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An Efficient Approach to Forensic Investigation in Cloud using VM Snapshots: A Survey

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ABSTRACT: Pandemic Covid-19 had seen more than many cases in last two years and it was very difficult to curb this disease with simple medical pills. Vaccination is but most important for curbing Covid 19 from happening and spreading. It is must vaccination for everyone. With growing need of vaccination for our large population it is really important to manage the system for vaccination to be given to people and keep count of it. Vaccination needs to be managed from manufacturer end to person booking and receiving the vaccination. Management of this is done with developed system. In this application person can book vaccination one week early and with information available the manufacturer is conveyed for making vaccine available for the booked date. The application helps to streamline the process of vaccination and make it easier to manage.

I. INTRODUCTION

Vaccines for the coronavirus disease (COVID-19) offer hope for better containing the pandemic, which had infected more than 288 million people and killed more than 5 million as of 3 January 2022. A large COVID-19 vaccination campaign is particularly challenging in developing economies in Asia and the Pacific. Israel was first to show that vaccines were bending the curve of Covid infections. The country led the world in early vaccinations, and by February more than 84% of people ages 70 and older had received two doses. Covid cases declined rapidly, and a similar pattern of vaccination and recovery repeated

Global Vaccination Campaign			% of population			
Countries and regions	Doses administered ▼	Doses per 100 people	given 1+ dose	fully vaccinated	booster dose	Daily rate of doses administered
Global Total	9,204,422,878	—	—	—	—	39,285,708
Mainland China	2,841,269,000	202.9	90.0	86.2	—	11,937,929
India	1,457,241,451	106.6	61.9	44.4	—	5,689,495
EU	744,233,890	167.5	73.3	70.4	29.3	2,045,750
U.S.	507,657,980	152.9	73.4	62.0	20.7	1,354,705
Brazil	331,292,259	157.6	79.1	74.0	12.6	364,234
Indonesia	280,051,325	104.9	62.2	42.7	—	1,790,751
Japan	199,596,362	158.2	79.6	78.2	0.4	229,608
Pakistan	156,623,021	76.5	47.4	34.5	—	1,467,807
Germany	149,469,843	179.9	74.2	71.2	38.7	425,227
Mexico	148,938,454	116.7	64.2	57.1	—	79,677
Vietnam	148,198,862	153.6	80.2	63.5	—	1,514,214
Russia	146,724,190	100.0	50.4	45.7	5.0	498,607
U.K. 	133,112,711	199.3	77.5	71.0	42.6	253,126
Bangladesh	132,282,376	79.4	52.6	28.6	—	570,616

Fig.1 <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>.

across dozens of other countries. This progress is under threat. New strains, led by the highly transmissible delta variant, caused renewed outbreaks. Israel saw another surge of cases, which it brought under control by offering boosters to all vaccinated people. Worldwide, unvaccinated people are more at risk than ever, leading U.S. health officials to dub it a “pandemic of the unvaccinated.”[1] Even among those who are vaccinated, the delta variant may lead to mild cases, and those who get sick are able to spread the disease to others, according to the latest data. The vaccines remain effective at reducing hospitalizations and deaths.

Vaccinations vs. Cases

Vaccines have helped reduce case numbers in the places where they've been deployed most widely. Currently, **41 places** have given at least one dose to **75%** of the population.

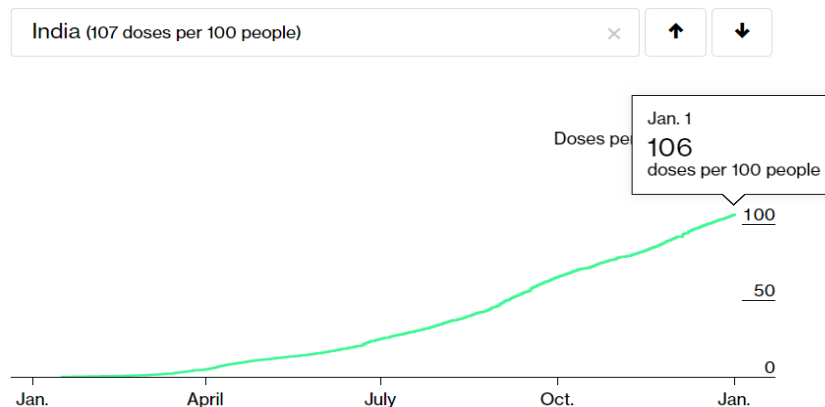


Fig.2 <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>

COVID-19 vaccines are new and some need to be kept in ultra-low temperature freezers for storage and distribution. Successful implementation of a vaccination strategy also requires transport, storage, and logistics infrastructure; capacity in health facilities; sufficient medical personnel; safety monitoring; and strong public awareness and advocacy campaigns. With rapid spread of Covid-19 everywhere it is very important to get all people vaccinated as fast as possible. For this management and coordination from manufacturer to people getting vaccinated is needed.

