

# ER DIAGRAM, RELATIONAL SCHEMA, AND NORMALIZATION

## PROOF

**Group No:-T508**

**Kevin Shingala - 202201465**

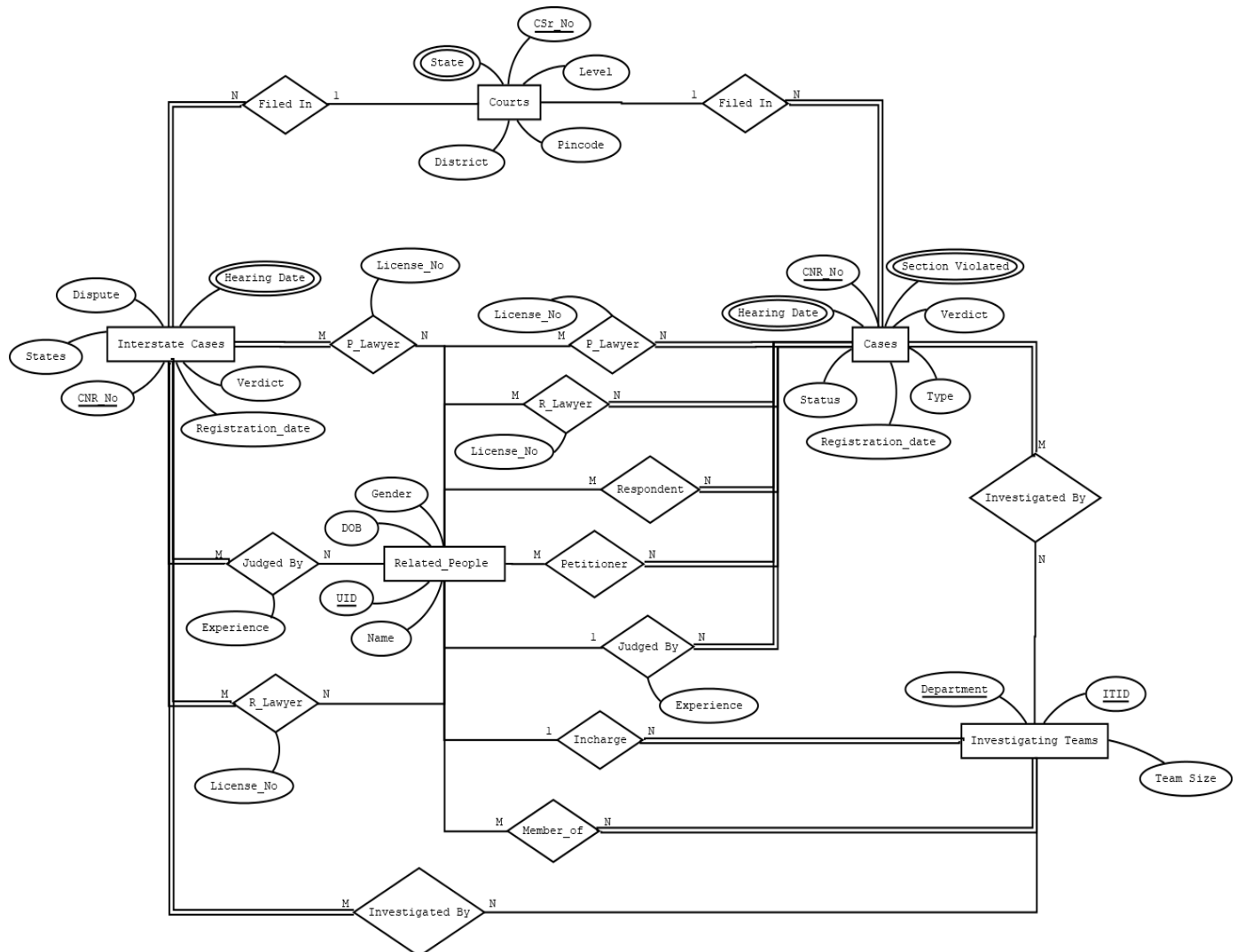
**Malay Sidapara - 202201488**

**Shravan Makwana - 202201492**

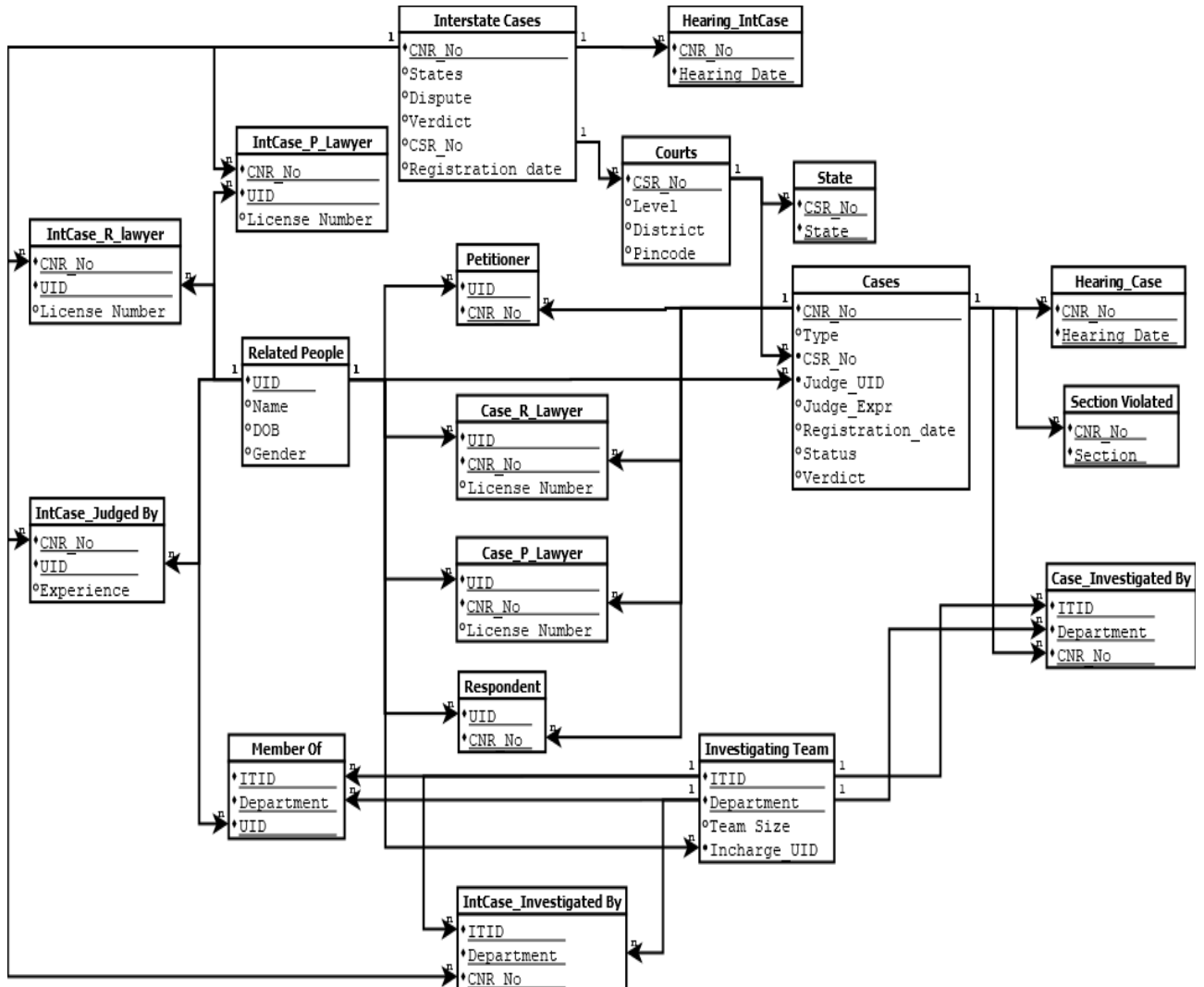
**Tushar Mori - 202201502**

**Arnold Mochahari - 202201522**

- ER DIAGRAM (Updated)**



- **RELATIONAL SCHEMA**



### FUNCTIONAL DEPENDENCIES :

The identified Functional Dependencies from the database are :-

CNR\_No.  $\rightarrow$  Type

CNR\_No.  $\rightarrow$  CSR\_No

CNR\_No. → Judge\_UID

CNR\_No. → Judge\_Expr

CNR\_No. → Registration\_Date

CNR\_No. → Status

CNR\_No. → Verdict

CNR\_No. → Department

ITID. → Department

ITID. → Size

ITID. → Incharge\_UID

CSR\_No. → Level

CSR\_No. → District

CSR\_No. → Pincode

IntCNR\_No. → States (States with dispute)

IntCNR\_No. → Dispute

IntCNR\_No. → Verdict

IntCNR\_No. → CSR\_No.

