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Asia Pacific College

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[ITEM TRACKING AND INVENTORY SYSTEM]

This is the official documentation of the proposed Item Tracking and Inventory System by the students of Asia Pacific College taking up Bachelor of Computer Science in Information Technology. This is a course requirement of the Project Based Learning Subject (PBL), Introduction to Systems Analysis and Design, under the supervision of Mr. Manuel Sebastian S. Sanchez.

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Chapter 1

Background of the Company

In this chapter, the group will be discussing the background of Euro Health Care Exponents Incorporated, their line of business and their history.

Euro Health Care Exponents Inc. is a company that was established in August 1990 and was acquired by the new sets of stock holders in 1996. Majority stock holder Mrs. Zenaida D. Balajadia and Mrs. Ma. Cristina S. Palomar being one of the Board of Directors has been appointed as General Manager up to the present.

The company is engaged in importation and local distribution of highly specialized ethical products. EuroHealth was created with an objective of providing Filipino consumers with a wider range of pharmaceutical and health care products at costs lower that imported brands but comparable with potency and effectiveness. To achieve this goal, product line expansion is permanent business program with continuous product research and development. All products are tested, approved and registered by the Philippine Bureau of Food and Drugs.

In status quo, EuroHealth, still, does not have an automated system that will track their daily operations and transactions which makes it difficult not only for the clients but also for the workers.

In line with this problem, the group, Team Ace has offered their service to develop an Item Tracking and Inventory System for EuroHealthCare Exponents Incorporated as a requirement for their Project-Based Learning (PBL) Subjects from January 2013 – April 2014.

Chapter 2

Project Authors

In this chapter, the group will discuss the people involved In developing the project.

As mentioned in Chapter 1, Team ACE will be developing an Item Tracking and Inventory System for EuroHealth. The following are the people involved in creating the proposed project:

Project Adviser:
Mr. Manuel Sebastian S. Sanchez
School of Computer Science and Information Technology
Professor, Asia Pacific College

EuroHealth Project Consultant:
Mr. Rico Dela Cruz
Systems Analyst, MDLD Corporation

Jelanie T. Calingaw
Human Resources Manager, EuroHealthCare Exponents Inc.

Project Developers:
Adrian Santos, *Group Leader*
Jake Robert Pasculado
Nabil Al-hamadah

Chapter 3

Project Overview

In this chapter, the group will discuss the system details, specifications and design of the proposed project.

General Objectives

The general objectives of the system being proposed by the group are:

a. Provide efficiency
b. Lessen human error
c. Save time and effort,

To EuroHealth with their daily operations, transactions and, report generation by creating a system that will run on three (3) departments of the company, specifically:

d. Sales Department
e. Warehouse Department
f. Accounting Department

B.) Specific Objectives

The specific objectives of the system, being proposed by the group are:

a.) Create a database for the system
b.) Create a networked system with a real-time link between three departments
c.) Create user restriction and privileges
d.) Create a secured application for confidential data and information
e.) Upgrade the current medium of the EuroHealth
f.) Provide a user-friendly and easy-to-learn application for the workers
g.) Keep track of all the transactions, operations and item inventory of the company

C.) Target Audience

The target audience of the group's proposed system are the following:

a.) Management: The management who's in charge of keeping the EuroHealth Inc. running. The management of EuroHealth pertains to the current General Manager, Ms. Ma. Cristina Palomar. Under Management, we have the following departments as part of our target audience of the system.

- Sales Department
- Warehouse Department
- Accounting Department
- Supplier

b.) Client/Customer: The clients are our secondary target audience since the whole process of their transactions is hidden and only the updates regarding their order/s are being sent to them. Nonetheless, our system will boost the efficiency of the whole company making the client benefit from it by means of consistent, fast and reliable services provided by EuroHealth.

D.) Related Architecture

Some related architectures of our proposed project are listed below:

a.) Inventory Control System:

- An inventory control system is a process for managing and locating objects or materials. In common usage, the term may also refer to just the software components.

- Modern inventory control systems often rely upon barcodes and radio-frequency identification (RFID) tags to provide automatic identification of inventory objects. In an academic study performed at Wal-Mart, RFID reduced Out of Stocks by 30 percent for products selling between 0.1 and 15 units a day. Inventory objects could include any kind of physical asset: merchandise, consumables, fixed assets, circulating tools, library books, or capital equipment. To record an inventory transaction, the system uses a barcode scanner or RFID reader to automatically identify the inventory object, and then collects additional information from the operators via fixed terminals (workstations), or mobile computers.

b.) Document Automation

- Document automation is the design of systems and workflows that assist in the creation of electronic documents. These include logic based systems that use segments of pre-existing text and/or data to assemble a new document. This process is increasingly used within certain industries to assemble legal

documents, contracts and letters. Document automation systems can also be used to automate all conditional text, variable text, and data contained within a set of documents.

