PATHOLOGY-LAB MANAGEMENT SYSTEM

DATABASE MANAGEMENT SYSTEM PROJECT REPORT

Submitted By:

Uday Pratap Singh

21EEB0B60

Department of Electrical and Electronics Engineering

NATIONAL INSTITUTE OF TECHNOLOGY

(An Institute of National Importance)

WARANGAL

TELANGANA,506004

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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:

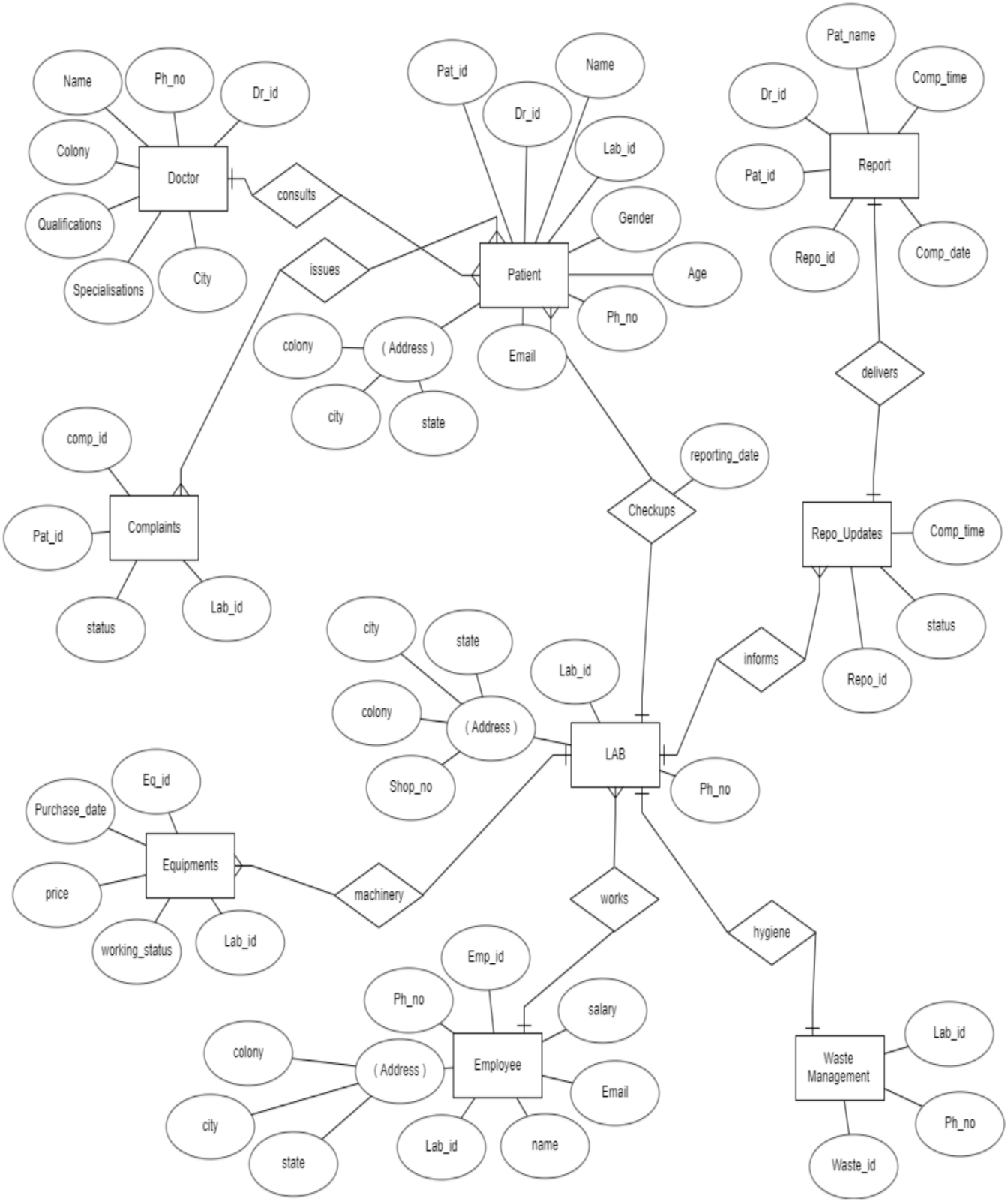
Primary Key:Dr_id,Pat_id

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

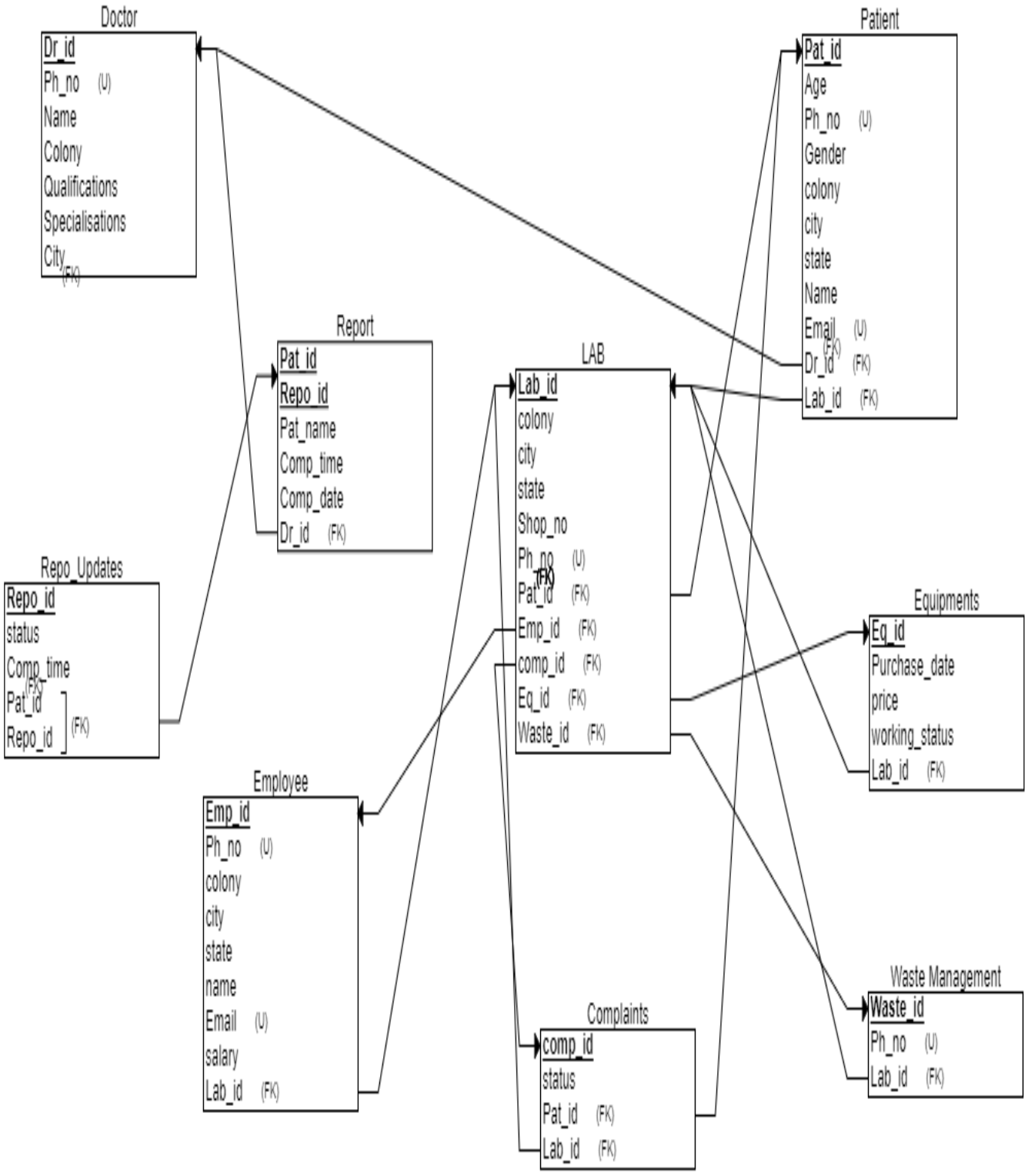
All attributes depend directly on Dr_id,Pat_id, hence the table is in 3NF.

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

ER Diagram:


Name
Ph_no
Dr_id
Colony
Doctor
Qualifications
Specialisations
City
consults
issues
Pat_id
Name
Dr_id
Lab_id
Gender
Patient
Age
Ph_no
Email
colony
(Address)
city
state
Pat_name
Comp_time
Dr_id
Pat_id
Report
Repo_id
Comp_date
delivers
comp_id
Pat_id
Complaints
status
Lab_id
reporting_date
Checkups
Repo_Updates
Comp_time
status
Repo_id
informs
city
state
colony
(Address)
Shop_no
Lab_id
LAB
Ph_no
Eq_id
Purchase_date
Equipments
price
working_status
Lab_id
machinery
works
hygiene
Emp_id
Ph_no
salary
colony
(Address)
Employee
Email
city
state
Lab_id
name
Lab_id
Waste Management
Ph_no
Waste_id

Relational Schema:



MY SQL CODES:

Creating Tables and Inserting Data:

Doctor:

