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### **DBMS MINI PROJECT**

**TOPIC: Vaccination management system** 

### **AIM:**

Vaccination management system: An easy and user-friendly way to manage vaccination data all over the country.

### **INTRODUCTION**

- Databases can store very large numbers of records efficiently (they take up little space).
- It is very quick and easy to find information . It is easy to add new data and to edit or delete old data.
- Database management systems help users share data quickly, effectively, and securely across an organization.
- By providing quick solutions to database queries, a data management system enables faster access to more accurate data.

Our vaccination management system project enables users to book their vaccination slot according to their convenience in the nearest vaccination centers available.

### **RELEVANCE**

This project is based on implementation of the real life system of vaccination booking that was used by the government of not only India, but multiple countries.

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# **SOFTWARE REQUIREMENT SPECIFICATION (SRS)**

Database: MySQL

Localhost Server : Apache Tomcat

Backend: JSP

**GUI: HTML** 

### **Normalization**

Normalization is the process of organizing data in a database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy and inconsistent dependency.

#### • 1NF

- 1.No repeating values
- 2.No repeating columns

	Personal_Det
PK	Aadhar_No
	Name
	DOB
	Gender
	City

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	State
	Pincode
	MobNo
	emailId
	Pregnancy
	Diabetes
	Other_III
FK	Bene_No_of_Vac c
	pwd

	Centres_Detail
PK	C_code
	C_Name
	C_city
	C_state
	C_pincode
	TS1
	TS2
	Capacity

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	cv_amt
	cs_amt
	Covaxin_consmp
	Covishield_consm p
PK	vaccId
	Vacc_Name

	Emp_det
PK	empld
FK	C_code
	e_name
	DOB
	qualif
	eGender

	det_of_vacc
PK	Bene_no
	vacc_Name

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	status
	time
	Vacc_by
	ts
	v_date
FK	adhno

### 2NF

Here except centers table all table are in 3NF form

- 1.It should be in 1NF form
- 2.No partial dependency

Thus,

	Centres_Detail
PK	C_code
	C_Name
	C_city
	C_state
	C_pincode
	TS1
	TS2

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Capacity
cv_amt
cs_amt
Covaxin_consmp
Covishield_consm

	vacc_ids
PK	vaccId
	Vacc_Name

### • 3NF

	Personal_Det
PK	Aadhar_No
	Name
	DOB
	Gender

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	City
	State
	Pincode
	MobNo
	emailId
	Pregnancy
	Diabetes
	Other_III
FK	Bene_No_of_Vac c
	pwd

	det_of_vacc
PK	Bene_no
	vacc_Name
	status
	time
	Vacc_by
	ts
	v_date

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FK	adhno
----	-------

	Centres_Detail
PK	C_code
	C_Name
	C_city
	C_state
	C_pincode
	TS1
	TS2
	Capacity
	cv_amt
	cs_amt
	Covaxin_consmp
	Covishield_consm

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### **DESCRIPTION**

We have two main pages on frontend:

- 1.Login page
- 2. Registration page
  - Login page:

Login page consist Employee login. One has to enter employee id, password and the aadhar number of person who has done his/her vaccination.

### • Registration page:

If the applicant is new, he/she has to register first for the vaccine. In this he/she has to enter her/his personal details, vaccination details such as vaccine name, date of vaccination, etc.

**Database description** 

We have created a database called Vaccination\_Drive consisting following tables:

## 1.personal\_det:

Table to store user information

Primary key : Aadhar\_No

Foreign key : Bene\_No\_of\_Vacc

Not null : pwd

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1.Aadhar No	Varchar(15)
<b>—</b>	<del>                                     </del>
2.Name	Varchar(50)
3.DOB	Date
4.Gender	Varchar(20)
5.City	Varchar(30)
6.State	Varchar(30)
7.Pincode	Int
8.MobNo	Varchar(10)
9.emailld	Varchar(50)
10.Pregnancy	Varchar(5)
11.Diabetes	Varchar(5)
12.Other_III	Varchar(50)
13.Bene_No_of_Vacc	Varchar(15)
14.pwd	Varchar(50)

### 2.centres

Table to store center information

Primary key : C\_code (auto\_increment)

