DBMS Project

Topic:- Oxygen Cylinders/ Ventilator Management System for Covid-19

Group Members:-

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INDEX:

Acknowledgement:

" True guidance is like a small torch in a dark forest. It does not show everything at first, but gives enough light for the next step to be safe. "

Firstly, we would like to express our gratitude to our college and the professors, who gave us the opportunity to work on this project. Special thanks to <u>Ms Veenu</u>, who guided us all along the path, with suggestions and help.

Each and every person of the group worked sincerely to complete this project. We were able to learn a lot of new things while working on the project.
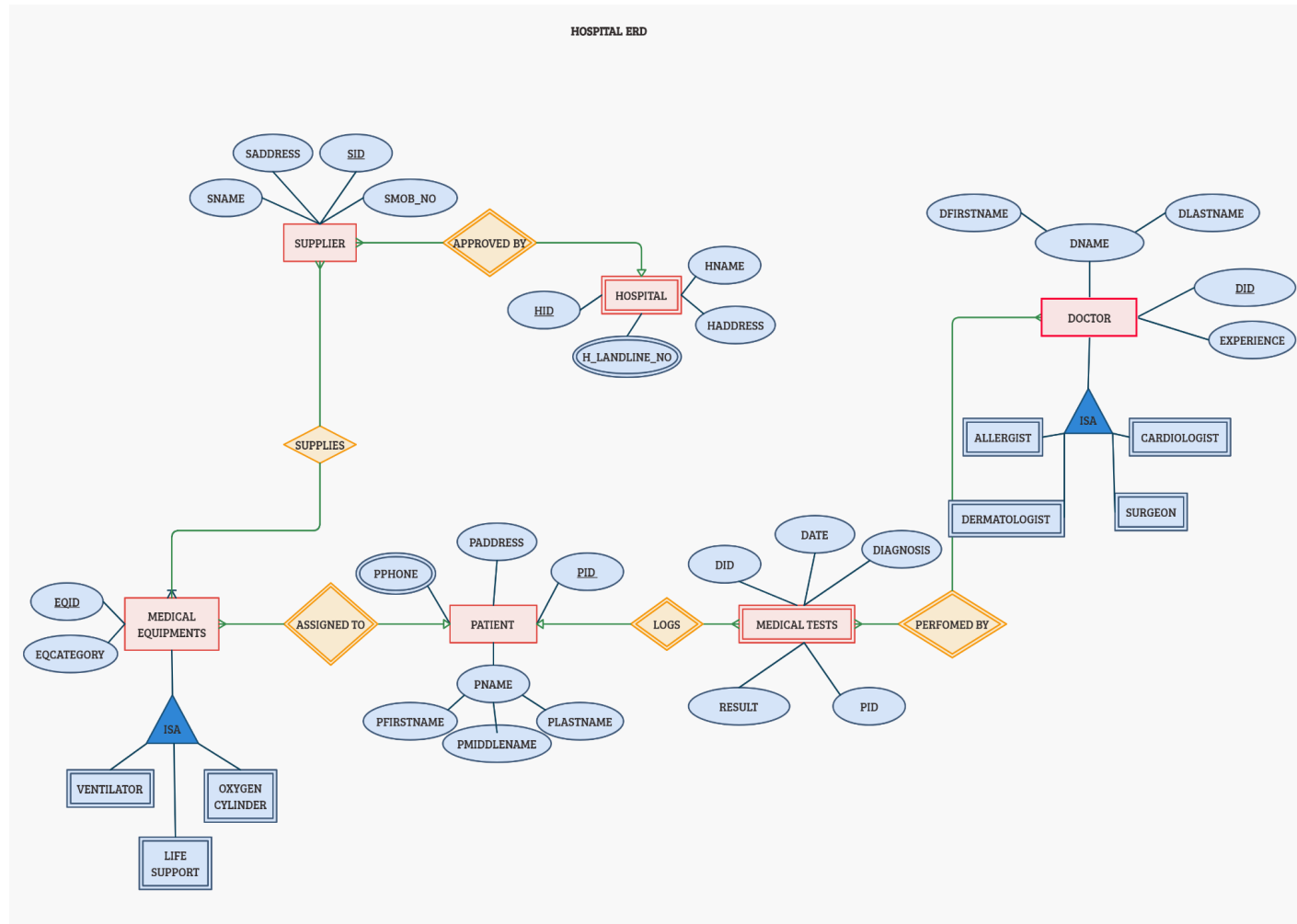
About:

