



Project Name:- VaccAlert: Child Vaccination
Management System
Batch DAC March-2024

Documentation On

**“VACCALERT: CHILD VACCINATION
MANAGEMENT SYSTEM”**
DAC March 2024

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1. Introduction:

1.1 Document Purpose:

This document communicates the business requirements and scope for developing VaccAlert: Child Vaccination Management System. The scope of this document is to define the functional and non-functional requirements, business rules and other constraints requirements.

1.2 Project Background:

Currently there is no computerized system to manage and monitor vaccinations given to children. Vaccination is very important to any child for healthy life. Without a centralized system, it is challenging to ensure that children receive their vaccinations at the right age, resulting in missed or delayed vaccinations. This can lead to outbreaks of preventable diseases when parents forget or choose not to vaccinate their children. Furthermore, unvaccinated children can spread diseases to other vulnerable populations, including infants and individuals with weakened immune systems. To address these problems, a software solution is needed to track and manage vaccination schedules, ensuring timely and complete immunization coverage. This system would help maintain high vaccination rates and protect public health by preventing the spread of infectious diseases.

1.3 Aim & Objectives:

The main objective of this project is to increase the vaccination rate by providing a comprehensive software solution for managing childhood vaccinations. The system will alert parents about upcoming vaccinations and their prices based on the child's birth date, according to the immunization chart prescribed by the Government of India. It will help users find nearby hospitals for treatment by providing addresses and contact numbers. It will provide descriptions of each vaccination, including any potential side effects, and offer a quick view summary report of completed and upcoming vaccines.

2. Business Requirements Overview:

- VaccAlert is a public web application accessible to all parents in India.
- It provides a platform for parents to manage their child's vaccination schedule conveniently.
- Initially targeting users in India, including parents, hospitals, and administrators involved in child healthcare.
- Digitizes vaccination records, streamlining record-keeping for parents and healthcare providers.
- Enhances communication between parents and healthcare providers, ensuring timely vaccinations.
- Provides administrators with tools for efficient system management and data security.

3. Functional Requirements Overview:

VaccAlert System consists of three modules described as below.

1. Parent Module
2. Hospital Module
3. Admin Module

3.1 Parent Module

- Parent can Sign Up and Sign in to his/her own account.
- Parents can modify their own profile.
- Parents can book appointment for vaccination.
- Parents can get reminders for upcoming vaccinations and medications.
- Parents can download vaccination records.
- Parents can communicate with hospitals for any related queries.

3.2 Hospital Module

- Hospitals can communicate with parents for vaccination and medication related queries.

3.3 Admin Module

- Admin manages parent and hospital accounts.
- Admin can generate reports.
- Admin can view statistics on user engagement & application usage.

4. Non-Functional Requirement:

- The website should use professional design, look and feel and color scheme.
- Users will have no limitations for accessing the application through Internet. The portal being an internet application, it is difficult specify exact number of visitor or users. Hence we will target the system to support between 5 and 10 million users on launch of phase 1.
- Being a public website, the site must follow general usability guidelines for menus, navigation, colors, links and other actions provided on the screens.
- The system should be designed in such a manner that user will be able to complete tasks in minimum number of steps.

5. Use-Case Diagram

5.1 Parent:

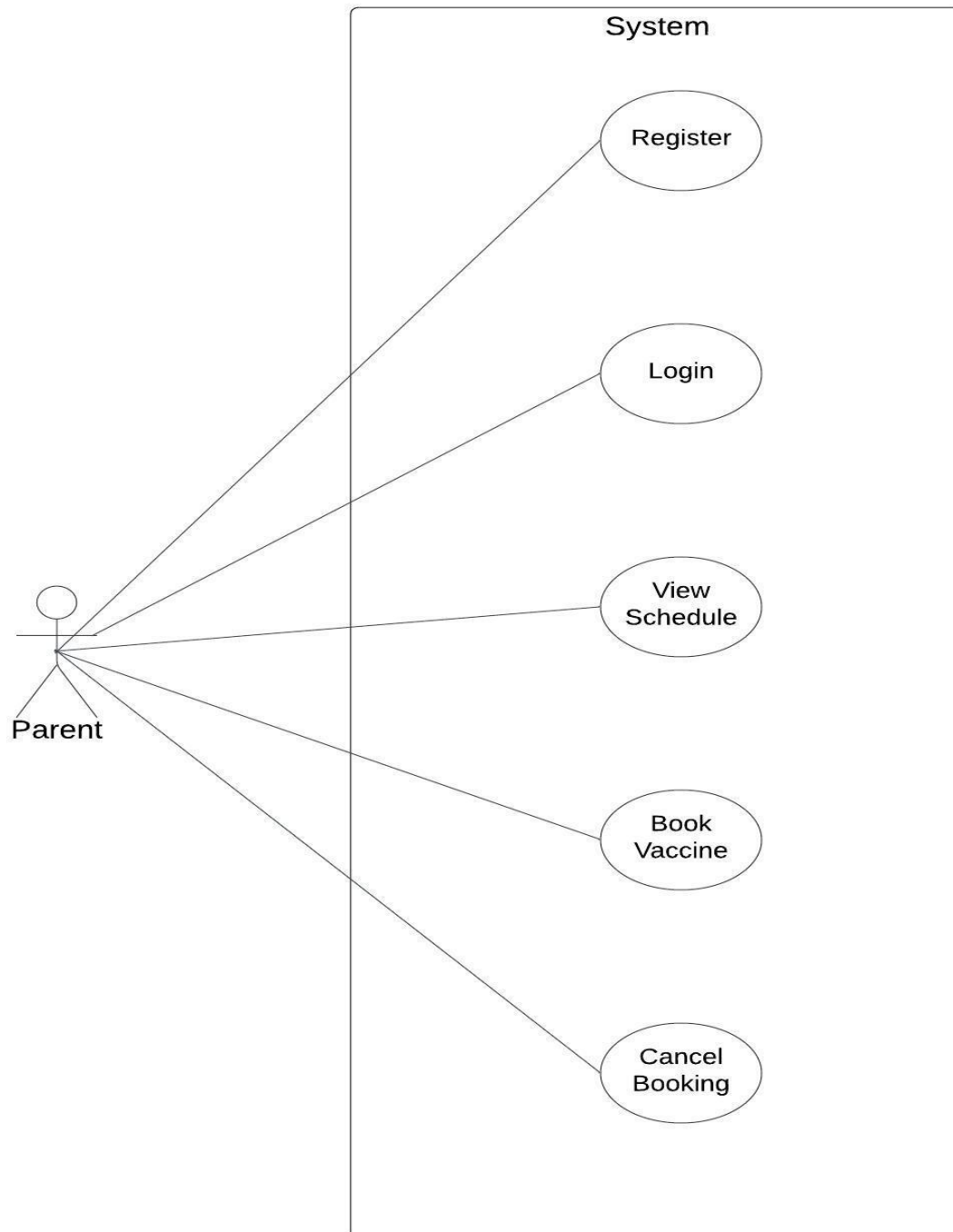


Fig. Use-Case Diagram for Parent

5.2 Hospital:

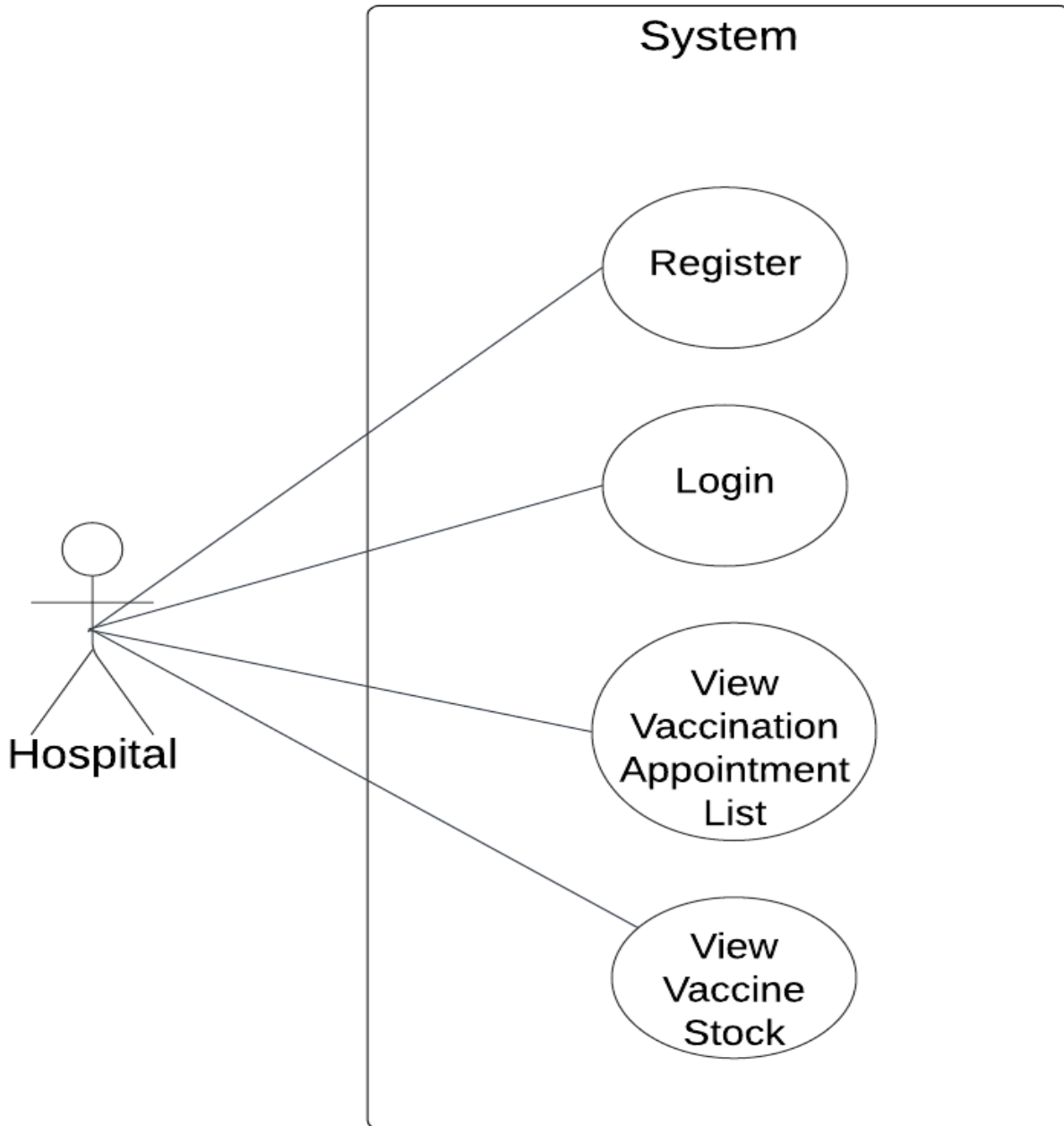


Fig. Use-Case Diagram for Hospital

5.3 : Admin :