1.C_code	int
2.C_Name	Varchar(50)
3.C_city	Varchar(30)
4.C_state	Varchar(30)
5.C_pincode	int
6.TS1	Varchar(15)
7.TS2	Varchar(15)
8.Capacity	int
9.cv_amt	int
10.cs_amt	int

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11.covaxin_consumption	int
12.covishield_consumption	int

### 3.emp\_det

Table to store employee information

Primary key : empld

Foreign key : C\_code

1.empld	Varchar(15)
2.C_code	int
3.e_name	Varchar(50)
4.DOB	Date
5.qualif	Varchar(30)
6.eGender	Varchar(20)
7.pwd	varchar(20)

# 4.det\_of\_vacc

Table to store vaccination information

Primary key : Bene\_no

Foreign key : adhno, Vacc\_by

1.Bene_no	Varchar(15)
2.vacc_Name	Varchar(20)
3.status	Varchar(20)
4.v_time	time
5.ts	Varchar(15)
6.v_date	Date
7.Vacc_by	Varchar(15)

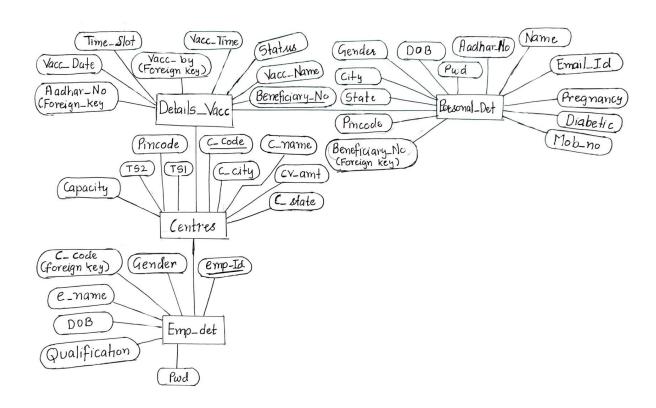
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8.adhno Varchar(15)	8.adhno
---------------------	---------

#### **ERD**



### **QUERIES**

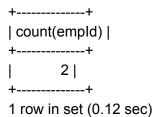
#### BETWEEN()

mysql> select count(empId) from Emp\_det where (DOB between "1997-03-01" and "1997-04-01");

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#### • LIKE()

To display employee id using year and month irrespective of date mysql> select distinct empld,DOB from Emp\_det where DOB like "1997-03%" order by DOB;

```
+-----+
| empld | DOB |
+-----+
| 100153 | 1997-03-07 |
| 100044 | 1997-03-10 |
+-----+
2 rows in set (0.01 sec)
```

#### Subquery

#### To display centres having maximum capacity

mysql> select C\_code, C\_Name from Centres where Capacity = (select max(Capacity) from Centres);

