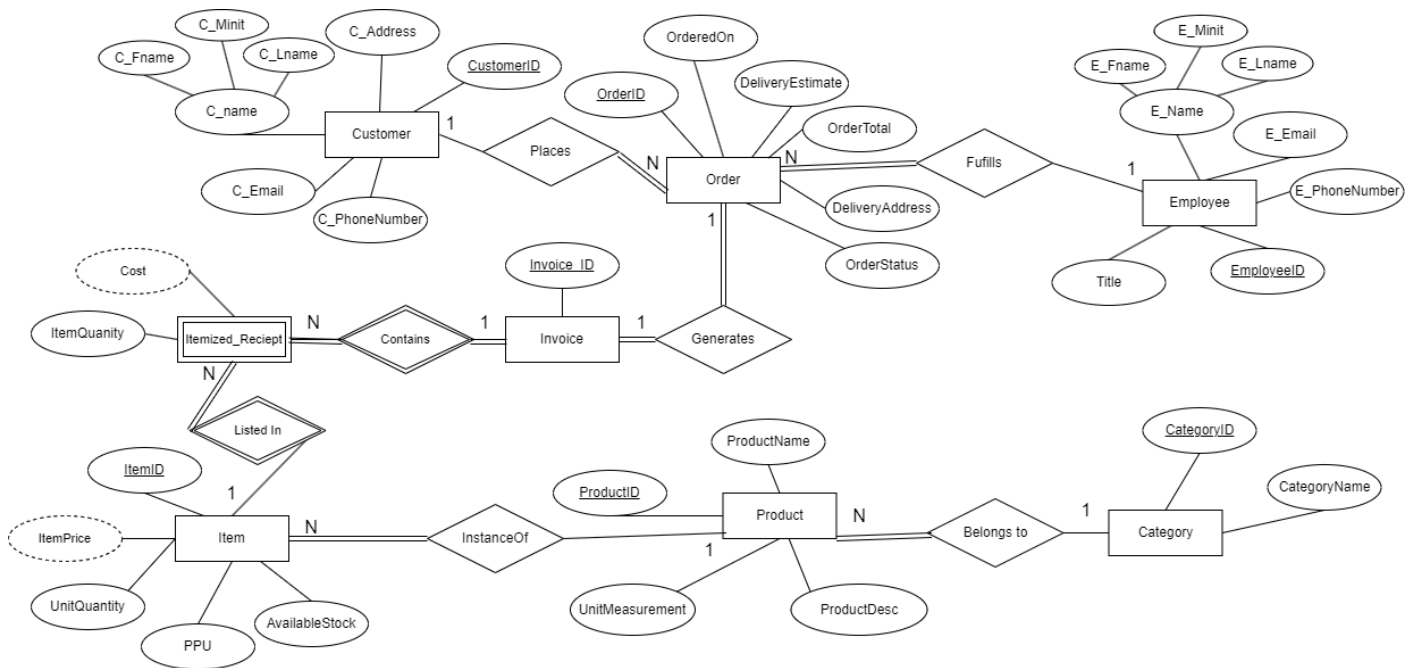


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Phase 2 Project Submission

Task A: ER Diagram



Task B: Relations and Schema

1. List of Relations

○ Category

- **CategoryID: primary key**, NOT NULL
 - Unique identifier for each category, references in foreign keys
 - Data type: INT
- **CategoryName** NOT NULL
 - Name of category that has 1 or more products, (e.g. Paper, Writing)
 - Data type: VARCHAR(50)

○ Customer

- **CustomerID: primary key**, NOT NULL
 - Unique identifier for each customer, references in foreign keys
 - Data type: INT

- FName:
 - First name of customer
 - Data type: VARCHAR(20)
- MInit
 - Middle Initial of customer
 - Data type: VARCHAR(1)
- LName:
 - Last name of customer
 - Data type: VARCHAR(20)
- Email: NOT NULL
 - Email of customer, for contact information
 - Data type: VARCHAR(50)
- PhoneNumber:
 - Phone number of customer, for contact information
 - Data type: VARCHAR(10)
- Address
 - Billing Address of customer, for delivery and mail communication
 - Data type: VARCHAR(50)