II. LITERATURE REVIEW

The section will drive use through various vaccination drive and management the countries have adopted to immunize all people.

Getting Ready for the COVID-19 Vaccine Rollout.

Many high-income economies have started vaccination, purchasing plenty of shots in advance to cover entire populations; but low- and middle-income economies might have to wait until 2022 or even 2023 to vaccinate a majority of their populations.

Effective vaccine management: The case of a rural district in Ghana.

Vaccine Management (EVM) initiative provides the platform needed to monitor and assess the vaccine supply chain system to identify strengths and weaknesses of the system at all levels to enhance the development of improvement plan to strengthen the system. • is valuation was carried out in the Tolon District of the Northern Region, Ghana. Methods. A descriptive valuation of vaccine management was carried out in six vaccine stores in the Tolon District of Northern Ghana.

Assessment of factors affecting vaccine cold chain management practice in public health institutions in east Gojam zone of Amhara region

An institutional based cross-sectional study was conducted from March to April 2017 in ten districts of East Gojam zone of Amhara Region. Among 60 health institutions, only 46(76.7%) had functional refrigerators. Twenty-one (35%) had a functional generator for backup service and 28(46.6%) had a car/motorbike for transportation of vaccines in case of refrigerator/power failure. Twenty-nine (48.3%) had known the correct vaccine storage temperature (2 °C – 8 °C) in the refrigerator and the results of this study revealed that only 23(38.3%) of respondents had sufficient knowledge about vaccine cold chain management. The finding of this study also revealed that 35(58.3%) had appropriate vaccine cold chain management practice and the rest 25(41.7%) had inappropriate practice. Logistic regression showed us the knowledge gap and profession were significantly associated with vaccine cold chain management practice at $P < 0.05$.

Effective vaccine management and Oman's healthcare system's challenge to maintain high global standards.

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) launched the effective vaccine management (EVM) framework to assist countries to gauge the performance of their immunization supply chains. Oman underwent the assessment in 2016 and scored the best score to date. This report looks at the process of EVM and the challenges for the Oman healthcare system to maintain high global standards. An EVM assessment uses a template designed to evaluate the 4 distinctly different levels in the supply chain (national, subnational, lowest delivery level, and service delivery points). Its tool is based on 9 basic criteria (vaccine and commodity arrival procedures, vaccine storage temperature, cold and dry storage capacity, buildings, cold chain equipment and transport, maintenance, stock management, effective distribution, good vaccine management practices and information systems and supportive management functions).

III.METHODOLOGY OF PROPOSED SURVEY

Existing Method :

During earlier times the person to be vaccinated had to visit hospital and take vaccination at spot without any prior appointment. The drawback behind this was the time spend during the vaccination and availability of vaccine at hospital.



Fig.3 Existing System

Proposed Method

The working for proposed system started with initial request with URL address and return of Html page. With new technical development, the only needed request are send to server side. and remaining code remains same on client side. thus it takes less time to process request.

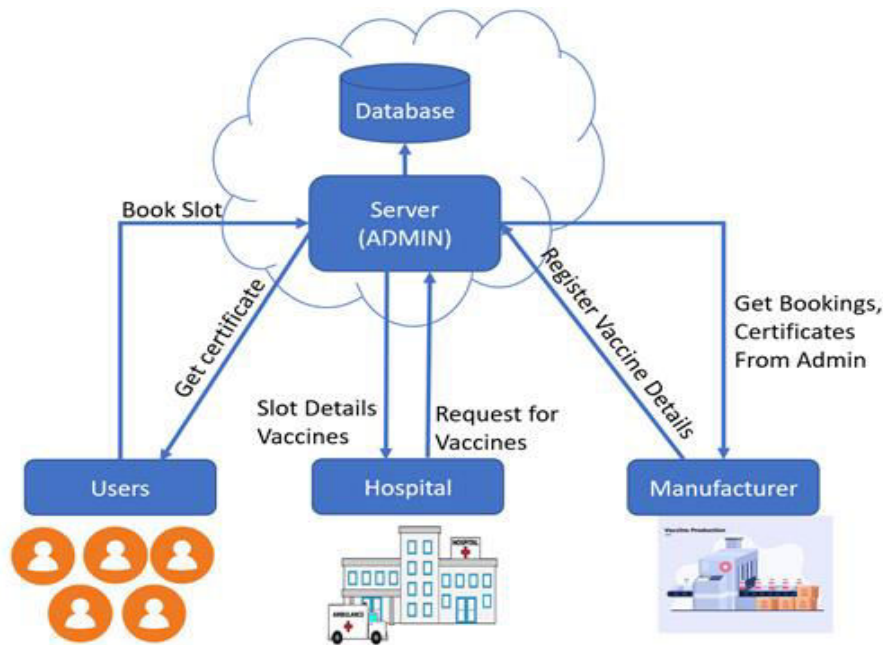


Fig.4 Proposed System

Modules:

- Module 1: Users
- RegisterUser ,
- Book Slot for User
- Module 2 :Hospital
- Verify slots booked b user,
- Request for vaccines from company for booked slot
- Module 3 :Manufacturer(Company)
- Get certificates for vaccinations,
- Give Vaccines to hospitals as per requirements.
- Module 4 :Admin

- Verify Vaccine certificate,
- Verify hospitals, and users.
- Give certificates to vaccinated users.