#### ORDER BY

To display centre table order by state

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```
| 10000 | Aruna Asaf Ali Govt. Hospital | Central | Delhi |
110054 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 | 100 |
0 |
    0 |
| 10001 | Balak Ram Hospital | Central | Delhi
110054 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 300 | 200 | 100 |
0 |
     0 |
| 10002 | Burari Hospital | Central | Delhi |
110084 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 | 100 |
0 |
      0 |
| 10003 | Delhi Cantonment General Hospital | New Delhi | Delhi
| 110010 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 600 | 400 | 200
     0 |
            0 |
| 10004 | Northern Railways Hospital | New Delhi | Delhi |
110001 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 | 100 |
0 |
    0 |
| 10005 | Doctor Hedgewar Arogya Sansthan DH | Shahdara |
Delhi | 110032 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
200 | 100 | 0 |
                      0 |
| 10006 | Rajiv Gandhi Super Speciality Hospital Tahirpur DH | Shahdara |
Delhi | 110095 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
300 | 100 |
            0 |
                   0 |
| 10007 | All India Institute of Medical Sciences | South | Delhi
110029 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM | 400 | 200 | 200 |
0 |
     0 |
| 10008 | Acharya Shree Bhikshuk Govt Hospital | East | Delhi
| 110029 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM | 500 | 400 | 100
     0 |
            0 |
| 10042 | PHC TRENT
                                       | Ahmedabad | Gujarat |
382130 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 | 100 |
0 |
     0 |
| 10043 | ANGANWADI KARELI
                                           | Surat | Gujarat |
394110 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 300 | 200 | 100 |
0 |
     0 |
| 10044 | BORASARA PALOD ANGANWADI 2
                                                  | Surat |
Gujarat | 394110 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 300 |
300 | 0 | 0 |
                     0 |
                                       | Surat | Gujarat |
| 10045 | CHC OLPAD
394540 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 300 | 200 | 100 |
0 | 0 |
```

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```
| 10046 | HOJIWALA HC UDHYOG NAGAR VANZ | Surat |
Gujarat | 394235 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 |
300 | 100 | 0 |
                     0 |
| 10047 | PHC BODHAN
                                       | Surat | Gujarat |
394140 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 500 | 300 | 200 |
0| 0|
| 10041 | PHC DHOLERA
                                       | Ahmedabad | Gujarat |
382455 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 | 100 |
0 |
     0 |
| 10038 | CHC DHANDHUKA 1 | Ahmedabad | Gujarat
| 382460 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 300 |
100 |
       0 | 0 |
| 10039 | NANI JOK ANGANWADI-DHK | Ahmedabad |
Gujarat | 382460 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
200 | 0 |
             0 |
                    0 |
| 10040 | PARA ANGANWADI-2 BHUVALADI
                                               | Ahmedabad |
Gujarat | 382430 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
200 | 100 |
              0 |
                     0 |
| 10024 | PCMC KHBP M.KUTE M HOSP AKURDI | Pune |
Maharashtra | 411035 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
                                                        400 |
300 | 100 | 0 | 0 |
| 10020 | DISTRICT HOSPITAL AUNDH
                                             | Pune |
Maharashtra | 411027 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
300 | 100 |
            0 |
                     0 |
| 10021 | PCMC ANKUSHRAO LANDGE NATYAGRU | Pune
| Maharashtra | 411039 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
| 200 | 100 | 0 |
                       0 |
| 10022 | PCMC APOLO CLINIC
Maharashtra | 411044 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
                                                        400 |
300 | 100 | 0 | 0 |
| 10023 | PCMC JADHAVWADI PCMC SCHOOL
Maharashtra | 412105 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM |
                                                        200 |
200 | 0 | 0 |
                    0 |
                                         | Mumbai |
| 10025 | ADMIRE EYE CARE
Maharashtra | 400104 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                                        500 |
400 | 100 |
            0 |
                     0 |
| 10026 | ADVANCED MULTI SPECIALTY HOSP
                                                | Mumbai |
Maharashtra | 400056 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                                        300 |
200 | 100 |
            0 |
                     0 |
| 10027 | AMEYA SURGICAL AND GENERAL NH
                                                  | Mumbai |
Maharashtra | 400059 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 200 |
200 | 0 | 0 |
                    0 |
```