Low and middle income countries face huge hurdles in getting oxygen to patients. In many countries proper systems to supply oxygen have been neglected for decades, despite pneumonia being the single biggest cause of hospital admission in low and middle income countries, even before the pandemic.
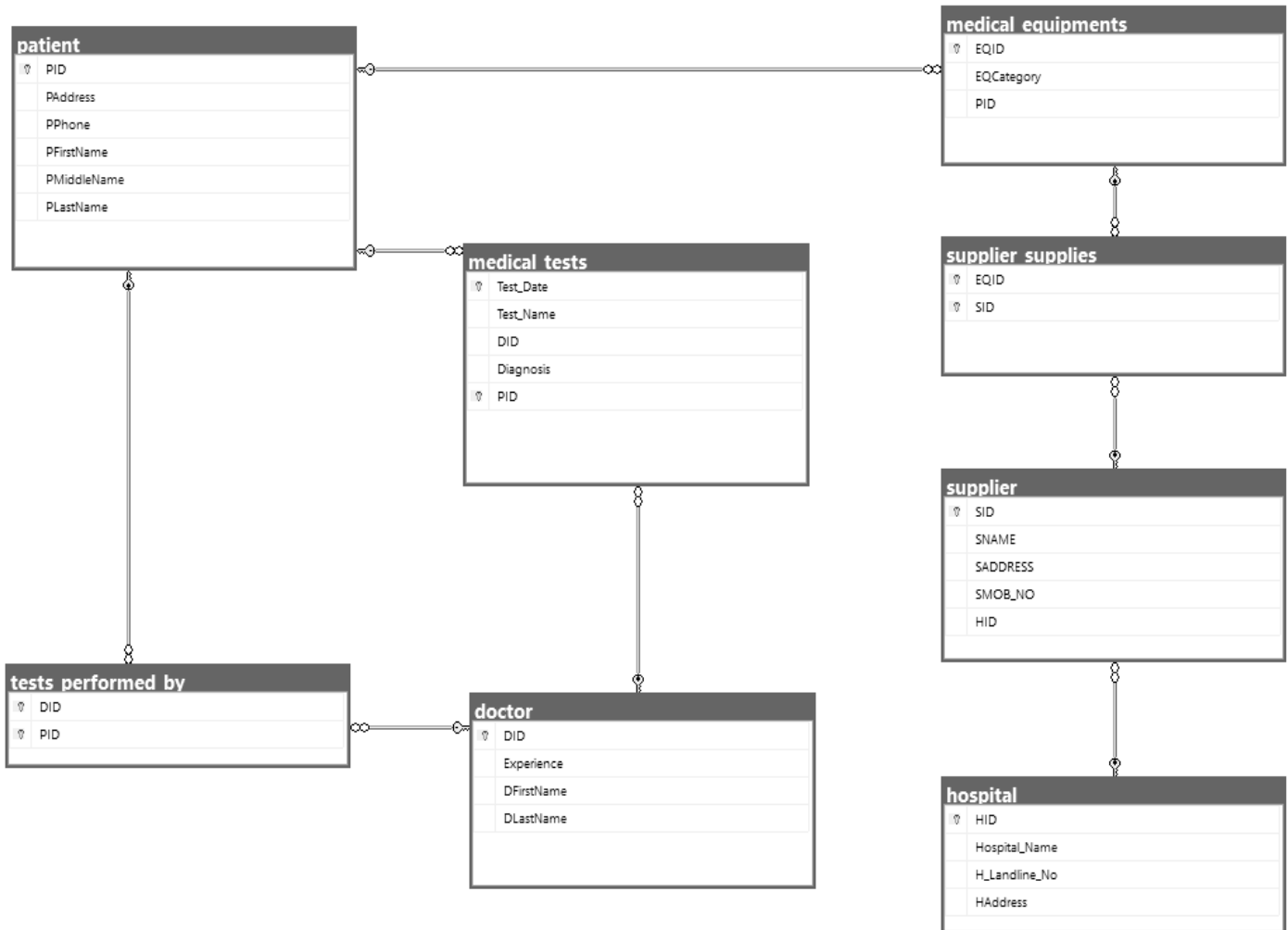
The neglect of oxygen systems has been partly market failure, partly lack of knowledge and anticipation, partly inertia.

This project aims to overcome one of the toughest problems faced during the pandemic i.e the supply and proper management of resources especially oxygen cylinders and ventilators. The second wave is a grim reminder of how the lack of a proper management system can result in loss of countless lives, and that was one of the motivations for this project.