- Automation systems allow companies to minimize data entry, reduce the time spent proof-reading, and reduce the risks associated with human error. Additional benefits include: savings due to decreased paper handling, document loading, storage, distribution, postage/shipping, faxes, telephone, labor and waste.

E.) Project Description

a. General Description:

i. The group has selected possible programming tools in developing the project. The tools listed below are still tentative and are susceptible to changes during the development of the system. The tools are the following:

1. Microsoft Access Database/ MySQL Database
2. Visual Basic/Java/Python Programming Language
3. Programming Frameworks

ii. The group has come up with the idea of creating an interactive GUI, with tabbed windows and easy-to-use interface. This will only be achieved by using a custom design by interviewing the end-users

b. Specific Description:

i. The proposed project for EuroHealthCare Exponents Incorporated is an Item Tracking and Inventory System with these specifications:

- Four (4) Graphical User Interfaces for the following departments:
  - Sales Department GUI
    - Description: This part of the system is the where all transactions start. This means that the GUI of Sales Department is critical when it comes to Database Access for they will input all the data needed by other departments for the transaction to progress.
    - In addition to that, the Sales Department GUI will have a restriction when it comes to database access, because other data inside the database is confidential and is prohibited to be seen by end-users
  - Warehouse Department GUI

- Description: This Graphical User Interface will rely on the data that the Sales Department will provide. They will validate each data that will be transferred to them before they clear the Purchase Order and move it forward to the next level of the process.
- And also, the Warehouse Department has access to the database but only limited to the data they need in order to come up with daily, weekly, and date triggered reports about the transactions, delivery status, and item inventory.

- Accounting Department:
  - Description: The Graphical User Interface of the Accounting Department, has all the access in the database dealing with monetary data and other transaction details.
- Management:
  - Description: The last GUI of our system will be used by the General Manager of the EuroHealthCare Exponents Incorporated. The General Manager has no restriction when it comes to data access and, other confidential information needed for company growth and success.

Chapter 4

Glossary

In this chapter, all the terminologies used in system development are defined.

A

1. **Accounting Department** - A department in a company which handles money paid, received, borrowed, or owed

2. **Accounts Payable** - Money borrowed by a company to its creditors.

3. **Accounts Receivable** - Borrowed money to a company by a customer for products and services provided on credit. A sale is considered as an account receivable when the customer receives an invoice.

C

4. **Client/Customer** - Person who uses services of a company

D

5. **Distributor** - A person who supplies goods to companies/stores

6. **Document automation** - The design of systems and workflows that assist in the creation of electronic documents. These include logic based systems that use segments of pre-existing text and/or data to assemble a new document.

7. **DR (Delivery Report)** - A document that is typically signed by the receiver of a shipment to indicate that they have in fact received the item being shipped and have taken possession of it. Most businesses that transport valuable items via mail or parcel post will require the completion of a signed delivery receipt to make sure that the goods were actually received by the intended recipient.

I

8. **Inventory Control System** - A process for managing and locating objects or materials. In common usage, the term may also refer to just the software components.

L

9. **Lot Number** – A the classification of a product stored in a company warehouse

M

10. **Management** - A group of people seeking to accomplish company objectives.

P

11. **PO (Product Order)** - A buyer-generated document that authorizes a purchase transaction. When accepted by the seller, it becomes a contract binding on both parties.

12. **Product Tracking and Inventory System** - A complete network enabled sample tracking and management solution for all stocks that is indexed, whatever they are and wherever in storage or in the warehouse.

R

13. **Radio-Frequency Identification** - The acronym refers to small electronic devices that consist of a small chip and an antenna. The chip typically is capable of carrying 2,000 bytes of data or less.

14. **RR (Receiving Report)** - A document used to record the amount and type of finished goods or raw materials when a shipment has been accepted. A receiving report is an important record of the merchandise that a retailer has actually received from a supplier because it documents what is owed to the supplier in terms of payment for the goods received or the return of the goods, in some cases.

S

15. **Sales Department** - Manages/handles the services dealing with client orders and queries

16. **SharePoint** - A Web application platform developed by Microsoft. First launched in 2001, SharePoint has historically been associated with intranet content management and document management, but recent versions have significantly broader capabilities.