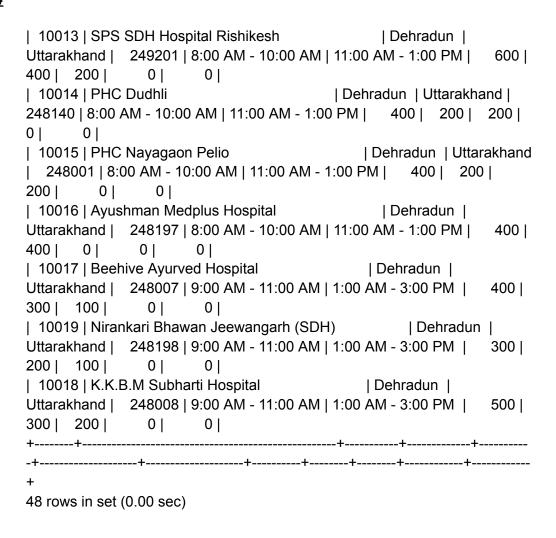
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```
| 10028 | APEX HOSPITALS MULUND
                                              | Mumbai |
Maharashtra | 400080 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                                          300 |
300 |
      0 |
             0 |
                    0 |
| 10030 | APOLLO CLINIC COLABA
                                             | Mumbai |
Maharashtra | 400005 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                                          400 |
300 | 100 |
            0 |
                     0 |
| 10029 | APOLLO CLINIC ANDHERI (E)
                                              | Mumbai |
                                                          300 |
Maharashtra | 400093 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
200 | 100 |
             0 |
                     0 |
| 10031 | ARYAN HOSPITAL MEDICAL CENTRE | Mumbai |
Maharashtra | 400024 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                                          300 |
200 | 100 |
             0 |
                     0 |
| 10034 | PARAS JK HOSPITAL
                                         | Udaipur | Rajasthan
| 313001 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 200 | 200 | 0
     0 |
            0 |
| 10036 | MARBLE CITY SITE 1 | Ajmer | Rajasthan |
305801 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM | 300 | 200 | 100 |
0 |
    0 |
| 10037 | PHC DANTRA SITE 1 | Ajmer | Rajasthan |
305207 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM | 200 | 200 |
0 | 0 |
                                      | Udaipur |
| 10032 | DISTRICT HOSPITAL CHANDPOL
Rajasthan | 313001 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
300 | 0 | 0 |
                    0 |
| 10033 | GMCH EKLINGPURA
                                          | Udaipur | Rajasthan
| 313003 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 300 | 200 |
100 | 0 |
               0 |
| 10035 | UPHC BHOPALPURA
                                   | Udaipur | Rajasthan
| 313001 | 9:00 AM - 11:00 AM | 1:00 AM - 3:00 PM | 300 | 300 | 0 |
0 |
      0 |
| 10009 | Sky Garden Booth-1
                                        | Dehradun | Uttarakhand
248001 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
                                               600 | 300 |
300 | 0 | 0 |
| 10010 | ST. Paul Health Centre
                                        | Dehradun | Uttarakhand
| 248002 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 200 |
       0 | 0 |
200 |
| 10011 | Cantt. General Hospital C Town | Dehradun |
Uttarakhand | 248002 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM |
300 | 100 | 0 |
                     0 |
                                       | Dehradun | Uttarakhand |
| 10012 | PHC Bhaniyawala
248145 | 8:00 AM - 10:00 AM | 11:00 AM - 1:00 PM | 400 | 400 | 0 |
0 | 0 |
```

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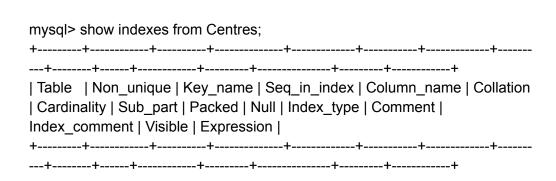
#### IINDEX

#### To display index of centre table

mysql> create index Cname on Centres(C\_Name);

Query OK, 0 rows affected (0.12 sec)

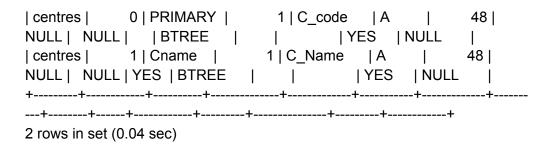
Records: 0 Duplicates: 0 Warnings: 0



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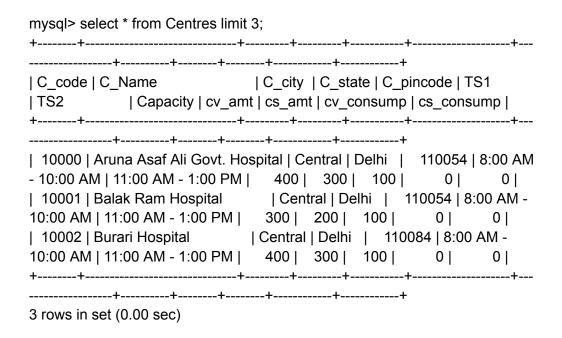
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#### LIMIT

#### To display first 3 centres information



#### INNER JOIN

#### Here we are joining Emp\_det and Centres column using inner join

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```
| Acharya Shree Bhikshuk Govt Hospital | Sparsh Madan | ADMIRE EYE CARE | Hriday Sinha | +-----+
5 rows in set (0.00 sec)
```

#### FUNCTION

Function which determines whether applicant has booked vaccine or not

mysql> create function isBooked(adhno varchar(15))