E-R Diagram:

HOSPITAL ERD

Relational Schema

patient
- PID
- PAddress
- PPhone
- PFirstName
- PMiddleName
- PLastName

medical equipments
- EQID
- EQCategory
- PID

medical tests
- Test_Date
- Test_Name
- DID
- Diagnosis
- PID

supplier supplies
- EQID
- SID

supplier
- SID
- SNAME
- SADDRESS
- SMOB_NO
- HID

tests performed by
- DID
- PID

doctor
- DID
- Experience
- DFirstName
- DLastName

hospital
- HID
- Hospital_Name
- H_Landline_No
- HAddress

DDL Commands:

```
create database dbms_project;
use dbms_project;

create table patient(
PID int primary key,
PAddress varchar(40),
PPhone varchar (10),
PFirstName varchar(20),
PMiddleName varchar(20),
PLastName varchar(20)
);

create table medical_equipments(
EQID int primary key,
EQCategory varchar(35),
PID int,
foreign key(PID) references patient(PID)
);

create table doctor(
DID int primary key,
Experience int,
DFirstName varchar(20),
DLastName varchar(20)
);

create table medical_tests(
Test_Date date,
Test_Name varchar(40),
DID int,
Diagnosis varchar(40),
PID int,
foreign key(PID) references patient(PID),
foreign key(DID) references doctor(DID),
primary key(Test_Date, PID)
);

create table tests_performed_by(
DID int,
PID int,
foreign key(PID) references patient(PID),
foreign key(DID) references doctor(DID),
primary key(DID, PID)
);

create table hospital(
HID int primary key ,
Hospital_Name varchar(40),
H_Landline_No varchar(10),
```

```
HAddress varchar(40)
);

create table supplier(
SID int primary key,
SNAME varchar(40),
SADDRESS varchar(40),
SMOB_NO varchar(10),
HID int,
foreign key(HID) references hospital(HID)
);

create table supplier_supplies(
EQID int,
SID int,
foreign key(EQID) references medical_equipments(EQID),
foreign key(SID) references supplier(SID),
primary key(EQID, SID));
insert into patient values(50, "New Delhi", "9811123555", "Rohan", " ", "Mehta");
insert into patient values(51, "New Delhi", "9811123555", "Roshan", " ", "Mehta");
insert into patient values(52, "Mumbai", "9811123556", "Aman", "Kumar", "Sharma");
insert into patient values(53, "Bangalore", "9811123557", "Samarth", "Pal", "Antil");
insert into patient values(54, "Kanpur", "9811123558", "Rohit", "Kumar", "Sharma");
insert into patient values(55, "Jammu", "9811123559", "Kushal", " ", "Mangal");
insert into patient values(56, "New Delhi", "9811123560", "Vansh", " ", "Agarwal");
insert into patient values(57, "New Delhi", "9811123561", "Ramesh", " ", "Goyal");
insert into patient values(58, "Mumbai", "9811123562", "Rupesh", " ", "Narang");
insert into patient values(59, "Amritsar", "9811123563", "Suresh", " ", "Gupta");

insert into medical_equipments values(101, "Oxygen Cylinder", 50);
insert into medical_equipments values(102, "Ventilator", 53);
insert into medical_equipments values(103, "Ventilator", 55);
insert into medical_equipments values(104, "Oxygen Cylinder", 52);
insert into medical_equipments values(105, "Life Support", 57);
insert into medical_equipments values(106, "Oxygen Cylinder", 56);
insert into medical_equipments values(107, "Ventilator", 58);
insert into medical_equipments values(108, "Life Support", 51);
insert into medical_equipments values(109, "Ventilator", 59);
insert into medical_equipments values(110, "Oxygen Cylinder", 54);

insert into doctor values(501, 17, "Priyansh", "Agarwal");
insert into doctor values(502, 10, "Utkarsh", "Gupta");
insert into doctor values(503, 20, "Prateek", "Narang");
insert into doctor values(504, 12, "Raj", "Vikram");
insert into doctor values(505, 7, "Hanit", "Banga");
insert into doctor values(506, 23, "Ashish", "Gupta");
insert into doctor values(507, 13, "Kshitij", "Sodani");
insert into doctor values(508, 15, "Udit", "Sanghi");
```

```
insert into doctor values(509, 18, "Aditya", "Mehrotra");
insert into doctor values(510, 20, "Ankush", "Singla");

insert into medical_tests values("2021-08-09", "RT-PCR", 505, "COVID-19 Positive", 55);
insert into medical_tests values("2021-08-10", "CT-Scan", 501, "No Infection Detected", 51);
insert into medical_tests values("2021-08-07", "LFT", 503, "Liver Infection", 53);
insert into medical_tests values("2021-07-09", "RT-PCR", 506, "COVID-19 Negative", 56);
insert into medical_tests values("2021-08-09", "RT-PCR", 506, "COVID-19 Positive", 57);
insert into medical_tests values("2021-08-11", "MRI", 502, "Brain Tumour", 52);
insert into medical_tests values("2021-08-09", "X-Ray", 508, "CT-Scan Needed", 58);
insert into medical_tests values("2021-06-10", "CT-Scan", 509, "Severe Lung Infection Detected", 59);
insert into medical_tests values("2021-07-05", "RT-PCR", 504, "COVID-19 Positive", 54);
insert into medical_tests values("2021-07-06", "CT-Scan", 510, "Minor Infection Detected", 50);

insert into tests_performed_by values(501, 51);
insert into tests_performed_by values(502, 52);
insert into tests_performed_by values(509, 59);
insert into tests_performed_by values(504, 54);
insert into tests_performed_by values(508, 58);
insert into tests_performed_by values(506, 56);
insert into tests_performed_by values(506, 57);
insert into tests_performed_by values(503, 53);
insert into tests_performed_by values(510, 50);
insert into tests_performed_by values(505, 55);

insert into hospital values(1001, "Shree Ganga Hospital 1", "9215685200", "New Delhi");
insert into hospital values(1002, "Shree Ganga Hospital 2", "9215685201", "Mumbai");
insert into hospital values(1003, "Shree Ganga Hospital 3", "9215685202", "Amritsar");
insert into hospital values(1004, "Shree Ganga Hospital 4", "9215685203", "Bangalore");

insert into supplier values(10, "Rajesh Singhania", "New Delhi", "9310489888", 1001);
insert into supplier values(11, "Ram Kapoor", "New Delhi", "9310489889", 1001);
insert into supplier values(12, "Janki Tripathi", "Mumbai", "9310489900", 1002);
insert into supplier values(13, "Manoj Gogia", "Amritsar", "9310489905", 1003);
insert into supplier values(14, "Chandan Bari", "Bangalore", "9310489999", 1004);
insert into supplier values(15, "Suraj Chopra", "Mumbai", "9310489765", 1002);
insert into supplier values(16, "Deepak Mishra", "Jammu", "9310482222", 1003);

insert into supplier_supplies values(101, 10);
insert into supplier_supplies values(106, 10);
insert into supplier_supplies values(104, 12);
insert into supplier_supplies values(109, 13);
insert into supplier_supplies values(105, 11);
insert into supplier_supplies values(103, 16);
insert into supplier_supplies values(107, 15);
insert into supplier_supplies values(102, 14);
insert into supplier_supplies values(108, 11);
insert into supplier_supplies values(110, 13);
```