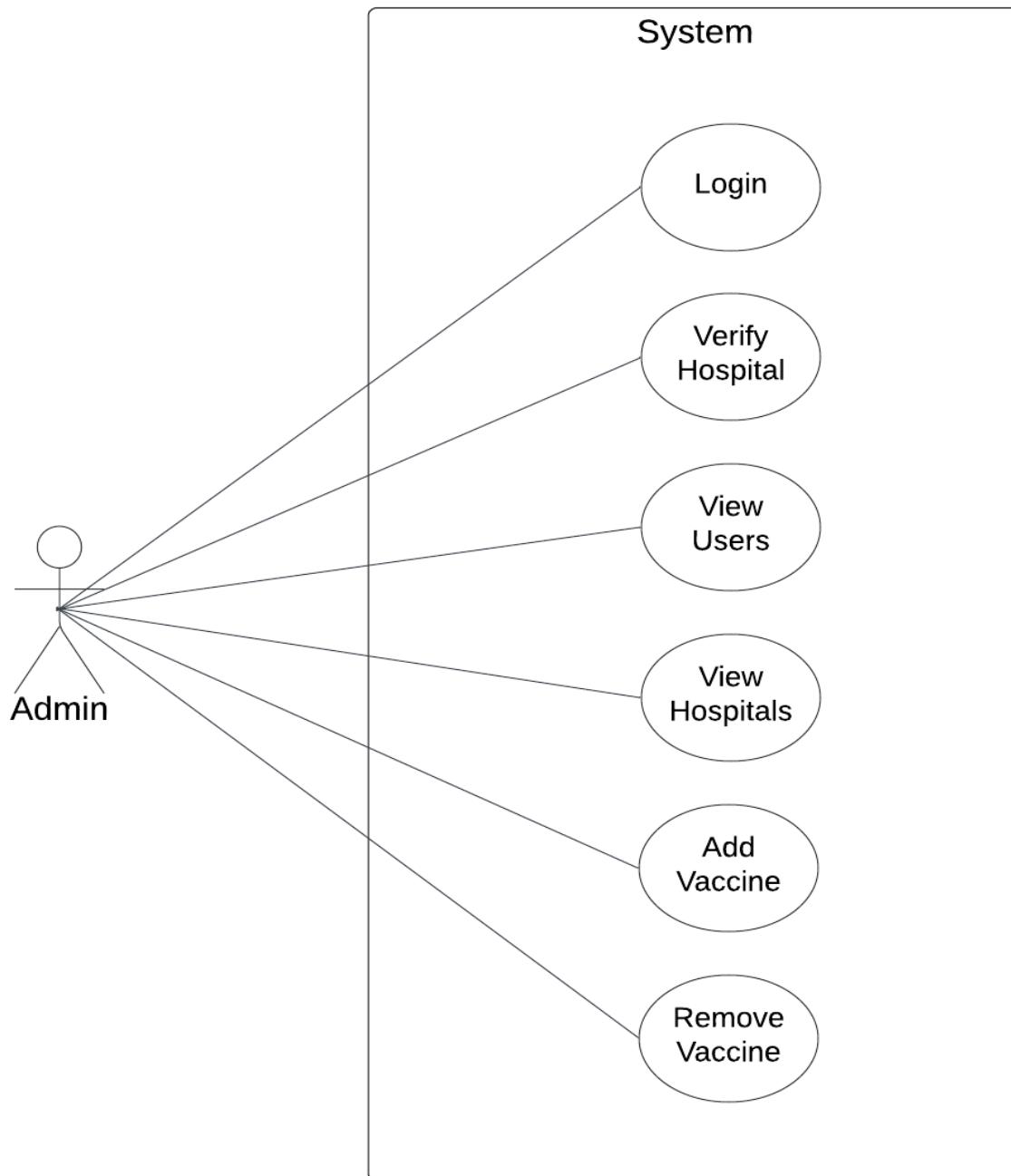
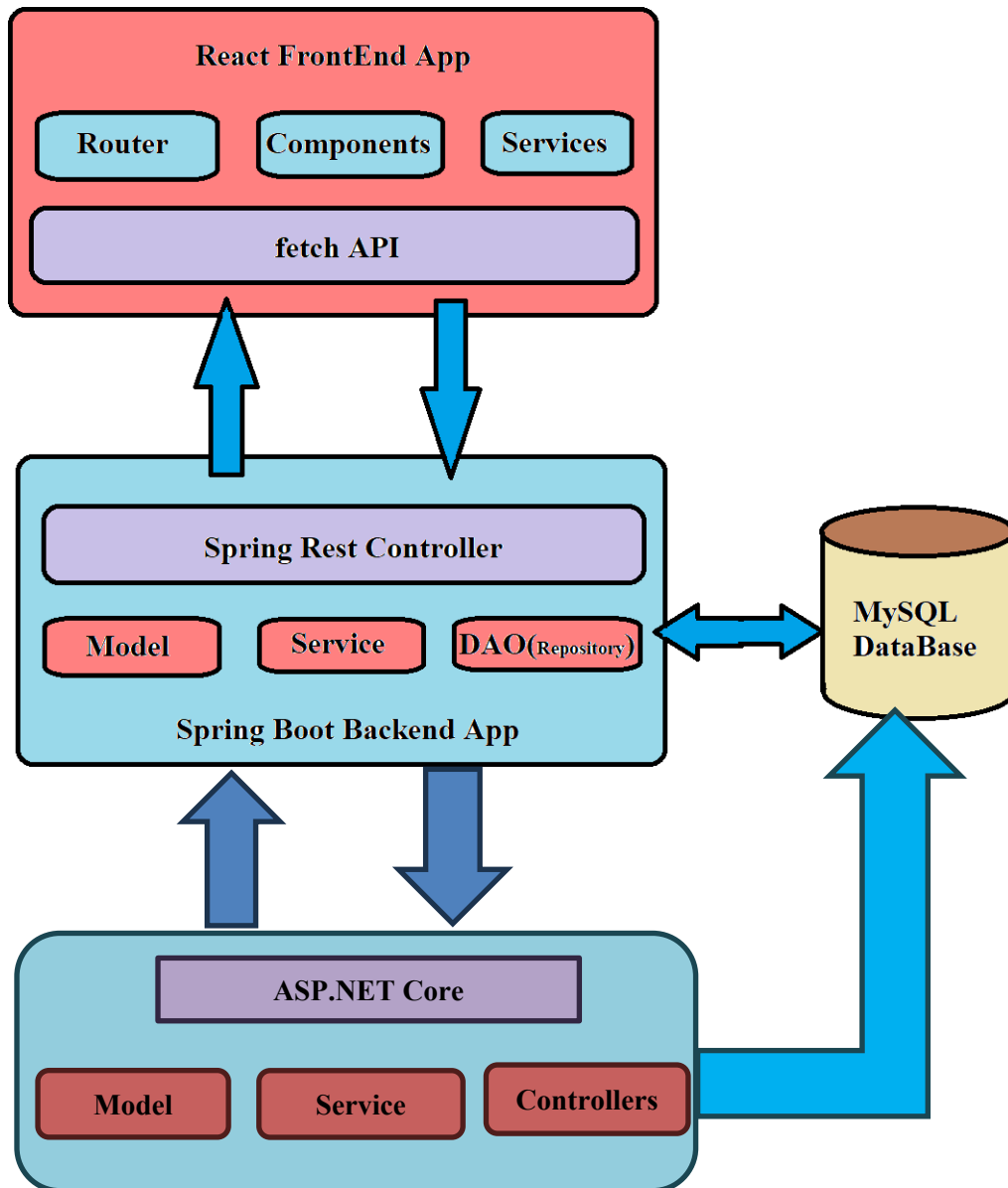


Fig. Use-Case Diagram for Admin

6. Project Architecture Diagram:



7. Database Design:

1. Address table:

Field	Type	Null	Key	Default	Description
adid	INT		Primary		Unique address ID
state	INT		Foreign	NULL	State
district	INT		Foreign	NULL	District
city	INT		Foreign	NULL	City
pincode	INT			NULL	Pincode
area	VARCHAR				Area

2. Booking

Field	Type	Null	Key	Default	Description
bkid	INT		Primary		Booking Id
bk_date	DATE			NULL	Booking date
apt_date	DATE			NULL	Appointment date
hid	INT		Foreign	NULL	Hospital ID
pid	INT		Foreign	NULL	Parent ID
cid	INT		Foreign	NULL	Child ID
vid	INT		Foreign	NULL	Vaccine ID
status	VARCHAR			pending	Status

3. Child

Field	Type	Null	Key	Default	Description
cid	INT		Primary		Child ID
pid	INT		Foreign	NULL	Parent ID
cname	VARCHAR			NULL	Child Name
dob	DATE			NULL	Date of Birth
gender	VARCHAR			NULL	Gender
blood_group	VARCHAR			NULL	Blood Group

4. Cities

Field	Type	Null	Key	Default	Description
cityid	INT		Primary		City ID
cityname	VARCHAR			NULL	City Name
did	INT		Foreign	NULL	District ID

5. Districts

Field	Type	Null	Key	Default	Description
did	INT		Primary		District ID
dname	VARCHAR			NULL	District Name
sid	INT		Foreign	NULL	State ID

6. Hospital

Field	Type	Null	Key	Default	Description
hid	INT		Primary		Hospital ID
uid	INT		Foreign	NULL	User ID
hname	VARCHAR			NULL	Hospital Name
email	VARCHAR			NULL	Email
url	VARCHAR			NULL	website
haddress	INT		Foreign	NULL	Address
contact	VARCHAR			NULL	Contact No.
status	TINY INT			0	Status

7. Parent

Field	Type	Null	Key	Default	Description
pid	INT		Primary		Parent ID
uid	INT		Foreign	NULL	User ID
fname	VARCHAR			NULL	First Name
lname	VARCHAR			NULL	Last Name
contact	VARCHAR			NULL	Contact No.
email	VARCHAR			NULL	Email
paddress	INT		Foreign	NULL	Address

