

COVID MANAGEMENT

DATABASE MANAGEMENT SYSTEMS

Subject code – 19PC1CS04

COURSE BASED PROJECT



VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING &
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DECLARATION

The **course based project** titled -----COVID MANAGEMENT-----

-----has been executed

under the Guidance of

Dr.C.Kiran Mai, as per the academic requirements at VNR VJIET. To the best of our knowledge we were able to design and implement, while understanding the key concepts of the subject, Data Base Management System. We are indebted to the support and motivation extended by HOD and faculty of the department, in completing our project.

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Introduction

Database Management system is a collection of interrelated and persistent data. It's a set of application Programs used to access, update and manage data.

The goal of DBMS is to provide an environment that is both convenient and efficient to use in

- i) Retrieving information from DB and
- ii) Storing information into DB.

Databases are designed to manage large repository of information. This involves

- i) Definition of structures for information storage (Data Modeling)
- ii) Provision of mechanisms for the manipulation of information (file and system structure, query processing).
- iii) Providing safety of the information in the database (Crash Recovery and security).
- iv) Concurrency control when system is shared by multiple users.

PURPOSE OF DATABASE SYSTEM:

1. To see why DBMS is necessary, consider a typical example of the file processing system supported by a conventional operating system.

Application is employee database in an institute :

- i) *Employee details, salary payment, classes handled are kept in the permanent system files.*
- ii) *Application programs are written to manipulate files to perform the following tasks:*
 - a) *List the total employee in the institute.*
 - b) *List the subjects handled by the faculty.*
 - c) *List the lab courses assisted by the operators.*
 - d) *Generate the monthly statement of salaries paid.*

2. Development of the system proceeds as follows:

- i) *New application Programs to be written as need arises.*

- ii) *New permanent files are to be created as required.*
 - iii) **But** *over a long period, each file may be of a different format, and*
 - iv) *Application programs may be in different languages.*
3. There are problems with the file processing system
- i) *Data Redundancy and inconsistency*
 - a) Same files duplicated at several places.
 - b) All copies are not updated properly.
 - ii) *Difficulty in accessing the data*

May have to write a new application program to satisfy an unusual request.

Eg: Find the faculty with the same postal code.
 - iii) *Data isolation:* Because data are scattered in various files, and files may be in different formats, writing new application programs to retrieve the appropriate data is difficult.
 - iv) *Atomicity Problems.*
 - v) *Concurrent access anomalies:*
 - a) Concurrency is required for faster response time.
 - b) Protection from concurrent updates.
 - vi) *Security*

Every user is able to handle the complete data. Restricted access cannot be applied.

Eg: Payroll details to be viewed by accounts department only.

This is difficult to enforce through an application program.
 - vii) *Integrity problems*

Difficulty in enforcing the constraints to automatically check the input or modification of data.

Advantage of DBMS

- No redundant data – Redundancy removed by data normalization
- Data Consistency and Integrity – data normalization takes care of it too
- Secure – Each user has a different set of access
- Privacy – Limited access
- Easy access to data and Flexible storage
- Easy recovery

Disadvantages of DBMS:

- DBMS implementation cost is high compared to the file system
 - Complexity: Database systems are complex to understand
- Performance: Database systems are generic, making them suitable for various applications. However this feature affects the performance for certain applications

Problem Definition

This project is based on collecting the details of the patient, symptoms exhibited, displaying status of treatment and assigning vaccination follow-up. It includes collection of details of the patient, symptoms tracking, classification of the disease (light, moderate, severe), storing the details of the patient, collecting details regarding vaccination.

This project is beneficial to:

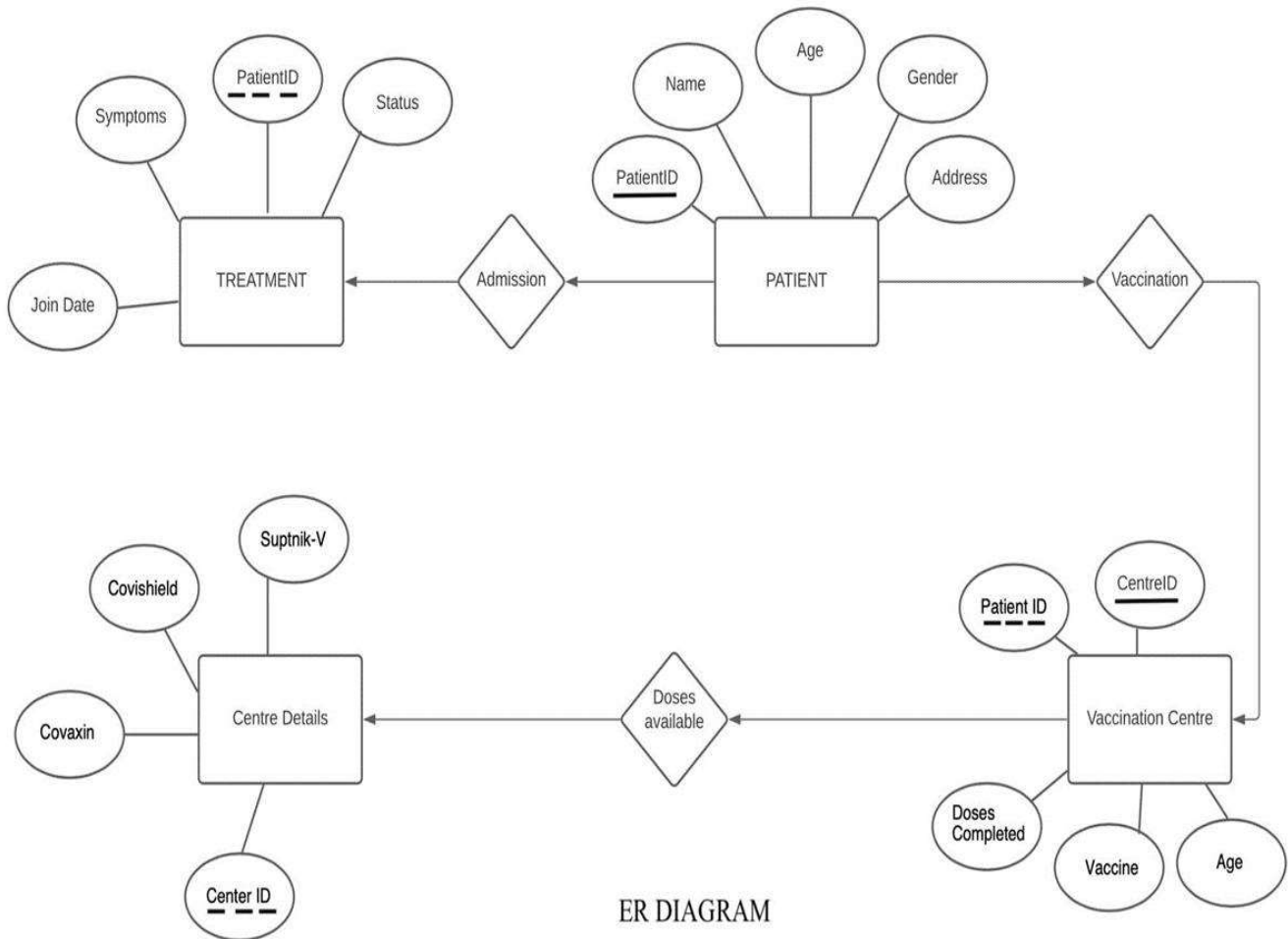
I. PHC Centres

II. Private vaccination centres and hospitals

Features of the project.

- 1) Collection of patient details through SQL.
- 2) Symptom assessment
- 3) Maintaining record of the patient details in a Database
- 4) Storing the details of all vaccinated individuals
- 5) Storing vaccination centre details in a database.

ER DIAGRAM



ER DIAGRAM

SCHEMA DEFINITION

TREATMENT TABLE SCHEMA :

Sno	Column Name	Datatype	constraints
1	PatientID	varchar(3)	foreign key
2	Join Date	date	
3	Symptoms	varchar(20)	
4	Status	varchar(10)	

PATIENT TABLE SCHEMA :

Sno	Column Name	Datatype	constraints
1	PatientID	varchar(3)	primary key
2	Name	varchar(20)	
3	Age	number(2)	
4	Gender	varchar(1)	
5	Address	varchar(30)	

VACCINATION CENTRE SCHEMA :

Sno	Column Name	Datatype	constraints
1	CentreID	Varchar(3)	Primary key
2	PatientID	Varchar(3)	Foreign key
3	Doses Completed	Number(1)	
4	Vaccine	Varchar(15)	
5	age	Number(2)	

CENTRE DETAILS SCHEMA

Sno	Column Name	Datatype	constraints
1	CentreID	Varchar(3)	Foreign Key
2	Covaxin	Number(4)	
3	Covieshield	Number(4)	
4	Sputnik-v	Number(4)	

