

# *Relational Schema*

## **Ingredient**

ingredient = (barcode, iname, weight)

## **Contain**

contain = (barcode[Fk1], droneServiceId, droneTag[Fk2], price, quality)

Fk1: barcode → ingredient.barcode

Fk2: droneServiceId, droneTag → drone.ServiceID, drone.tag

## **Drone**

drone = (serviceID[Fk3], tag, fuel, capacity, sales, pilot[Fk4], leadServiceID, leadTag[Fk5],  
location[Fk6])

Fk3: serviceId → service.ID

Fk4: pilot → pilot.username

Fk5: leadServiceID, leadTag → drone.serviceID, drone.tag

Fk6: location → location.label, location is non-null

## **User**

user = (username, first\_name, last\_name, address, birthdate)

## **Employee**

employee = (username[Fk7], taxID, hired, salary\_experience)

Fk7: username → user.username

## **Owner**

owner = (username[Fk8])

Fk8: username → user.username

## **Pilot**

pilot = (username[Fk9], license\_type, experience)

Fk9: username → employee.username

## **Worker**

worker = (username[Fk10], service[Fk11])

Fk10: username → employee.username

Fk11: service → service.ID (connects with “manage” relationship)

## **Fund**

fund = (owner[Fk12], restaurant[Fk13], invested, dt\_made)

Fk12: owner → owner.username

Fk13: restaurant → restaurant.name

### Work\_for

work\_for = (worker[Fk14], service[Fk15])

Fk14: worker → worker.username

Fk15: service → service.ID

### Location

location = (label, x\_cord, y\_cord, space)

### Restaurant

restaurant = (label[Fk16], name, spent, rating)

Fk16: label → location.label

### Service

service = (label[Fk17], ID, name)

Fk17: label → location.label

## *Unhandled Constraints*

- Each user must be a member of the employee or owner entity set.
- Each delivery service must have at least one employee at work.
- A pilot can only for one delivery service at a time.
- A worker cannot also be a pilot at the same time.
- A drone must get its flight directions from either a pilot or a pilot-controlled drone but not both.
- All drones in a swarm must be at the same location.
- A drone can only move to a location if there is enough “flight or hovering” space at that location
- A drone cannot hold more fixed-sized packages than allowed by its capacity.
- A drone can only move to a location if it has enough fuel to reach the location and reach its homebase from that location.
- A swarm can only move to a location if all of the drones have enough fuel to reach the location and reach their homebase from that location
- All drones in a swarm must be from the same service
- An address needs to be in the format #### street name
- A taxId needs to be in the format ####-##-#####
- A barcode needs to be in the format xx\_#####