8. Role

Field	Type	Null	Key	Default	Description
rid	INT		Primary		Role ID
rname	VARCHAR			NULL	Role Name

9. States

Field	Type	Null	Key	Default	Description
sid	Int		Primary		State ID
sname	VARCHAR			NULL	State Name

10. Users

Field	Type	Null	Key	Default	Description
uid	INT		Primary		User ID
uname	VARCHAR			NULL	User Name
password	VARCHAR			NULL	Password
rid	INT		Foreign	NULL	Role ID

11. Vaccine

Field	Type	Null	Key	Default	Description
vid	INT		Primary		Vaccine ID
vaccine_name	VARCHAR			NULL	Vaccine Name
description	VARCHAR			NULL	Description
dose	VARCHAR			NULL	Dose
route	VARCHAR			NULL	Route
site	VARCHAR			NULL	Site
whentogive	VARCHAR			NULL	When to give
weeks	INT				weeks

12. Vaccine Stock

Field	Type	Null	Key	Default	Description
vsid	INT		Primary		Stock id
hid	INT		Foreign	NULL	Hospital id
vid	INT		Foreign	NULL	Vaccine id
stock	INT			NULL	quantity

8. ER-Diagram:

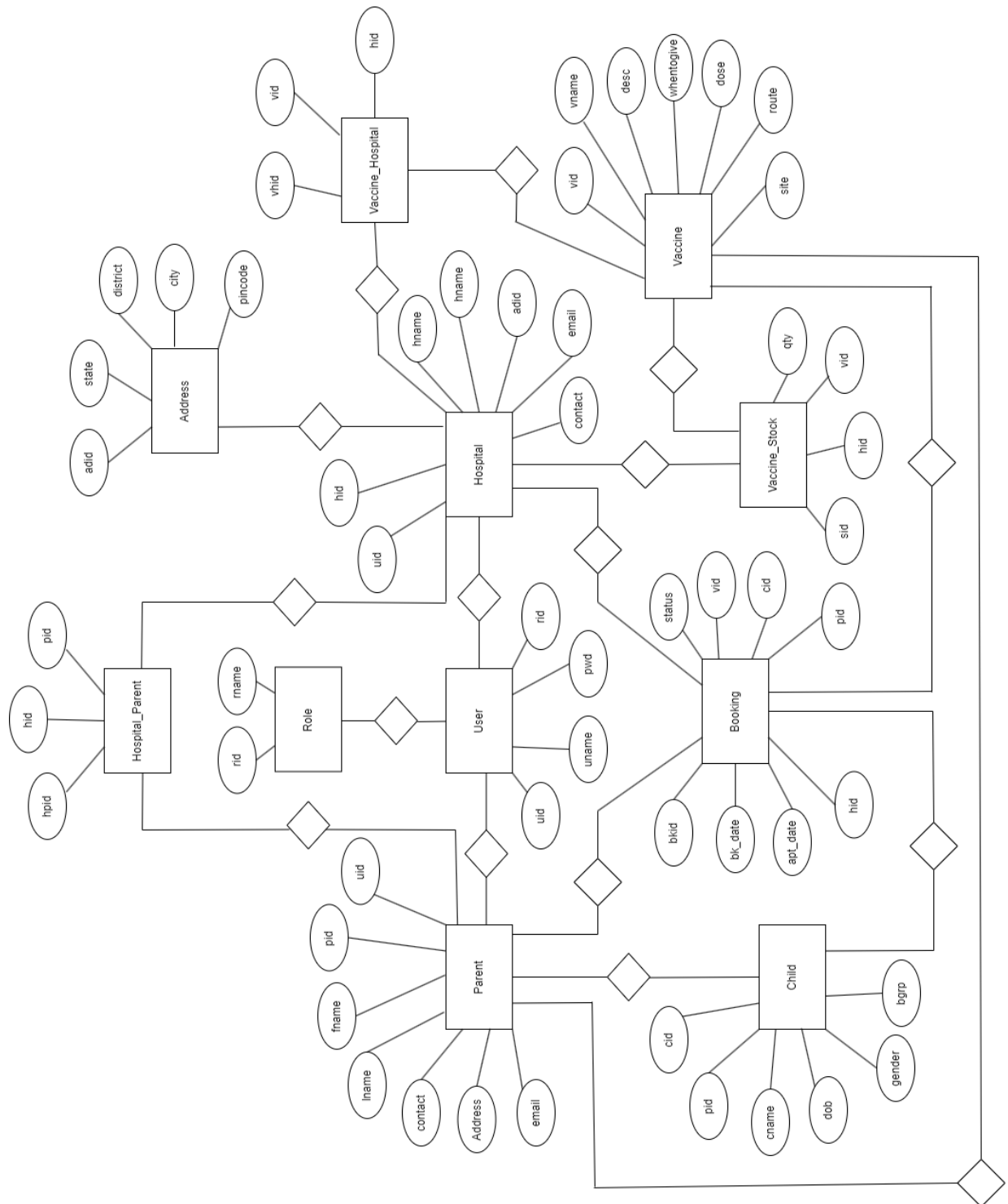
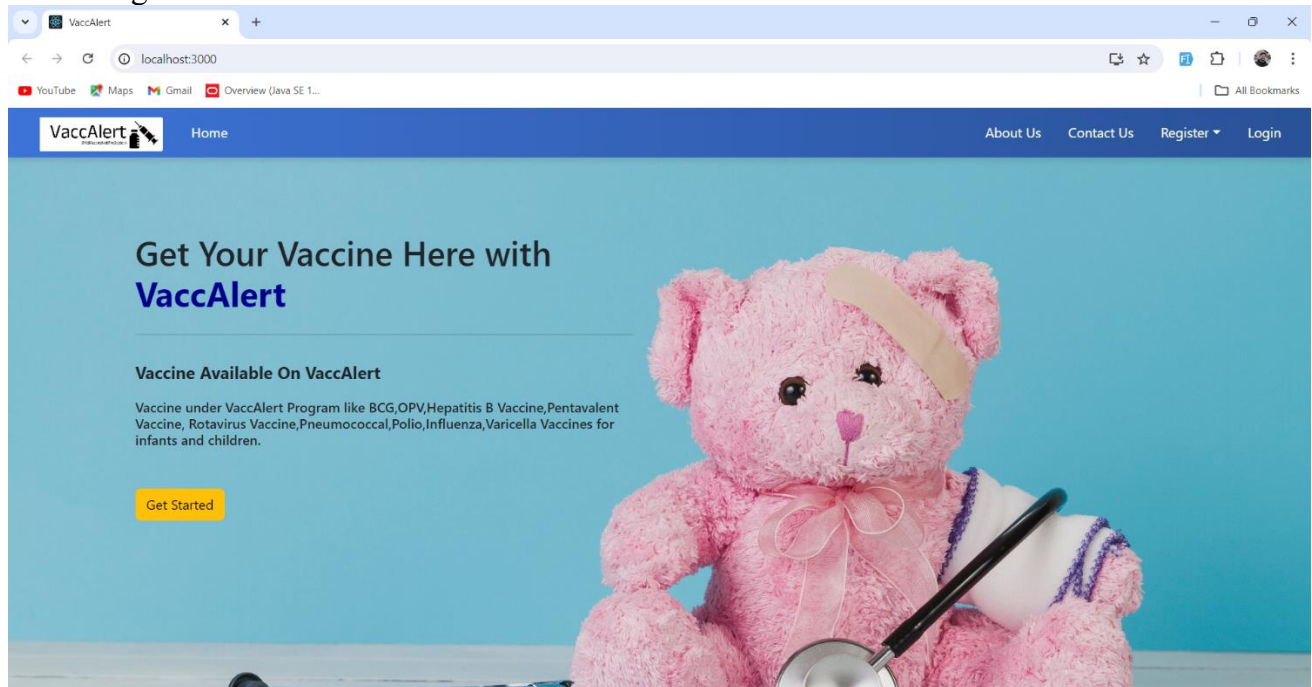


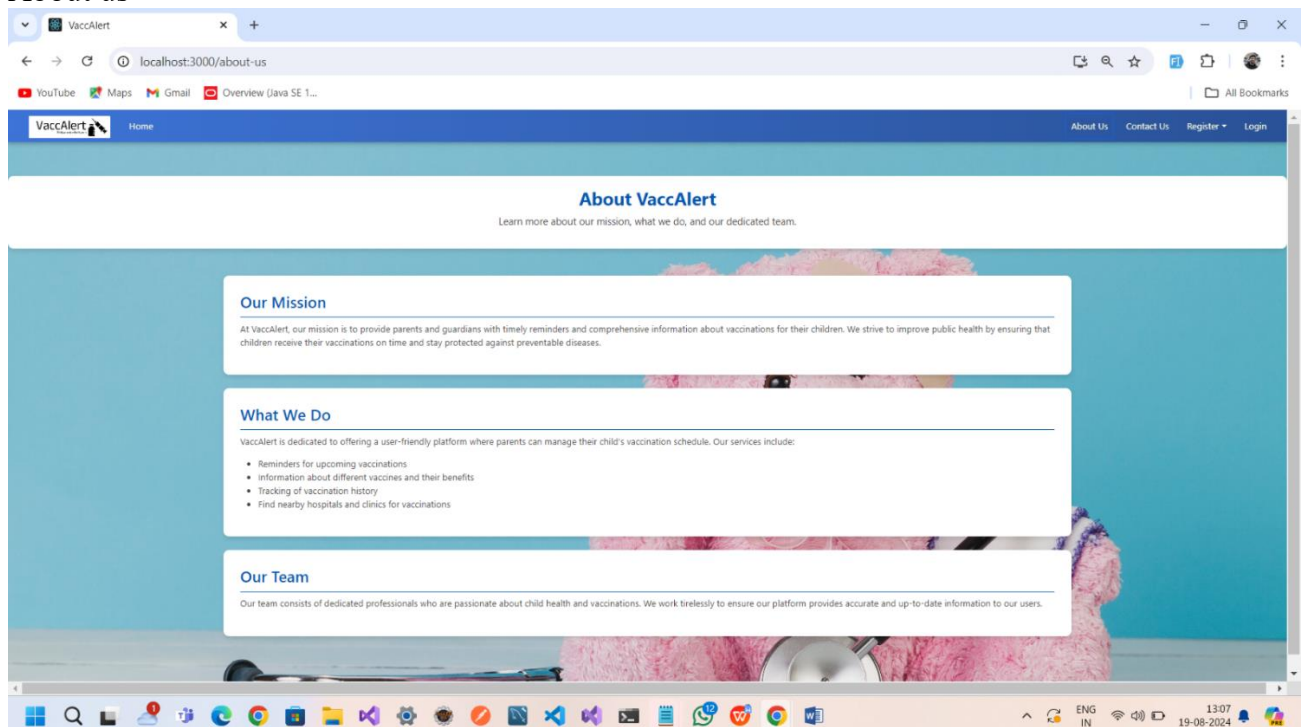
Fig. E-R diagram shows database of VaccAlert:Child Vaccination Management System