Algorithm:

Random Search

Idea:

- the current approximation of the solution is randomly perturbed
- if the perturbed configuration is better than the current approximation then the perturbation is accepted

Problem: find x^* which minimizes the function f

General structure:

Initialize x

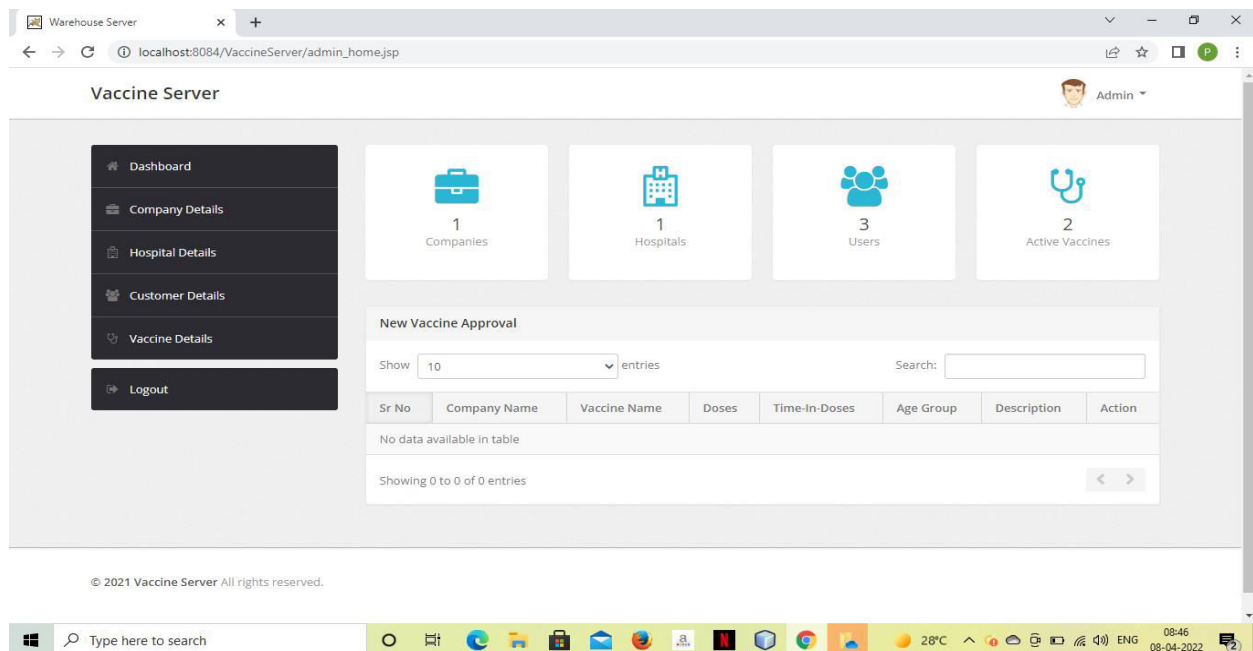
Repeat

 If $f(x+z) < f(x)$ then $x := x+z$

Until " a stopping condition is satisfied "

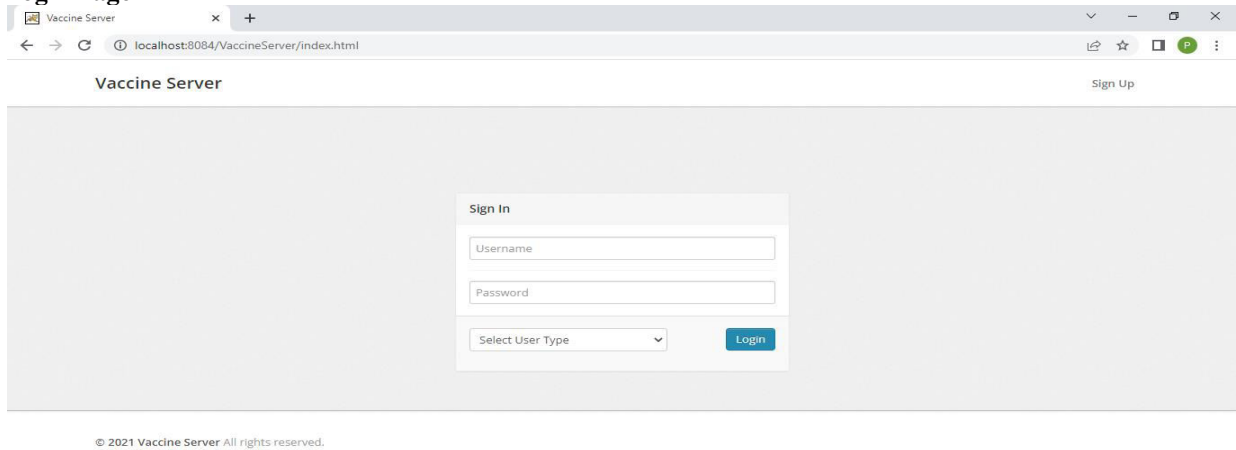
IV. RESULTS AND DISCUSSIONS

1) Admin Dashboard :



