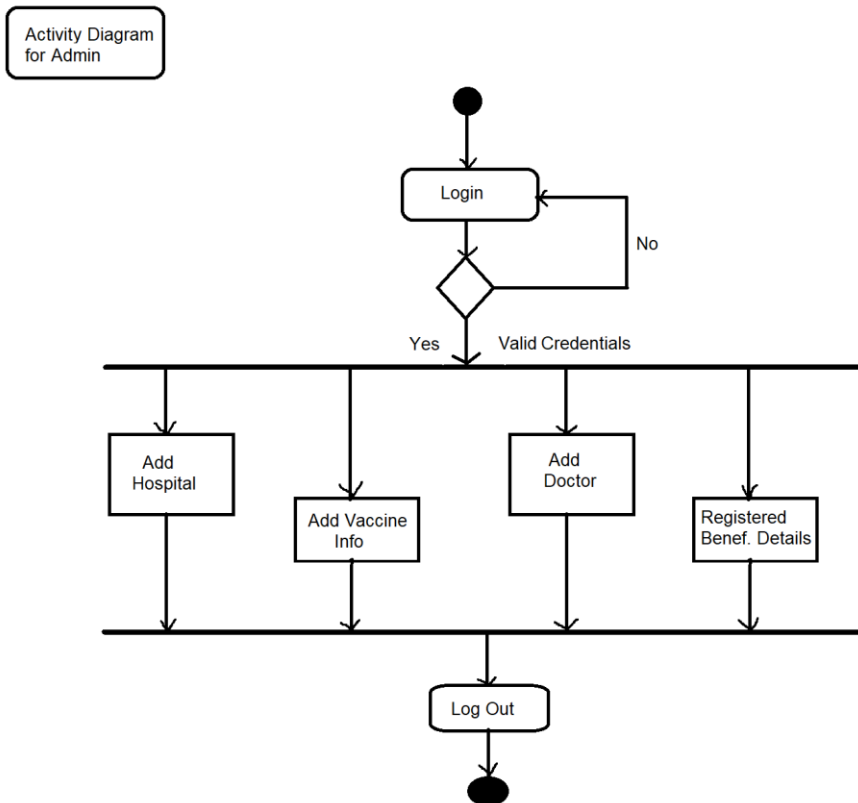# 3.3 Activity Diagrams :

Activity Diagram for Admin :

Figure 3. Activity Diagram for Admin

Activity Diagram for Hospital Management :
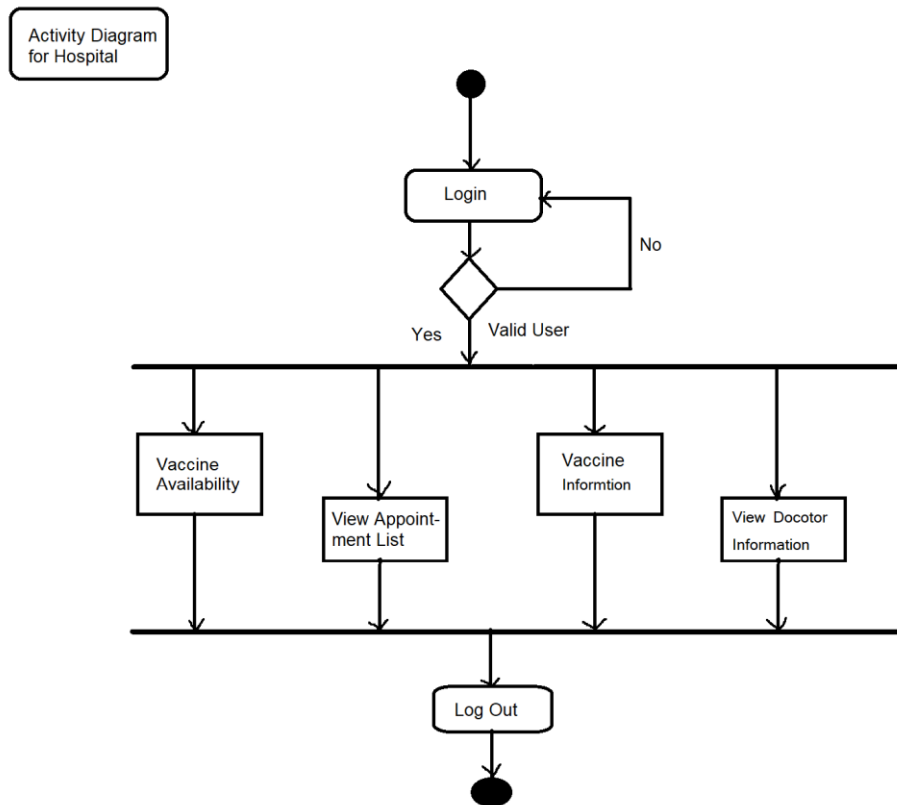
Figure 4 Activity Diagram for Hospital

