

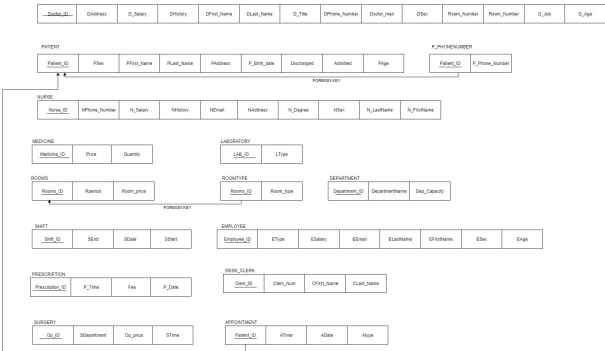
RELATIONAL SCHEMA

Step 1: Mapping of Regular Entity Sets



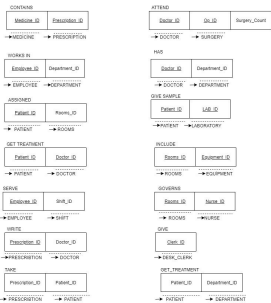
- In this step, firstly we set the strong entities in a relation R that contains all the basic attributes of E.
- Then we choose the key attributes of E as the primary key for R.
- If E is the chosen key as a composite (E (PFirst\_Name, PLast\_Name)), then the set of the simple attributes inside that form will together be the primary key of R.
- Our entity set has two multi-valued attributes (P\_Phone Number, Room\_type) M of E. we did not include them in the relation R. Moreover we create a foreign key constraint that includes the primary key attributes of E because we did not create a new relation schema RM which contains the M as the attribute and the primary key of E.

Step 2: Mapping of Weak Entity Sets



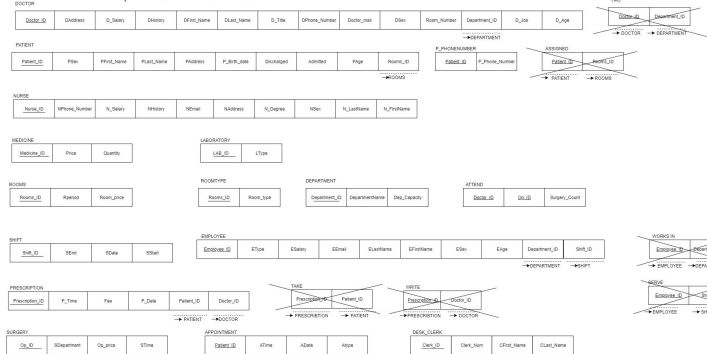
- We created one weak entity set W in the ER schema and then we include a relation R and it contains all simple attributes of W as attributes R.
- In addition, it includes foreign key attributes of R the primary keys of the relations that correspond to the owner entity set.
- The combination of the primary key of the owner and the partial key of the weak entity form W, if any, is the primary key of R.

Step 3: Mapping of Relationship Sets



- We created a relational schema for the relationship set R.
- We use all of the primary keys of contributing relation schemas in the relation schema's attributes, and if there are any informative attributes, we use them as well.
- Firstly we decide on the primary key:
  - 1:1 case: We need to choose the primary key of any of the two participating entity sets.
  - M:1 case: We need to choose the union of all primary keys of the participating entity sets.
  - 1:N or N:1 case: We select the primary key in relation to the entity set having the N ratio.
  - N:nary case with one entity having 1 ratio: We select the union of all primary keys in the participating entity set with a cardinality ratio of less than one.
  - N:nary case: We select the union of all primary keys of the entity sets that are participating.
  - We need to add related foreign key constraints, and for the part recursive relationship sets, the attribute names are based on the role names.

Step 4: Combination of Schemas



- For N:1 and 1:N relationships, where N is the total number of participants, by shifting its attributes, combine the schema corresponding to the relationship set into the entity set with the N cardinality ratio.
- Then we adjust the foreign primary constraint if necessary.
- In 1:1 relationship sets, either side may serve as the "many" side; however, choose the side with the most participation. Otherwise, NULL values may be present in any of the relation's tuples.

