

PATHOLOGY-LAB MANAGEMENT SYSTEM



DATABASE MANAGEMENT SYSTEM PROJECT REPORT

Submitted By:

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Problem Statement:

The pathology lab management project aims to address the challenges faced by pathology labs in efficiently managing their operations and providing accurate and timely test results to patients. The current manual system is time-consuming, error-prone, and lacks integration with other departments, resulting in delays in test processing, difficulty in tracking samples, and inefficient resource utilization.

Assumption:

1. One patient can make any number of complaints.
2. Many patient can be referred by a single doctor.

Tables:

Doctor:

Attributes	Data Types	Constraints
Dr_id	Varchar(6)	Primary Key
Ph_no	Varchar(10)	Unique
Name	Varchar(20)	NOT NULL
Colony	Varchar(20)	NOT NULL
Qualifications	Varchar(10)	NOT NULL
Specialisations	Varchar(20)	NOT NULL
City	Varchar(20)	NOT NULL

Patient:

Attributes	Data Types	Constraints
Pat_id	Varchar(5)	Primary Key
Age	Int	NOT NULL
Phone_no	Varchar(10)	Unique
Gender	Varchar(6)	NOT NULL
City	Varchar(10)	NOT NULL
State	Varchar(15)	NOT NULL
Pat_name	Varchar(20)	NOT NULL
Email	Varchar(15)	Unique
Colony	Varchar(15)	NOT NULL
Lab_id	Varchar(5)	Foreign Key
Dr_id	Varchar(6)	Foreign Key
Reporting_Date	Varchar(15)	NOT NULL

Lab:

Attributes	Data Types	Constraints
Lab_id	Varchar(5)	Primary Key
Colony	Varchar(15)	NOT NULL
City	Varchar(15)	NOT NULL
State	Varchar(15)	NOT NULL
Shop_no	Varchar(8)	NOT NULL
Phone_no	Varchar(10)	Unique

Employee:

Attributes	Data Types	Constraints
Emp_id	Varchar(3)	Primary Key
Phone_no	Varchar(10)	Unique
Colony	Varchar(15)	NOT NULL
City	Varchar(15)	NOT NULL
State	Varchar(15)	NOT NULL
Lab_id	Varchar(5)	Foreign Key
Name	Varchar(20)	NOT NULL
Email	Varchar(15)	Unique
Salary	Int	NOT NULL

Complaints:

Attributes	Data Types	Constraints
Comp_id	Varchar(7)	Primary Key
Pat_id	Varchar(5)	Foreign Key
Status	Bool	NOT NULL
Lab_id	Varchar(5)	Foreign Key

Equipments:

Attributes	Data Types	Constraints
Eq_id	Varchar(5)	Primary Key
Purchase_date	Varchar(15)	NOT NULL
Price	Int	NOT NULL

Working_status	Bool	NOT NULL
Lab_id	Varchar(5)	Foreign Key

Waste Management:

Attributes	Data Types	Constraints
Waste_id	Varchar(12)	Primary Key
Phone_no	Varchar(10)	Unique
Lab_id	Varchar(5)	Foreign Key

Report Updates:

Attributes	Data Types	Constraints
Report_id	Varchar(12)	Primary Key
Status	Bool	NOT NULL
Complition_time	Varchar(10)	NOT NULL

Report:

Attributes	Data Types	Constraints
Report_id	Varchar(12)	Primary Key
Pat_id	Varchar(5)	
Complition_time	Varchar(10)	NOT NULL
Complition_date	Varchar(15)	NOT NULL

Normalisation:

1.Doctor:

Primary Key:Dr_id

All attributes depend on Dr_id, hence the table is in 2NF.

All attributes depend directly on Dr_id, hence the table is in 3NF.

The Dr_id is a Super Key, hence the table is in BCNF.

Patient:

Primary Key:Pat_id

All attributes depend on Pat_id, hence the table is in 2NF.

All attributes depend directly on Pat_id, hence the table is in 3NF.

The Pat_id is a Super Key, hence the table is in BCNF.

Lab:

Primary Key:Lab_id

All attributes depend on Lab_id, hence the table is in 2NF.

