Project Title: Inventory Control Management Database
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Table of Contents

Section I: Project Description

Tracking goods going in and out of warehouses, being delivered to customers, or being shipped to you is a hassle. Not knowing whether you have enough of an item in stock to make it through a quarter or when your shipments are being delivered. There are many problems in knowing where your products are at any given moment. It costs time and money when one location, whether that be a store or warehouse, is running low on inventory but the excel spread sheet says you have thousands of units oh hand. A modern solution is needed to remedy these problems. One that takes all the data needed and puts it in one system.

This is where EZI comes in to fix all these problems. A backend inventory control management system for your operation that will track your products coming in and out of your locations. Need to look at all the incoming shipments? No problem. Each shipment is labeled with a location, whether that's one of your stores or a warehouse, the product along with how much of it you purchased, the Supplier from whom you bought it from, and the date it was shipped. If you need to look at outgoing orders to customers, the orders will have a list of products that were purchased, the location they are being delivered, and a total amount.

To keep track of inventory that is moving between locations, there is the ability to see all requests made by stores. These requests have

Section II: Use Cases

1. David is a supermarket manager that wants to restock food for the store. He goes to the computer in his office which is already on the supermarket chain's network. He needs to log into his Manager EZI account with his Employee ID number and password before being able to access any of the system. Then, he creates a request for the food he needs at the store along with a desired amount. After he submits the request, he wants to change the amount of items and submits a request change that modifies the original request.

2. Victor is an employee at a warehouse for a big box chain and is tasked with processing requests from the stores. He logs into his Sender EZI account from his work station to see the requests he is assigned. He then gathers the product to send to the store and creates a conformation request for the initial request, indicating it has been fulfilled. Victor knows that not everything in the store request was available at his warehouse and knows that another warehouse will submit their own confirmation request when they send product to the store.

3. Mia is an employee working at a big box store and is working on the online fulfillment purchases. She logs into her Sender EZI account and sees a customer has ordered some products and they will be picked up at the store. She collects the items for the purchase and notices that is has been updated for delivery. Mia places the contents in a shipping box and creates a confirmation update for the order, indicating that the purchase has been packed and is in the process of being delivered.

4. Mel works in a warehouse and today has been assigned online orders for shipping. They log into their Sender EZI account and see that there is a purchase for some products. Mel gathers the product, puts it in a shipping box and creates a confirmation update for the purchase, letting the customer know that their item has started the transit process.

5. Patty is the manager at a warehouse and notices some product is getting low. She logs into her Manager EZI account and creates an order that will be fulfilled by a Supplier and shipped to her warehouse. The stock shipped by the Supplier can contain a variety of different products in one shipment.

6. It is Chris's first day on the job at a store. Before he can get to work, the manager of the store has to login to their Manager EZI account and create a Sender account using Chris's Employee ID. The first time that Chris tries to log into his account, he will have to create a password so that he will be able to access it each time he comes to work.

7. Mary is one of the only employees that showed up to work today. She has to do more tasks than usual today, so she logs into her Manager EZI account and starts fulfilling orders that are meant for store pickup and delivery by creating confirmation updates for Customer purchases.

Section III: Database Requirement

1. Location
   i. A location shall be a store or a warehouse
   ii. A location shall contain products

2. EZI Account
   i. An EZI account shall only be used by Employees
   ii. An EZI account shall only be used by one Employee
   iii. An EZI account shall only be used on company machines
   iv. There are only two different EZI account types
   v. Manager EZI accounts shall do everything a Sender account shall do
   vi. Manager EZI accounts shall make requests to restoke their store
   vii. Manager EZI accounts shall submit request changes to change previous requests
   viii. EZI accounts shall view requests made by Manager accounts
   ix. EZI accounts shall create confirmation requests indicating that items in a request are being shipped to the store that requested them
   x. Multiple EZI accounts shall contribute to one request and send multiple confirmation requests
   xi. EZI accounts shall create confirmation updates for Customer purchases either for shipping or store pickup
   xii. Manager EZI accounts shall order more Stock from Suppliers
   xiii. Manager EZI accounts shall create Sender EZI accounts

