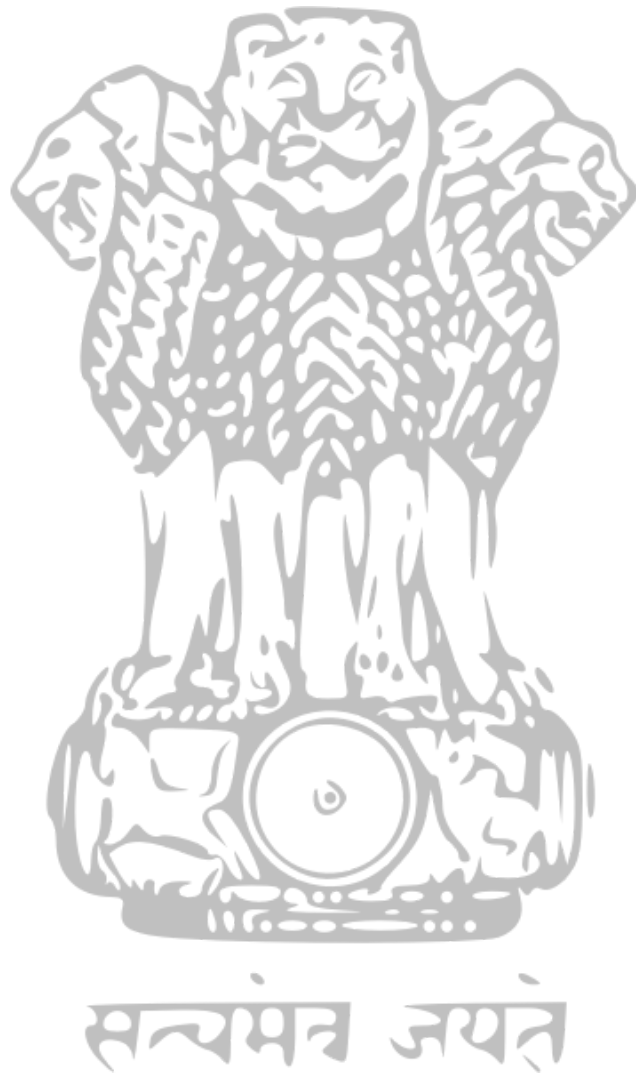# MULTI-SPECIALITY HOSPITAL DATABASE SYSTEM

Team Members

1. Utkarsh Aggarwal 19103255
2. Shikhar Shrivastava 19103262
3. Samarth Kumar Shah 19103257

INTRODUCTION

We have designed and implemented a relational database system for any hospital. It fulfills the basic queries needed for a hospital for both customers, i.e- for e.g: patients / relatives of patients or any other party (administration).

A multi-speciality hospital consists of multiple departments. Each department has multiple doctors who work in it. Doctors are specialists in some branch of medicine and can be associated with exactly one department of the hospital. Each department deals with multiple patients. Information about medical tests undertaken by a patient are also stored, after recommendation of a doctor. Each patient might undergo multiple tests.

There are several schemas that we have defined for the efficient working of the hospital system. Relations and schemas are connected to each other in some form, so that we can retrieve information in an efficient way.

FUNCTIONALITIES

More details (below) are also being stored in the database.

- For each department, a name that uniquely identifies it and the total number of rooms in the department and the cost of the room per day in that department. A department can have more than one specialist who works in it, can have more than one patient, and is managed by exactly one specialist.

- For each doctor, a doctor id which uniquely identifies him/her, his/her full name, the phone number(s) (there can be more than one), and the specialty. The joining date when the doctor started working in the dept.

- For each patient, an Aadhar no. (citizen identifier) which uniquely identifies a patient, the first name and last name, and the sex. A patient can undertake many medical tests and a medical test can be undertaken by many patients. For each patient in a department, we want to keep, as well, the admission date and the discharge date. A patient can get admitted in the same department on a different date as well.

- For each medical test, a test code that uniquely identifies it, a description, a cost, and the result of the test and the admission date for each patient. The result of a test can be either negative or positive.