EQID	EQCategory	PID
101	Oxygen Cylinder	50
102	Ventilator	53
103	Ventilator	55
104	Oxygen Cylinder	52
105	Life Support	57
106	Oxygen Cylinder	56
107	Ventilator	58
108	Life Support	51
109	Ventilator	59
110	Oxygen Cylinder	54

Test_Date	Test_Name	DID	Diagnosis	PID
2021-06-10	CT-Scan	509	Severe Lung Infection Detected	59
2021-07-05	RT-PCR	504	COVID-19 Positive	54
2021-07-06	CT-Scan	510	Minor Infection Detected	50
2021-07-09	RT-PCR	506	COVID-19 Negative	56
2021-08-07	LFT	503	Liver Infection	53
2021-08-09	RT-PCR	505	COVID-19 Positive	55
2021-08-09	RT-PCR	506	COVID-19 Positive	57
2021-08-09	X-Ray	508	CT-Scan Needed	58
2021-08-10	CT-Scan	501	No Infection Detected	51
2021-08-11	MRI	502	Brain Tumour	52

DID	Experience	DFirstName	DLastName
501	17	Priyansh	Agarwal
502	10	Utkarsh	Gupta
503	20	Prateek	Narang
504	12	Raj	Vikram
505	7	Hanit	Banga
506	23	Ashish	Gupta
507	13	Kshitij	Sodani
508	15	Udit	Sanghi
509	18	Aditya	Mehrotra
510	20	Ankush	Singla

PID	PAddress	PPhone	PFirstName	PMiddleName	PLastName
50	New Delhi	9811123555	Rohan		Mehta
51	New Delhi	9811123555	Roshan		Mehta
52	Mumbai	9811123556	Aman	Kumar	Sharma
53	Bangalore	9811123557	Samarth	Pal	Antil
54	Kanpur	9811123558	Rohit	Kumar	Sharma
55	Jammu	9811123559	Kushal		Mangal
56	New Delhi	9811123560	Vansh		Agarwal
57	New Delhi	9811123561	Ramesh		Goyal
58	Mumbai	9811123562	Rupesh		Narang
59	Amritsar	9811123563	Suresh		Gupta

EQID	SID
101	10
102	14
103	16
104	12
105	11
106	10
107	15
108	11
109	13
110	13

DID	PID
501	51
502	52
503	53
504	54
505	55
506	56
506	57
508	58
509	59
510	50

SID	SNAME	SADDRESS	SMOB_NO	HID
10	Rajesh Singhania	New Delhi	9310489888	1001
11	Ram Kapoor	New Delhi	9310489889	1001
12	Janki Tripathi	Mumbai	9310489900	1002
13	Manoj Gogia	Amritsar	9310489905	1003
14	Chandan Bari	Bangalore	9310489999	1004
15	Suraj Chopra	Mumbai	9310489765	1002
16	Deepak Mishra	Jammu	9310482222	1003