Code:

```
create database DBMS;

create table Doctor(
    Dr_id varchar(6) Primary key,
    Ph_no varchar(10) unique,
    Dr_name varchar(20) not null,
    Colony varchar(20) not null,
    Qualifications varchar(20) not null,
    Specialisations varchar(20) not null,
    city varchar(20) not null
)

INSERT INTO Doctor VALUES('111111','8569326589','Ramesh','Bal vihar','MBBS','Physician','Raigarh');
INSERT INTO Doctor VALUES('111112','7459326588','Mohan','Lakhperabagh','BAMS','Therapyst','Barabanki
INSERT INTO Doctor VALUES('111113','6769326598','Buchireddy','Wadepally','MBBS','Physician','Waranga
INSERT INTO Doctor VALUES('111114','8869326575','Utkarsh Bansal','Subhash Nagar','MBBS','Cardiology'
```

Table:

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

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	Buchireddy	Wadepally	MBBS	Physician	Warangal
111114	8869326575	Utkarsh Bansal	Subhash Nagar	MBBS	Cardiology	Mohanlalganj
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:

```sql
create table Lab(
    Lab_id varchar(5) Primary key,
    Colony varchar(20) not null,
    city varchar(20) not null,
    State varchar(15) not null,
    Shop_no varchar(8) not null,
    Phone_no varchar(10) unique
)

insert into Lab values('12345','Maharishi Nagar','Barabanki','Uttar Pradesh','85967432','955528304
```

Patient:

Code:

```sql
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:

Pat_id	Age	Phone_no	Gender	city	State	Pat_name	Email	Colony	Dr_id	Lab_id	Reporting_date
10000	25	9936315845	Male	Hyderabad	Telangana	Ashu Verma	a@gmail.com	Kartik Vihar	111111	12345	01/07/2023
10001	24	9946315845	Male	Warangal	Telangana	Vikram Sai	v@gmail.com	Gosaiganj	111112	12345	18/07/2023
10002	10	9937315845	Female	Khammam	Telangana	Mohini	m@gmail.com	subhash vihar	111113	12345	10/07/2023
10003	45	9936415845	Male	Hyderabad	Telangana	Nikhil Boob	n@gmail.com	Kartik Vihar	111111	12345	01/07/2023
10004	35	9936325845	Female	Barabanki	Uttar Pradesh	Parwati	p@gmail.com	Kushinagar	111113	12345	07/07/2023
10005	20	9936316845	Male	Lucknow	Uttar Pradesh	Pappu Kumar	k@gmail.com	chandauli Vihar	111114	12345	20/03/2023
10006	80	9936315945	Male	Surat	Gujarat	Sambhav	sa@gmail.com	modi colony	111114	12345	20/05/2023
10007	65	9936315855	Female	Barabanki	Uttar Pradesh	Seema	se@gmail.com	chaya chauraha	111114	12345	17/07/2023
10008	49	9936300845	Female	Bhopal	Madhya Pradesh	Khushnuma	kh@gmail.com	krishna colony	111111	12345	02/07/2023
10009	25	9930315845	Male	ViZag	Andhra Pradesh	Modi	mo@gmail.com	god colony	111112	12345	31/07/2023
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

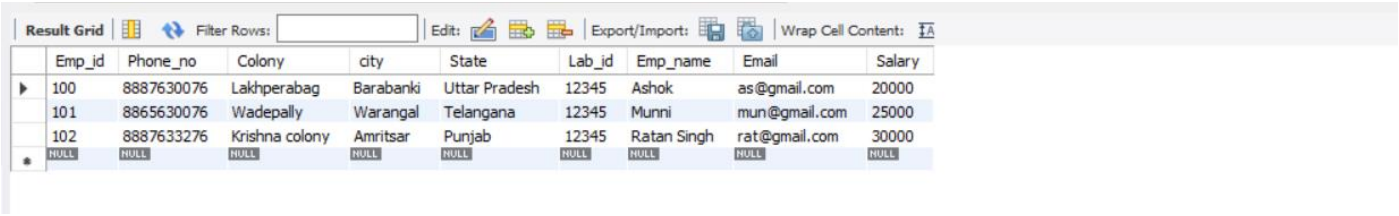
Employee:

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

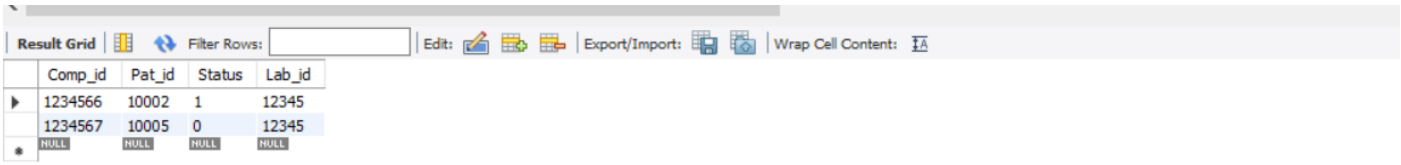
Complaints:

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

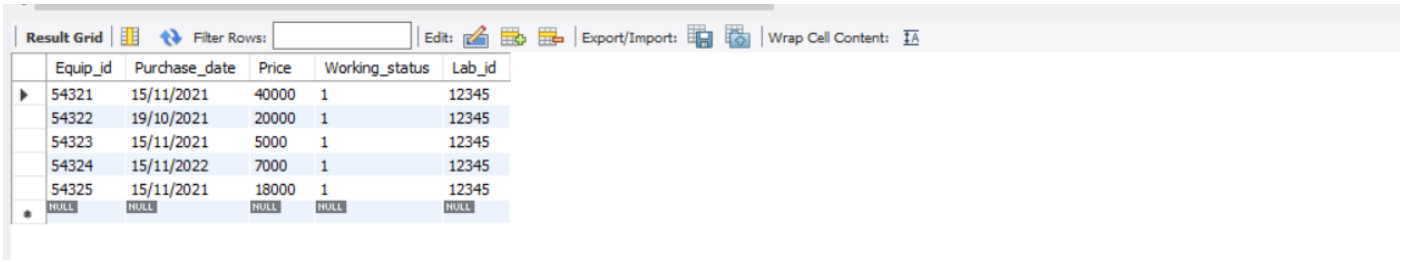
Equipments:

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:



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

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

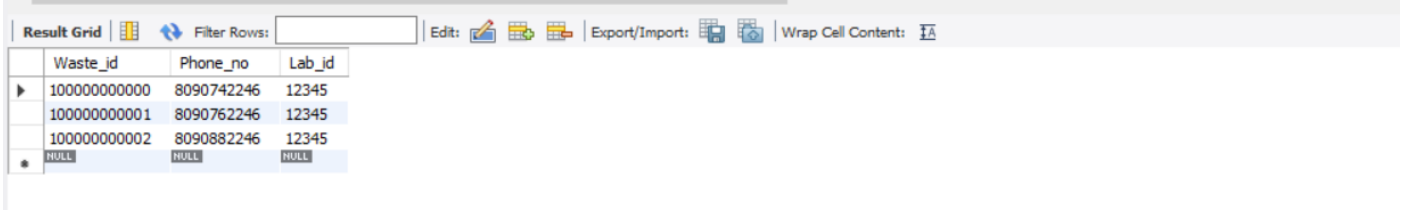
Waste_Management:

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:



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

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

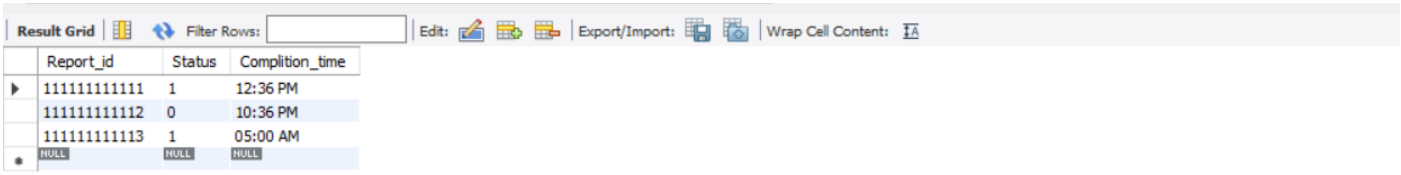
Report_Updates:

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

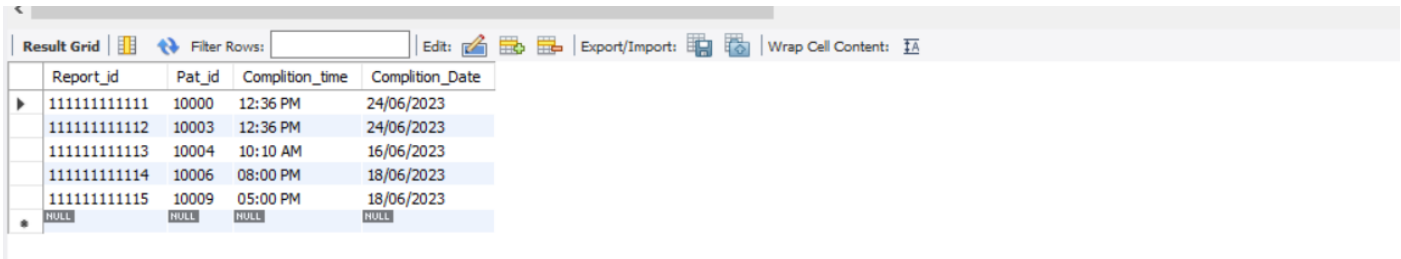
Report:

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;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Equip_id
54321
54322
54323
54324
54325
NULL

Q.2:To display the patient id and doctor name whose report gets prepaired 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;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

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;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Pat_id	city	Ph_no
10000	Raigarh	8569326589
10003	Raigarh	8569326589

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

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

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

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

Thank you!