9. Snapshots:

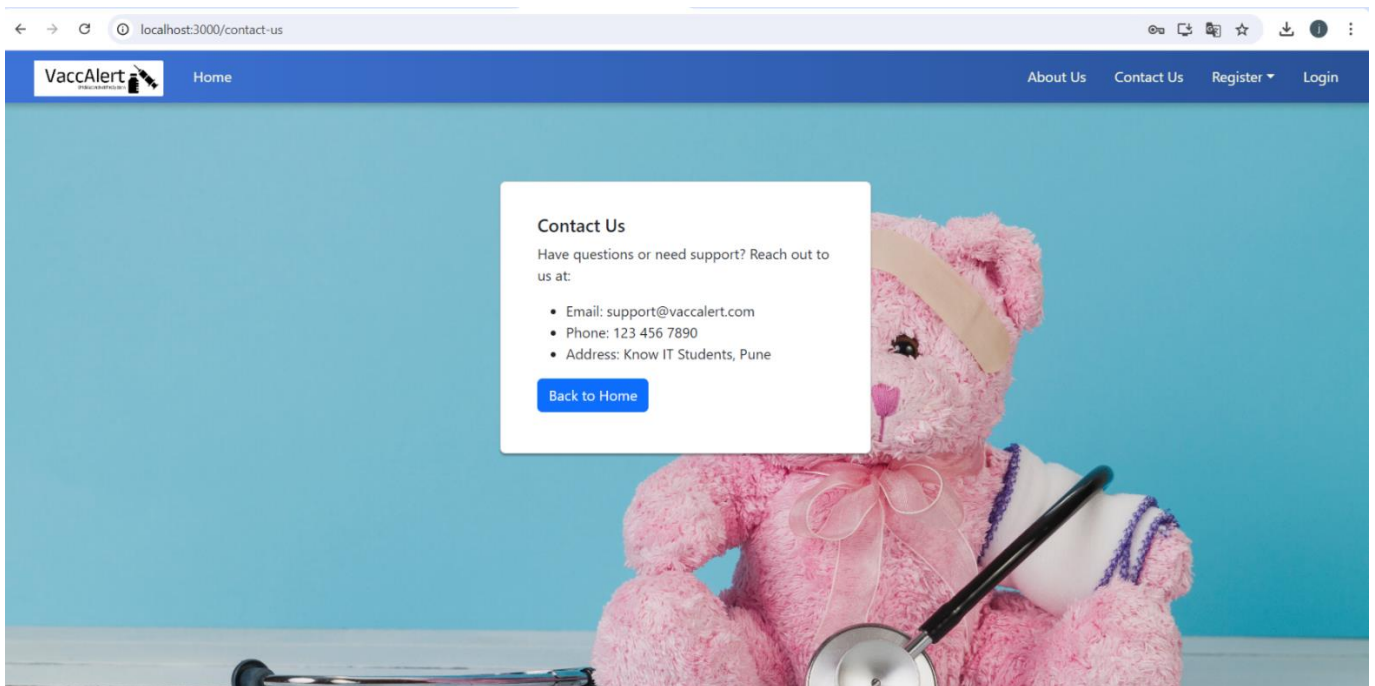
9.1 Home Page



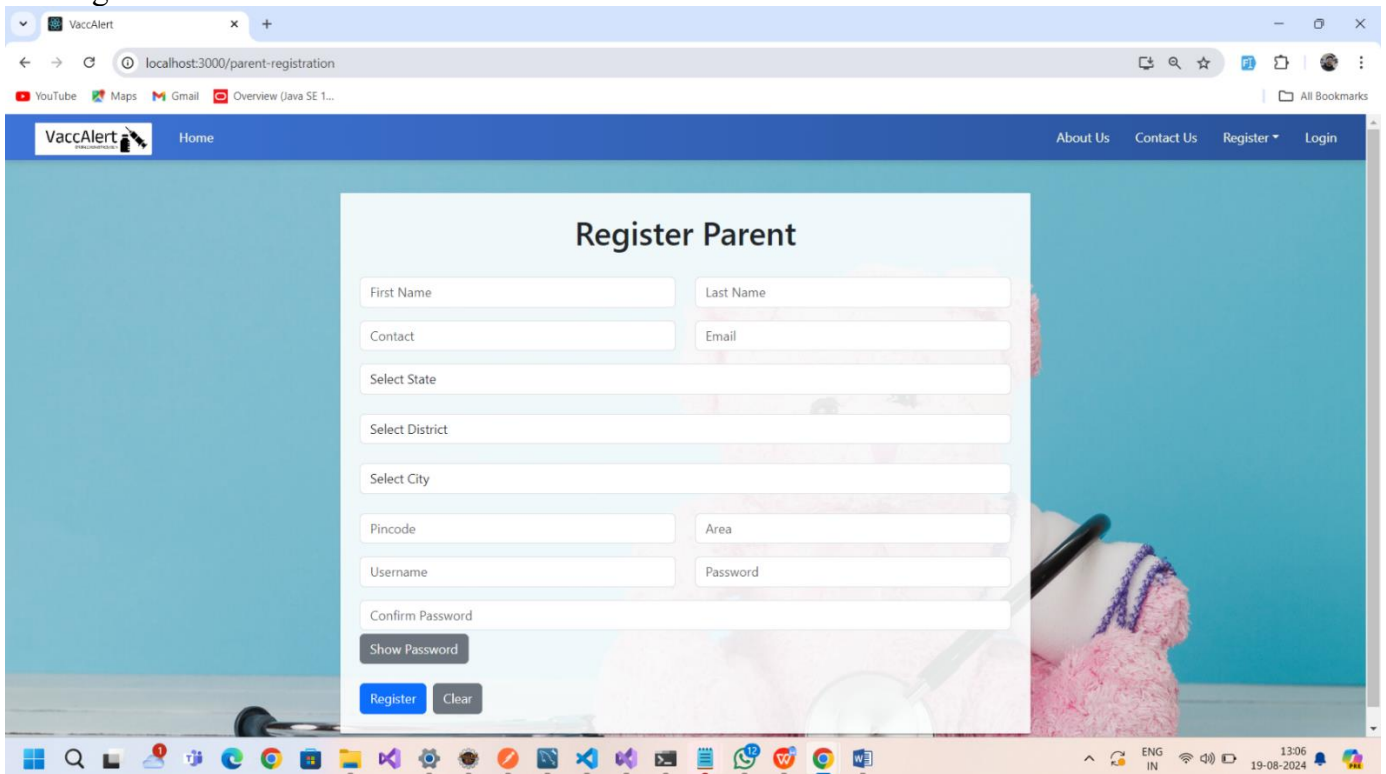
9.2 About us



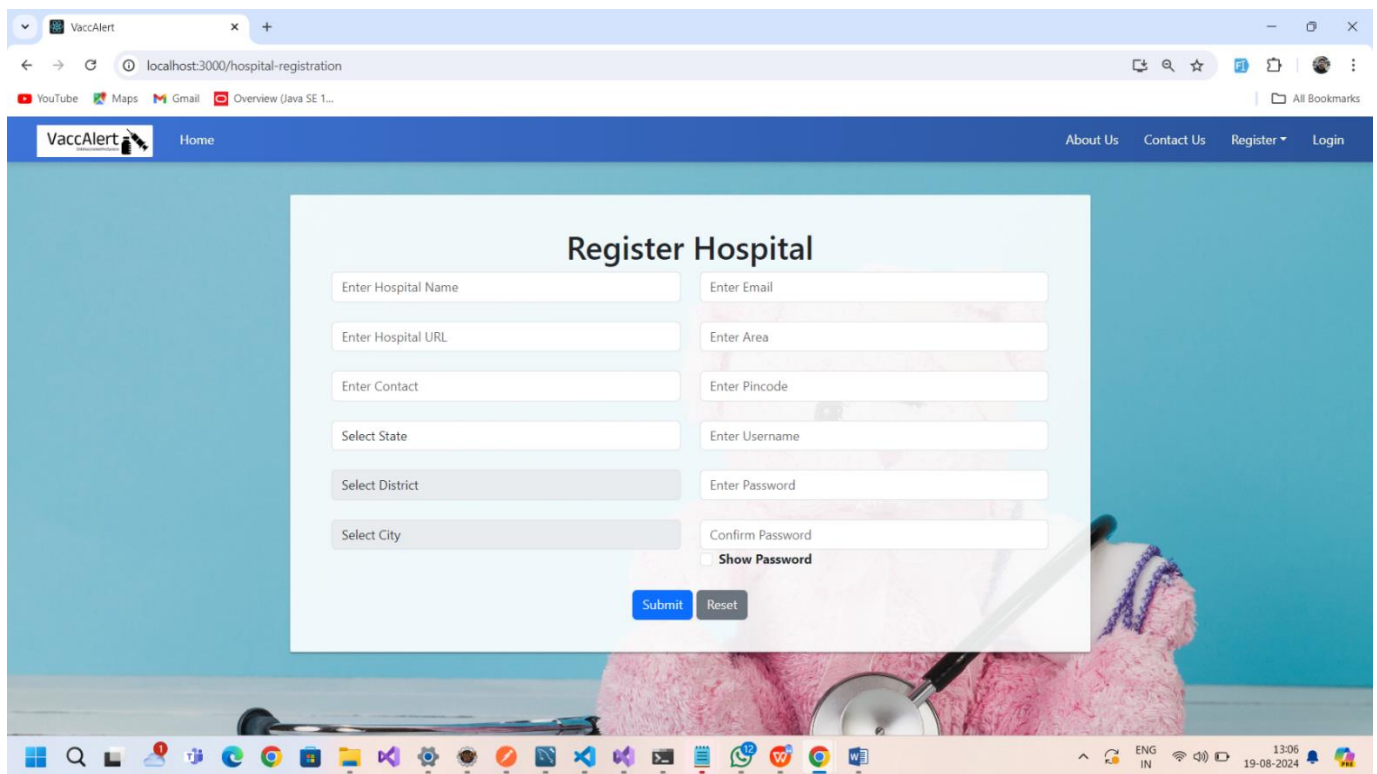
9.3 Contact us



9.4 Register Parent



9.5 Register Hospital



The screenshot shows a web browser window with the address bar displaying 'localhost:3000/hospital-registration'. The page features a blue header with the 'VaccAlert' logo and navigation links: 'Home', 'About Us', 'Contact Us', 'Register', and 'Login'. The main content area has a light blue background with a pink teddy bear and a stethoscope. A white registration form titled 'Register Hospital' is centered. It contains the following fields: 'Enter Hospital Name', 'Enter Hospital URL', 'Enter Contact', 'Select State', 'Select District', 'Select City', 'Enter Email', 'Enter Area', 'Enter Pincode', 'Enter Username', 'Enter Password', and 'Confirm Password'. There is a 'Show Password' checkbox and 'Submit' and 'Reset' buttons at the bottom of the form. The Windows taskbar at the bottom shows various application icons and the system clock indicating 13:06 on 19-08-2024.