ER-Diagram
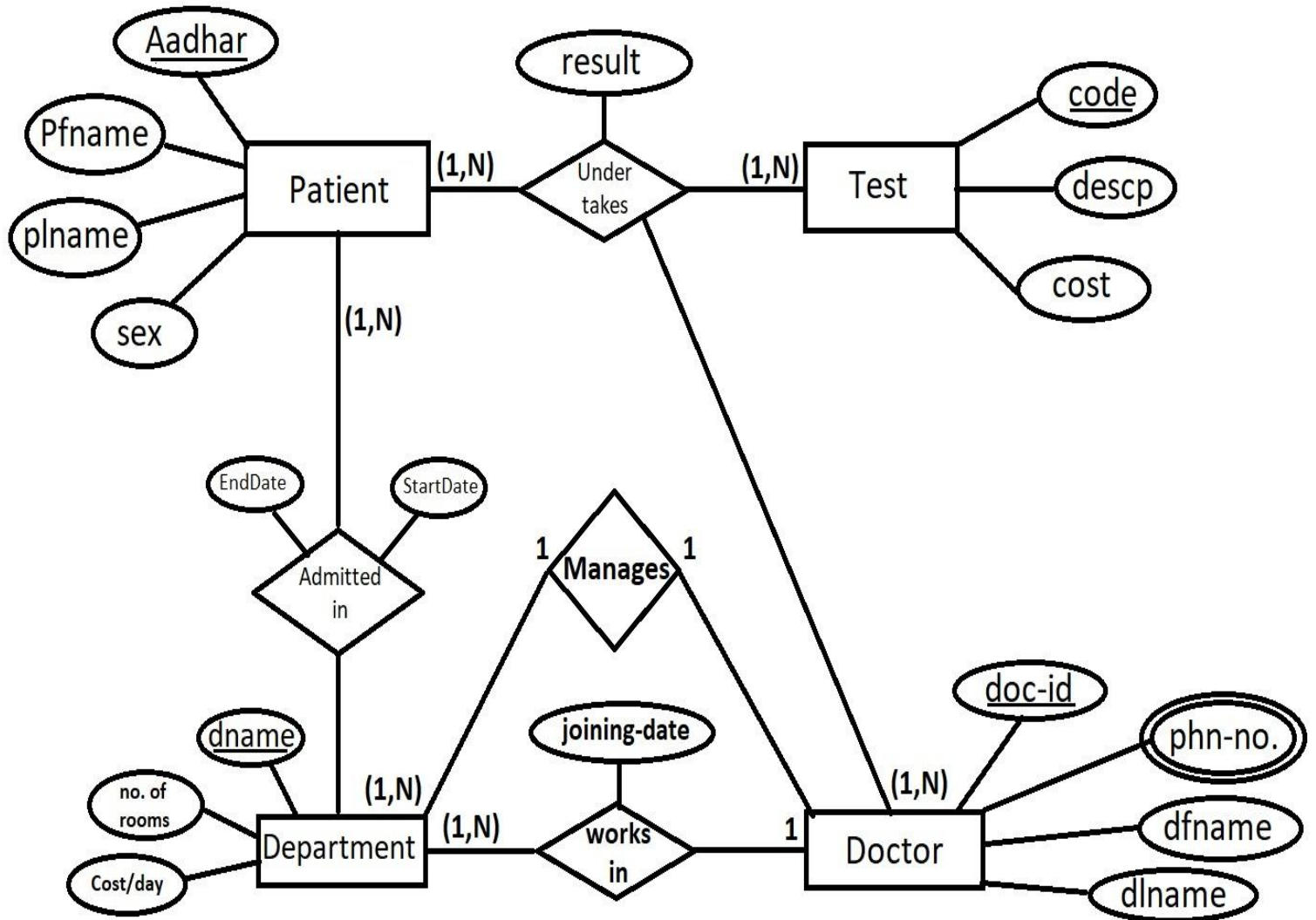
Relational Schema

doctor (<u>doc_id</u>, dfname, dlname, **dept_name**, manages, joining_date)

contact_detail(**<u>doc_id</u>**, <u>ph_no</u>)

patient(<u>p_id</u>, p_fname, p_lname, sex)

test(<u>code</u>, description, cost)

department(<u>dept_name</u>, rooms_available, cost_per_day)

undertakes(**<u>p_id</u>, <u>code</u>, <u>doc_id</u>,** result)

admitted_in(**<u>p_id</u>, <u>dept_name</u>**, <u>admit_date</u>, discharge_date)

