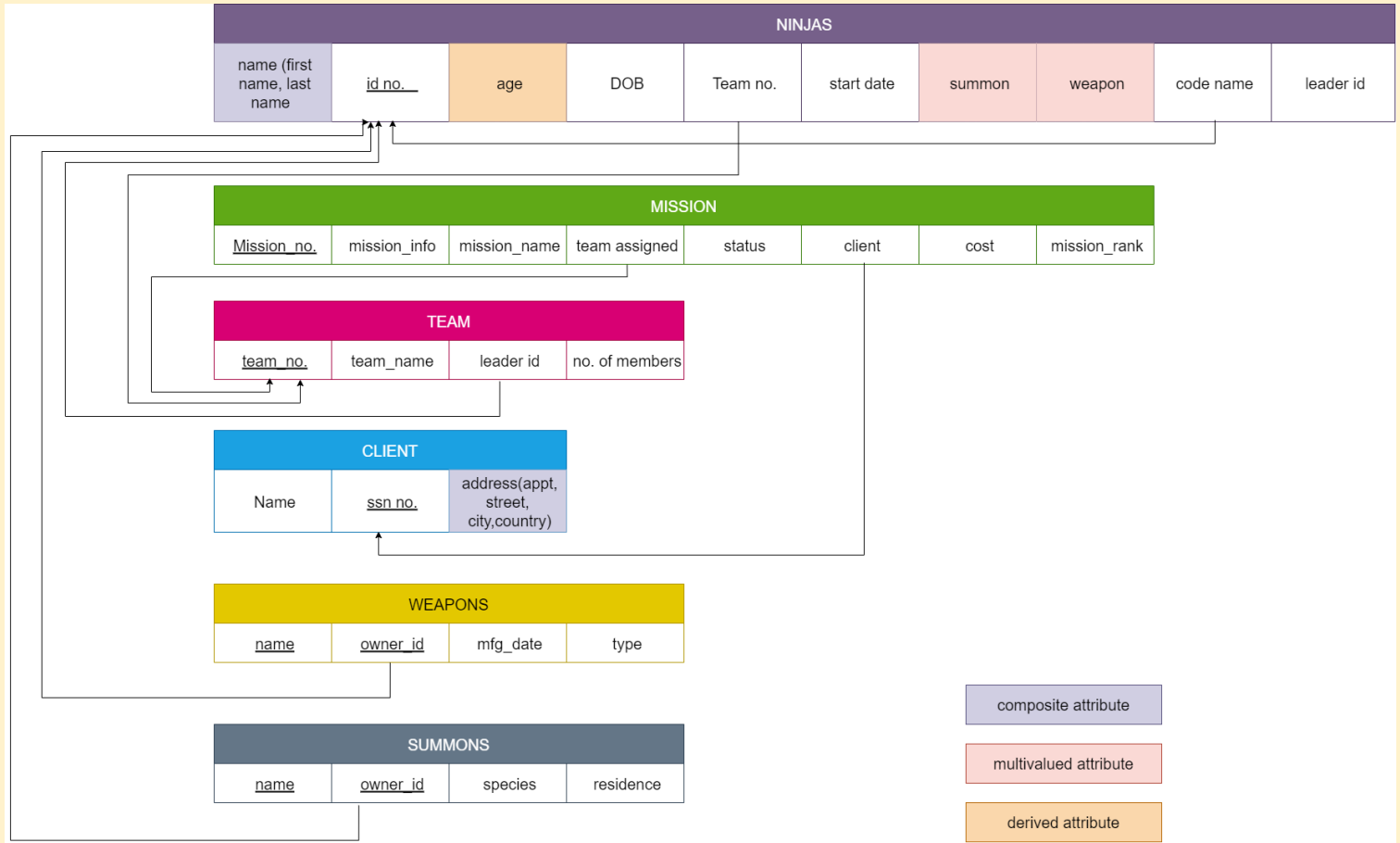


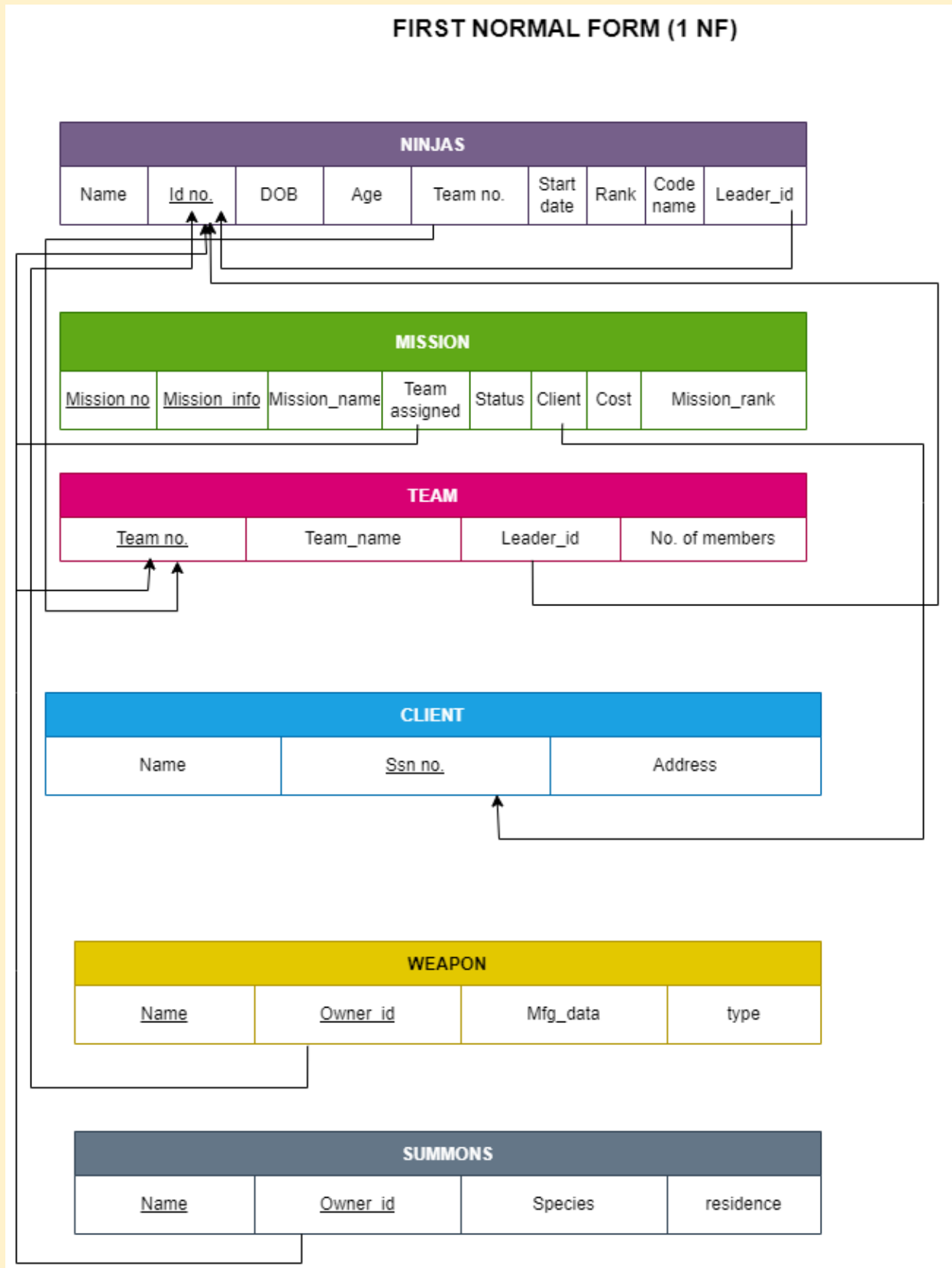
# PROJECT PHASE 3

## ER TO RELATIONAL MODEL

### Snapshot



## Snapshot

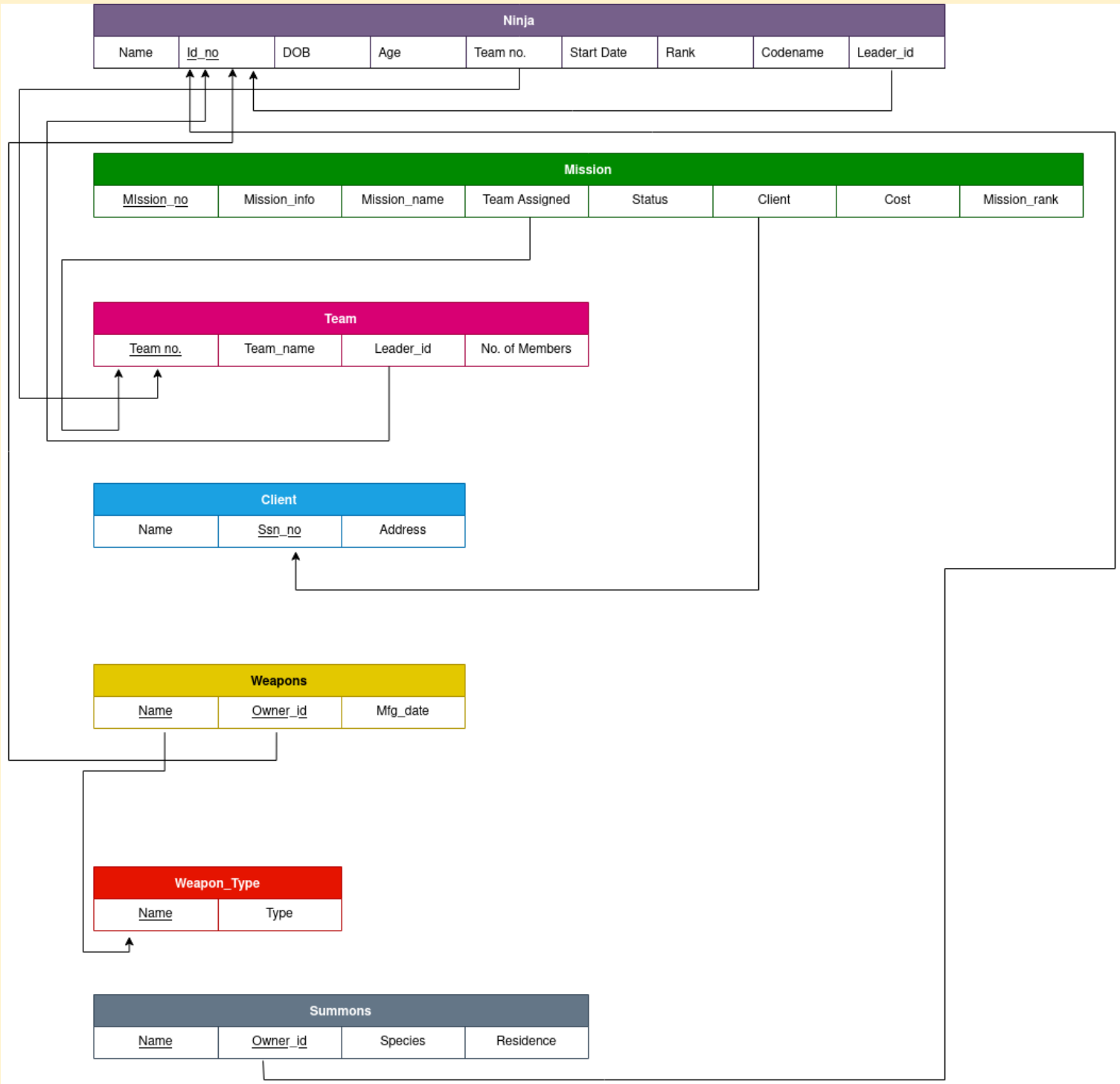


Here, we remove multi valued attributes, composite attributes and nested relation attributes.

- **NINJAS**
  - Here, we have removed 'weapons' and 'summons' since they are multivalued attributes. We have made a separate table for the above-mentioned attributes.
  - Also, 'name' which was a composite attribute was converted to simple attributes.
- **MISSION**  
(NO changes)
- **TEAM**  
(NO changes)
- **CLIENT**
  - 'name' and 'address' are changed to simple attributes instead of composite attribute.
- **WEAPON**  
(NO changes)
  - {name, owner id} form primary keys of the relation.
- **SUMMONS**  
(NO changes)
  - {name, owner id} form primary keys of the relation.

# SECOND NORMAL FORM (2NF)

Snapshot



Ensuring full functional dependency of non-prime attributes on Primary Key.

- **NINJAS**

(NO changes)

- **MISSION**

(NO changes)

- **TEAM**

(NO changes)

- **CLIENT**

(NO changes)

- **WEAPON**

➤ Here we have created a new relation- 'weapon type'.

➤ Since {name, owner\_id} -> type and {name} -> type, therefore full functional dependency was being violated.