UID → Name

UID → Gender

UID → DOB

UID → License\_No. (UID of the Petitioner's Lawyer)

UID → License\_No. (UID of the Respondent's Lawyer)

UID → License\_No. (UID of the Petitioner State's Lawyer)

UID → License\_No. (UID of the Respondent State's Lawyer)

{IntCNR\_No., UID} → Experience. (UID of Judge)

The identifiable MVDs are not included.

## **NORMALIZATION PROOFS :**

### ❖ Courts Relation –

CSR\_No. is the key of the relation with the projected FD set

CSR\_No.  $\rightarrow$  Level

CSR\_No.  $\rightarrow$  District

CSR\_No.  $\rightarrow$  Pincode

Since there is only the key attribute on the left side of all the FDs, this relation is in BCNF.

### ❖ State Relation –

Since there is no FD in this relation, this relation is in BCNF.

### ❖ Cases Relation –

The projected FD set for this relation is

CNR\_No.  $\rightarrow$  Type

CNR\_No.  $\rightarrow$  CSR\_No

CNR\_No.  $\rightarrow$  Judge\_UID

CNR\_No.  $\rightarrow$  Judge\_Expr

CNR\_No.  $\rightarrow$  Registration\_Date

CNR\_No.  $\rightarrow$  Status

CNR\_No.  $\rightarrow$  Verdict

Since all the FDs have the key, CNR\_No., on their left side, this relation is in BCNF.

### ❖ Hearing\_Case Relation –

Since there is no FD in this relation, this relation is in BCNF.

### ❖ Section\_Violated Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Interstate\_Cases Relation –

IntCNR\_No.  $\rightarrow$  States (States with dispute)

IntCNR\_No.  $\rightarrow$  Dispute

IntCNR\_No.  $\rightarrow$  Verdict

IntCNR\_No.  $\rightarrow$  CSR\_No.

Shown is the projected FD set of the relation having key IntCNR\_No. As all the FDs have the key attribute on their left side, the relation is in BCNF.

❖ Hearing\_IntCase Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Investigating\_Team –

The projected FD set of the relation having key ITID is

ITID.  $\rightarrow$  Department

ITID.  $\rightarrow$  Team\_Size

ITID.  $\rightarrow$  Incharge\_UID

Since all the FDs have key attribute on their left side, this relation is in BCNF.

❖ Member\_Of Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Case\_Investigated\_By Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ IntCase\_Investigated\_By Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Related\_People Relation –

The projected FD set of this relation is

UID  $\rightarrow$  Name

UID  $\rightarrow$  Gender

UID  $\rightarrow$  DOB

The key attribute of the relation is UID and since all the FDs have the key attribute on their left side, this relation is in BCNF.

❖ Petitioner Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Respondent Relation –

Since there is no FD in this relation, this relation is in BCNF.

❖ Case\_P\_Lawyer Relation –

This relation only contain one FD

UID  $\rightarrow$  License\_No. (UID of the Petitioner's Lawyer)

Since the key of the relation is {UID, CNR\_No.}, this relation is in BCNF.

❖ Case\_R\_Lawyer Relation –

This relation only contain one FD

UID  $\rightarrow$  License\_No. (UID of the Respondent's Lawyer)

Since the key of the relation is {UID, CNR\_NO.}, this relation is in BCNF.

❖ IntCase\_P\_Lawyer Relation –

This relation only contain one FD

UID  $\rightarrow$  License\_No. (UID of the Petitioner State's Lawyer)

Since the key of the relation is {UID, IntCNR\_No.}, this relation is in BCNF.

❖ Case\_R\_Lawyer Relation –

This relation only contain one FD

UID  $\rightarrow$  License\_No. (UID of the Respondent State's Lawyer)

Since the key of the relation is {UID, IntCNR\_No.}, this relation is in BCNF.

❖ IntCase\_Judged\_By Relation –

This relation only contain one FD

{IntCNR\_No., UID}  $\rightarrow$  Experience. (UID of Judge)

Since the key of the relation is {UID, IntCNR\_No.}, this relation is in BCNF.

Thus, all the relations are in BCNF.