RELATIONAL MODEL and NORMALIZATION

Notes:
- FKs are in **bold**.
- PKs are underlined.
- BCNF = Boyce-Codd Normal Form.

Relations

Location (location_id, name, city, address, **type_id**)

F = { location_id –» name, city, address, type_id }

PK = CK = { location_id }

location_id is a CK, so it's a superkey. Therefore, Location is in BCNF.

Employee (employee_id, name, password, **location_id**, **role_id**)

F = { employee_id –» name, password, location_id, role_id }

PK = CK = { employee_id }

employee_id is a CK, so it's a superkey. Therefore, Employee is in BCNF.

Location Type (type_id, description)

F = { type_id –» description }

PK = CK = { type_id }

type_id is a CK, so it's a superkey. Therefore, Location Type is in BCNF.

Role (role_id, description)

F = { role_id –» description }

PK = CK = { role_id }

role_id is a CK, so it's a superkey. Therefore, Role is in BCNF.

Status (status_id, description)

F = { status_id –» description }

PK = CK = { status_id }

status_id is a CK, so it's a superkey. Therefore, Status is in BCNF.

Shipping-Order (order_id, created_date, last_update, **status_id, location_id**)

F = { order_id –» created_date, last_update, status_id, location_id }

PK = CK = { order_id }

order_id is a CK, so it's a superkey. Therefore, Shipping-Order is in BCNF.

Product (product_id, name, brand, description, stock)

F = { product_id –» name, brand, description, stock }

PK = CK = { product_id }

product_id is a CK, so it's a superkey. Therefore, Product is in BCNF.

Included-In (**product_id**, **order_id**, quantity)

F = { product_id, order_id –» quantity }

PK = CK = { (product_id, order_id) }

(product_id, order_id) is a CK, so it's a superkey. Therefore, Product is in BCNF.

Each relation is in BCNF. Therefore, the overall design is BCNF.