Underline indicates a primary key

Bold red indicates a foreign key

DDL Commands

create database hospital;

use hospital;

CREATE TABLE `hospital`.`department` (

  `dept_name` VARCHAR(60) NOT NULL,

  `rooms_available` INT NOT NULL,

  `cost_per_day` FLOAT NOT NULL,

  PRIMARY KEY (`dept_name`));

CREATE TABLE `hospital`.`doctor` (

  `doc_id` INT NOT NULL,

  `dfname` VARCHAR(45) NOT NULL,

  `dlname` VARCHAR(60) NULL,

  `manages` VARCHAR(60) NULL,

  `joining_date` DATE NOT NULL,

  `dept_name` VARCHAR(60) NOT NULL,

  PRIMARY KEY (`doc_id`),

  INDEX `dept_name_idx` (`dept_name` ASC) VISIBLE,

  CONSTRAINT `dept_name`

    FOREIGN KEY (`dept_name`)

    REFERENCES `hospital`.`department` (`dept_name`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION)

```sql
CREATE TABLE `hospital`.`contact_detail` (

  `doc_id` INT NOT NULL,

  `phone_no.` VARCHAR(10) NOT NULL,

  PRIMARY KEY (`doc_id`, `phone_no.`),

  CONSTRAINT `doc_id`

    FOREIGN KEY (`doc_id`)

    REFERENCES `hospital`.`doctor` (`doc_id`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION);


CREATE TABLE `hospital`.`patient` (

  `p_id` INT NOT NULL,

  `p_fname` VARCHAR(45) NOT NULL,

  `p_lname` VARCHAR(60) NULL,

  `sex` CHAR NOT NULL,

  PRIMARY KEY (`p_id`));


CREATE TABLE `hospital`.`test` (

  `code` INT NOT NULL,

  `descp` VARCHAR(100) NOT NULL,

  `cost` FLOAT NOT NULL,

  PRIMARY KEY (`code`));


CREATE TABLE `hospital`.`undertakes` (
```

```sql
  `p_id` INT(11) NOT NULL,

  `code` INT(11) NOT NULL,

  `doctor_id` INT(11) NOT NULL,

  `result` VARCHAR(45) NOT NULL,

  PRIMARY KEY (`p_id`, `code`, `doctor_id`),

  INDEX `code_idx` (`code` ASC) VISIBLE,

  INDEX `doc_id_idx` (`doctor_id` ASC) VISIBLE,

  CONSTRAINT `p_id`

    FOREIGN KEY (`p_id`)

    REFERENCES `hospital`.`patient` (`p_id`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION,

  CONSTRAINT `code`

    FOREIGN KEY (`code`)

    REFERENCES `hospital`.`test` (`code`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION,

  CONSTRAINT `doctor_id`

    FOREIGN KEY (`doctor_id`)

    REFERENCES `hospital`.`doctor` (`doc_id`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION);


CREATE TABLE `hospital`.`admitted_in` (
```

```sql
  `patient_id` INT NOT NULL,

  `department_name` VARCHAR(60) NOT NULL,

  `admit_date` DATE NOT NULL,

  `discharge_date` DATE NULL,

  PRIMARY KEY (`patient_id`, `department_name`, `admit_date`),

  INDEX `department_name_idx` (`department_name` ASC) VISIBLE,

  CONSTRAINT `patient_id`

    FOREIGN KEY (`patient_id`)

    REFERENCES `hospital`.`patient` (`p_id`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION,

  CONSTRAINT `department_name`

    FOREIGN KEY (`department_name`)

    REFERENCES `hospital`.`department` (`dept_name`)

    ON DELETE NO ACTION

    ON UPDATE NO ACTION);




INSERT INTO `hospital`.`department` (`dept_name`, `rooms_available`, `cost_per_day`)
VALUES ('cardiology', '40', '15000');

INSERT INTO `hospital`.`department` (`dept_name`, `rooms_available`, `cost_per_day`)
VALUES ('ENT', '20', '10000');
```

INSERT INTO `hospital`.`department` (`dept_name`, `rooms_available`, `cost_per_day`) VALUES ('dermatology', '15', '7500');

INSERT INTO `hospital`.`department` (`dept_name`, `rooms_available`, `cost_per_day`) VALUES ('neurology', '20', '25000');