Register Hospital

Enter Hospital Name

Enter Hospital URL

Enter Contact

Select State

Select District

Select City

Enter Email

Enter Area

Enter Pincode

Enter Username

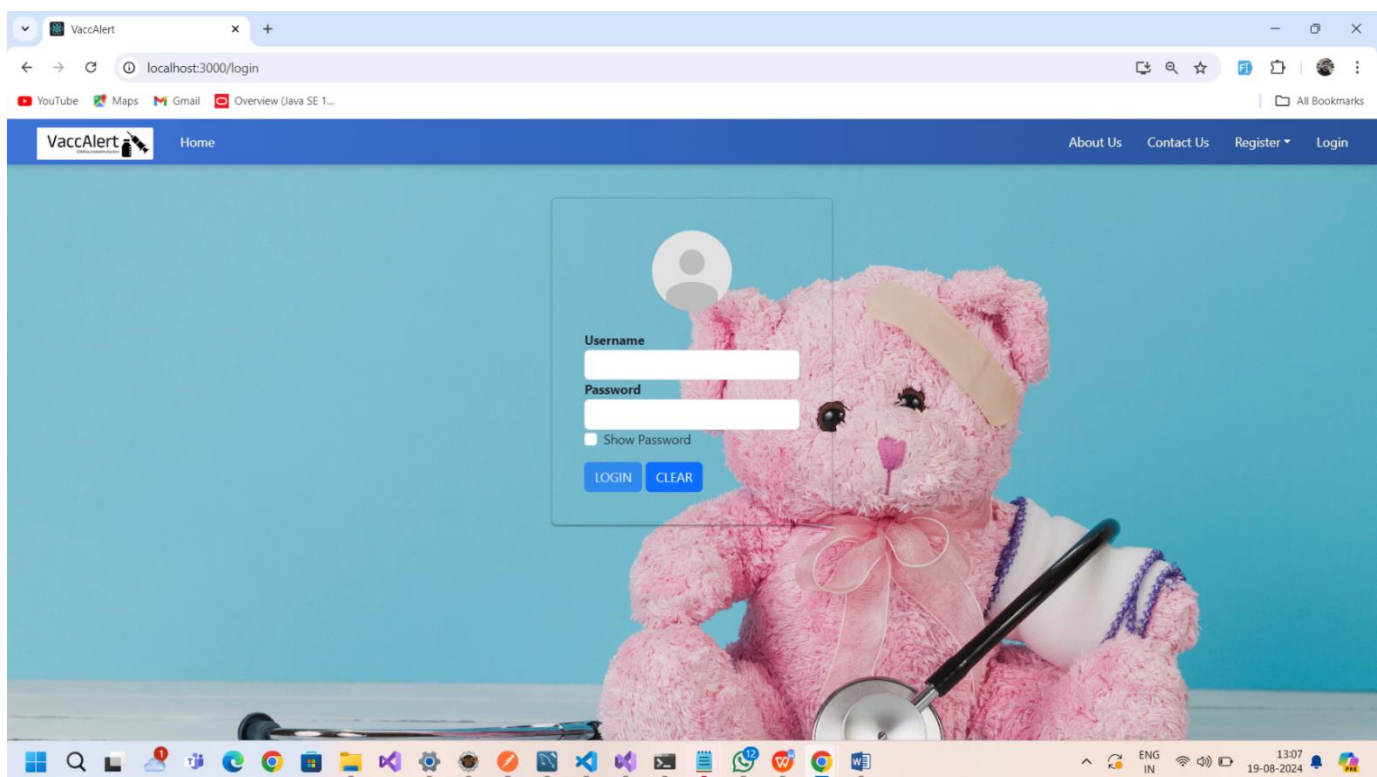
Enter Password

Confirm Password

☐ Show Password

Submit Reset

9.6 Login Page



The screenshot shows a web browser window with the address bar displaying 'localhost:3000/login'. The page features a blue header with the 'VaccAlert' logo and navigation links: 'Home', 'About Us', 'Contact Us', 'Register', and 'Login'. The main content area has a light blue background with a pink teddy bear and a stethoscope. A white login form is centered. It contains the following fields: 'Username', 'Password', and a 'Show Password' checkbox. There are 'LOGIN' and 'CLEAR' buttons at the bottom of the form. The Windows taskbar at the bottom shows various application icons and the system clock indicating 13:07 on 19-08-2024.

