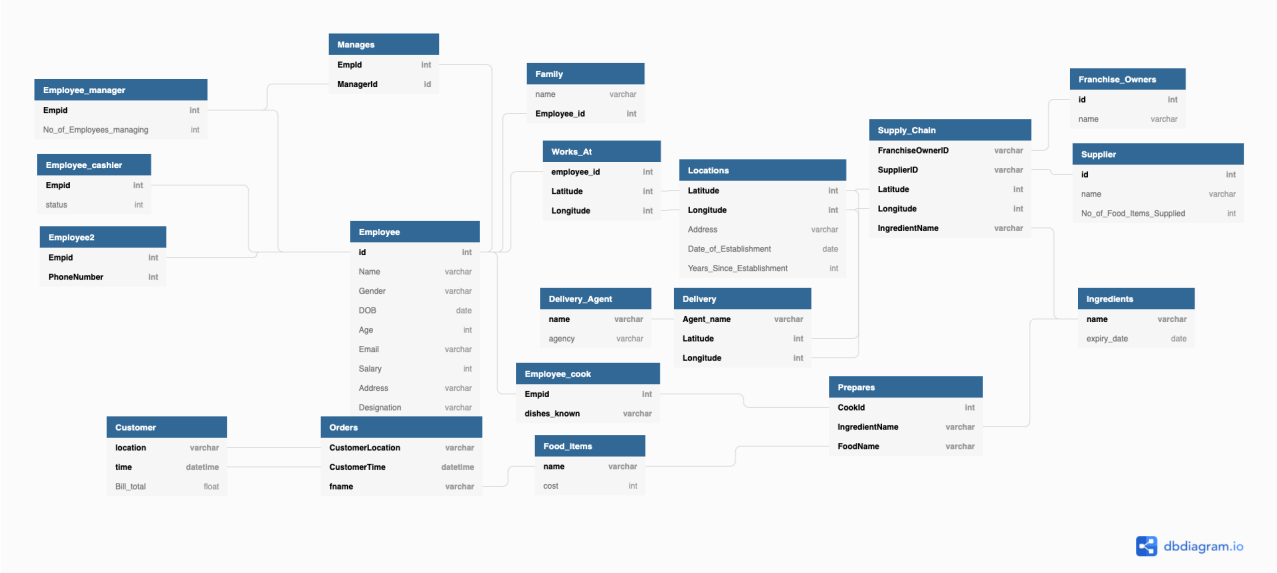
Project Phase III

UnderDogs

Relational Model

Tables were formulated for each entity. Tables for our relationships were formulated in which the primary keys of the participating entities were used as the primary keys . The multivalued attribute, “phone number” for “employee” entity was separated by creating another table “Employee2” with the primary key “id”. Connections between tables are made according to their relations. We also made tables to describe the different subclasses of Employee (Cook, Manager and Cashier).



1NF

In 1NF, all attributes in a table must be atomic and single valued.

Since multivalued attributes are put into separate tables, this means all tuples are atomic and single valued.

Hence, the given **relational model is already in 1NF**

2NF

In 2NF any non prime attributes cannot have partial dependencies with the keys. since Almost all the primary keys are single attributes. Only in the case of ‘location’ and ‘customer’ are there multi-attribute primary keys along with non-prime attributes. However ,upon closer observation, none of the non-prime attributes have partial dependencies with any of the primary keys.

Hence, The **2NF is the same as 1NF**

3NF

We removed all transitive dependencies from the model which meant removing all attributes that depended on each other. There were 2 such cases:

- “age” of the employee which depends on their “DOB” (date of birth) which in turn depends on ID. The “age” attribute was removed from the “employee” table and instead, “DOB” was treated as a foreign key that references the table “DOB” with the primary key “DOB” and the attribute “age”.
- “Years_since_Establishment” which depends on “Date_of_Establishment” which in turn depends on its composite primary key (“Latitude” , “Longitude”). The “Years_since_Establishment” was treated as the foreign key that references the table “Date_of_Establishment” with the primary key “Date_of_Establishment” and the attribute “Years_since_Establishment”.