INSTANCE

VACCINATIONCENTRE TABLE INSTANCE

CENTRE ID	PATIENT ID	DOSES COMPLETED	VACCINE	AGE
C2	P1	2	Covishield	35
C3	P2	1	Covishield	42
C1	P3	2	Covaxin	31
C4	P4	2	Covishield	56
C1	P5	1	Sputnik-V	25
C2	P6	1	Covaxin	66
C1	P7	1	Covishield	54
C2	P8	2	Covishield	27
C4	P9	2	Covaxin	43
C3	P10	1	Sputnik-V	33
C1	P11	2	Covaxin	38
C2	P12	1	Covishield	22
C4	P13	2	Covaxin	47

TREATMENT TABLE INSTANCE

PATIENT ID	JOIN DATE	SYMPTOMS	STATUS
P1	30-SEP-2020	Fever	Treatment
P2	18-OCT-2020	Cough	Treatment
P3	27-NOV-2020	No Smell and Taste	Discharged
P4	21-DEC-2020	Fever	Treatment
P5	11-JAN-2021	Cold	Treatment
P6	28-JAN-2021	Breathlessness	Expired
P7	14-FEB-2021	Fever	Treatment
P8	02-MAR-2021	No Smell and Taste	Discharged
P9	17-APR-2021	Cold	Treatment
P10	06-MAY-2021	Fever	Discharged
P11	15-MAY-2021	Breathlessness	Treatment
P12	14-JUN-2021	Cough	Expired
P13	07-JUL-2021	No Smell and Taste	Discharged

PATIENT TABLE INSTANCE

PATIENT ID	NAME	AGE	GENDER	ADDRESS
P1	Ramesh	35	MALE	Kukatpally
P2	Ayyappan	42	MALE	Miyapur
P3	Pravalika	31	FEMALE	Bachupally
P4	Prabhakar rao	56	MALE	Balnagar
P5	Kavitha	25	FEMALE	Kukatpally
P6	Banvar Singh	66	MALE	Kukatpally
P7	Jaya Lalitha	54	FEMALE	Dilsukhnagar
P8	Mamatha	27	FEMALE	Miyapur
P9	Venkat	43	MALE	Kukatpally
P10	Vikram Aditya	33	MALE	Bachupally
P11	Ramana	38	MALE	Kukatpally
P12	Yamini	22	FEMALE	LB Nagar
P13	Joseph	47	MALE	Balnagar

CENTREDETAILS TABLE INSTANCE

CENTRE ID	COVAXIN	COVISHIELD	SPUTNIK-V
C1	123	325	27
C2	88	490	0
C3	230	121	42
C4	151	122	15

DDL COMMANDS

patient table:

Create table patient(PatientID varchar(3) constraint pk1
PRIMARY KEY, Name Varchar(20), Age number(2),
Gender varchar(1), Address varchar(30));

treatment table:

Create table treatment(PatientID varchar(3), JoinDate
date, Symptoms varchar(20), Status varchar(10),
FOREIGN KEY(PatientID) REFERENCES
patient(PatientID));

vaccinationcentre table:

Create table vaccinationcentre(CentreID varchar(3)
constraint pk2 PRIMARY KEY, PatientID varchar(3),
DosesCompleted number(1), Vaccine varchar(15),
FOREIGN KEY(PatientID) REFERENCES
patient(PatientID));

centredetails table:

Create table centredetails (CentreID varchar(3)
constraint pk3 PRIMARY KEY,
Covaxin number(4), Covishield number(4),
SputnikV number(4));

DML COMMANDS

patient table:

Insert into patient values('&PatientID', '&Name',
&Age, '&Gender', '&Address');

treatment table:

Insert into treatment values('&JoinDate', '&PatientID',
'&Symptoms', '&Status');

vaccinationcentre table:

Insert into vaccinationcentre values('&CentreID',
'&PatientID', &DosesCompleted, '&Vaccine', &Age);

centredetails table:

Insert into centredetails ('&CentreID', &Covaxin,
&Covishield, &SputnikV);

Queries

- 1) Display the details of all patients in patients table.
- 2) Display the details of patients who have the age more than 40.
- 3) Display the names of patients who are from Kukatpally.
- 4) Display the no of patients who are females and age is under 30 .
- 5) Display the names of patients whose name ends with 'a'.
- 6) Display name, age, gender by increasing of their age.
- 7) Display the no of patients from each place.
- 8) Display patientid ,names,of patients who are suffering with fever .
- 9) Display the names of patients whose gender is female and status is treatment.
- 10) Display below statement for all patients
"Patient Ramesh joined on 30-SEP-2020 with symptoms fever and his/her age 35" .
- 11) Display the details of patients who have vaccinated with Covishield Vaccine along with numbers of doses taken .
- 12) Display the number of patients who have completed two doses of vaccination .
- 13) Display the details of patients who have expired .
- 14) Display the details of centre which supply the highest covaxin among all the centres .

