Rules for 1NF

1). There should be only atomic valued attributes.

2). Columns name should be unique.

Tables for 1NF.

Doc No.	Ph. No.
D1	0333-123
D1	042-123
D2	0334-124
D2	0300-123
D4	0321-123
D5	0321-124

Table-1

Doc No.	Dep. Id
D1	Neurology
D2	Orthopedic
D4	ENT
D4	Neurology
D5	Skin
D5	Orthopedic

Table-2.

Doc No	Name	Address	Designation	Charges
D1	Dr Nadeem	Abc123	Proff.	5000
D2	Dr Nadeem	Kb13	Proff.	5000
D4	Dr Erum	AK123	Asst Proff	3000
D5	Dr Hafeez	Nd123	Asst Proff	3000

Table-3.

| Pat. No.	Doc No.	Pat. Name	CNIC	Phone	Room No.	Room Type	Bed No.
P1	P1	Kahlid	12345-1	042-1	R-2	Normal	B1
P1	D4	Kahlid	12345-1	042-1	R-5	Special	B9
P5	D1	Ahmed	12345-2	042-2	Nil		Nil
P7	D1	Anum	12345-3	042-3	R-2	Normal	B1
P7	D2	Anum	12345-3	042-3	R-4	Two Bed	B5
P4	D2	Mehmood	12345-4	042-4	R-2	Normal	B1
P9	D2	Khawar	12345-6	042-5	R-4	Two Bed	B7
P10	D4	Tanweer	12345-7	042-6	Nil		Nil
P12	D5	Sohail	12345-9	042-8	Nil		Nil
P13	D5	Ahmed	12345-0	042-9	R6	Special	B9

Table- 4.

2NF. → A table is in 2NF iff:

i) It is in 1NF.

ii) There is no partial dependency.

The various dependencies are

Doc No. → Name
Doc No. → Dep. Id
Doc No. → Address
Doc No. → Designation
Doc No. → Charges
Doc No. → Phone No.

Patient No. → Patient Name
Patient No. → Phone
Patient No. → CNIC
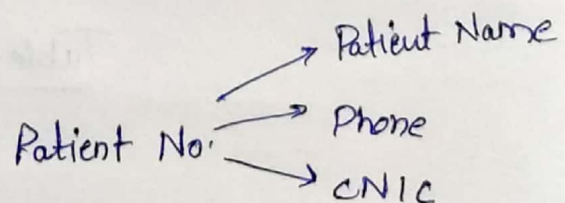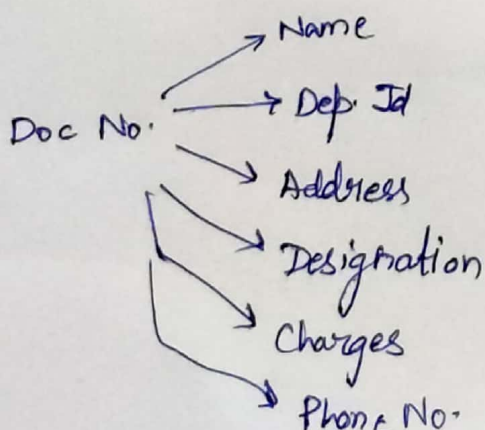
Room No. $\longrightarrow$ Room Type

Room No. $\longrightarrow$ Bed No.

$\{$ Patient No. Doc No. $\} \longrightarrow$ Doc No.

So, the candidate key is : Patient No., Doc No.

Partial dependency exist in 4th table. So, we have to split 4th table in order to remove partial dependency.

Patient No.	Pat. Name.	CNIC	Phone
P1	Kahlid	12345-1	042-1
P1	Kahlid	12345-1	042-1
PS	Ahmed	12345-2	042-2
P7	Anum	12345-3	042-3
P7	Anum	12345-3	042-3
P4	Mehmood	12345-4	042-4
P9	Khawar	12345-6	042-5
P10	Tanweer	12345-7	042-6
P12	Sohail	12345-9	042-8
P13	Ahmed	12345-0	042-9

Table-5.

Pat. No.	Doc No.	Room No	Room Type	Bed No.
P1	D1	R-2	Normal	B1
P1	D4	R5	Special	B4
P5	D1	Nil		Nil
P7	D1	R2	Normal	B1
P7	D2	R4	Two Bed	B5
P4	D2	R2	Normal	B1
P9	D2	R4	Two Bed	B7
P10	D4	Nil		Nil
P12	D5	Nil		Nil
P13	D5	R6	Special	B9

Table - 6

Third Normal Format (3NF)

A table is in 3NF iff :

i) It is in 2NF

ii) It should not have partial dependency.
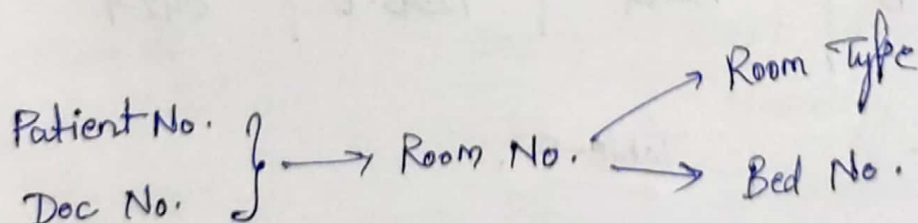
Patient No. }
Doc No.   } ⟶ Room No. ⟶ Room Type
                      ⟶ Bed No.

Patien No.	Doc No.	Room No.
R2	Normal	B1
R5	special	B9
Nil		Nil
R2	Normal	B1
R4	Two Bed	B5
R2	Normal	B1
R4	Two Bed	B7
Nil		Nil
Nil		Nil
R6	Special	B9

Table - 7 .

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

Table - 8 .

Final Tables .

Doc No.	Name	Address	Designation	Charges
D1	Dr Nadeem	Abc123	Proff.	5000
D2	Dr Nadeem	Kb13	Proff	5000
D4	Dr Erum	AK123	Asst Proff	3000
D5	Dr Hafeez	Nd123	Asst Proff.	3000

Doc No.	Phone No.
D1	0333-123
D1	042-123
D2	0334-124
D2	0300-123
D4	0321-123
D5	0321-124

Doc No.	Dept. Id
D1	Neurology
D2	Orthopedic
D4	ENT
D4	Neurology
D5	Skin
D5	Orthopedic

Pat. No.	Pat. Name	CNIC	Phone
P1	Kahlid	12345 1	042-1
P1	Kahlid	12345-1	042-1
P5	Ahmed	12345-2	042-2
P7	Anum	12345-3	042-3
P7	Anum	12345-3	042-3
P4	Mehmood	12345-4	042-4
P9	Khawar	12345-6	042-5
P10	Tanweer	12345-7	042-6
P12	Sohail	12345-9	042-8
P13	Ahmed	12345-0	042-9

on previous page

Table-7 & Table-8 are also resultant table.