The screenshot shows the Admin Dashboard of the Vaccine Server. The dashboard includes a sidebar with navigation links: Dashboard, Company Details, Hospital Details, Customer Details, Vaccine Details, and Logout. The main content area displays four summary cards: 1 Companies, 1 Hospitals, 3 Users, and 2 Active Vaccines. Below these cards is a 'New Vaccine Approval' section with a search bar and a table. The table has columns: Sr No, Company Name, Vaccine Name, Doses, Time-In-Doses, Age Group, Description, and Action. The table currently shows 'No data available in table' and 'Showing 0 to 0 of 0 entries'. The footer of the dashboard indicates '© 2021 Vaccine Server All rights reserved.' and the system clock shows '08:46 08-04-2022'.

2) Login Page

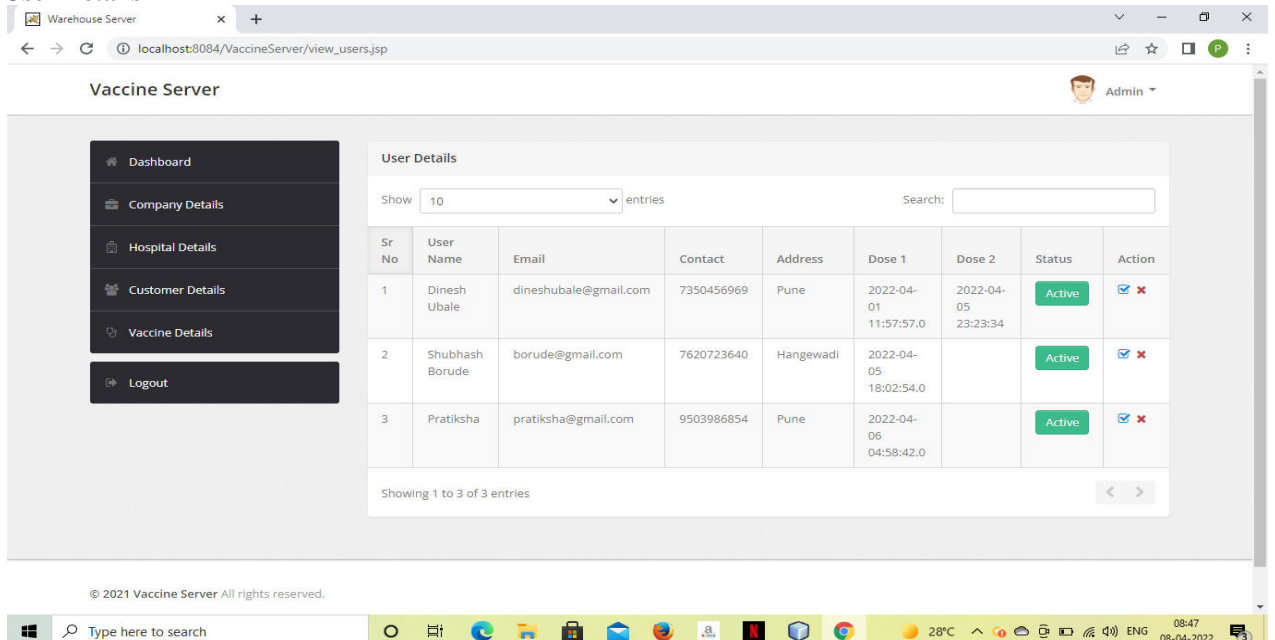


The screenshot shows a web browser window titled "Vaccine Server" with the URL "localhost:8084/VaccineServer/index.html". The page features a "Sign In" form with the following fields:

- Username
- Password
- Select User Type (dropdown menu)
- Login button

Below the form, there is a "Sign Up" link in the top right corner. At the bottom of the page, a copyright notice reads: "© 2021 Vaccine Server All rights reserved."