3. Employee
   i. An Employee shall have a Manager or Sender EZI account

4. Customer
   i. A Customer shall only be able to determine if their purchase is pick up or delivered

5. Suppliers
   i. Suppliers will ship stock to warehouses
   ii. Suppliers can ship stock that has multiple different products

6. Devices
    i. Only Employees can use
    ii. Employees use to login to EZI account

Section IV: Detailed List of Main Entities, Attributes and Keys

1. Employee (Strong)
- employee_id: key, numeric
- name: composite
  - first_name: alphanumeric
  - last_name: alphanumeric
- dob: composite, numeric
  - year: numeric
  - month: numeric
  - day: numeric
- age: derived, numeric
- email: alphanumeric

2. EZI Account (Weak)
- easy_id: key, numeric
- employee: weak key, numeric
- password: alphanumeric

3. Manager EZI Account (Weak)
- ManagerEZI_id: key, numeric

4. Sender EZI Account (Weak)
- SenderEZI_id: key, numeric

5. Product (Strong)
- product_id: key, numeric
- product_name: alphanumeric
- product_descrip: alphanumeric

6. Location (Strong)

- location_number: key, numeric
- address: composite, alphanumeric
    - street: alphanumeric
    - zipcode: numeric
    - city: alphanumeric
    - state: alphanumeric

7. Supplier (Strong)
  - supplier_id: key, numeric
  - supplier_name: alphanumeric

8. Shipment (Weak)
  - shipment_id: key, numeric
  - location: weak key, numeric
  - supplier: weak key, numeric
  - arrival: composite, numeric
      - year: numeric
      - month: numeric
      - day: numeric

9. Shipping Content (Weak)
  - shipment: weak key, numeric
  - stock: weak key, numeric
  - quantity: derived, numeric

10. Customer (Strong)
  - customer_id: key, numeric
  - customer_name: composite
      - customer_first: alphanumeric
      - customer_last: alphanumeric

11. Customer Purchase (Weak)
- purchase_id: key, numeric
- customer_id: weak key, numeric
- destination: composite, alphanumeric
  - street: alphanumeric
  - zipcode: numeric
  - city: alphanumeric
  - state: alphanumeric
- total: numeric

12. Confirm Purchase (Weak)
- purchase_id: weak key, numeric
- deliver_date: composite, numeric
  - year: numeric
  - month: numeric
  - day: numeric
- store_ready: boolean

13. Purchase Content (Weak)
- order_id: weak key, numeric
- product_id: weak key, numeric
- quantity: numeric

14. Inventory (Weak)
- location: weak key, numeric
- product_id: weak key, numeric
- quantity: numeric

15. Review (Weak)
- order_id: weak key, numeric
- easy_id: weak key, numeric

- status: bool

16. Device (Strong)
   - device_id: key, numeric
   - type: alphanumeric

17. Stock (Strong)

   - stock_id: key, numeric
   - product_id: weak key, numeric
   - supplier: weak key, numeric