Activity Diagram for User :
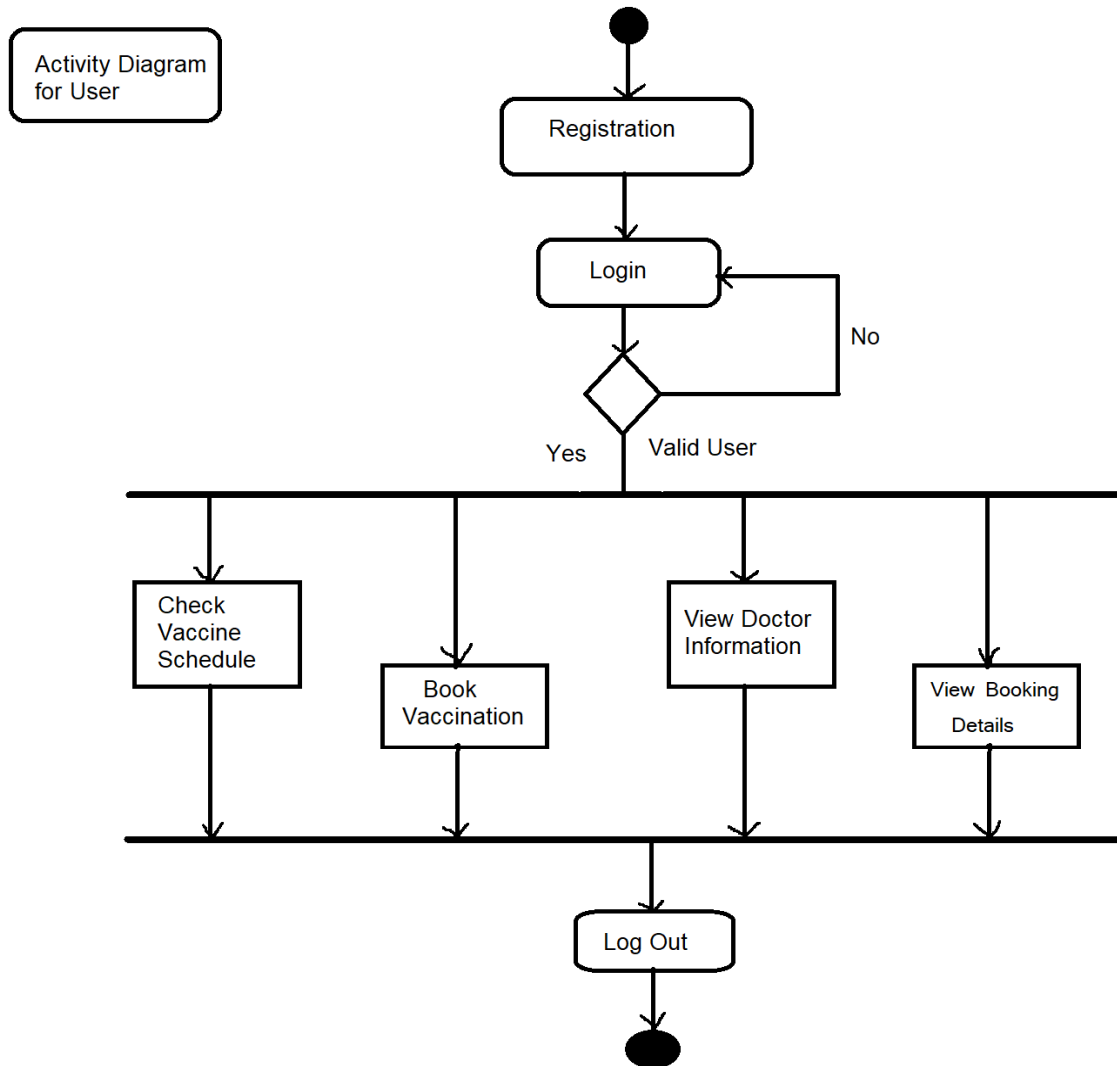

Activity Diagram
for User

Registration

Login

No

Yes   Valid User

Check
Vaccine
Schedule

Book
Vaccination

View Doctor
Information

View Booking

Details

Log Out

Figure 5. Activity Diagram for User

3.4 ER DIAGRAM :

The Entity-Relationship (ER) model was originally proposed by Peter in 1976 [Chen76] as a way to unify the network and relational database views. Simply stated the ER model is a conceptual data model that views the real world as entities and relationships. A basic component of the model is the Entity-Relationship diagram which is used to visually represent data objects. Since