3) User Details

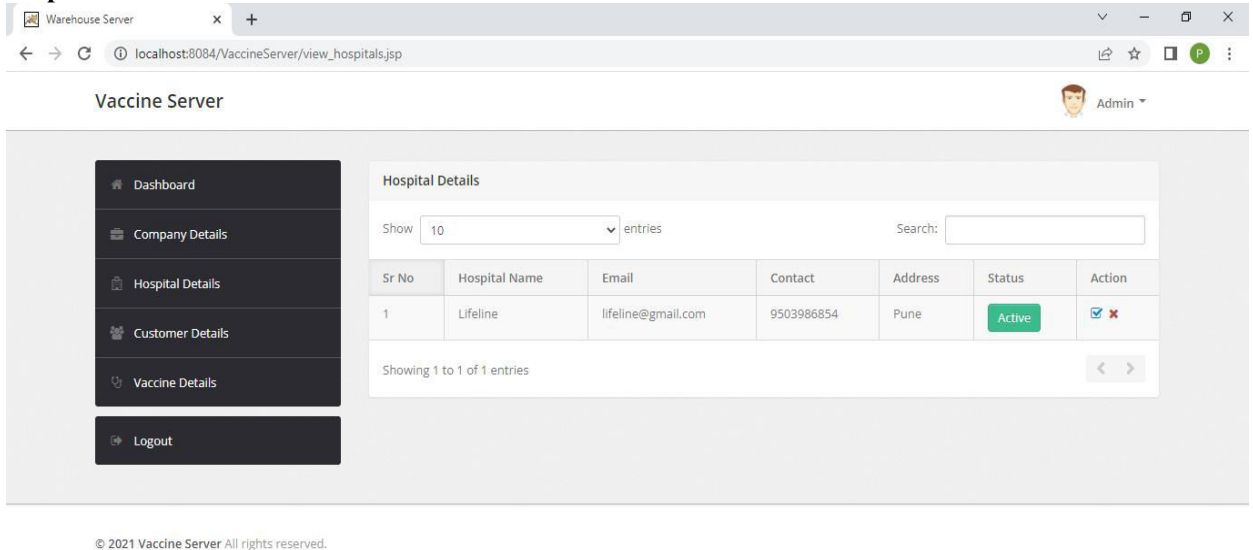


The screenshot shows a web browser window titled "Vaccine Server" with the URL "localhost:8084/VaccineServer/view_users.jsp". The page displays a "User Details" table with the following columns: Sr No, User Name, Email, Contact, Address, Dose 1, Dose 2, Status, and Action. The table contains three entries, all with a status of "Active".

Sr No	User Name	Email	Contact	Address	Dose 1	Dose 2	Status	Action
1	Dinesh Ubale	dineshubale@gmail.com	7350456969	Pune	2022-04-01 11:57:57.0	2022-04-05 23:23:34	Active	✓ ✗
2	Shubhash Borude	borude@gmail.com	7620723640	Hangewadi	2022-04-05 18:02:54.0		Active	✓ ✗
3	Pratiksha	pratiksha@gmail.com	9503986854	Pune	2022-04-06 04:58:42.0		Active	✓ ✗

Below the table, it says "Showing 1 to 3 of 3 entries". On the left side of the page, there is a sidebar menu with the following options: Dashboard, Company Details, Hospital Details, Customer Details, Vaccine Details, and Logout. At the bottom of the page, a copyright notice reads: "© 2021 Vaccine Server All rights reserved."