18. Order (Weak)

   - order_id: key, numeric
   - location: weak key, numeric
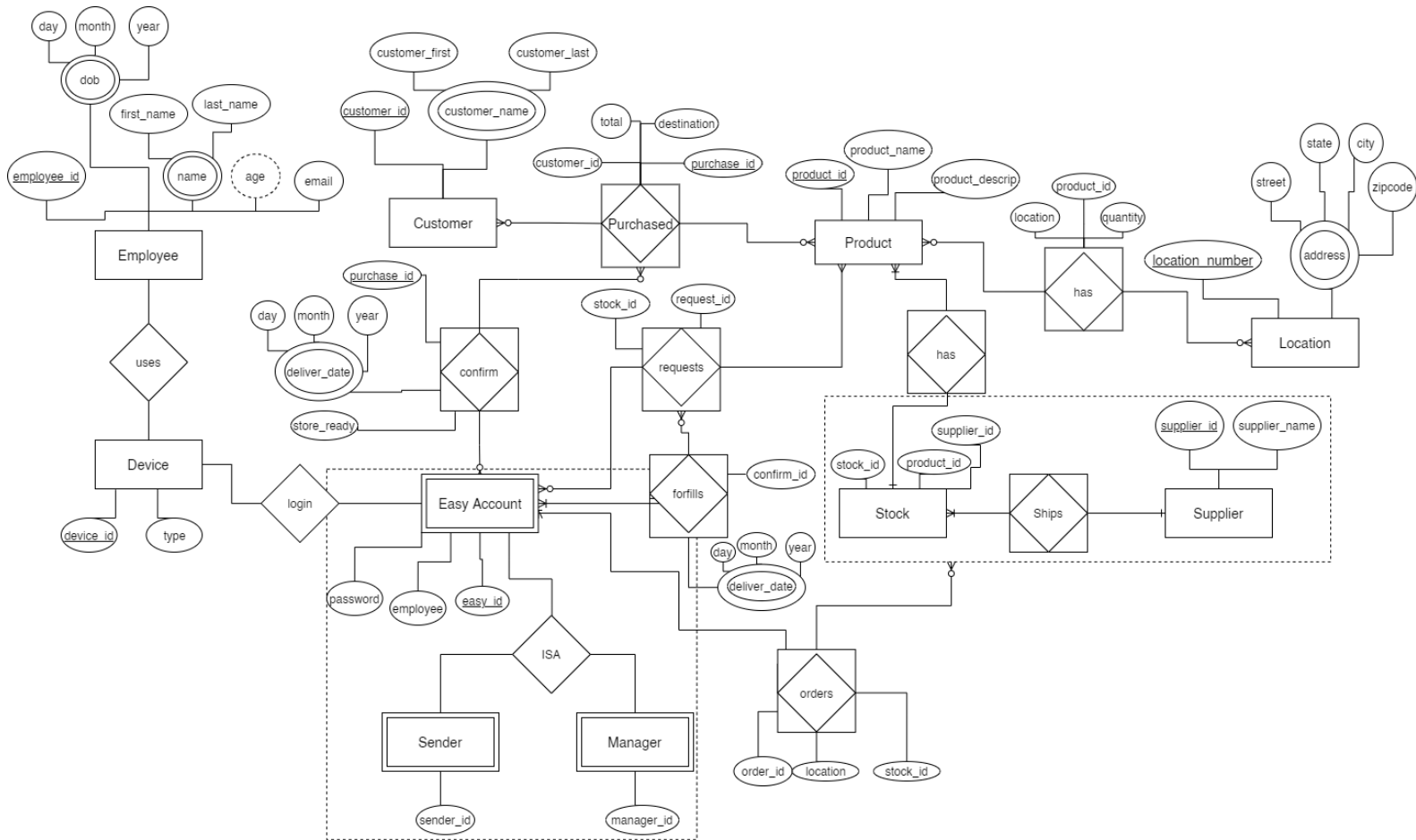   - stock_id: weak key, numeric

19. Request (Weak)

   - request_id: key, numeric
   - stock_id: weak key, numeric

20. Confirm Request (Weak)

   - confirm_id: key, numeric
   - arrival: composite, numeric
        - year: numeric
        - month: numeric
        - day: numeric

Section V: Entity Relationship Diagram (ERD)

Section VI: Testing Table

Rule	Entity A	Relation	Entity B	Cardinality	Pass/Fail	Descrip
1	Location	Has	products	Many to Many	Pass	None
3	Employee	Uses	EZI acct	One and Only one	Fail	No relation on line
5	Device	login	EZI acct	Many to one	Fail	No relation on line
6	EZI acct	ISA	Manager EZI acct, Sender EZI acct	ISA	Pass	None
7	Manager EZI	Request	product	0 or many to 1 or many	Pass	None
8	Manager EZI	Request Change	Request	One to one	Fail	No relation on line
9	EZI account	create	Confirmation request	One to one	Fail	Can confirm a 0
11	EZI account	confirm	purchase	0 or 1 to 0 or many	fail	Only 1 account can confirm
14	Manager EZI	order	stock	Many to 0 or many	pass	none
15	Manager EZI	Create	Sender EZI	One to one	Fail	No where on erd diagram