INSERT INTO `hospital`.`department` (`dept_name`, `rooms_available`, `cost_per_day`) VALUES ('paediatrics', '36', '12000');

	dept_name	rooms_available	cost_per_day
▶	cardiology	40	15000
	dermatology	15	7500
	ENT	20	10000
	neurology	20	25000
	paediatrics	36	12000
*	NULL	NULL	NULL

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('101', 'Ajay', 'Ganguly', '2009-03-01', 'cardiology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `manages`, `joining_date`, `dept_name`) VALUES ('102', 'Amitabh', 'Singhania', 'cardiology', '1998-06-13', 'cardiology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `manages`, `joining_date`, `dept_name`) VALUES ('201', 'Deepti', 'Agarwal', 'dermatology', '2008-02-14', 'dermatology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('202', 'Ganga', 'Mehrotra', '2003-04-02', 'dermatology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('103', 'Sanya', 'Tiwari', '2018-08-17', 'cardiology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `manages`, `joining_date`, `dept_name`) VALUES ('301', 'Rahul', 'Agarwal', 'ENT', '2010-07-11', 'ENT');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('302', 'Ashu', 'Rana', '2016-01-19', 'ENT');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `manages`, `joining_date`, `dept_name`) VALUES ('401', 'Vihaan', 'Shergill', 'neurology', '2002-05-23', 'neurology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('402', 'Pranjal', 'Kumar', '2003-09-18', 'neurology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('403', 'Tanisa', 'Gangawar', '2014-02-05', 'neurology');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('501', 'Sanju', 'Malhotra', '2017-02-07', 'paediatrics');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `manages`, `joining_date`, `dept_name`) VALUES ('502', 'Rohit', 'Sharma', 'paediatrics', '2003-09-07', 'paediatrics');

INSERT INTO `hospital`.`doctor` (`doc_id`, `dfname`, `dlname`, `joining_date`, `dept_name`) VALUES ('503', 'Umar', 'Quereshi', '2008-11-26', 'paediatrics');

doc_id	dfname	dlname	manages	joining_date	dept_name
101	Ajay	Ganguly	NULL	2009-03-01	cardiology
102	Amitabh	Singhania	cardiology	1998-06-13	cardiology
103	Sanya	Tiwari	NULL	2018-08-17	cardiology
201	Deepti	Agarwal	dermatology	2008-02-14	dermatology
202	Ganga	Mehrotra	NULL	2003-04-02	dermatology
301	Rahul	Agarwal	ENT	2010-07-11	ENT
302	Ashu	Rana	NULL	2016-01-19	ENT
401	Vihaan	Shergill	neurology	2002-05-23	neurology
402	Pranjal	Kumar	NULL	2003-09-18	neurology
403	Tanisa	Gangawar	NULL	2014-02-05	neurology
501	Sanju	Malhotra	NULL	2017-02-07	paediatrics
502	Rohit	Sharma	paediatrics	2003-09-07	paediatrics
503	Umar	Quereshi	NULL	2008-11-26	paediatrics
* NULL	NULL	NULL	NULL	NULL	NULL

```sql
insert into contact_detail values(101,"9875429525"),
                                 (102,"9834873670"),
                                 (103,"8750432749"),
                                 (103,"9821832749"),
                                 (201,"7089452146"),
                                 (202,"9760554320"),
                                 (202,"6540000212"),
                                 (301,"9765432189"),
                                 (302,"8900658723"),
                                 (401,"9684003216"),
                                 (401,"9800568218"),
                                 (402,"9999875000"),
                                 (403,"9821560436"),
                                 (501,"8650087621"),
                                 (501,"7856016532"),
                                 (501,"8760047496"),
                                 (502,"9885447100"),
                                 (503,"9134380420"),
                                 (503,"2016780324"),
                                 (503,"4560393749");
```