Chen wrote his paper the model has been extended and today it is commonly used for database design for the database designer, the utility of the ER model is:

- It maps well to the relational model. The constructs used in the ER model can easily be transformed into relational tables.

- It is simple and easy to understand with a minimum of training. Therefore, the model can be used by the database designer to communicate the design to the end user.

- In addition, the model can be used as a design plan by the database developer to implement a data model in specific database management software.
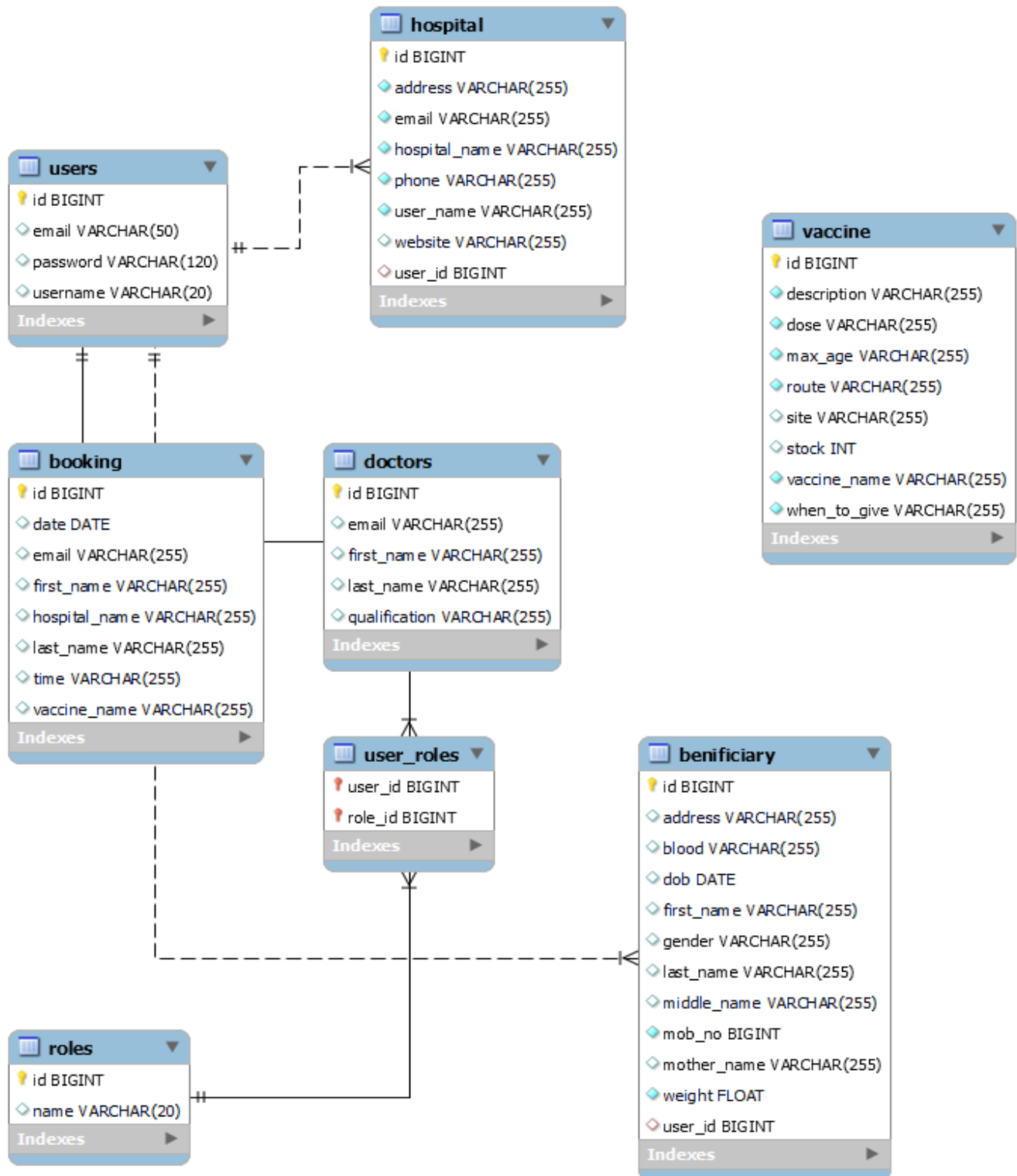
Figure 6. ER Diagram