- 15) Display all the details of the patients who have joined in the year 2021 .
- 16) Display following output
“Centre C1 has 123-covaxin doses ,321- covishield doses,27sputnik-V doses” .
- 17) Display the symptoms and status of patients from LB nagar .
- 18) Display total number of sputnik-v doses present across all the centres .
- 19) Display the names of patients who vaccinated sputnik-v .
- 20) Display the total number of vaccines in each centre.

QUERIES SOLUTIONS

1) Display the details of all patients in patients table.

Ans) **select * from patient;**

```
Run SQL Command Line
SQL> connect system;
Enter password:
Connected.
SQL> select * from patient;

PAT NAME                                AGE G ADDRESS
-----
P1 Ramesh                               35 M Kukatpally
P2 Ayyappan                             42 M Miyapur
P3 Pravalika                            31 F Bachupally
P4 Prabhakar Rao                         56 M Balnagar
P5 Kavitha                              25 F Kukatpally
P6 Banvar Singh                         66 M Kukatpally
P7 Jaya Lalitha                         54 F Dilsukhnagar
P8 Mamatha                              27 F Miyapur
P9 Venkat                               43 M Kukatpally
P10 Vikram Aditya                       33 M Bachupally
P11 Ramana                              38 M Kukatpally

PAT NAME                                AGE G ADDRESS
-----
P12 Yamini                              22 F LB Nagar
P13 Joseph                              47 M Balnagar

13 rows selected.
```

2) Display the details of patients who have the age more than 40

Ans) **Select name from patient where age>40;**

```
SQL> select name from patient where age>40;

NAME
-----
Ayyappan
Prabhakar Rao
Banvar Singh
Jaya Lalitha
Venkat
Joseph

6 rows selected.
```

3) Display the names of patients who are from Kukatpally.

Ans) **select name from patient where address='Kukatpally';**

```
SQL> select name from patient where address='Kukatpally';

NAME
-----
Ramesh
Kavitha
Banvar Singh
Venkat
Ramana

SQL>
```

4) Display the no of patients who are females and age is under 30 .

Ans) **select count(name) from patient where age<30 and gender='F';**

```
SQL> select count(name) from patient where age<30 and gender='F';

COUNT(NAME)
-----
              3

SQL> _
```

5) Display the names of patients whose name ends with 'a'

Ans) **select name from patient where name like '%a';**

```
Venkat
Ramana

SQL> select name from patient where name like '%a';

NAME
-----
Pravalika
Kavitha
Jaya Lalitha
Mamatha
Vikram Aditya
Ramana

6 rows selected.
```

6) Display name, age, gender by increasing of their age.

Ans) **select name, age, gender from patient order by age;**

```
SQL> select name, age, gender from patient order by age;

NAME                AGE G
-----
Yamini                22 F
Kavitha               25 F
Mamatha               27 F
Pravalika             31 F
Vikram Aditya         33 M
Ramesh                35 M
Ramana                38 M
Ayyappan              42 M
Venkat                43 M
Joseph                47 M
Jaya Lalitha          54 F

NAME                AGE G
-----
Prabhakar Rao         56 M
Banvar Singh          66 M

13 rows selected.
```

7) Display the no of patients from each place.

Ans) **select count(name), address from patient group by address;**

```
SQL> select count(name), address from patient group by address;

COUNT(NAME) ADDRESS
-----
1 LB Nagar
5 Kukatpally
2 Bachupally
1 Dilsukhnagar
2 Miyapur
2 Balnagar

6 rows selected.
```

8) Display patientid ,names,of patients who are suffering with fever .

Ans) **select patient.name, treatment.patientid from treatment, patient where patient.patientid = treatment.patientid and symptoms='Fever';**

```
SQL> select patient.name, treatment.patientid from treatment, patient where patient.patientid = treatment.patientid and symptoms='Fever';

NAME                PAT
-----
Ramesh              P1
Prabhakar Rao       P4
Jaya Lalitha        P7
Vikram Aditya       P10
```

9) Display the names of patients whose gender is female and status is treatment.