doc_id	phone_no.
101	9875429525
102	9834873670
103	8750432749
103	9821832749
201	7089452146
202	6540000212
202	9760554320
301	9765432189
302	8900658723
401	9684003216
401	9800568218
402	9999875000
403	9821560436
501	7856016532
501	8650087621
501	8760047496
502	9885447100
503	2016780324
503	4560393749

```
insert into patient values(11,"rajat","ahuja",'m'),
                          (12,"shaurya","chopra",'m'),
            (13,"anushka","rahiya",'f'),
            (14,"sasta","shah",'m'),
            (21,"ria","sharma",'f'),
```

```
(22,"shaurya","horo",'m'),
(23,"kashish","dahiya",'f'),
(31,"utsav","rana",'m'),
(32,"sumanyu","dutta",'f'),
(33,"anushka","banerjee",'f'),
(41,"mahindra","kumar",'m'),
(42,"doko","rai",'m'),
(43,"vinod","tenpuria",'m'),
(51,"ashi","jain",'f'),
(52,"golu","goyal",'m'),
(53,"ram","shergill",'m');
```

p_id	p_fname	p_lname	sex
11	rajat	ahuja	m
12	shaurya	chopra	m
13	anushka	rahiya	f
14	sasta	shah	m
21	ria	sharma	f
22	shaurya	horo	m
23	kashish	dahiya	f
31	utsav	rana	m
32	sumanyu	dutta	f
33	anushka	banerjee	f
41	mahindra	kumar	m
42	doko	rai	m
43	vinod	tenpuria	m
51	ashi	jain	f
52	golu	goyal	m
53	ram	shergill	m
NULL	NULL	NULL	NULL

```
insert into test values(1000,"ECG",2500),
                        (1100,"Transthoracic Echocardiogram",5000),
        (1200,"Positron Emission Tomography",3500),
        (2000,"Skin Biopsy",4599),
```

```
        (2100,"Patch Testing",1200),
        (3000,"Pure tone audiometry",750),
        (3100,"Laryngoscopy",2200),
        (4100,"Electroencephalograph",7000),
        (4200,"Brain MRI",2500),
        (5000,"Circulation/Perfusion",500),
        (5100,"X-Ray",1000);
```

code	descp	cost
1000	ECG	2500
1100	Transthoracic Echocardiogram	5000
1200	Positron Emission Tomography	3500
2000	Skin Biopsy	4599
2100	Patch Testing	1200
3000	Pure tone audiometry	750
3100	Laryngoscopy	2200
4100	Electroencephalograph	7000
4200	Brain MRI	2500
5000	Circulation/Perfusion	500
5100	X-Ray	1000
NULL	NULL	NULL

INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('33', '2000', '201', 'positive');

INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('33', '2000', '202', 'negative');

INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('14', '4200', '401', 'negative');

INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('14', '4100', '401', 'positive');

INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('43', '4200', '401', 'negative');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('32', '1200', '103', 'negative');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('23', '3000', '301', 'positive');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('41', '5100', '102', 'positive');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('52', '5100', '101', 'positive');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('51', '5000', '502', 'negative');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('42', '1000', '103', 'positive');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('21', '2100', '202', 'positive');
INSERT INTO `hospital`.`undertakes` (`p_id`, `code`, `doctor_id`, `result`) VALUES ('12', '1100', '101', 'negative');