HID	Hospital_Name	H_Landline_No	HAddress
1001	Shree Ganga Hospital 1	9215685200	New Delhi
1002	Shree Ganga Hospital 2	9215685201	Mumbai
1003	Shree Ganga Hospital 3	9215685202	Amritsar
1004	Shree Ganga Hospital 4	9215685203	Bangalore

Tables_in_dbms_project
doctor
hospital
medical_equipments
medical_tests
patient
supplier
supplier_supplies
tests_performed_by

DML Commands:

-- 1. Display the names of patients who are Covid 19 Positive.
SELECT PFIRSTNAME,PLASTNAME FROM Patient,Medical_Tests WHERE
Patient.PID = medical_tests.PID
AND MEDICAL_TESTS.DIAGNOSIS="COVID-19 Positive";

-- 2. Display the names of Doctors who are treating Covid 19 Positive patients.
SELECT DFIRSTNAME,DLASTNAME FROM DOCTOR,PATIENT,MEDICAL_TESTS WHERE
Patient.PID = medical_tests.PID AND DOCTOR.DID=MEDICAL_TESTS.DID
AND MEDICAL_TESTS.DIAGNOSIS="COVID-19 Positive";

-- 3. Display the names of patients who are being treated in New Delhi.
SELECT PFIRSTNAME,PLASTNAME FROM Patient
WHERE PATIENT.PADDRESS="New Delhi";

-- 4. Display the names of Doctors who have experience of more than 10 years in decreasing order of their experience.
SELECT DFIRSTNAME,DLASTNAME,EXPERIENCE FROM DOCTOR
WHERE EXPERIENCE>10
ORDER BY EXPERIENCE DESC;

-- 5. Display the medical equipments acquired by a patient during his treatment.
SELECT EQCATEGORY,PFIRSTNAME,PLASTNAME FROM MEDICAL_EQUIPMENTS,PATIENT WHERE
Patient.PID = MEDICAL_EQUIPMENTS.PID;

-- 6. Display the names of Doctors who have recomended CT Scan for the patients.
SELECT DFIRSTNAME,DLASTNAME FROM DOCTOR,PATIENT,MEDICAL_TESTS WHERE
Patient.PID = medical_tests.PID AND DOCTOR.DID=MEDICAL_TESTS.DID
AND MEDICAL_TESTS.TEST_NAME="CT-SCAN";

-- 7. Display the names of doctors and the number of patients they are assigned.
SELECT DFIRSTNAME,DLASTNAME,COUNT(PID) FROM DOCTOR,MEDICAL_TESTS
WHERE DOCTOR.DID = MEDICAL_TESTS.DID
GROUP BY DOCTOR.DID;

-- 8. Display the names of SUPPLIERS who SUPPLY VENTILATORS
SELECT SNAME FROM SUPPLIER,SUPPLIER_SUPPLIES,MEDICAL_EQUIPMENTS
WHERE SUPPLIER.SID = SUPPLIER_SUPPLIES.SID AND MEDICAL_EQUIPMENTS.EQID = SUPPLIER_SUPPLIES.EQID
AND EQCATEGORY = "VENTILATOR";

-- 9. Display the contact number for each supplier
SELECT SNAME,SMOB_NO FROM SUPPLIER;

-- 10. Display the names of HOSPITALS WHERE VENTILATORS ARE AVAILABLE
SELECT DISTINCT(HOSPITAL_NAME) FROM HOSPITAL,SUPPLIER,SUPPLIER_SUPPLIES,MEDICAL_EQUIPMENTS WHERE
HOSPITAL.HID = SUPPLIER.HID AND SUPPLIER.SID = SUPPLIER_SUPPLIES.SID AND SUPPLIER_SUPPLIES.EQID =
MEDICAL_EQUIPMENTS.EQID
AND MEDICAL_EQUIPMENTS.EQCATEGORY="VENTILATOR";

-- **11. Display the names of patients who REQUIRE CT-SCAN.**
SELECT PFIRSTNAME,PLASTNAME FROM Patient , MEDICAL_TESTS
WHERE PATIENT.PID = MEDICAL_TESTS.PID
AND MEDICAL_TESTS.DIAGNOSIS = "CT-SCAN NEEDED";

-- **12. Display the COUNT of Doctors who have experience of more than 10 years and group them by the tests they have recommended.**
SELECT COUNT(DOCTOR.DID),TEST_NAME FROM DOCTOR,MEDICAL_TESTS
WHERE DOCTOR.DID = MEDICAL_TESTS.DID AND EXPERIENCE>10
GROUP BY(TEST_NAME);