All attributes depend directly on Lab_id, hence the table is in 3NF.

The Lab_id is a Super Key, hence the table is in BCNF.

Employee:

Primary Key:Emp_id

All attributes depend on Emp_id, hence the table is in 2NF.

All attributes depend directly on Emp_id, hence the table is in 3NF.

The Emp_id is a Super Key, hence the table is in BCNF.

Complaints:

Primary Key:Comp_id

All attributes depend on Comp_id, hence the table is in 2NF.

All attributes depend directly on Comp_id, hence the table is in 3NF.

The Comp_id is a Super Key, hence the table is in BCNF.

Equipments:

Primary Key:Eq_id

All attributes depend on Eq_id, hence the table is in 2NF.

All attributes depend directly on Eq_id, hence the table is in 3NF.

The Eq_id is a Super Key, hence the table is in BCNF.

Waste Managements:

Primary Key:Waste_id

All attributes depend on Waste_id, hence the table is in 2NF.

All attributes depend directly on Waste_id, hence the table is in 3NF.

The Waste_id is a Super Key, hence the table is in BCNF.

Report Updates:

Primary Key:Repo_id

All attributes depend on Repo_id, hence the table is in 2NF.

All attributes depend directly on Repo_id, hence the table is in 3NF.

The Repo_id is a Super Key, hence the table is in BCNF.

Report:

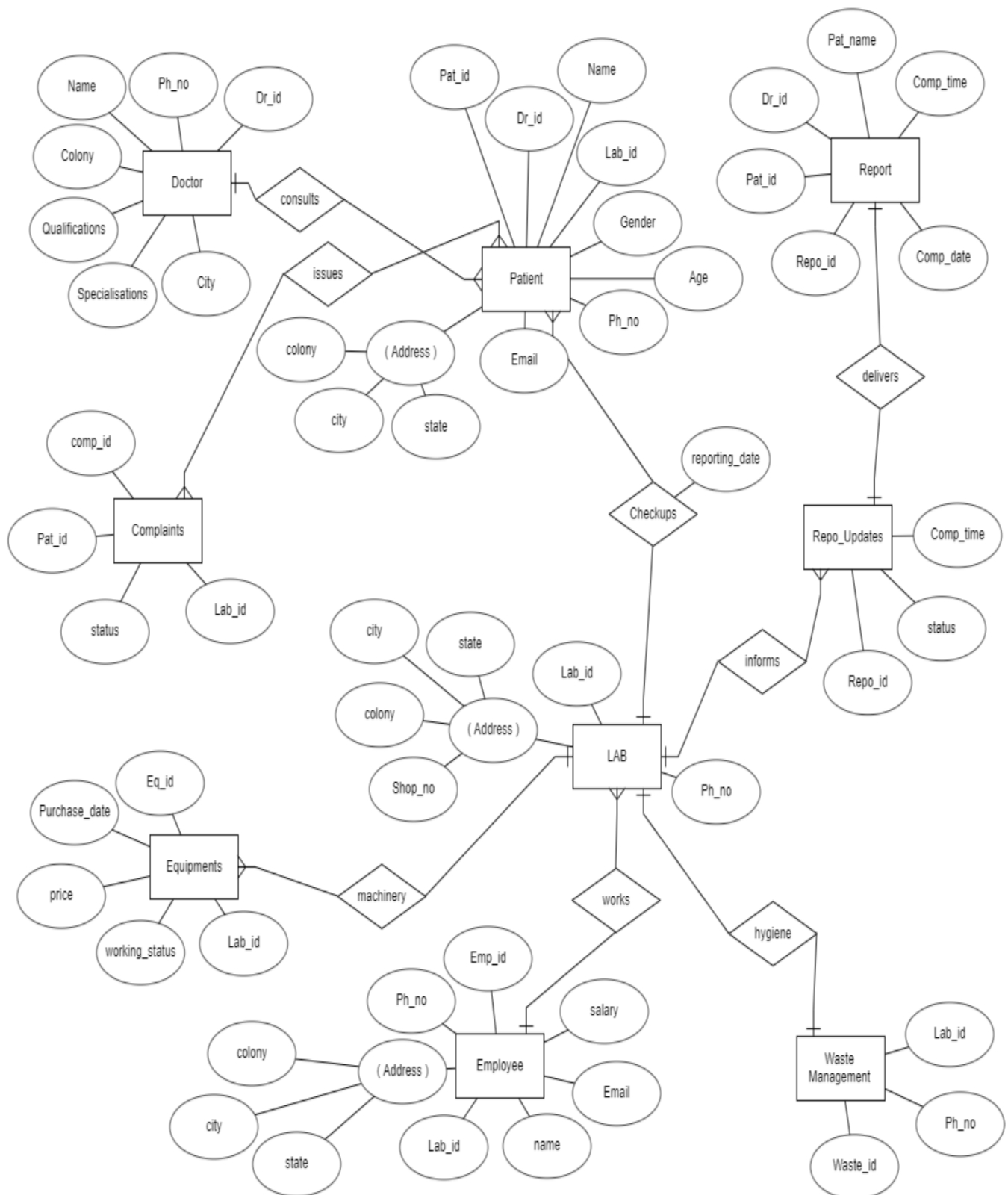
Primary Key:Dr_id,Pat_id

All attributes depend on Dr_id,Pat_id, hence the table is in 2NF.

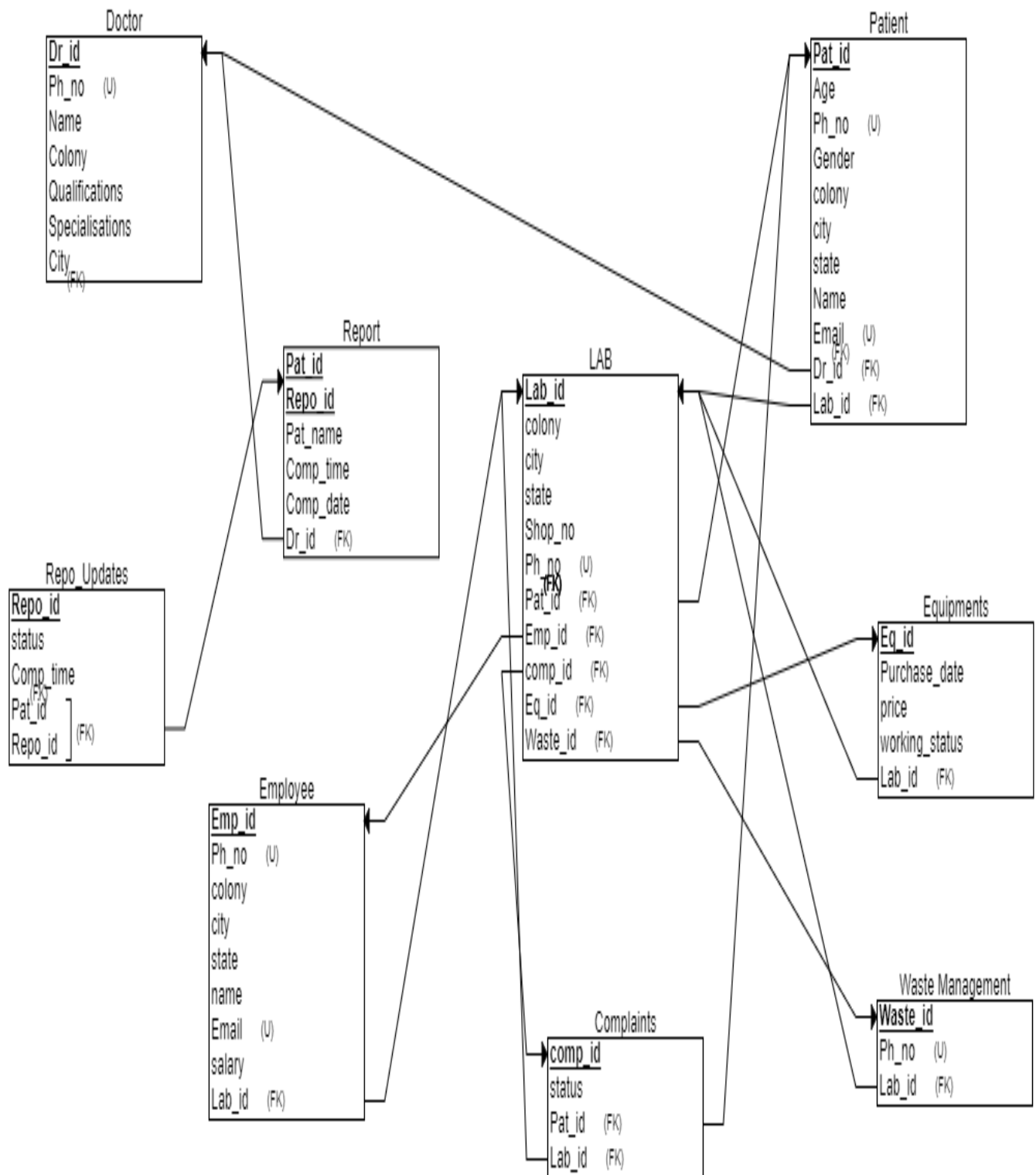
All attributes depend directly on Dr_id,Pat_id, hence the table is in 3NF.