p_id	code	doctor_id	result	admit_date
12	1000	101	positive	2021-02-02
12	1100	101	negative	2020-02-02
14	4100	401	positive	2021-02-14
14	4200	401	negative	2021-02-14
21	2100	202	positive	2020-12-19
23	3000	301	positive	2021-05-13
32	1200	103	negative	2020-09-18
33	2000	201	positive	2021-06-01
33	2000	202	negative	2021-06-01
41	5100	102	positive	2021-08-02
42	1000	103	positive	2021-01-27
43	4200	401	negative	2021-06-30
51	5000	502	negative	2021-04-01
52	5100	101	positive	2021-03-09
NULL	NULL	NULL	NULL	NULL
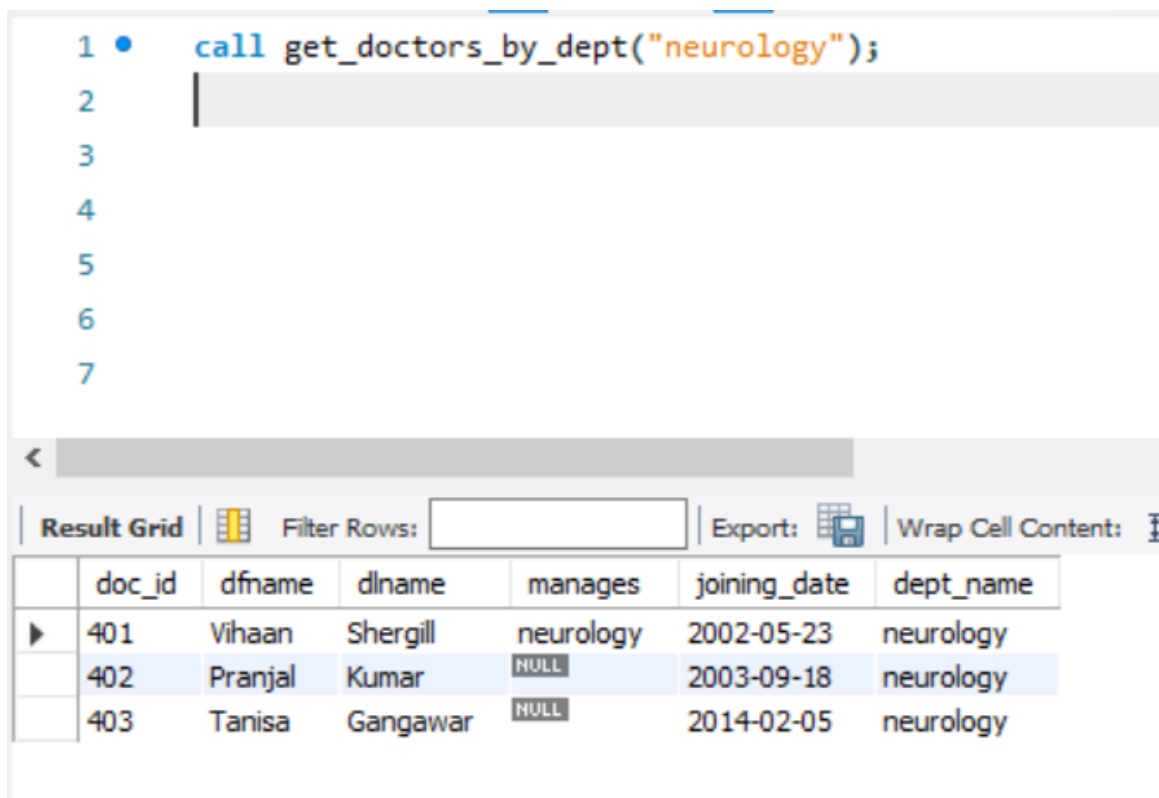
INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('11', 'ENT', '2021-04-04', '2021-04-04');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('12', 'cardiology', '2020-02-02', '2020-02-03');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('13', 'neurology', '2020-09-04', '2020-09-14');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`) VALUES ('14', 'neurology', '2021-02-14');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('21', 'dermatology', '2020-12-19', '2020-12-19');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('22', 'ENT', '2020-12-25', '2020-12-26');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('23', 'ENT', '2021-05-13', '2021-05-15');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('31', 'dermatology', '2021-02-09', '2021-02-09');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('32', 'cardiology', '2020-09-18', '2020-10-19');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('33', 'dermatology', '2021-06-01', '2021-06-03');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('41', 'cardiology', '2021-08-02', '2021-08-19');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`, `discharge_date`) VALUES ('42', 'cardiology', '2021-01-27', '2021-02-10');

INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`) VALUES ('43', 'neurology', '2021-06-30');

```
INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`,
`discharge_date`) VALUES ('51', 'paediatrics', '2021-04-01', '2021-04-01');
INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`,
`discharge_date`) VALUES ('52', 'paediatrics', '2021-03-09', '2021-03-11');
INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`,
`discharge_date`) VALUES ('53', 'paediatrics', '2020-11-28', '2020-11-28');
INSERT INTO `hospital`.`admitted_in` (`patient_id`, `department_name`, `admit_date`)
VALUES ('12', 'cardiology', '2021-02-02');
```

patient_id	department_name	admit_date	discharge_date
11	ENT	2021-04-04	2021-04-04
12	cardiology	2020-02-02	2020-02-03
12	cardiology	2021-02-02	NULL
13	neurology	2020-09-04	2020-09-14
14	neurology	2021-02-14	NULL
21	dermatology	2020-12-19	2020-12-19
22	ENT	2020-12-25	2020-12-26
23	ENT	2021-05-13	2021-05-15
31	dermatology	2021-02-09	2021-02-09
32	cardiology	2020-09-18	2020-10-19
33	dermatology	2021-06-01	2021-06-03
41	cardiology	2021-08-02	2021-08-19
42	cardiology	2021-01-27	2021-02-10
43	neurology	2021-06-30	NULL
51	paediatrics	2021-04-01	2021-04-01
52	paediatrics	2021-03-09	2021-03-11
53	paediatrics	2020-11-28	2020-11-28
NULL	NULL	NULL	NULL

