

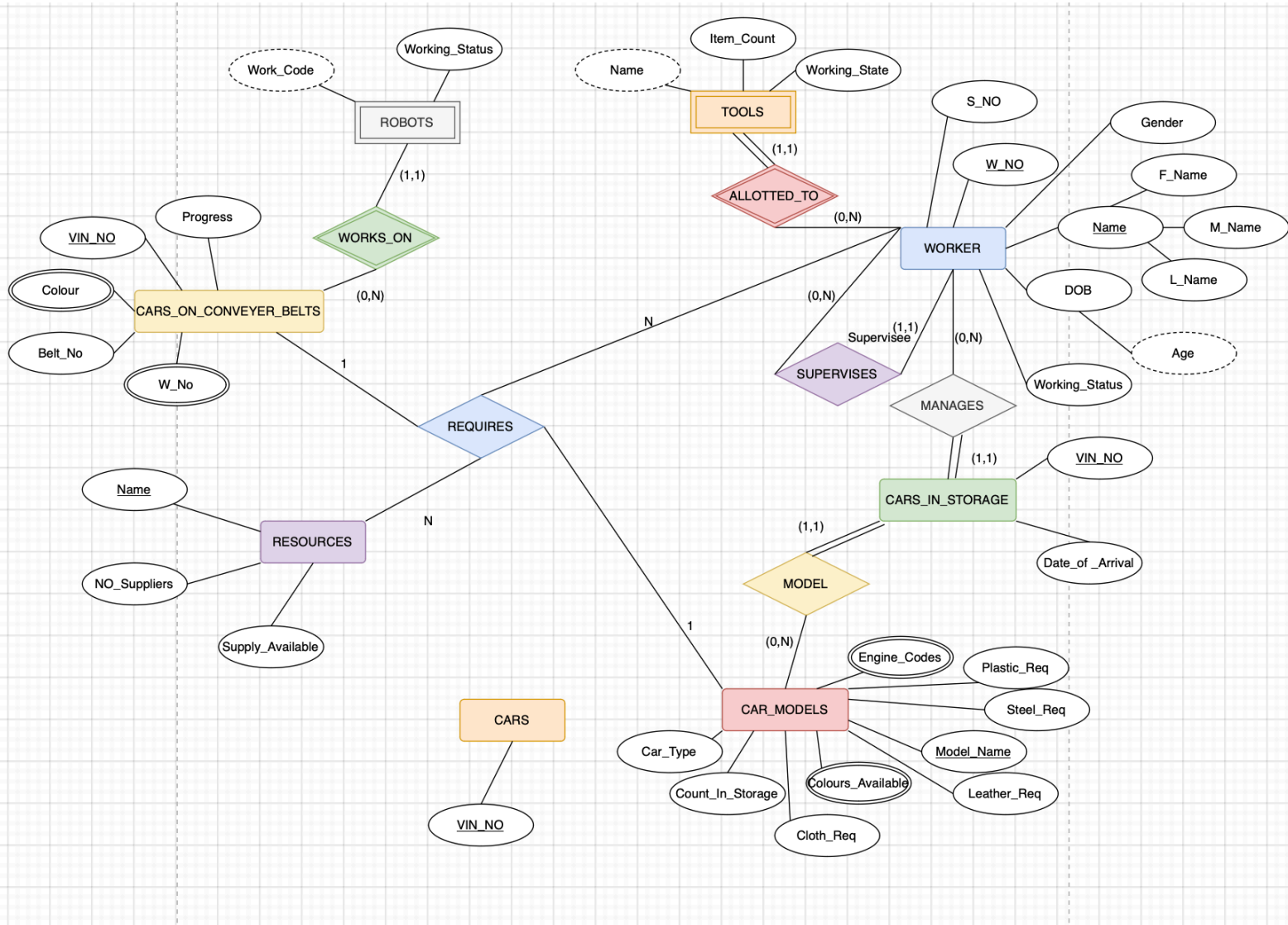
DATA AND APPLICATIONS

PROJECT PHASE - 3

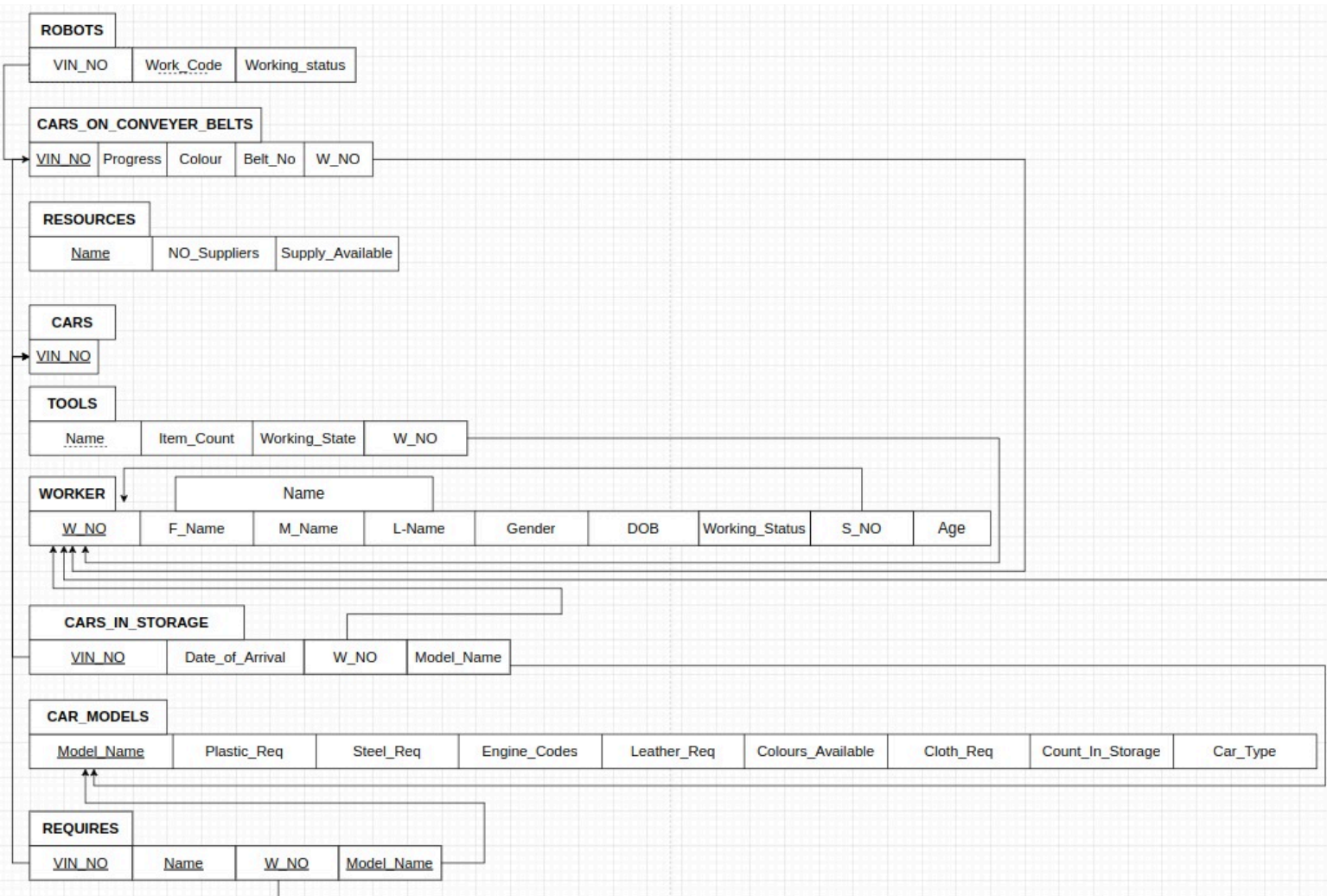
Team-5

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ER-DIAGRAM



MAPPING ER TO RELATIONAL MODEL



Steps To convert:

- For strong entities, create a separate table with the same name and include all attributes of the entity in the table. For composite attributes divide them into simple attributes. Select the primary key for the table.

- For weak entities, create a separate table with the same name and include all attributes of the entity in the table. Include the primary key of the strong entity in the table.
- For one-one relationship between entities A and B, modify either A or B to include the other entities primary key.
- For one to many relationship, modify the M entity to include the primary key of the other entity.
- For many- many relationship, create a serrated table including the primary keys of the M and N side of the as foreign keys in the new table and make their combination as the primary key for the new table.
- For n-ary relationships, create a separate table which includes all the primary keys of the entities involved in the relationship as the foreign key. The

combination of these foreign keys is then declared as the primary key.