-- **13. Display the medical equipments acquired by a doctor while treating a patient.**
SELECT EQCATEGORY,DFIRSTNAME,DLASTNAME FROM MEDICAL_EQUIPMENTS,DOCTOR,MEDICAL_TESTS,PATIENT
WHERE
PATIENT.PID = MEDICAL_EQUIPMENTS.PID AND PATIENT.PID = MEDICAL_TESTS.PID AND DOCTOR.DID = MEDICAL_TESTS.DID;

-- **14. Display the names of Doctors who have recomended RT PCR for the patients IN NEW DELHI.**
SELECT DFIRSTNAME,DLASTNAME FROM DOCTOR,PATIENT,MEDICAL_TESTS WHERE
Patient.PID = medical_tests.PID AND DOCTOR.DID=MEDICAL_TESTS.DID
AND MEDICAL_TESTS.TEST_NAME="RT-PCR"
AND PADDRESS = "New Delhi";

-- **15. Display the count of equipments supplied by the supplier.**
SELECT EQCATEGORY,COUNT(MEDICAL_EQUIPMENTS.EQID) FROM
MEDICAL_EQUIPMENTS,SUPPLIER_SUPPLIES,SUPPLIER
WHERE MEDICAL_EQUIPMENTS.EQID = SUPPLIER_SUPPLIES.EQID AND SUPPLIER.SID = SUPPLIER_SUPPLIES.SID
GROUP BY(EQCATEGORY);

-- **16. Display the MOBILE NUMBER OF SUPPLIERS who SUPPLY OXYGEN CYLINDERS**
SELECT SNAME,SMOB_NO FROM SUPPLIER,SUPPLIER_SUPPLIES,MEDICAL_EQUIPMENTS
WHERE SUPPLIER.SID = SUPPLIER_SUPPLIES.SID AND MEDICAL_EQUIPMENTS.EQID = SUPPLIER_SUPPLIES.EQID
AND EQCATEGORY = "OXYGEN CYLINDER";

-- **17. Display the COUNT of HOSPITALS WHERE LIFE SUPPORT IS AVAILABLE**
SELECT COUNT(HOSPITAL.HID) FROM HOSPITAL,SUPPLIER,SUPPLIER_SUPPLIES,MEDICAL_EQUIPMENTS
WHERE SUPPLIER.SID = SUPPLIER_SUPPLIES.SID AND MEDICAL_EQUIPMENTS.EQID = SUPPLIER_SUPPLIES.EQID AND
HOSPITAL.HID = SUPPLIER.HID
AND EQCATEGORY = "LIFE SUPPORT";

-- **18. Display the names of Doctors who have recomended CT-SCAN for the patients IN NEW DELHI.**
SELECT DFIRSTNAME,DLASTNAME FROM DOCTOR,PATIENT,MEDICAL_TESTS WHERE
Patient.PID = medical_tests.PID AND DOCTOR.DID=MEDICAL_TESTS.DID
AND MEDICAL_TESTS.TEST_NAME="CT-SCAN"
AND PADDRESS = "New Delhi";

