# I st Normal Form

DOC no → Name, DOC no → Address, DOC no → Phone
DOC no → Department Id, DOC no → Designation,
Designation → charges, Name → Phone.
Patient No → Patient Name, Patient No → CNIC, Patient No → Phone
Patient No → DOC no.

For first normal form each cell to be single valued but
here Phone, Patient No, Patient Name, Phone, Bed No
all have multivalued

So, we break the table.

Table 1: Doctor_info

| DOC | Name | Address | Department | Designation | Charge per hour |
|-----|------|---------|------------|-------------|-----------------|
| D1 | Dr. Nadeem | Abc 123 | Neurology | Professor | 5000 |
| D2 | Dr. Nadeem | K b13 | Orthopedic | Professor | 5000 |
| D4 | Dr. Erum | AK123 | ENT / Neurology | Astt. Prof | 3000 |
| D5 | Dr Hafeez | Nd123 | Skin / Orthopedic | Astt. Prof | 3000 |

Table 2: Doctor_Phone

| DOC No | Phone |
|--------|-------|
| D1 | 0333-123 |
| D2 | 0334-124 |
| D1 | 042-123 |
| D2 | 0300-123 |
| D4 | 0321-123 |
| D5 | 0321-124 |

Table 3: Patient_info.

| Pr NO | Patient No | Patient Name | CNIC | Phone | Room no | Room type | Bed no |
|-------|-----------|--------------|------|-------|---------|-----------|--------|
| P1 | P1 | Kahid | 12345-1 | 042-1 | R2 | Normal | B1 |
| P4 | P1 | Kahid | 12345-1 | 042-1 | R5 | special | B8 |
| P3 | P5 | Ahmed | 12345-2 | 042-2 | | | |
| P2 | P7 | Anum | 12345-3 | 042-3 | NLL | | Nill |
| P2 | | | | | | | |

Table 2: is only 2 column where
DOC NO → Phono
so, it is in 1st Normal form.
No partial dependencies is there
so it is in 2nd nomal form
No transitiv dependency so it is in
3rd Normal form
any super key determine the no prime
attribut
i.e in BCNF

## 2nd Normal Form.

Let

DOC, Designation $\hookrightarrow$ Name
DOC, Designation $\rightarrow$ Address
DOC, Designation $\rightarrow$ Department
Designation $\rightarrow$ charge per hour.

Table I:- Doctor-info.

| DOC | Name | Address | Department | Designation. |
|---|---|---|---|---|
| D1 | Dr Nadeem | Abc123 | Neurology | Professor |
| D2 | Dr Nadeem | Kb 13 | orthopedic | Professor |
| D4 | Dr Erum | AK 123 | ENT | Astt- prof |
| D5 | Dr Hafeez | Nd123 | Skin /orthopedic | Astt. Prof. |

Table II   Charge-table

| Designation | charge per hour. |
|---|---|
| Professor | 5000 |
| Professor | 5000 |
| Astt- prof | 3000 |
| Astt- prof | 3000 |

In this Partial dependency will occur so I break the table because
DOC, Designation is candidate key.
and
Designation itself determines Non prime attr.
which is charge per hour.

Table 3  Patient-info

| Patient NO | Patient Name | CNIC | Phone. |
|---|---|---|---|
| P1 | Kahid | 12345-1 | 042-1 |
| P5 | Mahied | 12345-2 | 042-2 |
| P7 | Anum | 12345-3 | 042-3 |

Patient NO $\rightarrow$ Patient Name
Patient NO $\rightarrow$ Patient CNIC
Patient No $\rightarrow$ Phone

DOC, Patient NO $\rightarrow$ ROOM no
DOC, Patient NO $\rightarrow$ Room type
DOC, Patient NO $\rightarrow$ Bed no.

Here is the Partial dependiency so I break the table.

Table    Patient_info_room

| DOC NO | Patient NO | Room no | ROOM type | Bed no |
|--------|------------|---------|-----------|--------|
| D1 | P1 | R2 | Normal | B1 |
| ~~D1~~ | ~~P7~~ | ~~Nil~~ | ~~Normal~~ | |
| D2 | P4 | R2 | Normal | B1 |
| D2 | P7 | R4 | Two bed | B5 |
| D2 | P9 | R4 | Two bed | B7 |
| D4 | P1 | R5 | Special | B8 |
| D5 | P13 | R6 | Special | B9 |

## 3rd Normal Form.

In Doctor_info table. is in 3rd Normal form and in BCNF also because all the fields are determined only by the key i.e DOC no determined all the field.

This table also in [BCNF]

Patient_info table is also in 3rd Normal form because their is no any transitive dependency.
Patient_info table is also in BCNF because Patient_no determine all field.

Patient_info_room is also in 3NF because their is no transitive dependency.

~~BCNF~~    ~~Patien~~

Patient_info_room is also in BCNF beause.
all the field depend upon (DOCNO, Patient No)