

DBMS Project

Date: 23/04/2023

Group: 1_15

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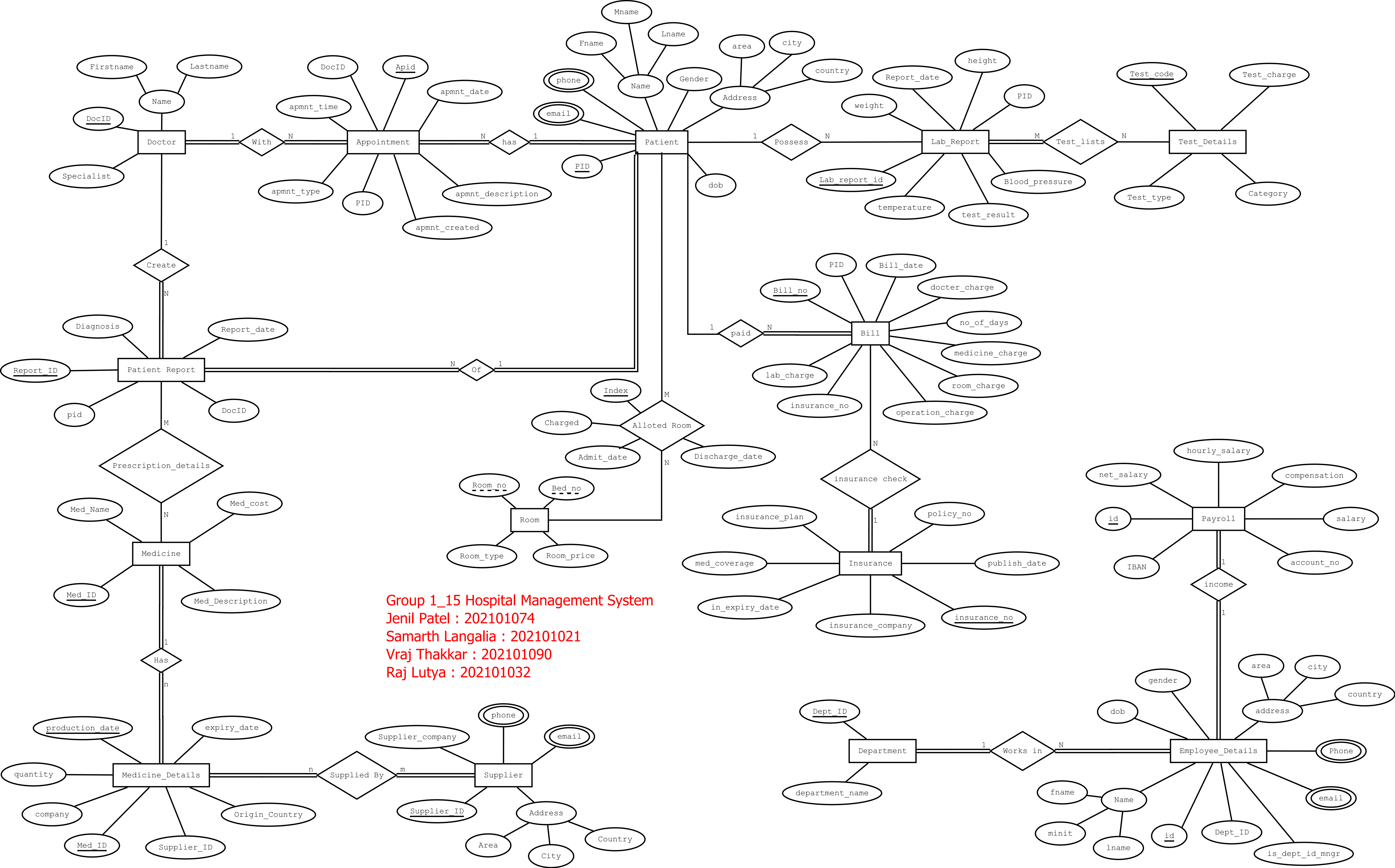
Objective:- FINAL SUBMISSION