1. List doctors working in a given department.

```sql
DELIMITER $$
USE `hospital`$$
CREATE PROCEDURE get_doctors_by_dept (in dept varchar(60))
BEGIN
select * from doctor where dept_name=dept;
END$$


DELIMITER ;


call get_doctors_by_dept("neurology");
```

2. List doctors in-charge of a given patient.

```
DELIMITER $$
USE `hospital`$$
CREATE PROCEDURE get_doctor_of_patient (in pid int)
BEGIN
select doc_id,dfname,dlname from doctor where doc_id in
(select distinct doctor_id from undertakes where p_id = pid );
END$$

DELIMITER ;

call get_doctor_of_patient(33);
```

```
1 •    call get_doctor_of_patient(33);
2
3
4
5
6
```

Result Grid	Filter Rows:	Export:	Wra

doc_id	dfname	dlname
201	Deepti	Agarwal
202	Ganga	Mehrotra

3.List the name of department heads

```sql
select doc_id,dfname,dlname,dept_name,joining_date
from doctor where manages is not null;
```

doc_id	dfname	dlname	dept_name	joining_date
102	Amitabh	Singhania	cardiology	1998-06-13
201	Deepti	Agarwal	dermatology	2008-02-14
301	Rahul	Agarwal	ENT	2010-07-11
401	Vihaan	Shergill	neurology	2002-05-23
502	Rohit	Sharma	paediatrics	2003-09-07
NULL	NULL	NULL	NULL	NULL

4. List the no. of tests undertaken by a patient with a given p_id.

```
select p_id,p_fname,p_lname,count(*) as no_of_tests
from undertakes u natural join patient p
group by u.p_id;
```

p_id	p_fname	p_lname	no_of_tests
12	shaurya	chopra	1
14	sasta	shah	2
21	ria	sharma	1
23	kashish	dahiya	1
32	sumanyu	dutta	1
33	anushka	banerjee	2
41	mahindra	kumar	1
42	doko	rai	1
43	vinod	tenpuria	1
51	ashi	jain	1
52	golu	goyal	1

5. List the doctor who prescribed max no. of tests.

```
select doc_id,dfname,dlname from doctor
where doc_id in
(select doctor_id from undertakes group by doctor_id
having count(*) = (select count(*) from undertakes group by
doctor_id order by count(*) desc limit 1));
```

doc_id	dfname	dlname
▶ 401	Vihaan	Shergill

6. Display the Nth most expensive test.

```
DELIMITER $$
USE `hospital`$$
CREATE PROCEDURE Nth_Expensive_Test (in n int)
BEGIN
select * from test t1
where n-1=(select count(distinct cost)  from test t2 where
t2.cost>t1.cost);
END$$

DELIMITER ;
```

The following query displays the 3rd most expensive test:

```
1    call  Nth_Expensive_Test(3);
```

<

Result Grid | ⊞ Filter Rows: [   ] | Export: ⊞

code	descp	cost
▶ 2000	Skin Biopsy	4599

7. List the doctor(s) who have worked for more than 15 years and are currently not managing any department.

```
select doc_id,dfname,dlname,dept_name
from doctor
where timestampdiff(year,joining_date,current_date)>15 and
manages is null;
```

```
1    select doc_id,dfname,dlname,dept_name
2    from doctor
3    where timestampdiff(year,joining_date,current_date)>15 and manages is null;
4
```

doc_id	dfname	dlname	dept_name
202	Ganga	Mehrotra	dermatology
402	Pranjal	Kumar	neurology