Ans) **select patient.name, treatment.status from patient, treatment where patient.patientid=treatment.patientid and gender='F' and status='Treatment';**

```
SQL> select patient.name, treatment.status from patient, treatment where patient.patientid=treatment.patientid and gender='F' and status='Treatment';

NAME                STATUS
-----
Kavitha             Treatment
Jaya Lalitha        Treatment
```

- 10) Display below statement for all patients
"Patient Ramesh joined on 30-SEP-2020 with symptoms fever and his/her age 35".

Ans) **select 'Patient' || patient.name || ' joined on ' || treatment.joindate || ' with symptoms ' || treatment.symptoms || ' and his/her age is ' || patient.age from patient, treatment where patient.patientid = treatment.patientid;**

```
Run SQL Command Line
SQL> select patient.name, treatment.status from patient, treatment where patient.patientid=treatment.patientid and gender='F' and status='Treatment';
NAME          STATUS
-----
Kavitha       Treatment
Jaya Lalitha   Treatment

SQL> select 'Patient' || patient.name || ' joined on ' || treatment.joindate || ' with symptoms ' || treatment.symptoms || ' and his/her age is ' || patient.age from patient, treatment where patient.patientid = treatment.patientid;
"Patient" || patient.name || "joined on" || treatment.joindate || "with symptoms" || treatment
-----
PatientRamesh joined on 30-SEP-20 with symptoms Fever and his/her age is 35
PatientAyyappa joined on 18-OCT-20 with symptoms Cough and his/her age is 42
PatientPrevalika joined on 27-NOV-20 with symptoms No Smell and Taste and his/her age is 31
PatientPrabhakar Rao joined on 21-DEC-20 with symptoms Fever and his/her age is 56
PatientKavitha joined on 11-JAN-21 with symptoms Cold and his/her age is 25
PatientBanvar Singh joined on 28-JAN-21 with symptoms Breathlessness and his/her age is 66
"Patient" || patient.name || "joined on" || treatment.joindate || "with symptoms" || treatment
-----
PatientJaya Lalitha joined on 14-FEB-21 with symptoms Fever and his/her age is 54
PatientMamatha joined on 02-MAR-21 with symptoms No Smell and Taste and his/her age is 27
PatientVenkat joined on 17-APR-21 with symptoms Cold and his/her age is 43
PatientVikram Aditya joined on 06-MAY-21 with symptoms Fever and his/her age is 33
"Patient" || patient.name || "joined on" || treatment.joindate || "with symptoms" || treatment
-----
PatientRamana joined on 15-MAY-21 with symptoms Breathlessness and his/her age is 38
PatientYamini joined on 14-JUN-21 with symptoms Cough and his/her age is 22
PatientJoseph joined on 07-JUL-21 with symptoms No Smell and Taste and his/her age is 47
```

- 11) Display the details of patients who have vaccinated with Covishield Vaccine along with numbers of doses taken .

Ans) **select patient.name, vaccine from patient, vaccinationcentre where patient.patientid = vaccinationcentre.patientid and vaccine='Covishield';**

```
SQL> select patient.name, vaccine from patient, vaccinationcentre where patient.patientid = vaccinationcentre.patientid and vaccine='Covishield';
NAME          VACCINE
-----
Ramesh        Covishield
Ayyappa       Covishield
Prabhakar Rao Covishield
Jaya Lalitha   Covishield
Mamatha        Covishield
Yamini         Covishield

6 rows selected.

SQL>
```

12) Display the number of patients who have completed two doses of vaccination .

Ans) **select count(patientid) from vaccinationcentre where dosescompleted=2;**

```
SQL> select patient.name, vaccine from patient, vaccinationcentre where patient.patientid = vaccinationcentre.patientid and vaccine='Covishield';
```

NAME	VACCINE
Ramesh	Covishield
Ayyappan	Covishield
Prabhakar Rao	Covishield
Jaya Lalitha	Covishield
Mamatha	Covishield
Yamini	Covishield

```
6 rows selected.
```

```
SQL> select count(patientid) from vaccinationcentre where dosescompleted=2;
```

COUNT(PATIENTID)
7

13) Display the details of patients who have expired

Ans) **select patient.name, treatment.status from patient, treatment where patient.patientid=treatment.patientid and status = 'Expired';**

```
SQL> select patient.name, treatment.status from patient, treatment where patient.patientid=treatment.patientid and status = 'Expired';
```

NAME	STATUS
Ranvar Singh	Expired
Yamini	Expired

14) Display the details of centre which supply the highest covaxin among all the centres .