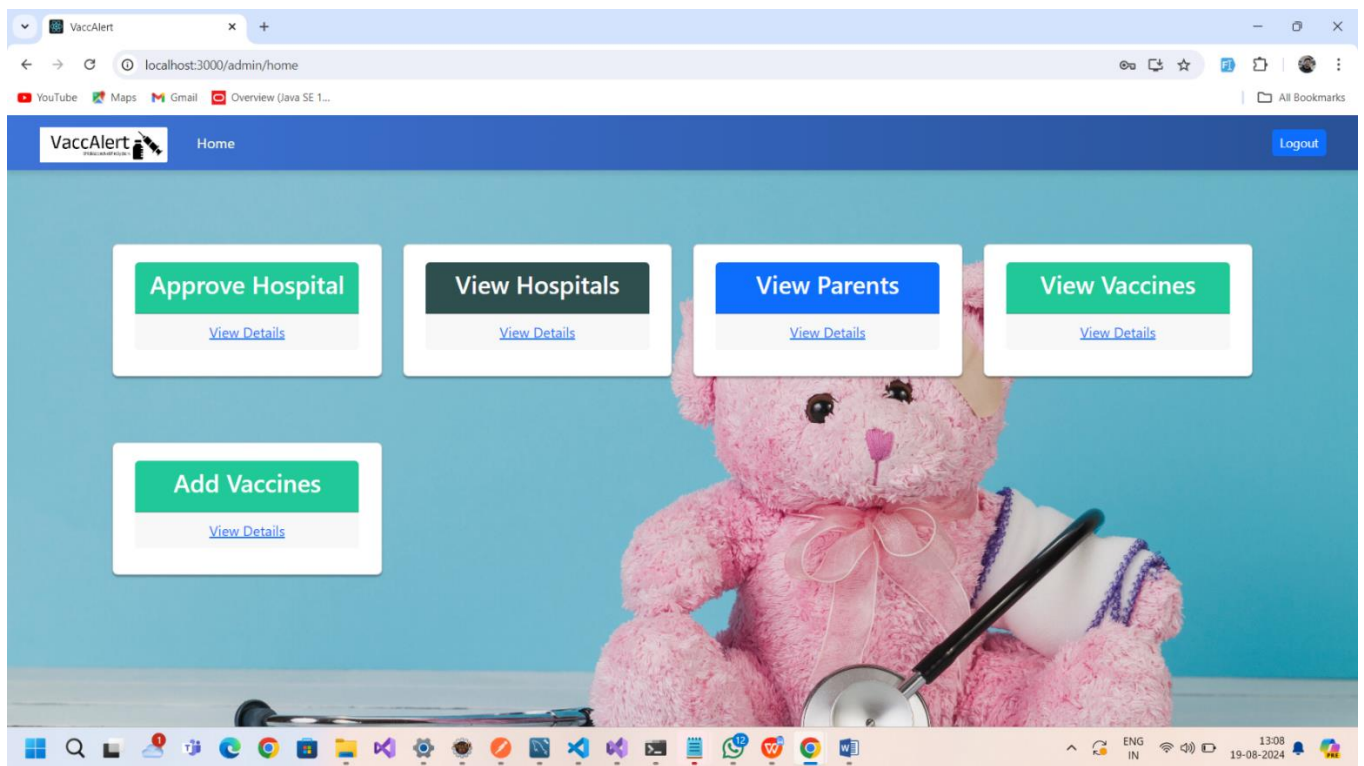
Username

Password

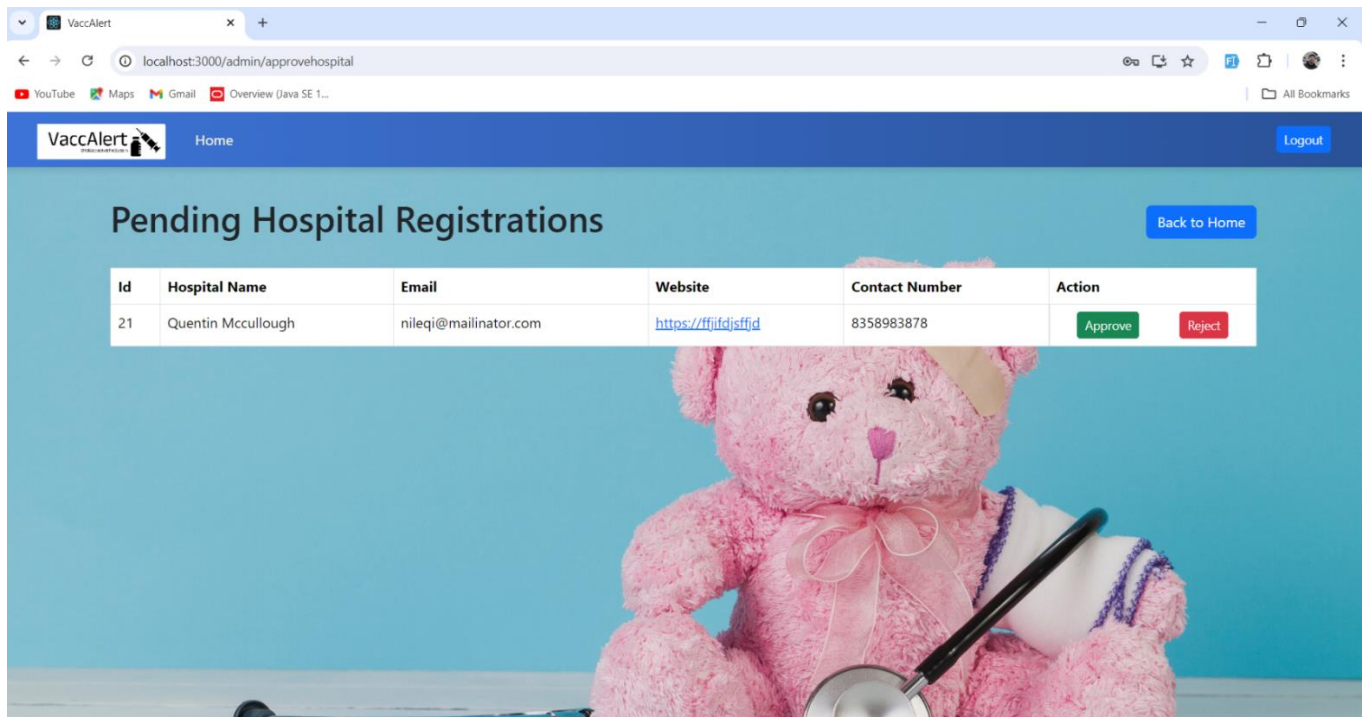
☐ Show Password

LOGIN CLEAR

9.7 Admin Home



9.8 Approve Hospital



9.9 View Hospital

VaccAlert Home Logout

Hospitals List

[Back to Home](#)

ID	Hospital Name	Email	Website	Address	Contact Number	Status
1	JaiHind Hospital	jaihindhospital@gmail.com	http://jaihindhospital.com	N/A Wai, Pune Maharashtra, 120036	1234567890	Approved
2	Sankalp Hospital	sankalphospital@gmail.com	http://sankalphospital.com	N/A Ranjangaon, Pune Maharashtra, 450036	9234567890	Approved
20	Sahyadri	sahyadri@gmail.com	https://ffjifdjsffjd	hadapsar Pune, Pune Maharashtra, 411028	1234567890	Approved

9.10 View Parents

VaccAlert Home Logout

Parents List

Id	First Name	Last Name	Contact	Email	Address
1	Shubham	Patil	7588734855	shubham@gmail.com	N/A Chakan,Pune Maharashtra,425400
2	Sample	Sample	7588734855	shuam@gmail.com	N/A Chakan,Pune Maharashtra,425400
3	Sample	Sample	9881423412	sam@gmail.com	N/A Chakan,Pune Maharashtra,425400
4	as	AS	8746767874	as@gmail.com	N/A Chakan,Pune Maharashtra,254654
5	QW	QW	123	yashdpatil2001@gmail.com	N/A Daund,Pune Maharashtra,425406
6	chaman	chaman	8746767874	chaman@gmail.com	N/A Dehuroad,Pune Maharashtra,425406

9.11 View Vaccines

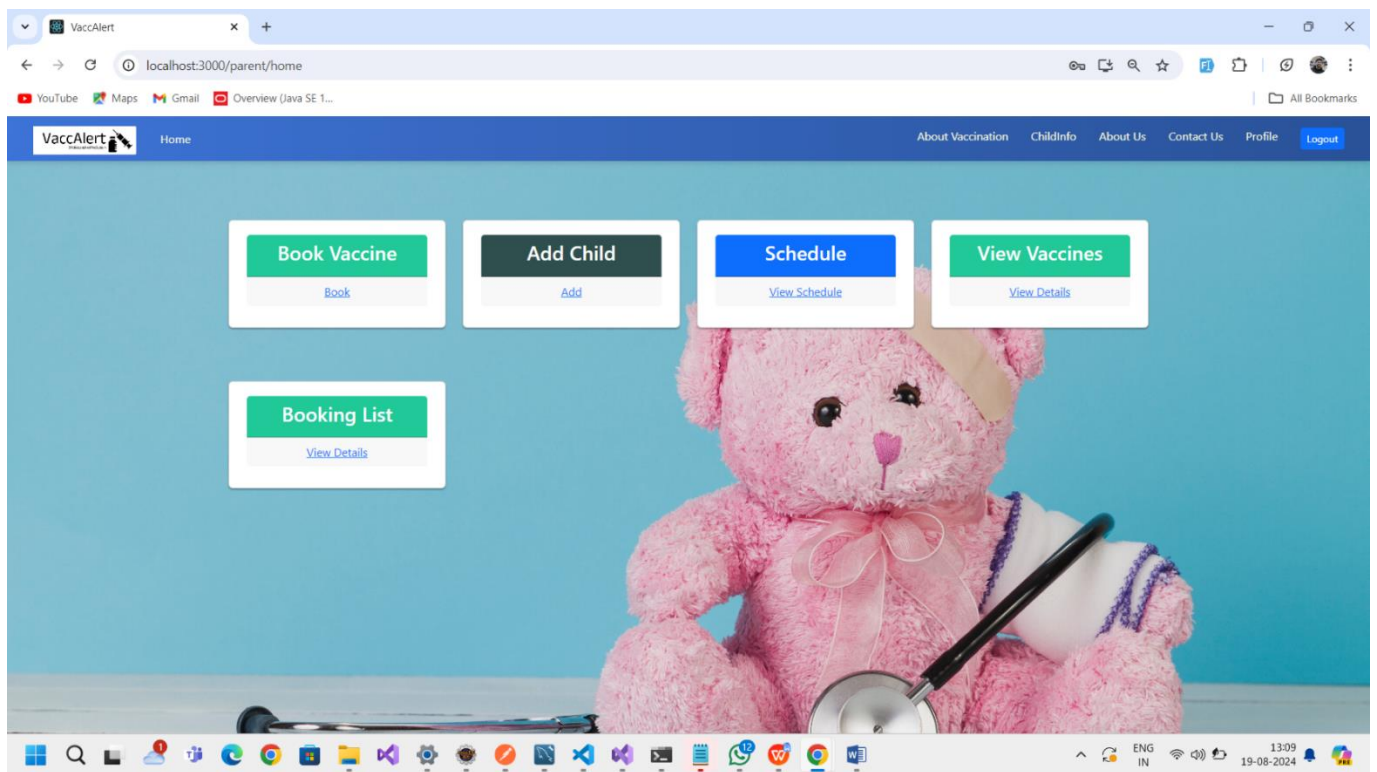
The screenshot shows the VaccAlert application interface. The browser address bar displays `localhost:3000/admin/viewvaccine`. The page header includes the VaccAlert logo, a "Home" link, and a "Logout" button. The main heading is "Vaccines List", with a "Back to Home" button below it. A table lists eight vaccines with columns for Vaccine ID, Vaccine Name, Description, Dose, Route, Site, When to Give, Weeks, and Actions.

Vaccine ID	Vaccine Name	Description	Dose	Route	Site	When to Give	Weeks	Actions
1	BCG	Bacillus Calmette-Guérin vaccine for tuberculosis. Given immediately after birth.	0.05 ml	Intradermal	Left upper arm	At birth	0	Remove
2	Hepatitis B	Hepatitis B vaccine to prevent Hepatitis B infection. Given immediately after birth.	0.5 ml	Intramuscular	Thigh	At birth	0	Remove
3	OPV	Oral Polio Vaccine for poliovirus. Given immediately after birth.	2 drops	Oral	Mouth	At birth	0	Remove
4	DTP	Diphtheria, Tetanus, and Pertussis vaccine. Given at 6, 10, and 14 weeks after birth.	0.5 ml	Intramuscular	Thigh	At 6, 10, and 14 weeks of age	6	Remove
5	Hib	Haemophilus influenzae type B vaccine. Given at 6, 10, and 14 weeks after birth.	0.5 ml	Intramuscular	Thigh	At 6, 10, and 14 weeks of age	6	Remove
6	Rotavirus	Vaccine to prevent rotavirus infections. Given at 6, 10, and 14 weeks after birth.	1.5 ml	Oral	Mouth	At 6, 10, and 14 weeks of age	6	Remove
7	Pneumococcal	Vaccine to prevent pneumococcal diseases. Given at 6, 10, and 14 weeks after birth.	0.5 ml	Intramuscular	Thigh	At 6, 10, and 14 weeks of age	6	Remove
8	Hepatitis B (2nd dose)	Second dose of Hepatitis B vaccine. Given at 6 weeks after birth.	0.5 ml	Intramuscular	Thigh	At 6 weeks of age	6	Remove

