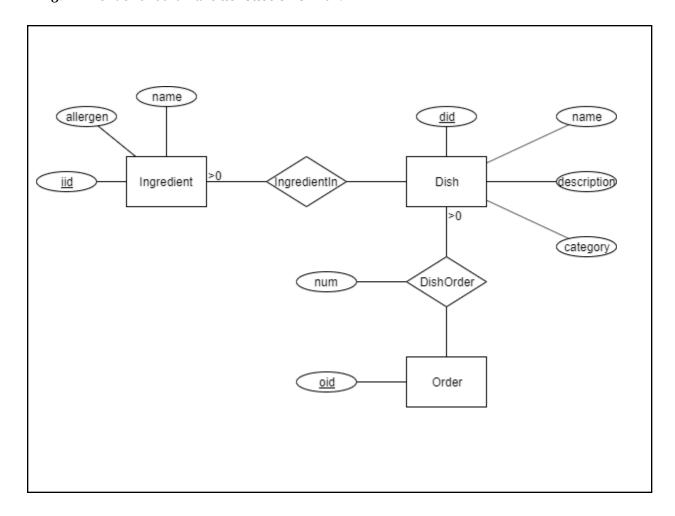
## **Entity Relationship Diagram Problem**

Consider the following database schema for a restaurant.

Ingredient(iid, name, allergen)
Dish(did, name, description, category)
IngredientIn(iid, did)
Order(oid, customer)
DishOrder(oid, did, num)

Draw an E/R diagram to represent the database, with the Ingredient, Dish, and Order tables as the entities, and IngredientInt and DishOrder as the relationships. Make sure to enforce the following constraints:

- 1. Ingredient.iid, Dish.did, Order.oid are the primary keys of the corresponding tables
- 2. A Dish should have at least one Ingredient.
- 3. An Order should have at least one Dish.



## (17WI Final Q4)

Given R(A, B, C, D, E), and functional dependencies:  $A \rightarrow C$ ,  $BD \rightarrow A$ ,  $D \rightarrow E$ 

a) Decompose R into BCNF. In each step, explain which functional dependency you used to decompose and explain why further decomposition is needed. Your answer should consist of a list of table names and attributes. Make sure you indicate the keys for each relation.