-- **19. Display the NAMES AND MOBILE NUMBER OF SUPPLIERS who SUPPLY LIFE SUPPORT**
SELECT SNAME,SMOB_NO FROM SUPPLIER,SUPPLIER_SUPPLIES,MEDICAL_EQUIPMENTS
WHERE SUPPLIER.SID = SUPPLIER_SUPPLIES.SID AND MEDICAL_EQUIPMENTS.EQID = SUPPLIER_SUPPLIES.EQID
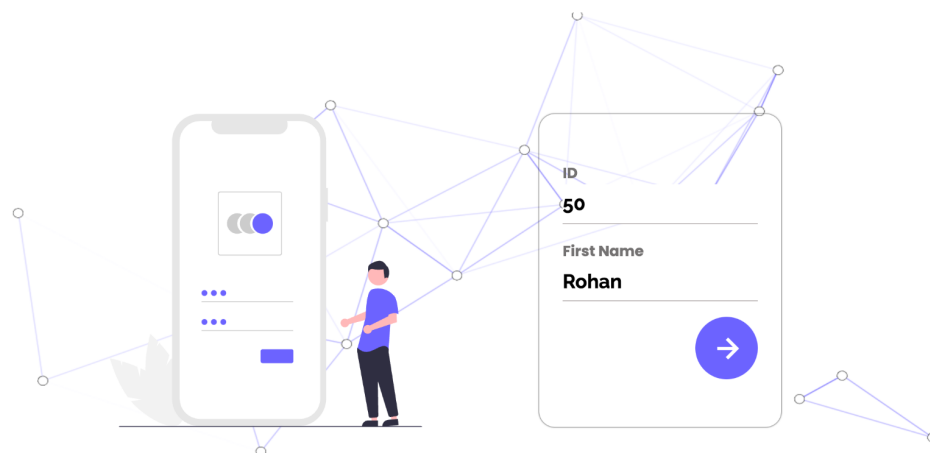AND EQCATEGORY = "LIFE SUPPORT";
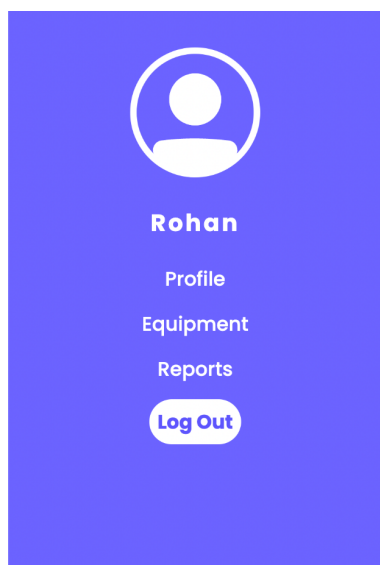
Project Screenshots:
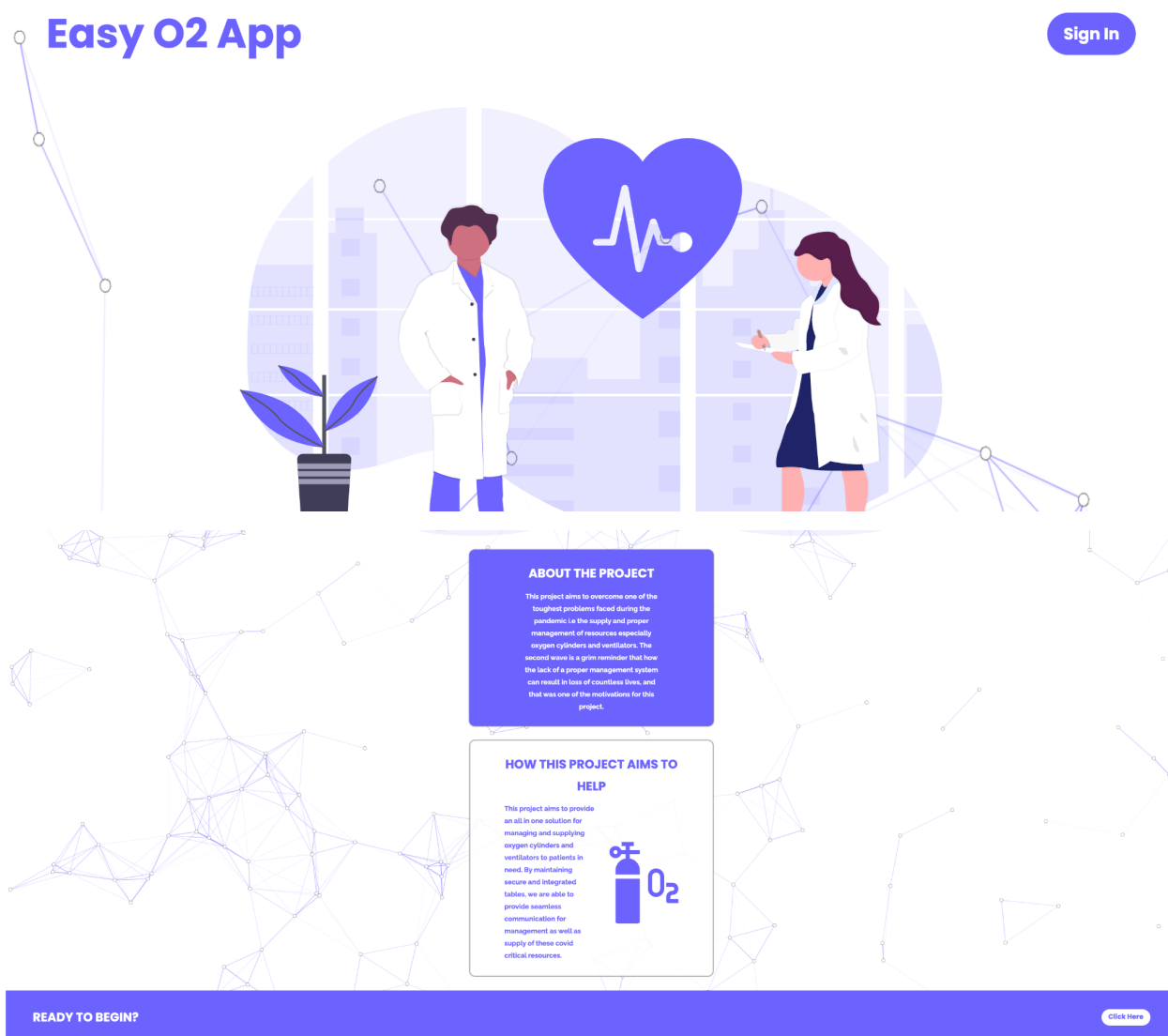
Landing Page for the Project