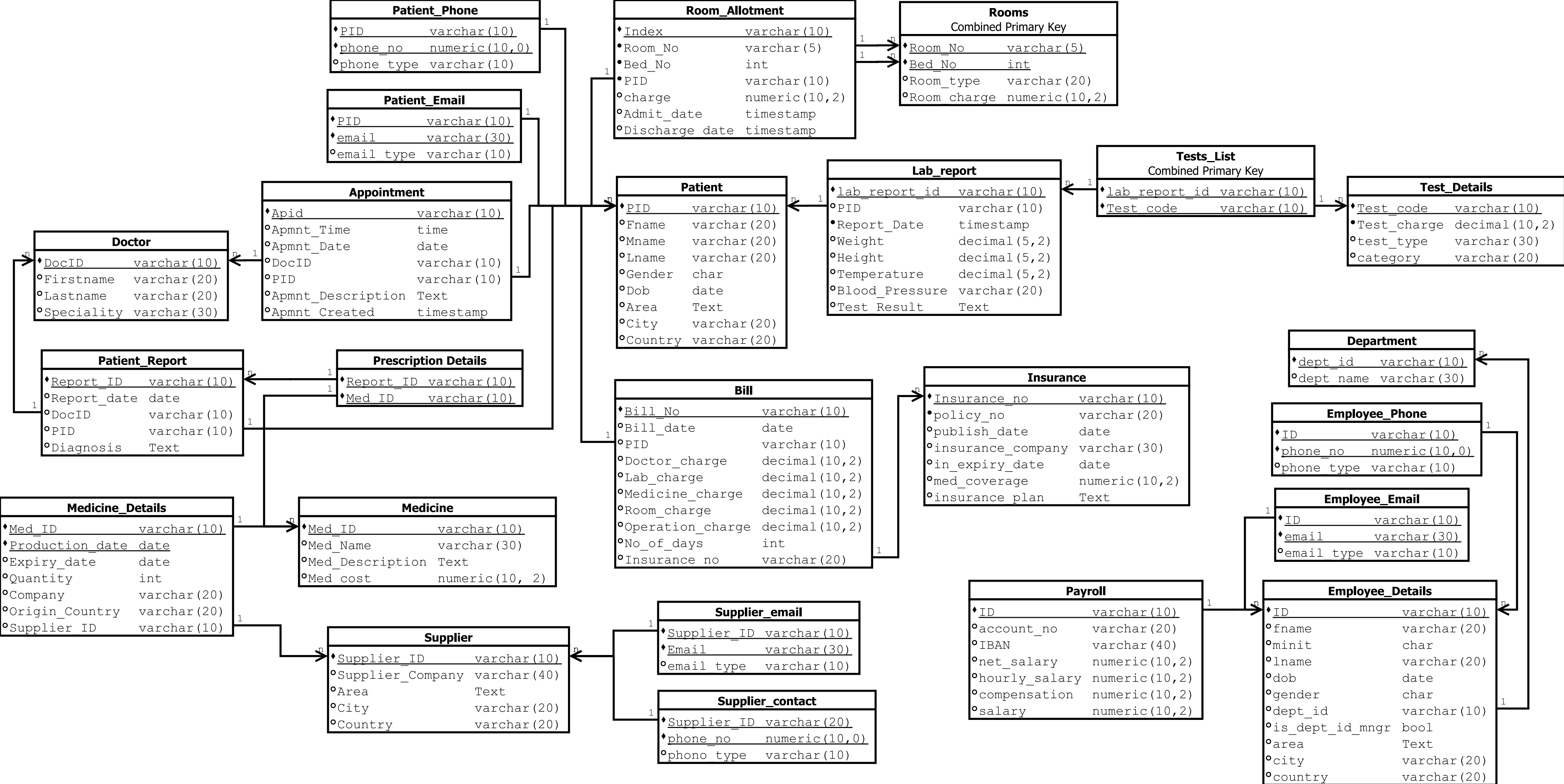
Submission should include following -

(1) ER Schema

(2) Relational Schema

(3) FD set, Minimal FD Set and Proof that relations are in BCNF.





	FDs, Fmin, Key and isBCNF	
1	<p style="text-align: center;">R(Patient)</p> <p>FD:</p> <ul style="list-style-type: none"> PID→Fname PID→Mname PID→Fname PID→Lname PID→Gender PID→Dob PID→Area PID→City PID→Country <p>Fmin:</p> <ul style="list-style-type: none"> PID→{First_name,Middle_name,Last_name,Gender,Dob,Area,City, Country} 	<p>Key = PID</p> <p>isBCNF = True</p>
2	<p style="text-align: center;">R(Bill)</p> <p>FD:</p> <ul style="list-style-type: none"> Bill_No→Bill_date Bill_No→PID Bill_No→Doctor_charge Bill_No→Lab_charge Bill_No→Medicine_charge Bill_No→Room_charge Bill_No→Operation_charge Bill_No→No_of_days Bill_No→Insurance_no <p>Fmin:</p> <ul style="list-style-type: none"> Bill_no→{PID,Doctor_charge,Lab_charge,Medicine_charge,Room_charge,Operation_charge,No_of_days,Insurance_no} 	<p>Key = Bill_no</p> <p>isBCNF = True</p>
3	<p style="text-align: center;">R(Insurance)</p> <p>FD:</p> <ul style="list-style-type: none"> Insurance_no→policy_no Insurance_no→publish_date Insurance_no→insurance_company Insurance_no→in_expiry_date Insurance_no→med_coverage Insurance_no→insurance_plan <p>Fmin:</p> <ul style="list-style-type: none"> Insurance_no→{policy_no,publish_date,insurance_company,expiry_date,med_coverage,insurance_plan} 	<p>Key = Insurance_no</p> <p>isBCNF = True</p>
4	<p style="text-align: center;">R(Test_Details)</p> <p>FD:</p> <ul style="list-style-type: none"> Test_code→Test_charge Test_code→test_type Test_code→category <p>Fmin:</p> <ul style="list-style-type: none"> Test_code→{Test_charge,test_type,category} 	<p>Key = Test_code</p> <p>isBCNF = True</p>
5	<p style="text-align: center;">R(Lab_report)</p> <p>FD:</p> <ul style="list-style-type: none"> Lab_report_id→PID Lab_report_id→Report_Date Lab_report_id→Weight Lab_report_id→Height Lab_report_id→Temperature 	<p>Key = Lab_report_id</p> <p>isBCNF = True</p>