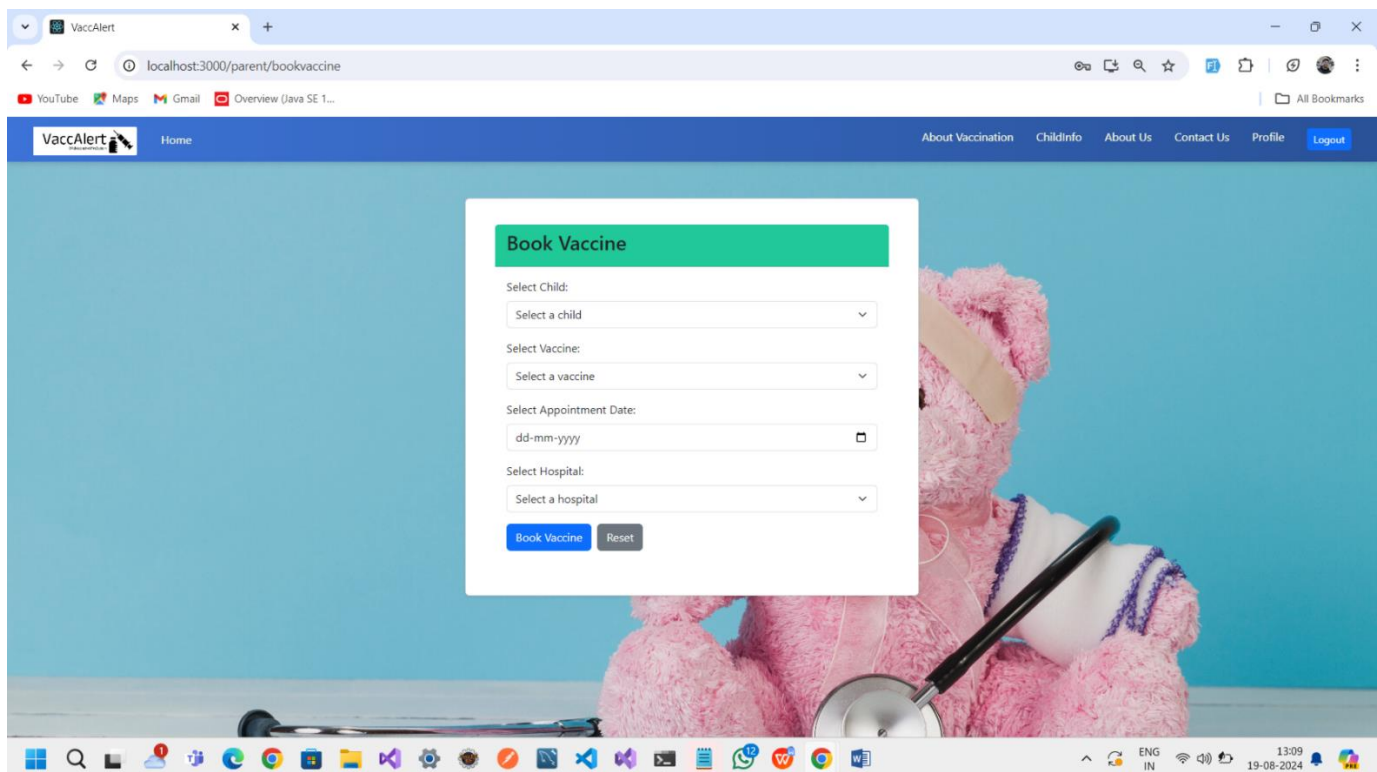
9.12 Add Vaccine

The screenshot shows the VaccAlert application interface for adding a new vaccine. The browser address bar displays `localhost:3000/admin/addvaccines`. The page header includes the VaccAlert logo, a "Home" link, and a "Logout" button. The main heading is "Add Vaccine", with a "Back to Home" button below it. The form contains input fields for Vaccine Name, Description, Dose, Route, Site, When to Give, and Weeks, followed by "Add Vaccine" and "Reset" buttons.

9.13 Parent Home



9.14 Book Vaccine



9.15 Add Child

The screenshot shows a web browser window with the URL `localhost:3000/parent/addchild`. The page features a blue header with the 'VaccAlert' logo and navigation links: Home, About Vaccination, ChildInfo, About Us, Contact Us, Profile, and Logout. The main content area has a light blue background with a pink teddy bear and a stethoscope. A white modal form titled 'Add Child' is centered on the screen. The form contains the following fields: 'Name' (text input with placeholder 'Enter Child's FirstName'), 'Date of Birth' (calendar icon, placeholder 'dd-mm-yyyy'), 'Gender' (radio buttons for Male, Female, Other), and 'Blood Group' (text input with placeholder 'Select Blood Group'). At the bottom of the form are two buttons: 'Add Child' (blue) and 'Reset' (grey).

Add Child

Name
Enter Child's FirstName

Date of Birth
dd-mm-yyyy

Gender
☐ Male ☐ Female ☐ Other

Blood Group
Select Blood Group

[Add Child](#) [Reset](#)

9.16 View schedule

The screenshot shows a web browser window with the URL `localhost:3000/parent/viewschedule`. The page layout is identical to the previous one. A white modal form titled 'View Schedule' is centered on the screen. It includes a 'Select Child:' dropdown menu with 'Aarav Kumar' selected. Below this, it displays 'Date of Birth: 2020-03-15' and 'Weeks Since DOB: 231'. The main part of the form is a table with vaccine information and an 'Action' column with 'Book' buttons.

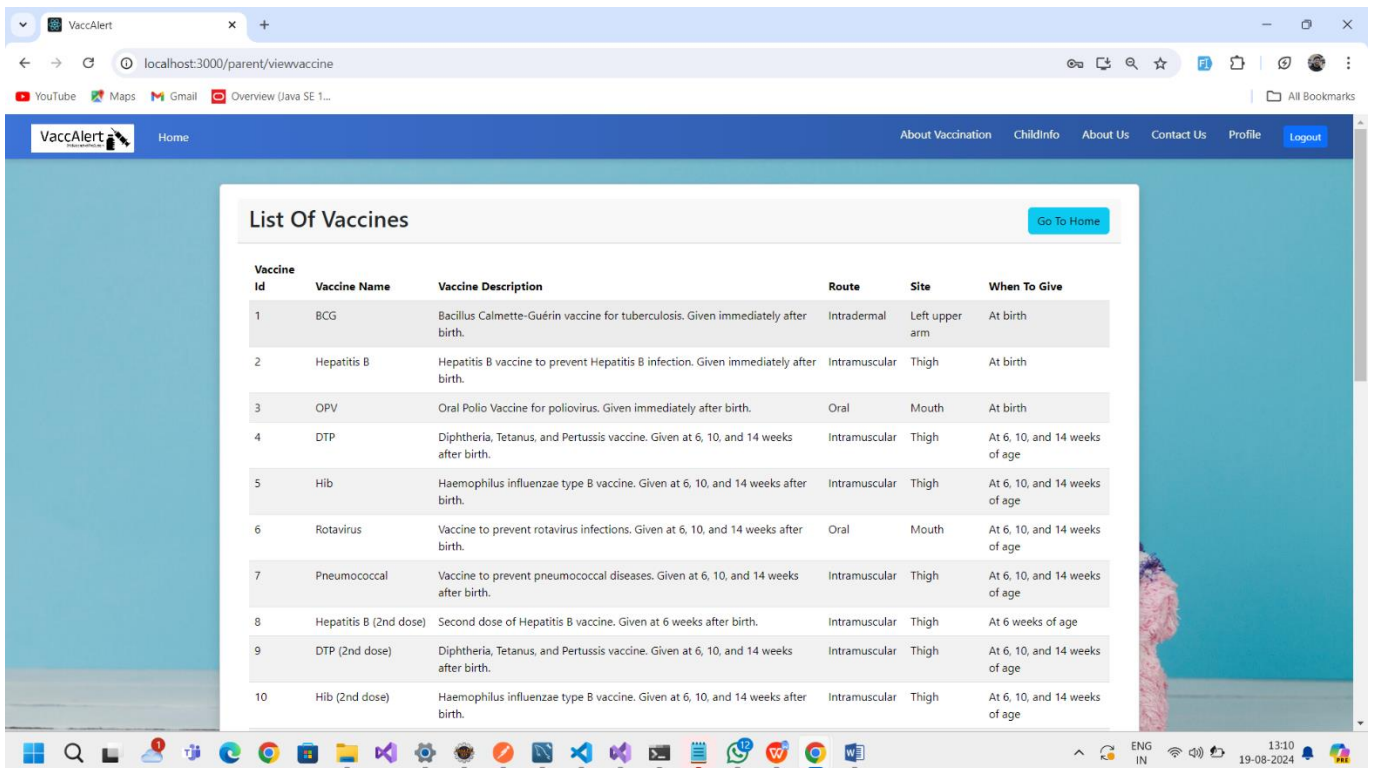
View Schedule

Select Child:
Aarav Kumar

Date of Birth: 2020-03-15
Weeks Since DOB: 231

Vaccine Name	Site	Route	When to Give	Action
DTP (2nd Booster)	Thigh	Intramuscular	Between 4 and 6 years of age	Book
MMR (2nd Dose)	Right upper arm	Subcutaneous	Between 4 and 6 years of age	Book
Varicella (2nd Dose)	Right upper arm	Subcutaneous	Between 4 and 6 years of age	Book