○ Employee

- EmployeeID: **primary key**, NOT NULL
 - Unique identifier for each employee, references in foreign keys
 - Data type: INT
- FName: NOT NULL
 - First name of employee
 - Data type: VARCHAR(20)
- MInit
 - Middle Initial of employee
 - Data type: VARCHAR(1)
- LName: NOT NULL
 - Last name of employee
 - Data type: VARCHAR(20)
- Title:
 - Title/position of employee, for information
 - Data type: VARCHAR(20)
- Email:
 - Email of employee, for contact information
 - Data type: VARCHAR(50)
- PhoneNumber:
 - Phone number of employee, for contact information
 - Data type: VARCHAR(10)

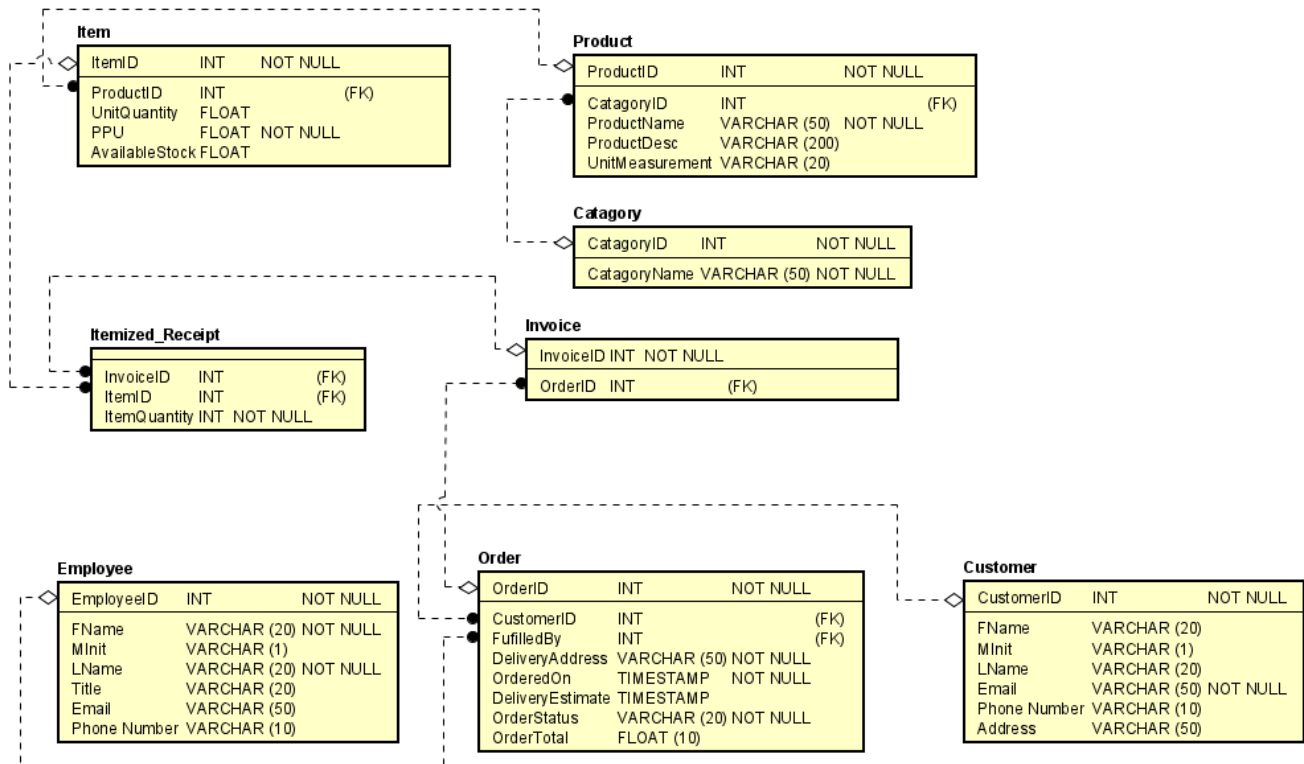
○ Invoice

- InvoiceID: **primary key**, NOT NULL
 - Unique identifier for each invoice, references in foreign keys

