#  Case Study – Hospital Management System

Whenever a new patient is either admitted or comes for outdoor check-up, a unique patient id is generated after storing the name, address and date of birth of the patient. For further visits, the patient uses his unique id. There are several departments in the Hospital. A department characterized by a unique id, name, floor number and total workers. The doctors have a unique employee id, and their name, address, contact number, qualifications are stored with this id. Similarly other workers like nurses, ward boys, ambulance drivers also have a unique employee id. Also, each worker is characterized by name, address and type. Doctors and workers can be associated with multiple departments with different schedules. Whenever patient is admitted in the hospital various details are recorded. The patient id, name and address are stored, the department number and name in which the patient is admitted along with the bed number and room number is also stored. Also, for every patient, a senior doctor and junior doctor are appointed. The details of the doctors, like name, id, contact number is recorded. The prescribed medicines are also stored for a patient. In case of outdoor checkups, the patient id is stored, along with the department number, the employee id of the doctor, the prescription and the date of checkup. For emergency duty every night, the employee\_id of doctor and the nurse is stored along with the date.



**ER Diagram**

# Relational Schema



**SQL Queries**

drop database hospital; create database hospital; use hospital;

create table Patient(Bed\_No int, Date\_of\_Birth varchar(20), Address varchar(20), Pname varchar(20), Pid int, primary key(Pid));

desc Patient;



create table Department(dept\_name varchar(20), floor\_no int, dept\_id int, no\_of\_workers int, Pid int, primary key(dept\_id), FOREIGN KEY (Pid) REFERENCES Patient(Pid) );

desc Department;



CREATE TABLE Outdoor\_Checkup(date\_of\_checkup varchar(20),dno int, dept\_id int, Pid int, PRIMARY KEY (dept\_id), UNIQUE (Pid) );

desc Outdoor\_Checkup;



CREATE TABLE details (dname varchar(20), roomno int, Pid int,

Pname varchar(20), Address varchar(20), Bed\_No int, dno int, PRIMARY KEY (Pid)); desc details;



CREATE TABLE Doctors(did int, contact\_no int, dname varchar(20),

qualification varchar(40), d\_address varchar(20), dept\_id int, PRIMARY KEY (did), FOREIGN KEY (dept\_id) REFERENCES Outdoor\_Checkup(dept\_id));

desc Doctors;



CREATE TABLE Emergency\_Duty(Bed\_No int, wid int, contact\_no int, dname varchar(20),

did int, PRIMARY KEY (did), FOREIGN KEY (did) REFERENCES Doctors(did), UNIQUE (wid) );

desc Emergency\_Duty;



CREATE TABLE Workers(wname varchar(20),wid int,address varchar(20), type varchar(20), Pid int, PRIMARY KEY (wid), FOREIGN KEY (Pid) REFERENCES details(Pid));

desc Workers;



CREATE TABLE treated\_by(Pname varchar(20), Pid int, Contact int, did int, PRIMARY KEY (Pid, did), FOREIGN KEY (Pid) REFERENCES Patient(Pid),

FOREIGN KEY (did) REFERENCES Doctors(did));

desc treated\_by;



CREATE TABLE works\_for(did int,dept\_id int,PRIMARY KEY (did, dept\_id),

FOREIGN KEY (did) REFERENCES Doctors(did),FOREIGN KEY (dept\_id) REFERENCES

Department(dept\_id)); desc works\_for;



CREATE TABLE helps(wid int,did int,PRIMARY KEY (wid, did),

FOREIGN KEY (wid) REFERENCES Workers(wid), FOREIGN KEY (did) REFERENCES

Doctors(did)); desc helps;



CREATE TABLE work\_for(wid int,dept\_id int,PRIMARY KEY (wid, dept\_id),

FOREIGN KEY (wid) REFERENCES Workers(wid),FOREIGN KEY (dept\_id) REFERENCES Department(dept\_id));

desc work\_for;



set foreign\_key\_checks=0;

insert into patient values(1,'21-01-2001','Vijayawada','Mohan',1001); insert into patient values(2,'05-07-1978','Vijayawada','Farooq',1002); insert into patient values(3,'08-12-1989','Guntur','Ramesh',1003);

insert into patient values(4,'04-10-1992','Vishakapatnam','Ravi Kiran',1004); select \* from patient;



insert into department values('General Medicine',1,2001,50,1001); insert into department values('General Medicine',1,2004,50,1004); insert into department values('Surgery',2,2002,90,1002);

insert into department values('Psychiatry',3,2003,72,1003); select \* from department;



insert into Outdoor\_Checkup values('01-01-2022',3,2001,1003); insert into Outdoor\_Checkup values('25-12-2021',5,2004,1004); insert into Outdoor\_Checkup values('25-12-2021',2,2002,1002); select \* from Outdoor\_Checkup;



insert into details values('Nithin',501,1001,'Mohan','Vijayawada',3,4);

insert into details values('Siddique',512,1004,'Ravi Kiran','Vishakapatnam',3,1); insert into details values('Radha',210,1002,'Farooq','Vijayawada',2,5);

insert into details values('Michael',106,1002,'Farooq','Vijayawada',5,2); insert into details values('Reshma',309,1003,'Ramesh','Guntur',1,3); select \* from details;



insert into doctors values(1,912345678,'Siddique','Head Chief on Medicine','Hyderabad',2001);

insert into doctors values(2,923546781,'Michael','Surgical attending physician','Chennai',2002);

insert into doctors values(3,987654312,'Reshma','MD Resident','Vijayawada',2003); insert into doctors values(4,896543721,'Nithin','MD Resident','Nellore',2001);

insert into doctors values(5,951234678,'Radha','Attending Psychiatrist','Banglore',2002); select \* from doctors;



insert into Emergency\_Duty values(1,3001,896543721,'Nithin',4); insert into Emergency\_Duty values(2,3002,987654312,'Reshma',3); select \* from Emergency\_Duty;



insert into workers values('Venkat',3001,'Vijayawada','Cleaner',1002); insert into workers values('Harika',3002,'Vijayawada','Nurse',1001); insert into workers values('Kumar',3003,'Guntur','Support',1004); select \* from workers;



insert into treated\_by values('Mohan',1001,896543721,4); insert into treated\_by values('Farooq',1002,923546781,2); insert into treated\_by values('Ramesh',1003,987654312,3); insert into treated\_by values('Ravi Kiran',1004,912345678,1); select \* from treated\_by;



insert into works\_for values(1,2001); insert into works\_for values(2,2002); insert into works\_for values(3,2003); insert into works\_for values(4,2001); insert into works\_for values(5,2002); select \* from works\_for;



insert into helps values(3001,2); insert into helps values(3002,4); insert into helps values(3003,1); select \* from helps;



# Simple Queries

update Department set floor\_no=2 where pid=1004; select \* from Department;



delete from patient where pid = 1004; select \* from patient;



select dept\_id,pname from doctors,details where doctors.did=details.dno;



select dname from doctors where did between 2 and 4;



select dname, Pname from details order by roomno;



select wname from workers group by address;