Login

Doctor

Patient

Hospital

Supplier

Login Page for Hospital Employees, Patients and Suppliers

Login

ID

50

First Name

Rohan

Sample Login Page for Patient

Rohan

Profile

Equipment

Reports

Log Out

PROFILE

Name	Rohan Mehta
Phone	9811123555
Address	New Delhi

Patient Profile after Login is Succesful

Rohan

Profile

Equipment

Reports

Log Out
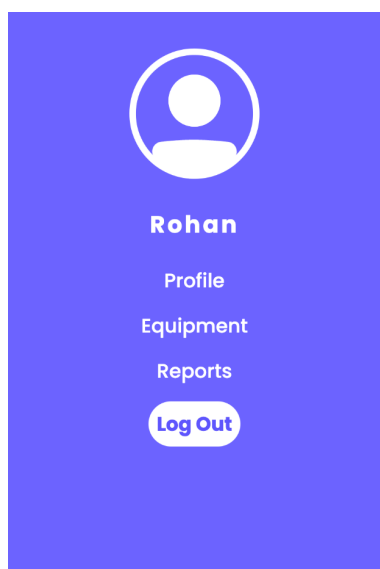
EQUIPMENT

EQID	Category
101	Oxygen Cylinder

Medical Equipments used for the treatment of the Patient

Shree Ganga Hospital 2

Patients

Doctors

Equipment

Suppliers

Hospitals

Log Out

WELCOME

CLICK ON THE LEFT SIDE TO NAVIGATE

Hospital Login Page

Shree Ganga Hospital 2

Patients

Doctors

Equipment

Suppliers

Hospitals

Log Out
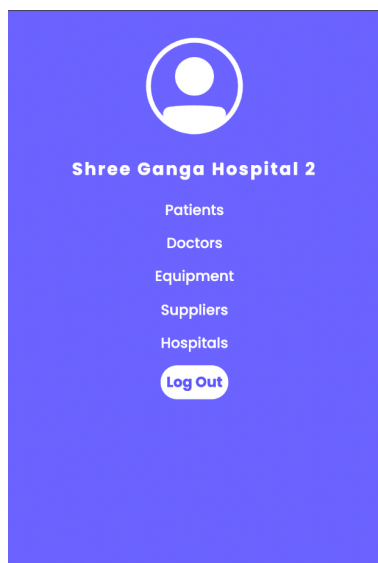
Patients

Covid 19 Positive

First Name	Last Name
Rohit	Sharma
Kushal	Mangal
Ramesh	Goyal

New Delhi Patients

First Name	Last Name
Rohan	Mehta
Roshan	Mehta
Vansh	Agarwal
Ramesh	Goyal

CT Scan

First Name	Last Name
Rupesh	Narang

Shree Ganga Hospital 2

Patients
Doctors
Equipment
Suppliers
Hospitals

Log Out

Doctors

Experience > 10

First Name	Last Name	Experience
Ashish	Gupta	23
Prateek	Narang	20
Ankush	Singla	20
Aditya	Mehrotra	18
Priyansh	Agarwal	17
Udit	Sanghi	15
Kshitij	Sodani	13
Raj	Vikram	12

CT Scan

First Name	Last Name
Aditya	Mehrotra
Ankush	Singla
Priyansh	Agarwal

RT PCR and New Delhi

First Name	Last Name
Ashish	Gupta
Ashish	Gupta

Shree Ganga Hospital 2

Patients
Doctors
Equipment
Suppliers
Hospitals

Log Out

Equipment

Category with Patient Names

Equipment Category	First Name	Last Name
Oxygen Cylinder	Rohan	Mehta
Ventilator	Samarth	Antil
Ventilator	Kushal	Mangal
Oxygen Cylinder	Aman	Sharma
Life Support	Ramesh	Goyal
Oxygen Cylinder	Vansh	Agarwal
Ventilator	Rupesh	Narang
Life Support	Roshan	Mehta
Ventilator	Suresh	Gupta
Oxygen Cylinder	Rohit	Sharma

Category with Count

Equipment Category	Count
Life Support	2
Oxygen Cylinder	4
Ventilator	4

Shree Ganga Hospital 2

Patients
Doctors
Equipment
Suppliers
Hospitals

Log Out

Hospitals

Hospitals having ventilators

Hospital Name
Shree Ganga Hospital 2
Shree Ganga Hospital 3
Shree Ganga Hospital 4

Count of hospitals having life support

Count Of Hospitals
2

Sample Queries related to Patients,Doctors and Equipments (performed using MySQL)