RDBMS Assignment

Table 1

Doc No.	Name	Addr	Phone	Dept Id	Design	Charge	Pt. No	Patient Name	CNIC	Phone	No. Room	Room Type	Bed No.
D1	Nadeem	Abc19	0833-193	Neurology	Prof	5000	P1	Kalid	1934-1	049-1	R8	Normal	B1
			Same				P5	Ahmed	1934-9	049-9	R9	Normal	B1
			Same				P7	Anum	193-3	049-3	Nill		Nill
			049-193				P1	Kalid	193-1	049-1	R9	Norm	B1
			049-193				P5	Ahmed	193-9	049-9	R9	Normal	B1
			049-193				P7	Anum	193-3	049-3	Nill		Nill
D8	Nadeem	KH19	0334-194	Ortho	Prof	5000	P4	Meh	193-4	049-4	R9	Normal	B1
			Same				P7	Anum	193-3	049-3	R4	Two Bd	B5
			Same				P9	Khawar	193-6	049-5	R4	Two Bd	B7
			0300-193				P4						
			0300-193				P7						
			0300-193				P9						
D4	Ezum	AK19	0391-19	ENT	Asst.	3000	P10	Tanw	193-7	049-6	Nill		Nill
D4	Ezum	AK19	0391-193	ENT	Asst	3000	P1	Kalid	193-1	049-1	R5	special	B8
D4	Ezum	AK19	0391-193	Neuro	Asst	3000	P10	Tanw	193-7	049-6	Nill		Nill
D4	Ezum	AK19	0391-193	Neuro	Asst	3000	P1	Kalid	193-1	049-1	R5	special	B8
D5	Hafeez	ND19	0391-19	Skin	Asst	8000	P19	Sohail	193-9	049-8	Nill		Nill
D5	Hafeez	ND19	0391-194	Skin	Asst	3000	P13	Ahmed	193-0	049-9	R6	special	B9
D5	Hafeez	ND19	0391-194	Ortho	Asst	3000	P19	Sohail	193-9	049-8	Nill		Nill
D5	Hafeez	ND19	0391-194	Ortho	Asst	3000	P13	Ahmed	193-0	049-9	R6	special	B9

This is INF form of the table given in the question where PhoneNo. field for Doc. D1 and D8 is splitted and Dept Id field for Doc. D4 and D5 is splitted and Patient No. field is splitted for all doctors.

Now,
We can see that, we have the below listed dependency with (Patient No. + Doc. No.) = Primary Key.
Let the dependencies be,

Doc. No, Patient No. → Bed No.
Patient No. → Patient Name, CNIC, Phone
Bed No. → Room No., Room Type.

Now,

⇒ For 2NF decomposition,
we consider/address partial dependency i.e

Partial CK → Non Key/Non-Prime

∴ we get following tables,

Doc No.	Patient No.	Bed No.	Room No.	Room Type
D1	P1	B1	R2	Normal
D1	P5	B1	R2	Normal
D1	P7	Nill	Nill	
D2	P4	B1	R2	Normal
D2	P7	B5	R4	Two Bed
D2	P9	B7	R4	Two Bed
D4	P10	Nill	Nill	
D4	P1	B8	R5	special
D5	P12	Nill	Nill	
D5	P13	B9	R6	Special

Table 2

Patient No.	Patient Name	CNIC	Phone
P1	Khalid	19345-1	042-1
P5	Mehmood	19345-2	042-2
P7	Ahmed	19345-3	042-3
P4	Anum	19345-4	042-4
P9	Khawar	19345-6	042-5
P10	Tanveer	19345-7	042-6
P12	Sohail	19345-9	042-8
P13	Ahmed	19345-0	042-9

Table 3

Table 4

Doc No.	Name	Address	Phone	Dept Id	Designation	Charges/hr.
D1	Nadeem	Abc 193	033-193	Neuro	Prof.	5000
D1	Nadeem	Abc 193	039-193	Neuro	Prof.	5000
D2	Nadeem	Kb 13	033-194	ortho	Prof.	5000
D2	Nadeem	Kb 13	030-193	ortho	Prof.	5000
D4	Eqlim	AK 193	0391-193	ENT	Asst. Prof.	3000
D4	Eqlim	AK 193	0391-193	Neuro	Asst. Prof.	3000
D5	Hafeez	Nd 193	039-194	ENT	Asst. Prof.	3000
D5	Hafeez	Nd 193	0391-194	Neuro	Asst. Prof.	3000

Now,

⇒ For 3NF decomposition,
we solve transitive dependency,
we find that

Bed No. → Room No, Room Type create transitive dependency.

And, here we consider a foreign key Phone Id.

∴ The tables we get after 3NF,

Table 5

Doc No.	Patient No.	Bed No.
D1	P1	B1
D1	P5	B1
D1	P7	Nill
D2	P4	B1
D2	P7	B5
D2	P9	B7
D4	P10	Nill
D4	P1	B8
D5	P12	Nill
D5	P13	B9

Page No.
Date :

Bed.No.	Room.No.	Room.Type
B1	R2	Normal
B5	R4	Two Bed
B7	R4	Two Bed
B8	R5	special
B9	R6	special

Table 6

Doc.No.	Name	Address	Designatn	Charge/hr	Phone.Id.
D1	Nadeem	Abc 123	Prof.	5000	1
D2	Nadeem	Kh 193	Prof.	5000	2
D4	Feium	AK13	Asst. Prof.	3000	3
D5	Hafeez	Nd 193	Asst. Prof.	3000	4

Table 7

Phone.Id.	Phone	Dept.Id.
1	0333-193	Neuro
2	0334-193	ortho
3	0300-193	ENT
4	0391-194	Skin

Table 8

⇒ Now, For BCNF:
We solve Non Key → Candidate Key
since, no non key determines candidate key
hence we have reached BCNF.