	Lab_report_id→Blood_Pressure Lab_report_id→Test_Result Fmin: Lab_report_id→{PID,test_code,Date,Weight,Height,Temperature,Blood_Pressure,Test_Result}	
6	R(Appointment) FD: Apid→Apmnt_Time Apid→Apmnt_Date Apid→Doc_ID Apid→PID Apid→Apmnt_Description Apid→Apmnt_Created Fmin: Apid→{Apmnt_time, Apmnt_date, DocID, PID, Apmnt_Description, Apmnt_created}	Key = Apid isBCNF = True
7	R(Doctor) FD: DocID→Firstname DocID→Lastname DocID→Speciality Fmin: DocID→{Firstname, Lastname, Speciality}	Key = DocID isBCNF = True
8	R(Patient_report) FD: Report_ID→Report_date Report_ID→DocID Report_ID→PID Report_ID→Diagnosis Fmin: Report_id→{Report_date, DocID, PID, Diagnosis}	Key = Report_id isBCNF = True
9	R(Prescription_details) N/A	Key = {Report_id, Medicine_id} isBCNF = N/A
10	R(Patient_phone) FD: {PID,phone_no}→phone_type Fmin: {PID,phone_no}→phone_type	Key = {PID,phone_no} isBCNF = True
11	R(Patient_email) FD: {PID, email}→email_type Fmin: {PID, email}→email_type	Key = {PID,Email} isBCNF = True
12	R(Room_allotment) FD: index→room_no index→bed_no index→PID index→charge Index→Admit_date Index→discharge_date Fmin: index→{room_no,bed_no,PID,charge,Admit_date,discharge_date}	Key = Index isBCNF = True
13	R(Rooms) FD: {Room_no, Bed_no}→room_charge {Room_no, Bed_no}→room_type	Key = {Room_no, Bed_no} isBCNF = True

	Fmin: {Room_no, Bed_no} → {Room_charge, Room_type}	
14	R(Medicine) FD: Med_id → Med_name Med_id → Med_Description Med_id → Med_cost Fmin: Med_id → {Med_name, Med_Description, Med_cost}	Key = Med_id isBCNF = True
15	R(Medicine Details) FD: {Med_id, Production_date} → Expiry_date {Med_id, Production_date} → Quantity {Med_id, Production_date} → Company {Med_id, Production_date} → Origin_Country {Med_id, Production_date} → supplier_id Fmin- {Med_id, Production_date} → {Expiry_id, Quantity, Company, Origin_Country, supplier_id}	Key = {Med_id, Production_date} isBCNF = True
16	R(Supplier) FD: Supplier_id → Supplier_company Supplier_id → City Supplier_id → Area Supplier_id → Country Fmin: Supplier_id → {Supplier_company, City, Area, Country}	Key = Supplier_id isBCNF = True
17	R(Supplier_email) FD: {Supplier_id, email} → email_type Fmin: {Supplier_id, email} → email_type	Key = {Supplier_id, email} isBCNF = True
18	R(Supplier_contact) FD: {Supplier_id, phone} → phone_type Fmin: {Supplier_id, phone} → phone_type	Key = {Supplier_id, phone} isBCNF = True
19	R(Payroll) FD: ID → net_salary ID → hourly_salary ID → bonus_salary ID → compensation ID → salary ID → account_no ID → IBAN Fmin: ID → {net_salary, hourly_salary, compensation, salary, account_no, IBAN}	Key = ID isBCNF = True
20	R(Employee_details) FD: ID → fname ID → minit ID → lname ID → dob ID → gender ID → dept_id ID → is_dept_id_mgr ID → area ID → city ID → country	Key = ID isBCNF = True

	Fmin: ID → {fname, minit, lname, dob, gender, dept_id, is_dept_id_mgr, area, city, country}	
21	R(Department) FD: dept_id → dept_name Fmin: dept_id → dept_name	Key = dept_id isBCNF = True
22	R(Employee_phone) FD: {ID, phone_no} → phone_type Fmin: {ID, phone_no} → phone_type	Key = {ID, phone_no} isBCNF = True
23	R(Employee_email) FD: {ID, email} → phone_type Fmin: {ID, email} → email_type	Key = {ID, email} isBCNF = True
24	R(Tests_List) N/A	Key = {lab_report_id, test_code} isBCNF = True

Proof: As we can see in all above FDs left side is always its particular primary key, so all relations are in BCNF.