17. **SI (Sales Invoice)** - A Accounting Department generated-document to show details of an item sold

18. **SO (Sales Order)** – A Sales Department generated-document that authorizes sale of the specified item(s), issued after receipt of a customer's purchase order. A sales order usually implies that there will be no additional labour or material cost incurred for the sale, except where it is used to initiate a production process.

19. **SS (Sales Summary)** - The sales summary is the most important customer data in condensed form. It contains information from the customer master such as order data and payment terms as well as transaction data such as sales figures.

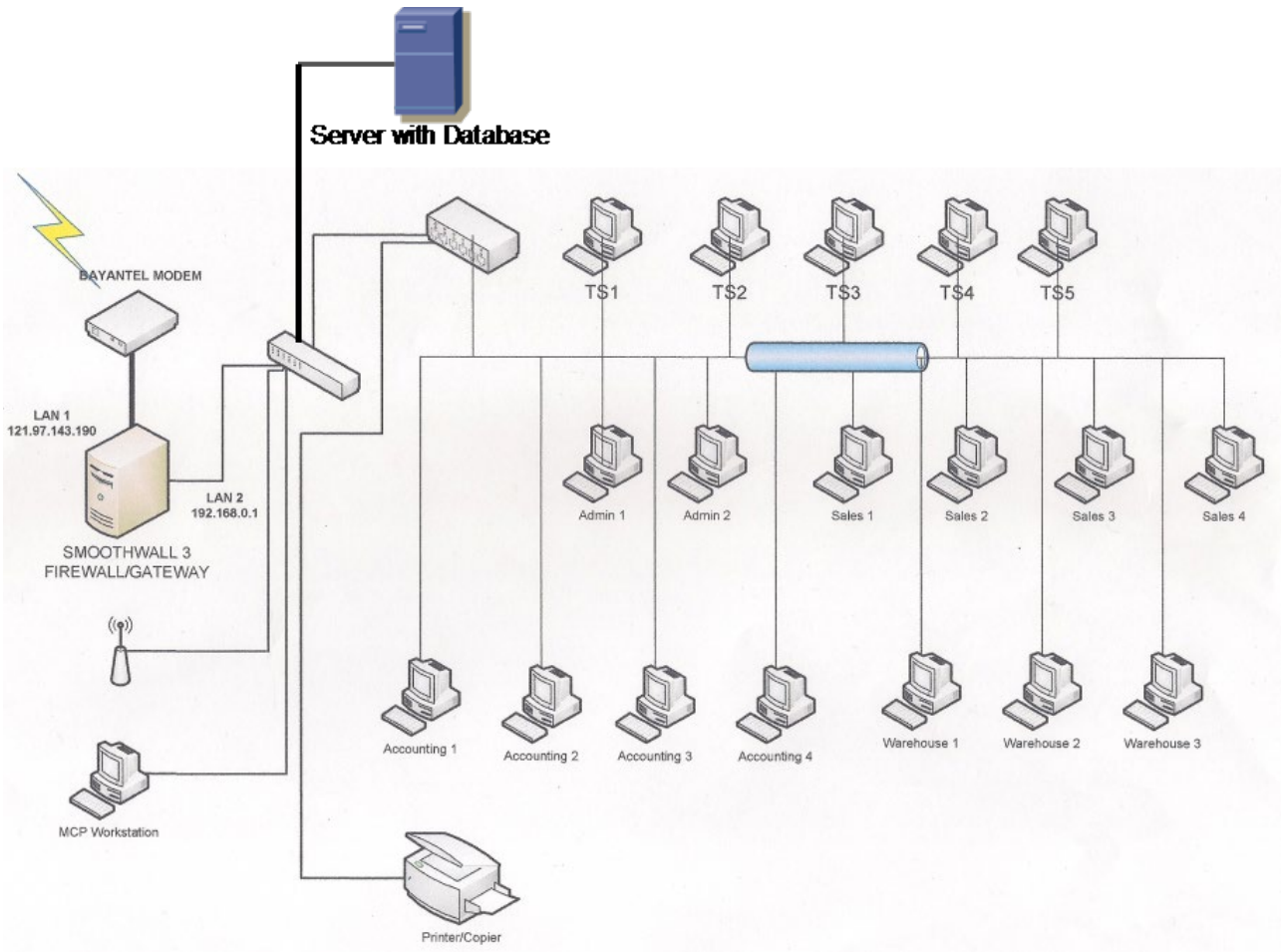
W

20. **Warehouse Department** - A department in a company where products/goods are stored.

Chapter 5

Project and Network Plan

In this chapter, the group will discuss the system's implementation of the network infrastructure.