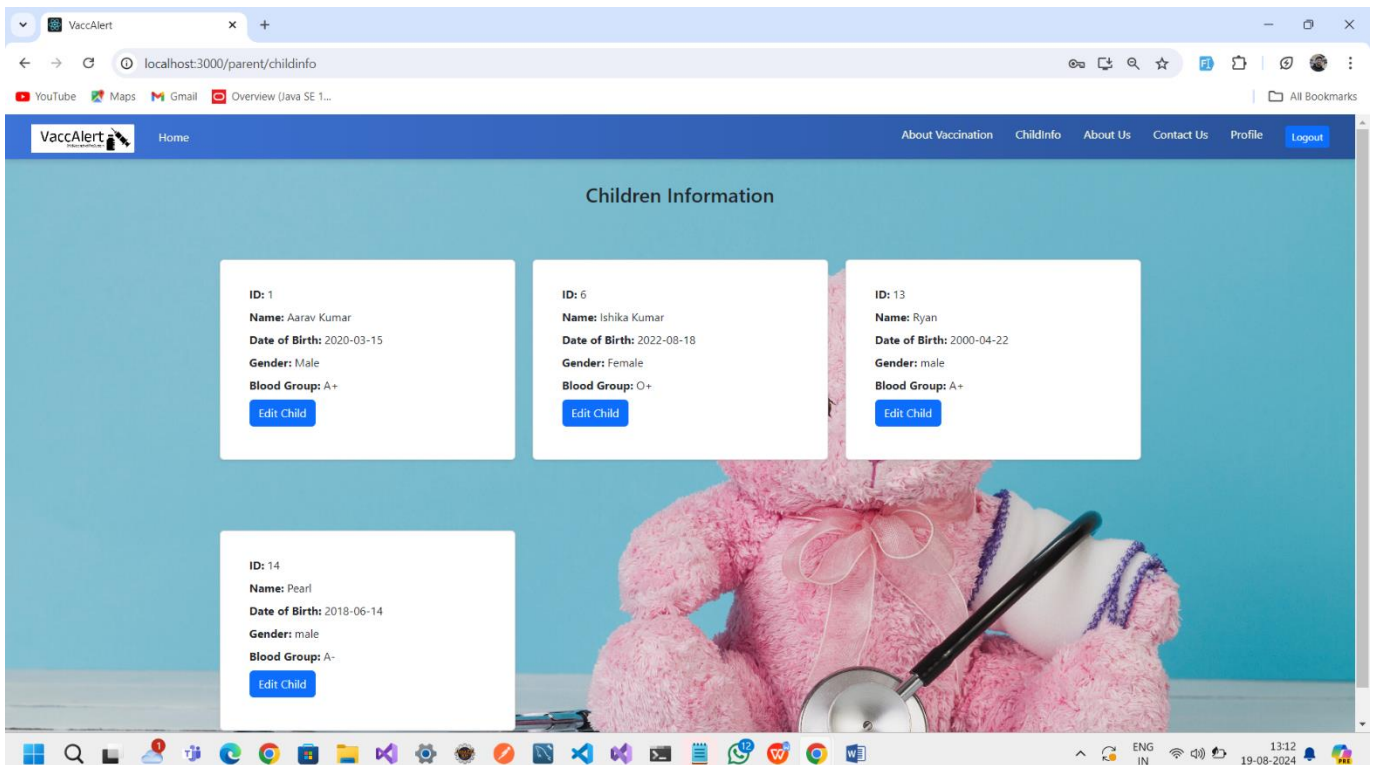
9.17 View Vaccines



List Of Vaccines

Vaccine Id	Vaccine Name	Vaccine Description	Route	Site	When To Give
1	BCG	Bacillus Calmette-Guérin vaccine for tuberculosis. Given immediately after birth.	Intradermal	Left upper arm	At birth
2	Hepatitis B	Hepatitis B vaccine to prevent Hepatitis B infection. Given immediately after birth.	Intramuscular	Thigh	At birth
3	OPV	Oral Polio Vaccine for poliovirus. Given immediately after birth.	Oral	Mouth	At birth
4	DTP	Diphtheria, Tetanus, and Pertussis vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
5	Hib	Haemophilus influenzae type B vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
6	Rotavirus	Vaccine to prevent rotavirus infections. Given at 6, 10, and 14 weeks after birth.	Oral	Mouth	At 6, 10, and 14 weeks of age
7	Pneumococcal	Vaccine to prevent pneumococcal diseases. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
8	Hepatitis B (2nd dose)	Second dose of Hepatitis B vaccine. Given at 6 weeks after birth.	Intramuscular	Thigh	At 6 weeks of age
9	DTP (2nd dose)	Diphtheria, Tetanus, and Pertussis vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
10	Hib (2nd dose)	Haemophilus influenzae type B vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age

9.17.1 Child Info



Children Information

ID: 1

Name: Aarav Kumar

Date of Birth: 2020-03-15

Gender: Male

Blood Group: A+

Edit Child

ID: 6

Name: Ishika Kumar

Date of Birth: 2022-08-18

Gender: Female

Blood Group: O+

Edit Child

ID: 13

Name: Ryan

Date of Birth: 2000-04-22

Gender: male

Blood Group: A+

Edit Child

ID: 14

Name: Pearl

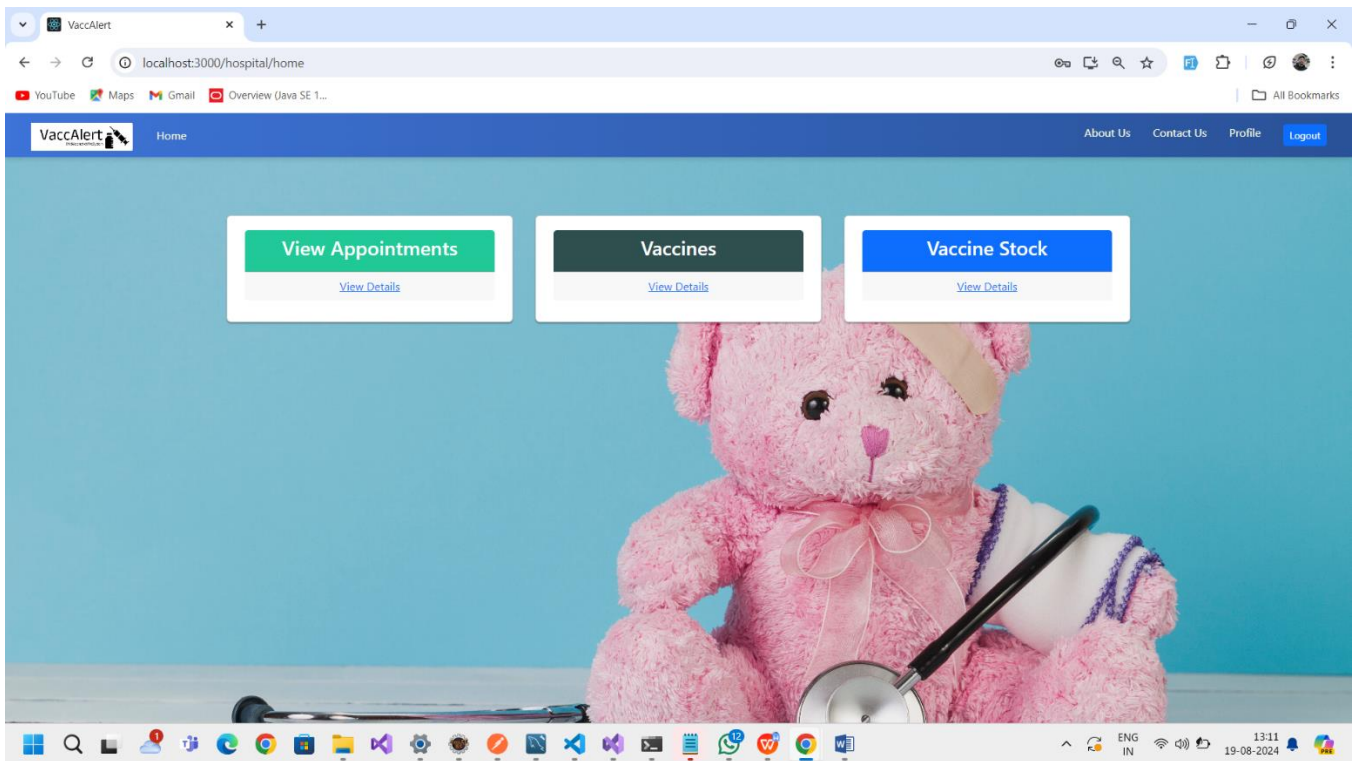
Date of Birth: 2018-06-14

Gender: male

Blood Group: A-

Edit Child

9.18 Hospital Home



9.19 View Appointment List

VaccAlert Hospital View Appointment List

Appointment List

Id	First Name	Middle Name	Last Name	Email	Booking Date	Appointment Date	Vaccine Name	Status	Action
1	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-07-01	2024-07-05	BCG	Confirmed	
6	Ishika Kumar	Shubham	Patil	shubham@gmail.com	2024-07-06	2024-07-18	Rotavirus	Confirmed	
11	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		Hib	Cancelled	
12	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		Rotavirus	Cancelled	
13	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		DTP (2nd dose)	Cancelled	
14	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		DTP (2nd dose)	Cancelled	
15	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		DTP (2nd dose)	Cancelled	
16	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16		DTP (2nd dose)	Cancelled	
17	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16	2024-09-24	DTP (2nd dose)	Confirmed	
18	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16	2024-09-24	DTP (2nd dose)	Confirmed	
19	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-16	2024-09-24	DTP (2nd dose)	Pending	<button>Confirmed</button> <button>Cancelled</button>
22	saarabh	Jyoti	Lanjewar	lanjewarjyoti5@gmail.com	2024-08-17	2024-08-31	BCG	Confirmed	
23	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-17	2024-08-19	Hib (3rd dose)	Pending	<button>Confirmed</button> <button>Cancelled</button>
25	Ishika Kumar	Shubham	Patil	shubham@gmail.com	2024-08-17	2024-08-30	Hib (2nd dose)	Pending	<button>Confirmed</button> <button>Cancelled</button>
26	Ishika Kumar	Shubham	Patil	shubham@gmail.com	2024-08-17	2024-08-30	Hib (2nd dose)	Pending	<button>Confirmed</button> <button>Cancelled</button>
27	Aarav Kumar	Shubham	Patil	shubham@gmail.com	2024-08-18	2024-08-23	Rotavirus (2nd dose)	Pending	<button>Confirmed</button> <button>Cancelled</button>

9.20 View Vaccines

List Of Vaccines [Go To Home](#)

Vaccine Id	Vaccine Name	Vaccine Description	Route	Site	When To Give
1	BCG	Bacillus Calmette-Guérin vaccine for tuberculosis. Given immediately after birth.	Intradermal	Left upper arm	At birth
2	Hepatitis B	Hepatitis B vaccine to prevent Hepatitis B infection. Given immediately after birth.	Intramuscular	Thigh	At birth
3	OPV	Oral Polio Vaccine for poliovirus. Given immediately after birth.	Oral	Mouth	At birth
4	DTP	Diphtheria, Tetanus, and Pertussis vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
5	Hib	Haemophilus influenzae type B vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
6	Rotavirus	Vaccine to prevent rotavirus infections. Given at 6, 10, and 14 weeks after birth.	Oral	Mouth	At 6, 10, and 14 weeks of age
7	Pneumococcal	Vaccine to prevent pneumococcal diseases. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
8	Hepatitis B (2nd dose)	Second dose of Hepatitis B vaccine. Given at 6 weeks after birth.	Intramuscular	Thigh	At 6 weeks of age
9	DTP (2nd dose)	Diphtheria, Tetanus, and Pertussis vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age
10	Hib (2nd dose)	Haemophilus influenzae type B vaccine. Given at 6, 10, and 14 weeks after birth.	Intramuscular	Thigh	At 6, 10, and 14 weeks of age

9.21 View vaccine stock

List Of Vaccines [Go To Home](#)

Id	Vaccine Name	Stock	Action
1	BCG	11	Update Stock
2	Hepatitis B	140	Update Stock

10. CONCLUSION AND FUTURE SCOPE

The **VaccAlert System** has been developed as a robust platform to ensure timely and efficient management of child vaccinations. By integrating modern technologies such as React for the user interface, ASP.NET Core for authentication, and Spring Boot for core functionalities, the system provides a seamless experience for users. The platform effectively addresses the challenge of missed vaccinations by offering timely alerts, scheduling features, and data management capabilities. With a centralized MySQL database, the system maintains secure and accurate records of vaccination schedules and histories. Through the use of RESTful APIs, the system remains scalable and flexible, capable of adapting to future requirements.

Overall, the VaccAlert System demonstrates significant potential to enhance public health outcomes by promoting timely vaccinations, reducing the risks of preventable diseases, and providing peace of mind to parents and healthcare providers alike.