The Dr_id,Pat_id is a Super Key, hence the table is in BCNF.

ER Diagram:



Relational Schema:



MY SQL CODES:

Creating Tables and Inserting Data:

Doctor:

Code:

```
1 • create database DBMS;
2
3 • create table Doctor(
4     Dr_id varchar(6) Primary key,
5     Ph_no varchar(10) unique,
6     Dr_name varchar(20) not null,
7     Colony varchar(20) not null,
8     Qualifications varchar(20) not null,
9     Specialisations varchar(20) not null,
10    city varchar(20) not null
11 )
12
13 • INSERT INTO Doctor VALUES('111111','8569326589','Ramesh','Bal vihar','MBBS','Physician','Raigarh');
14 • INSERT INTO Doctor VALUES('111112','7459326588','Mohan','Lakhperabagh','BAMS','Therapyst','Barabanki
15 • INSERT INTO Doctor VALUES('111113','6769326598','Buchiredy','Wadepally','MBBS','Physician','Waranga
16 • INSERT INTO Doctor VALUES('111114','8869326575','Utkarsh Bansal','Subhash Nagar','MBBS','Cardiology');
```

Table:

Dr_id	Ph_no	Dr_name	Colony	Qualifications	Specialisations	city
111111	8569326589	Ramesh	Bal vihar	MBBS	Physician	Raigarh
111112	7459326588	Mohan	Lakhperabagh	BAMS	Therapyst	Barabanki
111113	6769326598	Buchiredy	Wadepally	MBBS	Physician	Warangal
111114	8869326575	Utkarsh Bansal	Subhash Nagar	MBBS	Cardiology	Mohanlalgarh
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Lab:

Table:

Lab_id	Colony	city	State	Shop_no	Phone_no
12345	Maharishi Nagar	Barabanki	Uttar Pradesh	85967432	9555283044
NULL	NULL	NULL	NULL	NULL	NULL

Code:

Patient:

Code:

```

create table patient(
    Pat_id varchar(5) Primary key,
    Age int NOT NULL,
    Phone_no varchar(10) unique,
    Gender varchar(6) not null,
    city varchar(20) not null,
    State varchar(15) not null,
    Pat_name varchar(20) not null,
    Email varchar(15) unique,
    Colony varchar(20) not null,
    Dr_id varchar(6),
    FOREIGN KEY (Dr_id) REFERENCES Doctor(Dr_id),
    Lab_id varchar(5),
    foreign key (Lab_id) references Lab(Lab_id),
    Reporting_date varchar(15) not null
);

INSERT INTO patient VALUES('10000','25','9936315845','Male','Hyderabad','Telangana','Ashu Verma','a@gmail.com','Kartik Vihar','111111','1234');
INSERT INTO patient VALUES('10001','24','9946315845','Male','Warangal','Telangana','Vikram Sai','v@gmail.com','Gosaiganj','111112','12345','');
INSERT INTO patient VALUES('10002','10','9937315845','Female','Khammam','Telangana','Mohini','m@gmail.com','subhash vihar','111113','12345','');
INSERT INTO patient VALUES('10003','45','9936415845','Male','Hyderabad','Telangana','Nikhil Boob','n@gmail.com','Kartik Vihar','111111','123');
INSERT INTO patient VALUES('10004','35','9936325845','Female','Barabanki','Uttar Pradesh','Parwati','p@gmail.com','Kushinagar','111113','123');
INSERT INTO patient VALUES('10005','20','9936316845','Male','Lucknow','Uttar Pradesh','Pappu Kumar','k@gmail.com','chandauli Vihar','111114','');
INSERT INTO patient VALUES('10006','80','9936315945','Male','Surat','Gujarat','Sambhav','sa@gmail.com','modi colony','111114','12345','20/05');
INSERT INTO patient VALUES('10007','65','9936315855','Female','Barabanki','Uttar Pradesh','Seema','se@gmail.com','chaya chauraha','111114','');
INSERT INTO patient VALUES('10008','49','9936300845','Female','Bhopal','Madhya Pradesh','Khushnuma','kh@gmail.com','krishna colony','111111');
INSERT INTO patient VALUES('10009','25','9930315845','Male','Vizag','Andhra Pradesh','Modi','mo@gmail.com','god colony','111112','12345','31');

```

Table:

[illegible]

Employee:

Code:

```
create table Employee(  
    Emp_id varchar(3) Primary Key,  
    Phone_no varchar(10) unique,  
    Colony varchar(20) not null,  
    city varchar(20) not null,  
    State varchar(15) not null,  
    Lab_id varchar(5),  
    foreign key (Lab_id) references Lab(Lab_id),  
    Emp_name varchar(20) not null,  
    Email varchar(15) unique,  
    Salary int not null  
);  
  
INSERT INTO Employee VALUES('100','8887630076','Lakhperabag','Barabanki','Uttar Pradesh','12345','Ashok','as@gmail.com',20000);  
INSERT INTO Employee VALUES('101','8865630076','Wadepally','Warangal','Telangana','12345','Munni','mun@gmail.com',25000);  
INSERT INTO Employee VALUES('102','8887633276','Krishna colony','Amritsar','Punjab','12345','Ratan Singh','rat@gmail.com',30000);
```

Table:

Emp_id	Phone_no	Colony	city	State	Lab_id	Emp_name	Email	Salary
100	8887630076	Lakhperabag	Barabanki	Uttar Pradesh	12345	Ashok	as@gmail.com	20000
101	8865630076	Wadepally	Warangal	Telangana	12345	Munni	mun@gmail.com	25000
102	8887633276	Krishna colony	Amritsar	Punjab	12345	Ratan Singh	rat@gmail.com	30000
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Complaints:

Code:

```
create table Complaints(  
    Comp_id varchar(7) Primary Key,  
    Pat_id varchar(5),  
    foreign key (Pat_id) references Patient(Pat_id),  
    Status bool not null,  
    Lab_id varchar(5),  
    foreign key (Lab_id) references Lab(Lab_id)  
);  
  
INSERT INTO Complaints VALUES('1234566','10002',True,'12345');  
INSERT INTO Complaints VALUES('1234567','10005',False,'12345');
```

Table:

Comp_id	Pat_id	Status	Lab_id
1234566	10002	1	12345
1234567	10005	0	12345
NULL	NULL	NULL	NULL

Equipments:

Code:

```
:create table Equipments(  
    Equip_id varchar(5) Primary Key,  
    Purchase_date Varchar(15) not null,  
    Price int not null,  
    Working_status bool not null,  
    Lab_id varchar(5),  
    foreign key (Lab_id) references Lab(Lab_id)  
);  
  
INSERT INTO Equipments VALUES('54321','15/11/2021','40000',True,'12345');  
INSERT INTO Equipments VALUES('54322','19/10/2021','20000',True,'12345');  
INSERT INTO Equipments VALUES('54323','15/11/2021','5000',True,'12345');  
INSERT INTO Equipments VALUES('54324','15/11/2022','7000',True,'12345');  
INSERT INTO Equipments VALUES('54325','15/11/2021','18000',True,'12345');
```

Table:

Equip_id	Purchase_date	Price	Working_status	Lab_id
54321	15/11/2021	40000	1	12345
54322	19/10/2021	20000	1	12345
54323	15/11/2021	5000	1	12345
54324	15/11/2022	7000	1	12345
54325	15/11/2021	18000	1	12345
* NULL	NULL	NULL	NULL	NULL

Waste_Management:

Code:

```
create table Waste_Management(  
    Waste_id varchar(12) Primary Key,  
    Phone_no varchar(10) unique,  
    Lab_id varchar(5),  
    foreign key (Lab_id) references Lab(Lab_id)  
);  
  
INSERT INTO Waste_Management VALUES('100000000000','8090742246','12345');  
INSERT INTO Waste_Management VALUES('100000000001','8090762246','12345');  
INSERT INTO Waste_Management VALUES('100000000002','8090882246','12345');
```

Table:

Waste_id	Phone_no	Lab_id
100000000000	8090742246	12345
100000000001	8090762246	12345
100000000002	8090882246	12345
* NULL	NULL	NULL

Report_Updates:

Code:

```
create table Report_Updates(  
    Report_id varchar(12) Primary Key,  
    Status bool not null,  
    Complition_time varchar(10) not null  
);  
  
INSERT INTO Report_Updates VALUES('111111111111',True,'12:36 PM');  
INSERT INTO Report_Updates VALUES('111111111112',False,'10:36 PM');  
INSERT INTO Report_Updates VALUES('111111111113',True,'05:00 AM');
```

Table:

Report_id	Status	Complition_time
111111111111	1	12:36 PM
111111111112	0	10:36 PM
111111111113	1	05:00 AM
NULL	NULL	NULL

Report:

Code:

```
create table Report(  
    Report_id varchar(12),  
    Pat_id varchar(5),  
    Primary Key(Report_id,Pat_id),  
    Complition_time varchar(10) not null,  
    Complition_Date varchar(15) not null  
);  
  
INSERT INTO Report VALUES('111111111111','10000','12:36 PM','24/06/2023');  
INSERT INTO Report VALUES('111111111112','10003','12:36 PM','24/06/2023');  
INSERT INTO Report VALUES('111111111113','10004','10:10 AM','16/06/2023');  
INSERT INTO Report VALUES('111111111114','10006','08:00 PM','18/06/2023');  
INSERT INTO Report VALUES('111111111115','10009','05:00 PM','18/06/2023');
```

Table:

Report_id	Pat_id	Complition_time	Complition_Date
111111111111	10000	12:36 PM	24/06/2023
111111111112	10003	12:36 PM	24/06/2023
111111111113	10004	10:10 AM	16/06/2023
111111111114	10006	08:00 PM	18/06/2023
111111111115	10009	05:00 PM	18/06/2023
NULL	NULL	NULL	NULL

Queries:

Q.1: To display the Equipments ID in working condition.

```
154 • select Equip_id from Equipments where Working_status=True;
```

Equip_id
54321
54322
54323
54324
54325
NULL

Q.2: To display the patient id and doctor name whose report gets prepared at 12:36PM.

```
154 • select patient.Pat_id,Doctor.Dr_name
155 from Report,patient,Doctor
156 where Complition_time='12:36 PM' and patient.Pat_id=Report.Pat_id and Doctor.Dr_id=patient.Dr_id;
```

Pat_id	Dr_name
10000	Ramesh
10003	Ramesh

Q.3: To display the patient id, doctor city and doctor phone_no. whose patient lives in Hyderabad.

```
154 • select patient.Pat_id,Doctor.city,Doctor.Ph_no
155 from patient,Doctor
156 where patient.city='Hyderabad' and Doctor.Dr_id=patient.Dr_id;
```

Pat_id	city	Ph_no
10000	Raigarh	8569326589
10003	Raigarh	8569326589

Q.4: To display the report id, time of report prepared whose report is prepared.

```
154 • select Report_Updates.Report_id,Report_Updates.Complition_time
155 from Report_Updates
156 where Status=True;
```

Report_id	Complition_time
111111111111	12:36 PM
111111111113	05:00 AM
NULL	NULL

Thank you!