4) Hospital Details

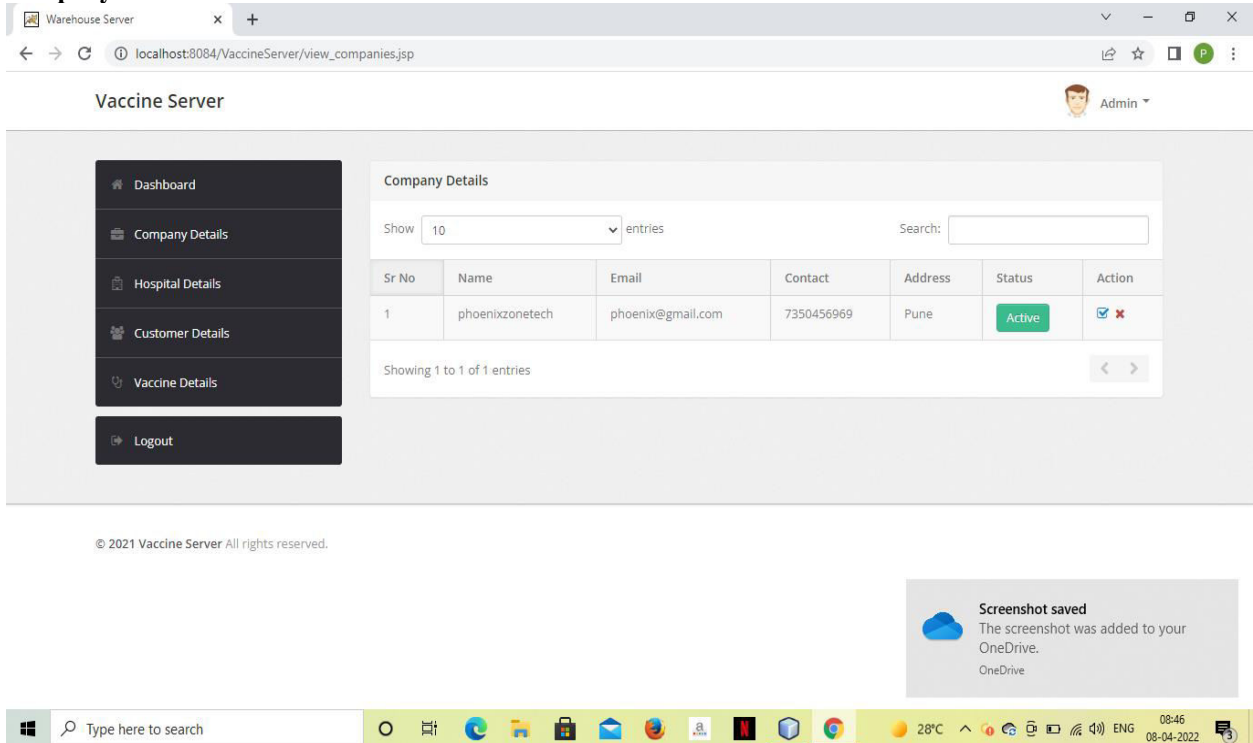


The screenshot shows a web browser window with the address bar displaying 'localhost:8084/VaccineServer/view_hospitals.jsp'. The page title is 'Vaccine Server' and the user is logged in as 'Admin'. On the left, there is a sidebar menu with options: Dashboard, Company Details, Hospital Details, Customer Details, Vaccine Details, and Logout. The main content area is titled 'Hospital Details' and includes a search bar and a table with the following data:

Sr No	Hospital Name	Email	Contact	Address	Status	Action
1	Lifeline	lifeline@gmail.com	9503986854	Pune	Active	✓ ✗

Below the table, it says 'Showing 1 to 1 of 1 entries'. At the bottom, there is a copyright notice: '© 2021 Vaccine Server All rights reserved.'

5) Company Details

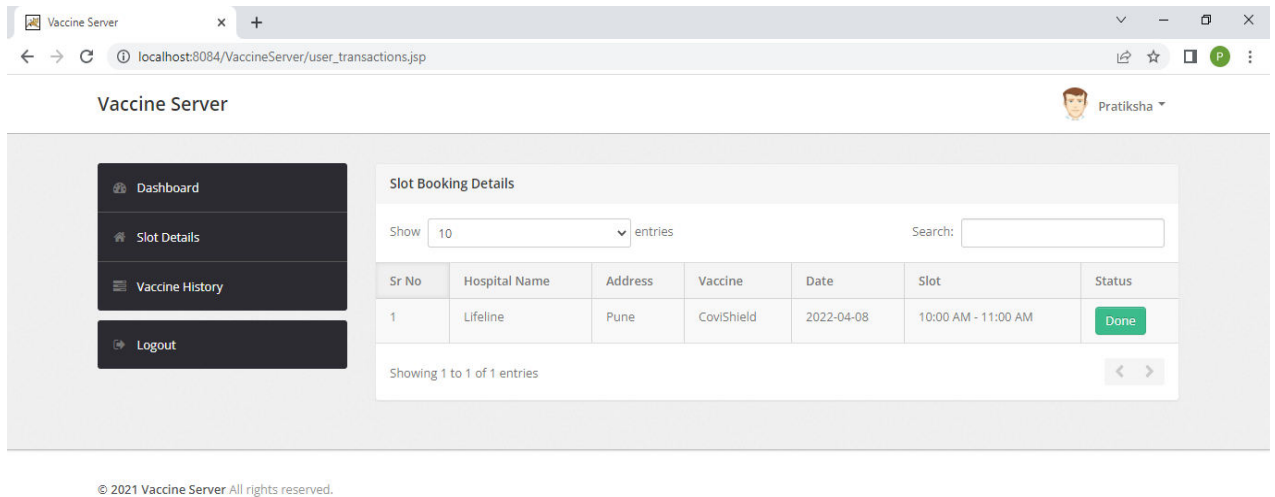


The screenshot shows a web browser window with the address bar displaying 'localhost:8084/VaccineServer/view_companies.jsp'. The page title is 'Vaccine Server' and the user is logged in as 'Admin'. On the left, there is a sidebar menu with options: Dashboard, Company Details, Hospital Details, Customer Details, Vaccine Details, and Logout. The main content area is titled 'Company Details' and includes a search bar and a table with the following data:

Sr No	Name	Email	Contact	Address	Status	Action
1	phoenixzonetech	phoenix@gmail.com	7350456969	Pune	Active	✓ ✗

Below the table, it says 'Showing 1 to 1 of 1 entries'. At the bottom, there is a copyright notice: '© 2021 Vaccine Server All rights reserved.' A notification box in the bottom right corner states: 'Screenshot saved. The screenshot was added to your OneDrive. OneDrive'.