8. Display the room cost of a patient with given p_id and admit_date.

```
DELIMITER $$
USE `hospital`$$
CREATE FUNCTION get_room_cost(p_id int,admission_date date)
RETURNS float
DETERMINISTIC
BEGIN
declare d varchar(60);
declare discharge date;
```

```sql
declare duration int;
declare result float;
select department_name into d from admitted_in
where patient_id=p_id and admit_date=admission_date;


select discharge_date into discharge from admitted_in
where patient_id=p_id and admit_date=admission_date;

if(discharge is not null) then
      select timestampdiff(day,admission_date,discharge) into
duration;
else
      select timestampdiff(day,admission_date,current_date) into
duration;
end if;


 select cost_per_day*duration into result from department
 where dept_name=d;


 return result;
 END$$

DELIMITER ;
```

```sql
1 •     select get_room_cost(12,'2021-02-02') as room_cost;
2
```

room_cost
2415000

9. Display the test cost of a patient with given p_id and admit_date

```sql
DELIMITER $$
USE `hospital`$$
CREATE  FUNCTION `get_test_cost`(patient_id int,admission_date
date)
RETURNS float
DETERMINISTIC
BEGIN
declare res float default 0;

select sum(cost) into res from undertakes natural join test
where patient_id=p_id and admission_date=admit_date;

return res;
END$$

DELIMITER ;
```

```
1    select get_test_cost(12,'2021-02-02') as test_cost;
```

Result Grid		Filter Rows:	Export:	Wrap Cell Cont

test_cost
2500

10. Display the total bill incurred by a patient with a given p_id and admit_date.

```sql
DELIMITER $$
USE `hospital`$$

CREATE  PROCEDURE `get_bill`(in p_id int,in admit_date date)
BEGIN
declare a,b float;
set a = get_room_cost(p_id,admit_date);
set b= get_test_cost(p_id,admit_date);
select a+b as total_bill;
END$$

DELIMITER ;
```

```
1       call get_bill(12,'2021-02-02') |
```

| Result Grid | Filter Rows: | Export: |

total_bill
▶ 2417500
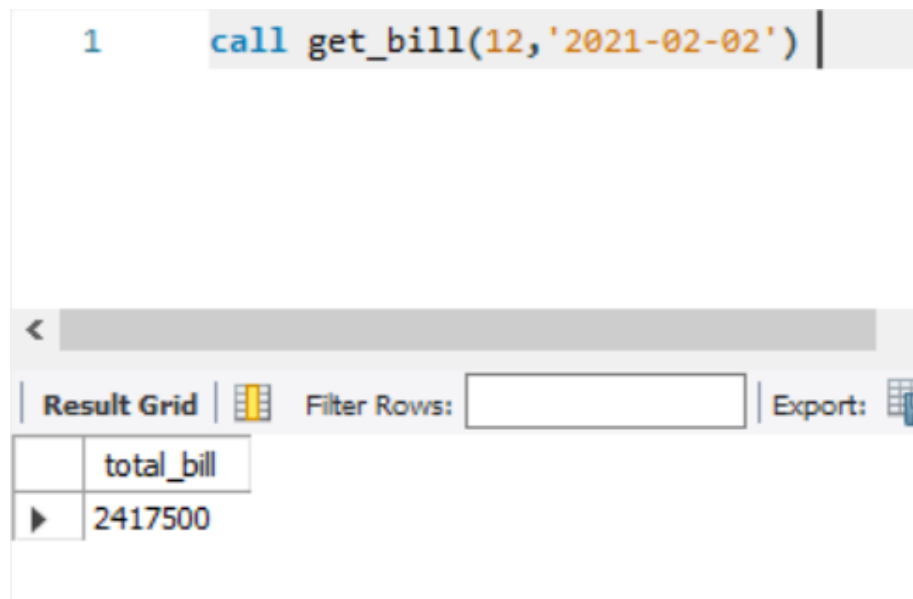
11. List the result of the test(s) for the patients with given patient_id and admission_date.

```
select code,doctor_id,result
from undertakes where p_id=patient_id and admit_date='admission_date';
```

code	doctor_id	result
4100	401	positive
4200	401	negative

12. List the doctors whose phone no. ends with '749'

```
select doc_id,dfname,dlname from doctor
where doc_id in
(select distinct doc_id from contact_detail where phone_no like
'%749');
```

doc_id	dfname	dlname
103	Sanya	Tiwari
503	Umar	Quereshi