- **WEAPON\_TYPE**

(New Table)

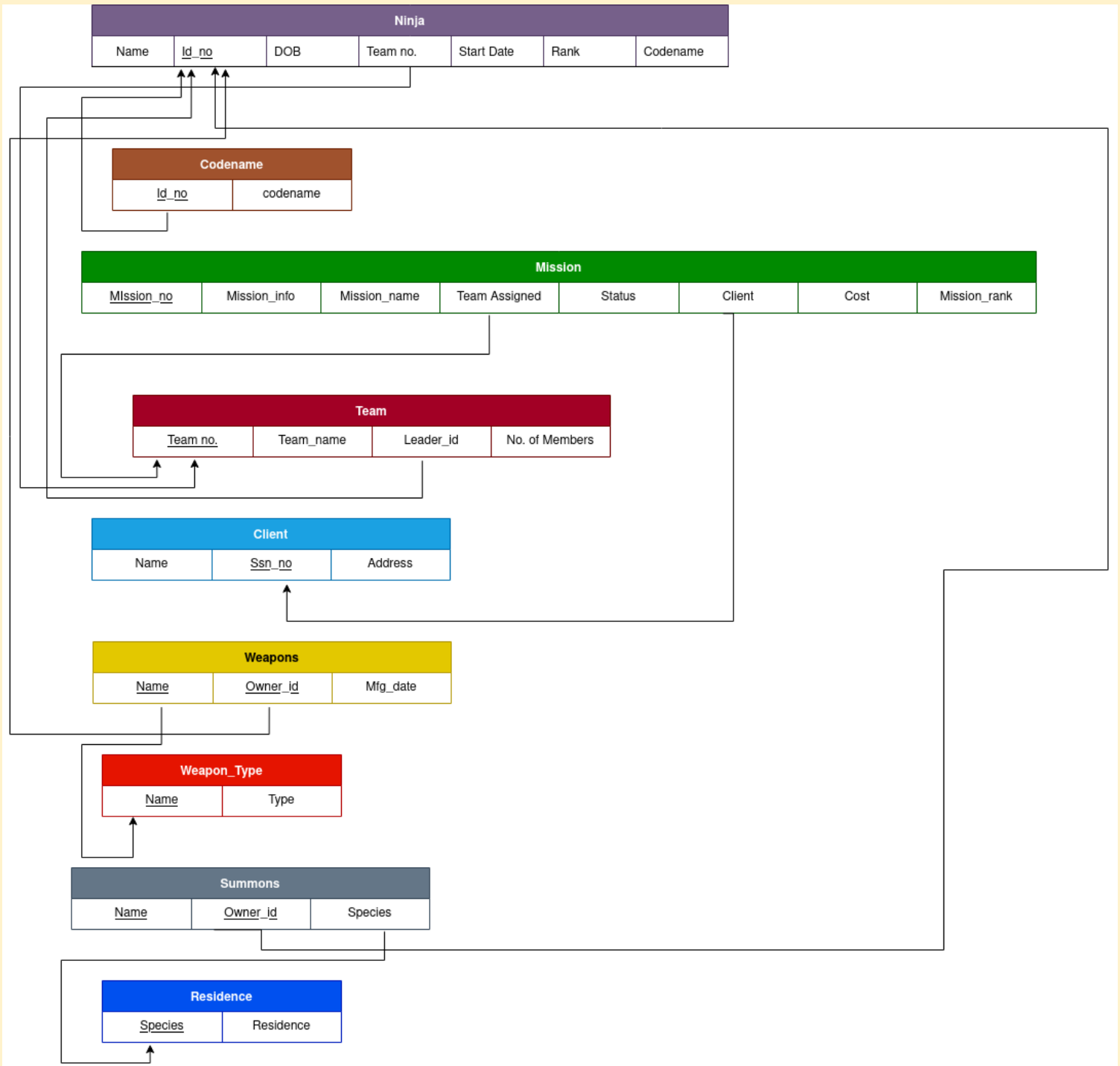
Name	type
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- **SUMMONS**

(NO changes)

# THIRD NORMAL FORM (3NF)

## Snapshot



Break up relations so that all non-prime attributes that are transitively dependent on the primary key are removed.

- **NINJAS**

- Team no -> leader-id was creating transitive dependency with primary key, hence leader\_id was removed. It is taken into account in the team table.
- DOB -> Age was creating transitive dependency with primary key so Age is removed. Age is a derived attribute from DOB so it is not really required and can be calculated from DOB whenever required.
- Codename was creating transitive dependency with primary key on every other non-prime attribute, hence a separate table is made for code name along with id no.

- **CODENAMES**

(New Table created)

Id no. (Foreign key referencing Ninja.id_no)	codename
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- **MISSION**

(NO changes)

- **TEAM**

(NO changes)

- **CLIENT**

(NO changes)

- **WEAPON**

(NO changes)

- **WEAPON\_TYPE**

(NO changes)

- **SUMMONS**

- Since Species -> residence was forming transitive dependency with primary key, hence a separate table for 'residence' is made.

- **RESIDENCE**

(New Table created)

Species	residence
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