Chapter 6

Systems Analysis and Design

In this chapter, the group will be discussing the processes in details using different types of tables and diagrams.

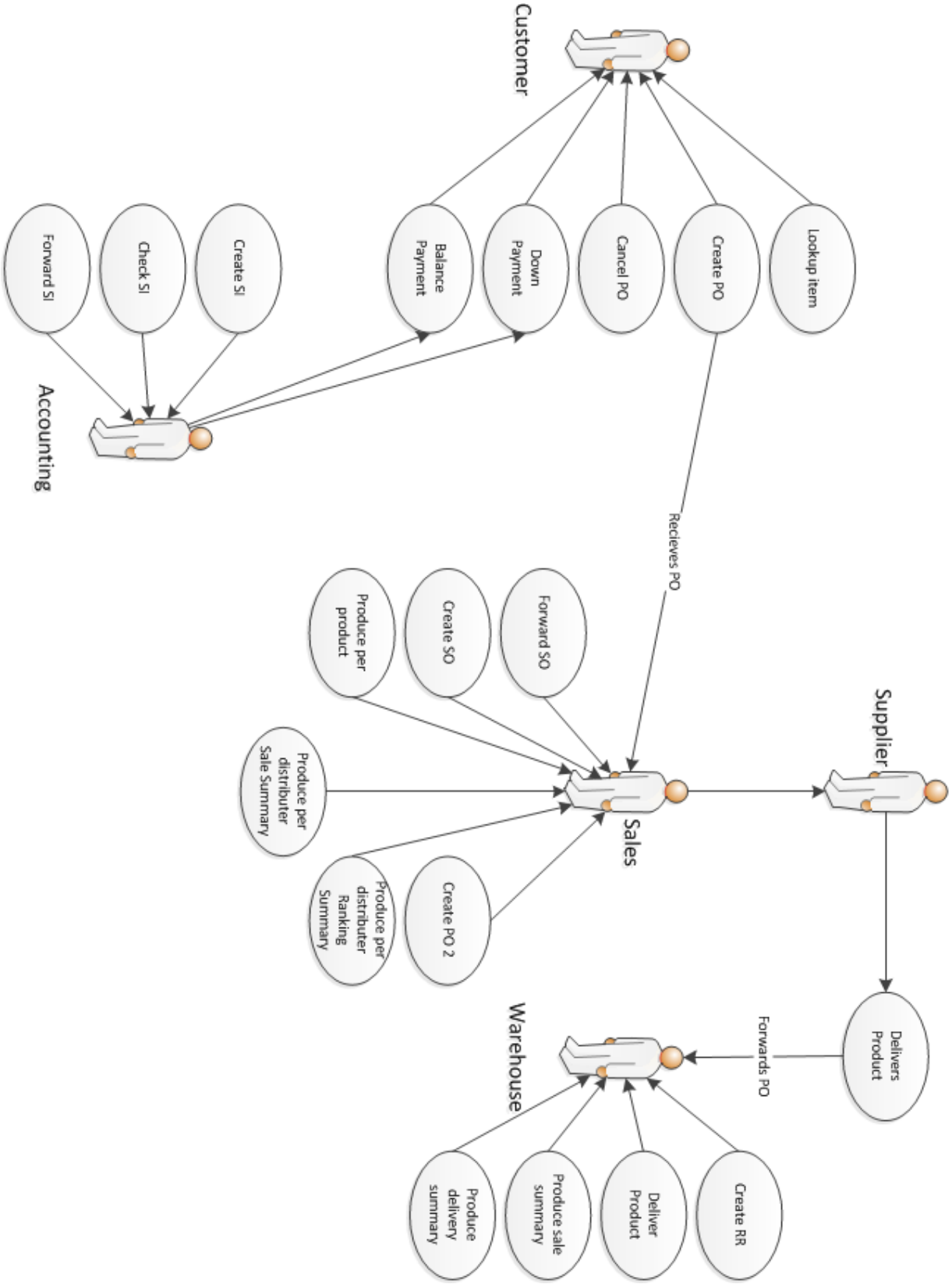
I.