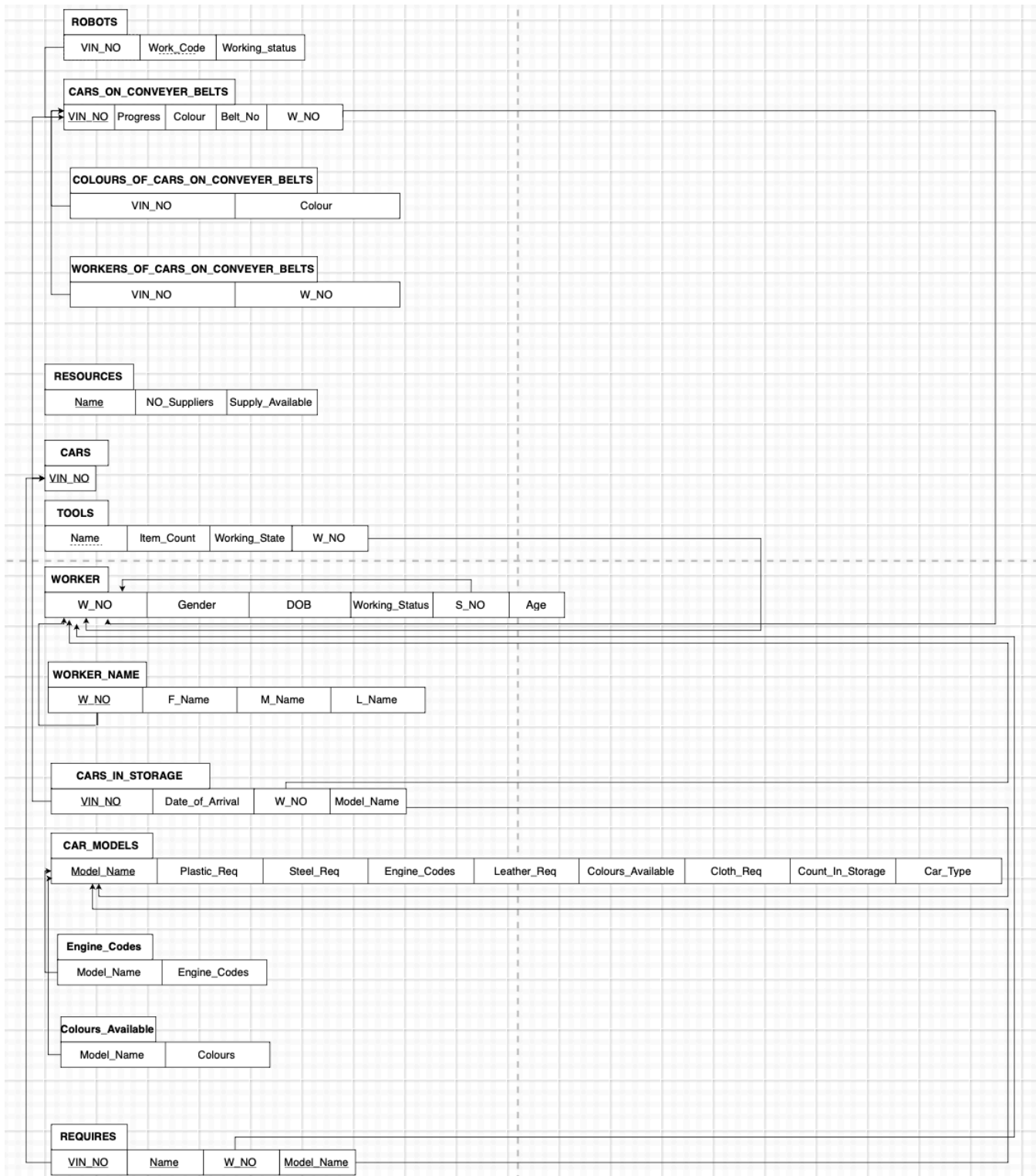
CONVERSION OF RELATIONAL MODEL TO 1NF

Steps taken to convert to 1NF:

- There are 4 multi-valued attributes in the schema: Engine_Codes, Colours_Available in CAR_MODELS and Colour,W_NO in CARS_ON_CONVEYER_BELTS. To convert to 1NF, we have to create new table for each such attribute and migrate the primary key from the corresponding entity types in them.
- There is a composite attribute Name in WORKER with sub-attributes F_Name, M_Name and L_Name. We make a new table, containing these sub-attributes along with the primary key from WORKER.

- At the end, we get 5 new entity types in the relational model.

RELATIONAL MODEL AFTER CONVERTING TO 1NF



CONVERSION OF RELATIONAL MODEL TO

2NF

ALREADY IN 2NF

The relational model is already in 2NF as all of its primary keys have a single attribute. Also, it does not have any non-prime attribute which is partially-dependent on a candidate key of the relation.

CONVERSION OF RELATIONAL MODEL TO

3NF

Steps:

There was a transitive dependency in relation WORKER where W_NO functionally determined DOB and DOB functionally determined Age.

So, we created a new relation named WORKER_AGE having attributes W_NO and Age to convert the relational model to 3NF.

RELATIONAL MODEL AFTER CONVERTING TO

3NF