Ans) **select centreid, sputnikv from centredetails where sputnikv in (select max(sputnikv) from centredetails);**

```
SQL> select centreid, sputnikv from centredetails where sputnikv in (select max(sputnikv) from centredetails);
```

CEN	SPUTNIKV
C3	42

```
SQL>
```

15) Display all the details of the patients who have joined in the year 2021 .

Ans) **select patient.name, treatment.joindate from patient, treatment where extract(year from joindate)=2021 and patient.patientid = treatment.patientid;**

```
SQL> select patient.name, treatment.joindate from patient, treatment where extract(year from joindate)=2021 and patient.patientid = treatment.patientid;
```

NAME	JOINDATE
Kavitha	11-JAN-21
Banvar Singh	28-JAN-21
Daya Lalitha	14-FEB-21
Mamatha	02-MAR-21
Venkat	17-APR-21
Vikram Aditya	06-MAY-21
Ramana	15-MAY-21
Yamini	14-JUN-21
Joseph	07-JUL-21

9 rows selected.

16) Display following output
“Centre C1 has 123-covaxin doses ,321- covishield doses,27sputnik-V doses” .

Ans) **select 'Centre ' || centreid || 'has ' || covaxin || ' - coxaxin doses, ' || covishield || ' -covishield doses, ' || sputnikv || ' - sputnikv doses ' from centredetails;**

```
SQL> select 'Centre ' || centreid || 'has ' || covaxin || ' - coxaxin doses, ' || covishield || ' -covishield doses, ' || sputnikv || ' - sputnikv doses ' from centredetails;
```

'CENTRE' CENTREID 'HAS' COVAXIN ' - COXAXIN DOSES, ' COVISHIELD ' - COVISHIELD DOSES, ' SPUTNIKV ' - SPUTNIKV DOSES'
Centre C1has 123 - coxaxin doses, 325 -covishield doses, 27 - sputnikv doses
Centre C2has 88 - coxaxin doses, 490 -covishield doses, 0 - sputnikv doses
Centre C3has 230 - coxaxin doses, 121 -covishield doses, 42 - sputnikv doses
Centre C4has 151 - coxaxin doses, 122 -covishield doses, 15 - sputnikv doses

SQL> _

17) Display the symptoms and status of patients from LB nagar .

Ans) **select patient.name, patient.address, treatment.symptoms from patient, treatment where patient.address='LB Nagar' and patient.patientid = treatment.patientid;**

```
SQL> select patient.name, patient.address, treatment.symptoms from patient, treatment where patient.address='LB Nagar' and patient.patientid = treatment.patientid;
```

NAME	ADDRESS	SYMPTOMS
Yamini	LB Nagar	Cough

SQL> _

18) Display total number of sputnik-v doses present across all the centres

Ans) **select sum(sputnikv) from centredetails;**

```
SQL> select patient.name, patient.address, treatment.symptoms from patient, treatment where patient.address='LB Na
gar' and patient.patientid = treatment.patientid;

NAME                ADDRESS        SYMPTOMS
-----
Yamini              LB Nagar       Cough

SQL> select sum(sputnikv) from centredetails;

SUM(SPUNTIKV)
-----
84

SQL>
```

19) Display the names of patients who vaccinated sputnik-v .

Ans) **select patient.name, vaccinationcentre.vaccine from patient, vaccinationcentre where patient.patientid = vaccinationcentre.patientid and vaccinationcentre.vaccine='Sputnik-V';**

```
SQL> select patient.name, vaccinationcentre.vaccine from patient, vaccinationcentre where patient.patientid = vacc
inationcentre.patientid and vaccinationcentre.vaccine='Sputnik-V';

NAME                VACCINE
-----
Kavitha             Sputnik-V
Vikram Aditya       Sputnik-V

SQL>
```

20) Display the total number of vaccines in each centre

Ans) **define x = covaxin+covishield+sputnikv by;**
select centreid, &x from centredetails;

```
SQL> define x = covaxin+covishield+sputnikv by;
SQL> select centreid, &x from centredetails;
old 1: select centreid, &x from centredetails
new 1: select centreid, covaxin+covishield+sputnikv from centredetails

CEN COVAXIN+COVISHIELD+SPUNTIKV
-----
C1                475
C2                578
C3                393
C4                288
```