- -> returns int
- -> begin
- -> declare is\_b int default 0;
- -> declare bno int default -1;
- -> set bno=(select bno from personal det where Aadhar No=adhno);
- -> if bno!=-1 then
- -> set is b=1;
- -> end if;
- -> return is b;
- -> end//

Query OK, 0 rows affected (0.01 sec)

#### VIEW

#### View to display information about vaccines available

mysql> create view vacc\_info (Centre\_ld, Pin\_Code, City, State, Covaxin, Covishield) -> as select C\_code, C\_pincode, C\_city, C\_state, cv\_amt, cs\_amt from centres; Query OK, 0 rows affected (0.05 sec)

#### • PROCEDURES

#### Procedure to find covid centers nearby

```
mysql> DELIMITER //
mysql> create procedure find_centre(IN st varchar(30), IN ct varchar(30), IN pin int)
    -> BEGIN
    -> select * from centres where (C_state = st AND C_city = ct) OR (C_pincode = pin);
    -> END
    -> //
```

#### Procedure to book vaccine

mysql> create procedure Book(in ad varchar(12), in bene varchar(15), in v\_name varchar(20), in ts varchar(15), in vd date) begin

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insert into det\_of\_vacc(Bene\_no, vacc\_Name, status, ts, v\_date, adhno) values(bene, v\_name, "Not Vaccinated", ts, vd, ad); end//

### • Procedure to update vaccine status of person

mysql> create procedure getVaccine(in ad varchar(12), in id varchar(15)) begin update det\_of\_vacc set status="Vaccinated", v\_time=now(), Vacc\_by=id, v\_date=curdate() where adhno=ad; end//

# • Procedure to reduce covaxine count and increment its consumption after each vaccination

mysql> create procedure up\_cv(in ad varchar(12))

- -> begin
- -> declare amt int default 0;
- -> declare cmp amt int default 0;
- -> declare cde int default 0;
- -> select C\_code into cde from emp\_det where empId=(select Vacc\_by from det\_of\_vacc where det\_of\_vacc.adhno=ad);
  - -> select cv\_amt into amt from centres where C\_code=cde;
  - -> select cv\_consump into cmp\_amt from centres where C\_code=cde;
- -> update centres set centres.cv\_amt=amt-1, centres.cv\_consump=cmp\_amt+1 where C\_code=cde;
  - -> end//

Query OK, 0 rows affected (0.01 sec)

#### Procedure to reduce covishield count and increment its consumption after each vaccination

mysql> create procedure up\_cs(in ad varchar(12))

- -> begin
- -> declare amt int default 0;
- -> declare cmp\_amt int default 0;
- -> declare cde int default 0:
- -> select C\_code into cde from emp\_det where empId=(select Vacc\_by from det\_of\_vacc where det\_of\_vacc.adhno=ad);
  - -> select cs\_amt into amt from centres where C\_code=cde;
  - -> select cs\_consump into cmp\_amt from centres where C\_code=cde;
- -> update centres set centres.cs\_amt=amt-1, centres.cs\_consump=cmp\_amt+1 where C code=cde:
  - -> end//

Query OK, 0 rows affected (0.01 sec)

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- TRIGGER
- Trigger to update vaccination availability and consumption

mysql> create trigger after\_det\_of\_vacc\_update

- -> after update
- -> on det of vacc
- -> for each row
- -> begin
- -> declare vN varchar(20);
- -> set vN=new.vacc\_Name;
- -> if vN="Covaxine" then
- -> call up\_cv(new.adhno);
- -> elseif vN="Covshield" then
- -> call up cs(new.adhno);
- -> end if;
- -> end//

Query OK, 0 rows affected (0.02 sec)

#### **CONCLUSION**

Through this project we have implemented a working model for booking vaccines and storing the data on whether a person is vaccinated or not.

Similar systems can also be implemented for booking for various other purposes, for e.g., systems for enrolling in government programs can be based on this system model, and many other ideas can be implemented through this system.

This project has helped us improve our understanding on using and connecting different technologies.

#### **REFERENCES**

2461: Bhakti Ugale

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https://docs.oracle.com/javaee/5/tutorial/doc/bnajo.html

https://developer.mozilla.org/en-US/docs/Web/HTML