6) Step 1 : Slot Booking by User



Vaccine Server

Pratiksha

Slot Booking Details

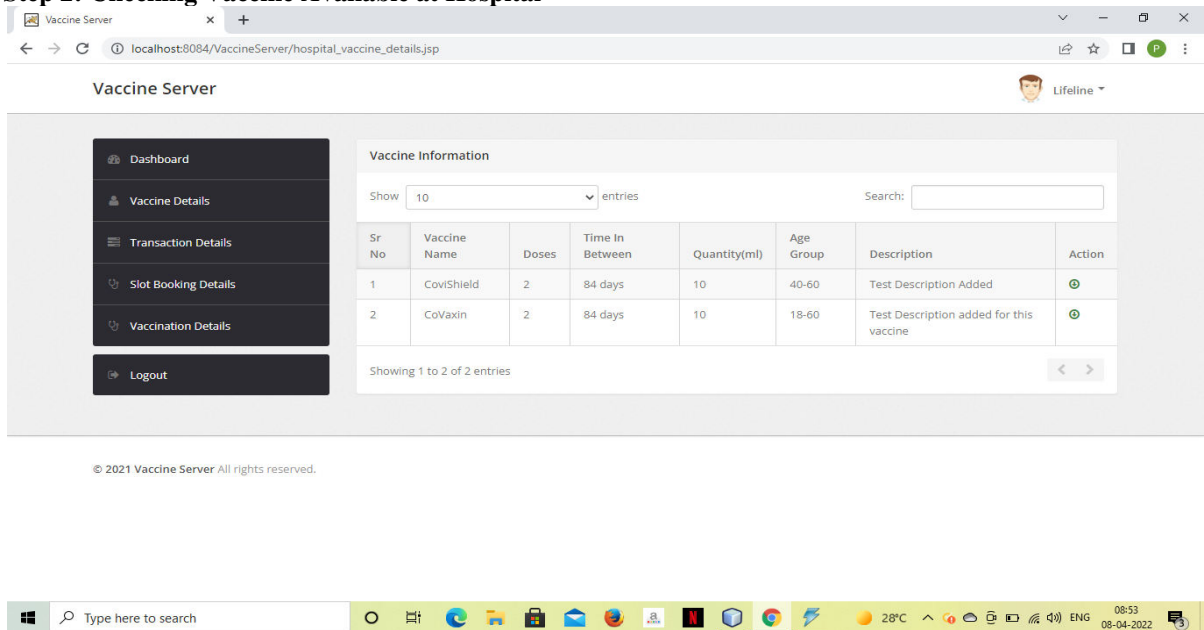
Show 10 entries Search:

Sr No	Hospital Name	Address	Vaccine	Date	Slot	Status
1	Lifeline	Pune	CoviShield	2022-04-08	10:00 AM - 11:00 AM	Done

Showing 1 to 1 of 1 entries

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7) Step 2: Checking Vaccine Available at Hospital



Vaccine Server

Lifeline

Vaccine Information

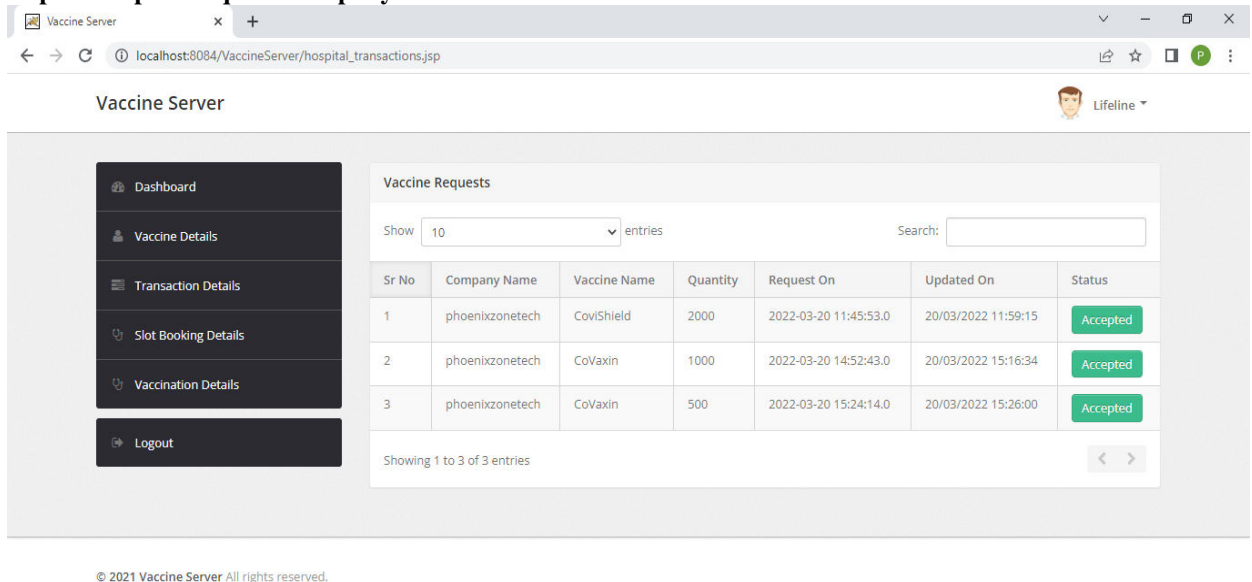
Show 10 entries Search:

