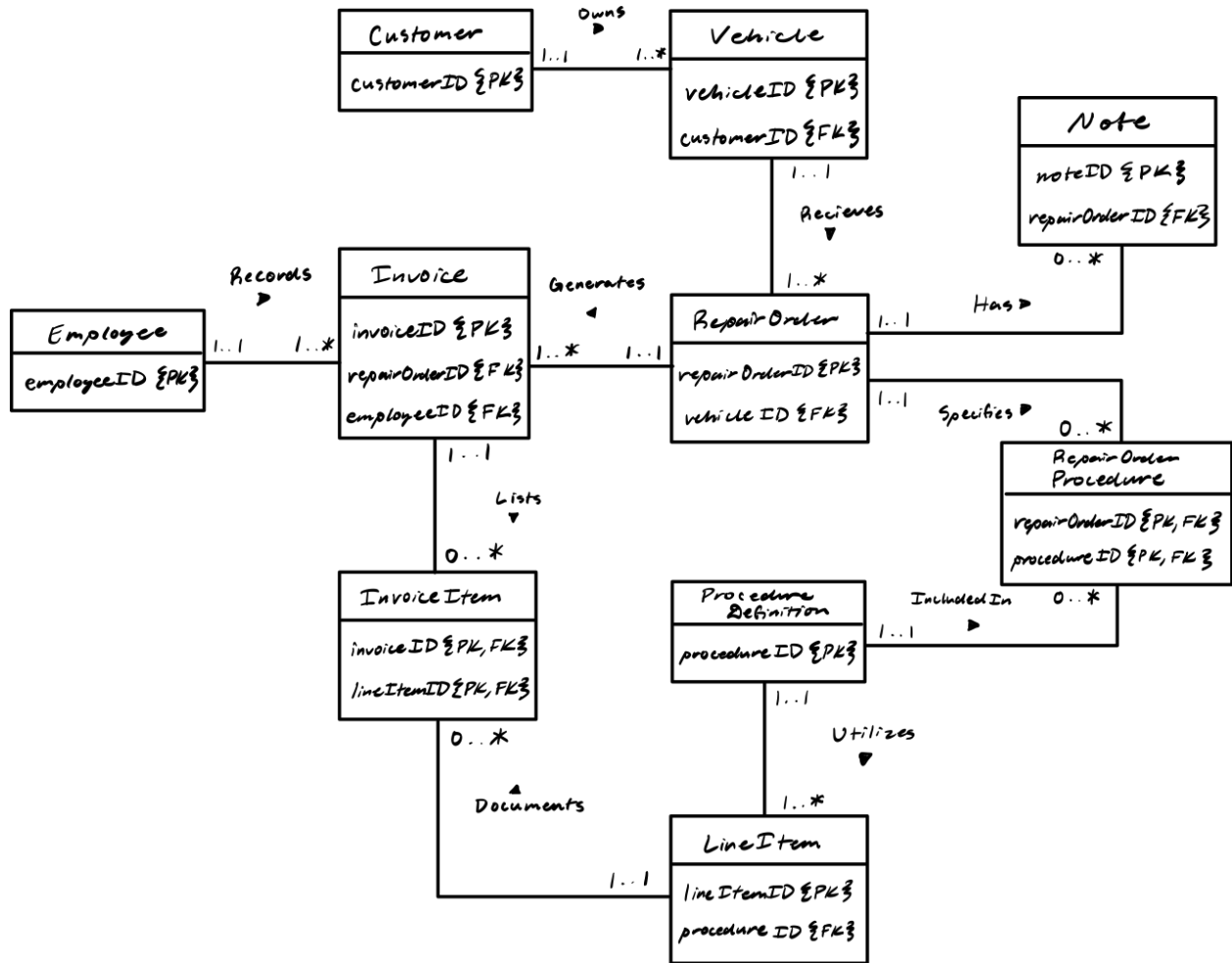# Logical Design

Refined EER Diagram:

Logical Data Model:

Repair Order (repairOrderID, originationDate, completionDate, notes, vehicleID)
Primary Key   repairOrderID
Foreign Key   vehicleID references Vehicle (vehicleID)
ON UPDATE CASCADE ON DELETE NO ACTION

Repair Order Procedure (repairOrderID, procedureID)
Primary Key   (repairOrderID, procedureID)
Foreign Key   repairOrderID references Repair Order (repairOrderID)
Foreign Key   procedureID references Procedure Definition (procedureID)
* For both FKs   ON UPDATE CASCADE ON ON DELETE NO ACTION

Vehicle (vehicleID, make, model, year, customerID)
Primary Key   vehicleID
Foreign Key   customerID ON UPDATE CASCADE ON DELETE NO ACTION

Customer (customerID, firstName, lastName, phoneNumber, email, address)
Primary Key   customerID
Alternate Key   email

Employee (employeeID, firstName, lastName, position)
Primary Key   employeeID

Procedure Definition (procedureID, definition)
Primary Key   procedureID

Invoice (invoiceID, mileageIn, mileageOut, datePrinted, datePaid, type, repairOrderID, employeeID)
Primary Key   invoiceID
Foreign Key   repairOrderID references Repair Order (repairOrderID)
ON UPDATE CASCADE ON DELETE NO ACTION
Foreign Key   employeeID references Employee (employeeID)
ON UPDATE CASCADE ON DELETE SET NULL

Invoice Item (invoiceID, lineItemID)
Primary Key   (invoiceID, lineItemID)
Foreign Key   invoiceID references Invoice (invoiceID)
Foreign Key   lineItemID references LineItem (lineItemID)
* For Both FKs   ON UPDATE CASCADE ON DELETE NO ACTION

Note (noteID, noteType, description, repairOrderID)
Primary Key   noteID
Foreign Key   repairOrderID references Repair Order (repairOrderID)
ON UPDATE CASCADE ON DELETE CASCADE

LineItem (lineItemID, description, quantity, price, procedureID,
Primary Key   lineItemID
Foreign Key   procedureID references Procedure Definition (procedureID)
ON UPDATE CASCADE ON DELETE NO ACTION

Integrity Constraints:

- Primary key constraint: each table has a primary key that is null and unique

- Referential Integrity constraints: **listed in data model**

- Entity Integrity constraint: No attribute of the primary key can be null

- General constraints:

    - Price for LineItem must be > 0

    - The quantity for LineItem must be > 0