- Data type: INT
- OrderID: **foreign key**
 - References which order generated this invoice
 - Data type: INT
 - Action upon delete: delete cascade
- Item
 - ItemID: **primary key**, NOT NULL
 - Unique identifier for each item, references in foreign keys
 - Data type: INT
 - ProductID: **foreign key**
 - Refers to type of product this item belongs to
 - Data type: INT
 - Default value: '0'
 - ProductID '0' is the ProductID of a predefined row in Product with ProductName = "Discontinued"
 - Action upon delete: set default
 - UnitQuantity:
 - Represents quantity/amount of item based on product units
 - Data type: FLOAT
 - PPU: NOT NULL
 - Represents the unit price of the item (e.g. \$0.04/oz)
 - Data type: FLOAT
 - AvailableStock
 - Represents the current stock of the inventory, based on product units
 - Data type: FLOAT
- Itemized_Receipt (Weak Entity)
 - InvoiceID: **foreign key**
 - References which invoice contains this receipt
 - Data type: INT
 - Action upon delete: delete cascade
 - ItemID: **foreign key**
 - References which item this receipt describes
 - Data type: INT
 - Action upon delete: delete cascade
 - ItemQuantity: NOT NULL
 - Represents the quantity of items ordered
 - Data type: INT
- Order
 - OrderID: **primary key**, NOT NULL
 - Unique identifier for each order, references in foreign keys
 - Data type: INT
 - CustomerID: **foreign key**

- References which customer created the order
 - Data type: INT
 - Action upon delete: set null
 - FulfilledBy: **foreign key**
 - References which employee fulfilled the order
 - Data type: INT
 - Action upon delete: set null
 - DeliveryAddress: NOT NULL
 - Address of location where items are to be delivered
 - Data type: VARCHAR(50)
 - OrderedOn: NOT NULL
 - Time at which order was placed by customer
 - Data type: TIMESTAMP
 - DeliveryEstimate:
 - Estimated time at which order will reach its destination
 - Data type: TIMESTAMP
 - OrderStatus: NOT NULL
 - Status of order (e.g. pending, transit, delivered, canceled)
 - Data type: VARCHAR(20)
 - OrderTotal:
 - Total price of order (total charge on customer)
 - Data type: FLOAT(10)
- Product
- ProductID: **primary key**, NOT NULL
 - Unique identifier for each product, references in foreign keys
 - Data type: INT
 - CategoryID: **foreign key**
 - References the category that the product belongs to
 - Data type: INT
 - Default value: '0'
 - CategoryID '0' is the CategoryID of a predefined row in Category with CategoryName = "Uncategorized"
 - Action upon delete: set default
 - ProductName: NOT NULL
 - Name of the product (e.g. BIC 0.7mm Mechanical Pencils)
 - Data type: VARCHAR(50)
 - ProductDesc:
 - Detailed description of product (dimension, instructions, etc)
 - Data type: VARCHAR(200)
 - UnitMeasurement
 - Unit at which product is measured (e.g. sheets, lb, pcs)
 - Data type: VARCHAR(20)
 - Default value: 'Units'

2. Mapping to Database Schema



- One-to-Many Relationships:
 - Product to Item: A product can have many items, but each item relates to one product, so ProductID is a foreign key in the Item table
 - Customer to Order: A customer can place multiple orders, so CustomerID is a foreign key in the Order table
 - Employee to Order: One employee can check multiple orders
 - Employee to Product: One employee can update many products
 - Category to Product: One category belongs to many products
 - Invoice to Itemized Receipt: One invoice contains many itemized receipts
 - Items to Itemized Receipt: One item can be listed in many itemized receipts
- Many-to-Many Relationships:
 - Invoice to Item: An invoice can contain many items, and an item can appear on many invoices, hence the Itemized_Reciept table, which uses invoiceID and ItemID as foreign keys to link the two
- One-to-One relationships:
 - Invoice to Order: One invoice generates exactly one order