CSE 414 Section 5 Practice Worksheet

SOLUTIONS

Problem 1: Entity Relationship Diagram

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.
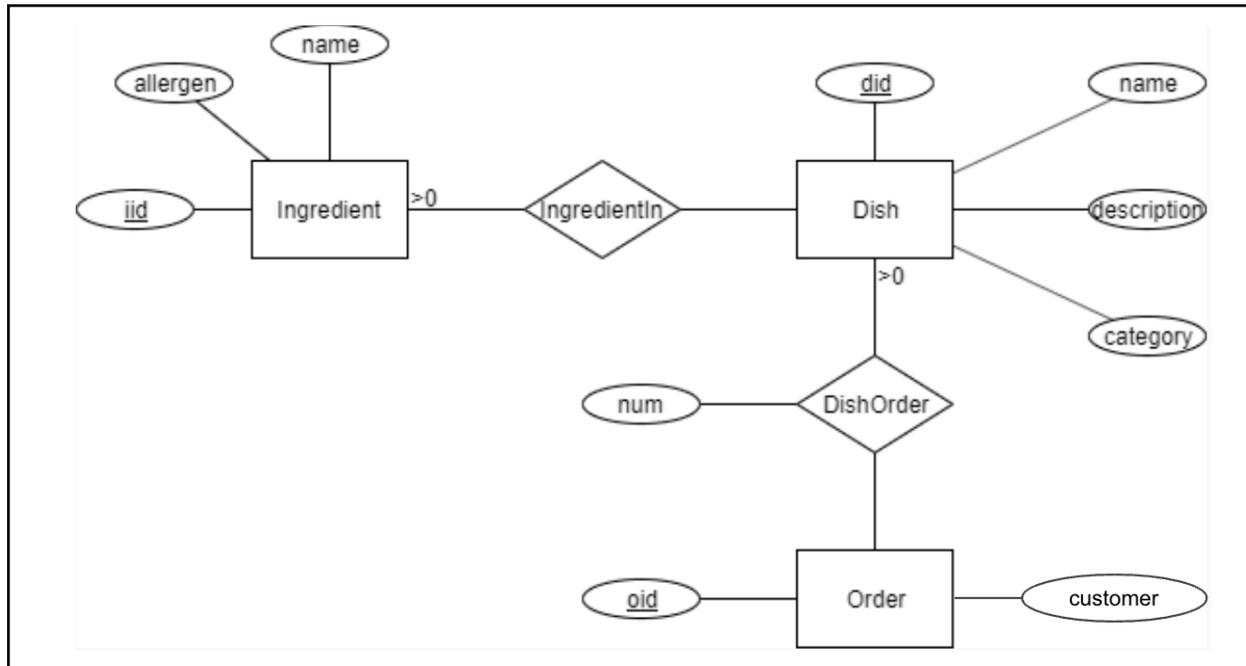
Problem 2: Minimal Keys

Given R(A, B, C, D, E), and functional dependencies: A → B, BC → E, DE → A. Find minimal key(s) for R. Is ACDE a super key? Is CDE a super key?

Minimal key: BCD or ACD or CDE

ACDE is a superkey because it determines all attributes. (We can easily deduce this because one of the minimal keys is a subset.)

CDE is a superkey because it is also a minimal key, and all minimal keys are superkeys