Sr No	Vaccine Name	Doses	Time In Between	Quantity(ml)	Age Group	Description	Action
1	CoviShield	2	84 days	10	40-60	Test Description Added	+
2	CoVaxin	2	84 days	10	18-60	Test Description added for this vaccine	+

Showing 1 to 2 of 2 entries

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8) Step 3: Hospital request Company for Vaccines



Vaccine Server

Vaccine Requests

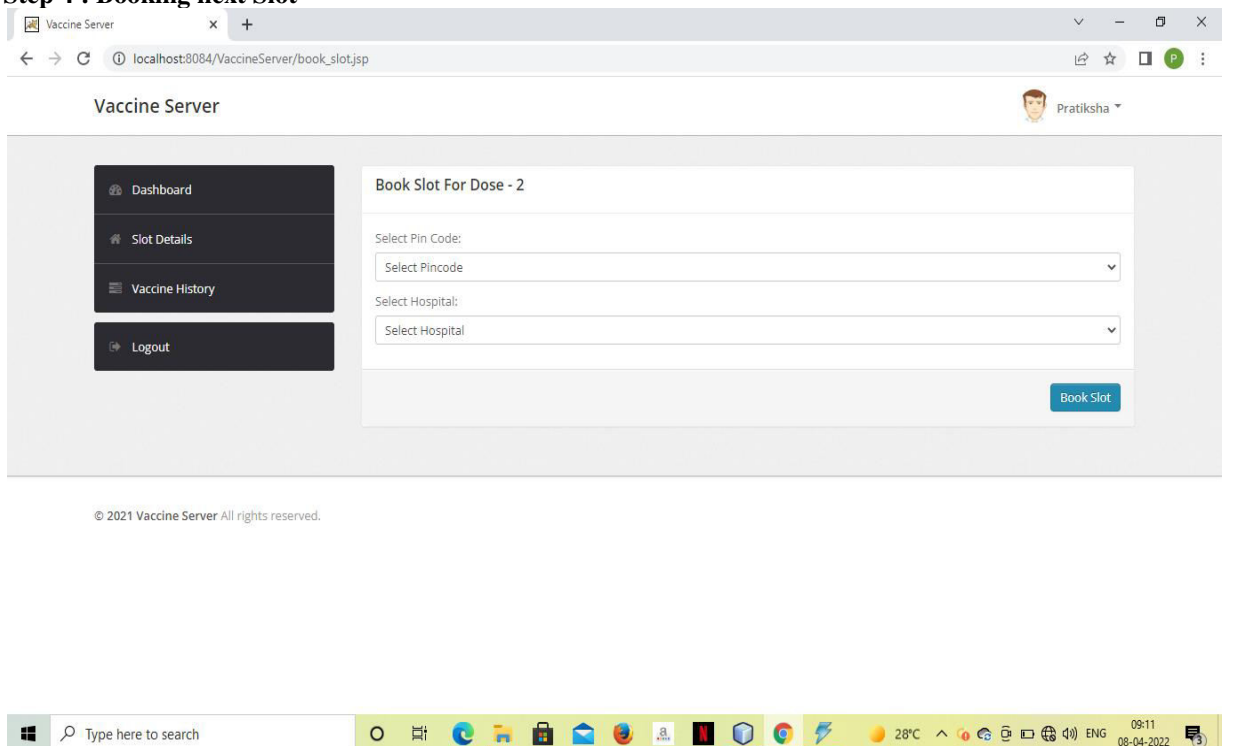
Show: 10 entries Search:

Sr No	Company Name	Vaccine Name	Quantity	Request On	Updated On	Status
1	phoenixzonetech	CoviShield	2000	2022-03-20 11:45:53.0	20/03/2022 11:59:15	Accepted
2	phoenixzonetech	CoVaxin	1000	2022-03-20 14:52:43.0	20/03/2022 15:16:34	Accepted
3	phoenixzonetech	CoVaxin	500	2022-03-20 15:24:14.0	20/03/2022 15:26:00	Accepted

Showing 1 to 3 of 3 entries

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9) Step 4 : Booking next Slot



Vaccine Server

Book Slot For Dose - 2

Select Pin Code:
Select Pincode

Select Hospital:
Select Hospital

Book Slot

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V.CONCLUSION AND FUTURE WORK

In this paper, with rapid spread of covid-19 everywhere it is very important to get all people vaccinated as fast as possible. For this management and coordination from manufacturer to people getting vaccinated is needed. The system helps to pipeline the process from manufacturing to vaccination. As system get enhanced new features can be added to make management smoother. More things can be added to the line of management such as health record.

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