4. DATABASE DESIGN

The data in the system has to be stored and retrieved from database. Designing the database is part of system design. Data elements and data structures to be stored have been identified at analysis stage. They are structured and put together to design the data storage and retrieval system.

A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make database access easy, quick, inexpensive and flexible for the user. Relationships are established between the data items and unnecessary data items are removed. Normalization is done to get an internal consistency of data and to have minimum redundancy and maximum stability. This ensures minimizing data storage required, minimizing chances of data inconsistencies and optimizing for updates. The MySQL database has been chosen for developing the relevant databases.

4.1 Roles Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
name	varchar(20)	YES		NULL	

4.2 Users Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
email	varchar(50)	YES	UNI	NULL	
password	varchar(120)	YES		NULL	
username	varchar(20)	YES	UNI	NULL	

4.3 User_Roles Table

Field	Type	Null	Key	Default	Extra
user_id	bigint	NO	PRI	NULL	
role_id	bigint	NO	PRI	NULL	

4.4 Vaccine Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
description	varchar(255)	NO		NULL	
dose	varchar(255)	NO		NULL	
max_age	varchar(255)	NO		NULL	
route	varchar(255)	NO		NULL	
site	varchar(255)	YES		NULL	
stock	int	YES		NULL	
vaccine_name	varchar(255)	NO		NULL	
when_to_give	varchar(255)	NO		NULL	

4.5 Benificiary Table:

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
address	varchar(255)	YES		NULL	
blood	varchar(255)	YES		NULL	
dob	date	YES		NULL	
first_name	varchar(255)	YES		NULL	
last_name	varchar(255)	YES		NULL	
middle_name	varchar(255)	YES		NULL	
mob_no	bigint	NO		NULL	
mother_name	varchar(255)	YES		NULL	
weight	float	NO		NULL	
gender	varchar(255)	YES		NULL	

4.6 Hospital Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
address	varchar(255)	NO		NULL	
email	varchar(255)	NO		NULL	
hospital_name	varchar(255)	NO		NULL	
phone	varchar(255)	NO		NULL	
user_name	varchar(255)	NO		NULL	
website	varchar(255)	YES		NULL	
user_id	bigint	YES	MUL	NULL	

4.7 Doctor Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
email	varchar(255)	YES		NULL	
first_name	varchar(255)	YES		NULL	
last_name	varchar(255)	YES		NULL	
qualification	varchar(255)	YES		NULL	

4.8 Booking Table

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
date	date	YES		NULL	
email	varchar(255)	YES		NULL	
first_name	varchar(255)	YES		NULL	
hospital_name	varchar(255)	YES		NULL	
last_name	varchar(255)	YES		NULL	
time	varchar(255)	YES		NULL	
vaccine_name	varchar(255)	YES		NULL	

5. CONCLUSION

Child vaccination notifier system can be inevitable part of the lifecycle of the modern medical institution. It automates numerous operations and enables smooth interactions of the users. User can access services and functionalities from anywhere and anytime for their own comfort. Developing the child vaccination notifier system is a great opportunity to create the distinct, efficient and fast delivering healthcare model. This system covers the needs of the patients, staff and hospital authorities and simplifies their interactions. Many countries have already experienced its advantages and continue developing new child vaccination notifier system project modules.

6. FUTURE SCOPE

This project can be enhanced further by

- This system currently takes care of vaccines given up to 7 years, so this limit can be increase up to 13/15 years.
- Message and Email alerts can be added to the system so that users do not miss the updates.
- Certificates can be generated on basis of successful vaccination.

7. REFERENCES

[1] https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality
[2] https://www.unicef.org/india/what-we-do/immunization
[3] http://www.nrhmhp.gov.in/content/immunisation