a. **Event Table**

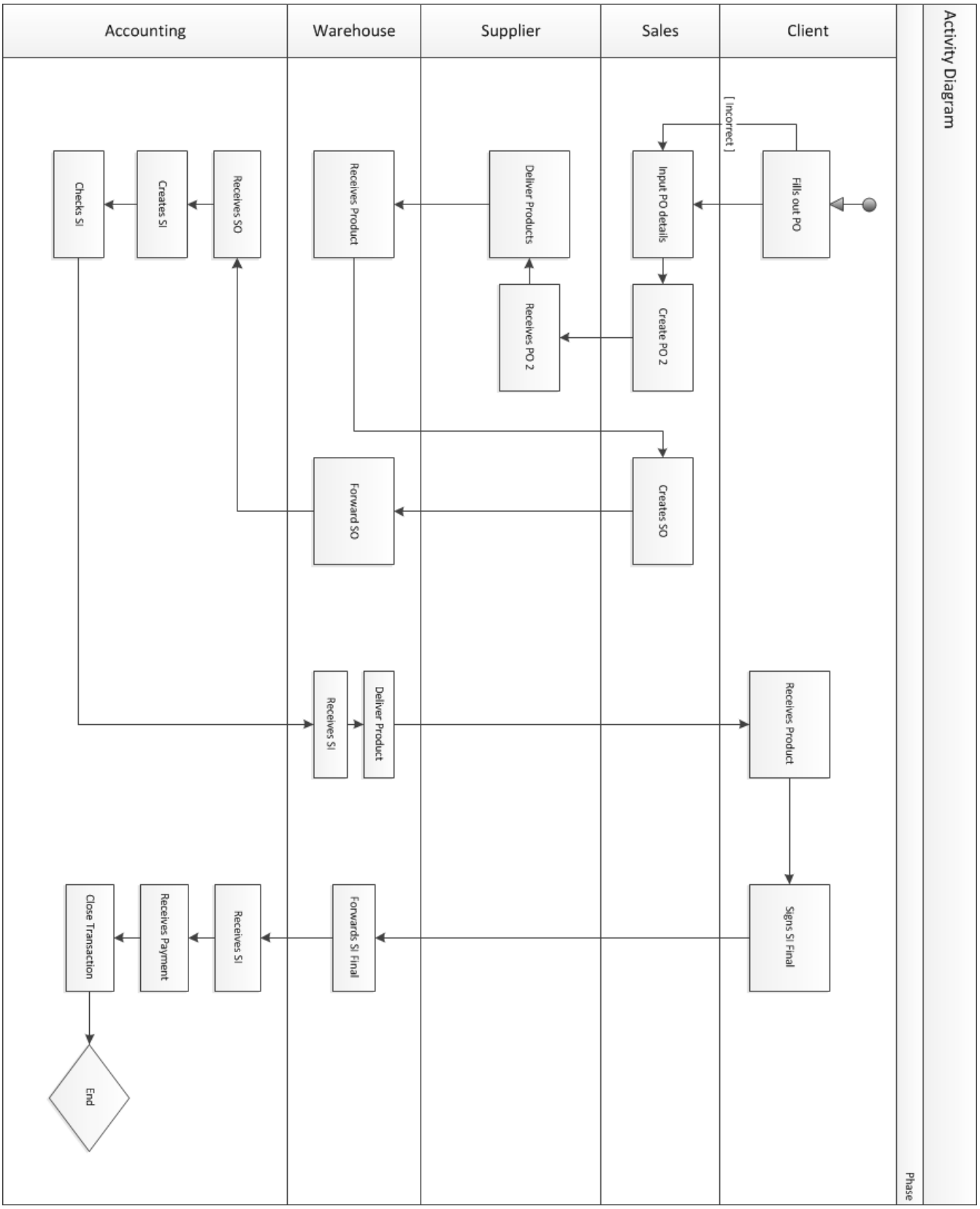
Product Tracking and Inventory System Event Table

No.	Event	Trigger	Source	Use Case	Response	Destination
1	Customer checks product availability	Product Inquiry	Customer	Look-up Item Availability	Product Availability	Customer
2	Customer requests PO	PO Request	Customer	Create PO Request	PO Request	Sales
3	Sales approve PO	PO Approval	Sales	Forward PO Approval	PO Approval	Customer
4	Customer sends PO	Purchase Order	Customer	Create new Purchase Order	*PO confirmation *PO details *Transaction (Down Payment)	*Customer *Sales *Accounting
5	Customer cancels PO	Order Cancel Request	Customer	Cancel existing PO	*Cancel Confirmation *Cancel Details *Transaction	Customer Sales Accounting
6	Sales Create PO 2	Purchase Order 2	Sales	Create PO 2 From PO 1	*PO 2 Details *PO 2 Copy	*Supplier *Warehouse
7	Sales forwards PO	PO Forwarding	Sales	Forwards existing PO	PO details	Supplier
8	Supplier delivers products	Product Delivery	Supplier	Creates Delivery Report	Delivery Report	Warehouse
9	Warehouse receives product	Product Reception	Warehouse	Creates new Receiving Report	Receiving Report	Warehouse Sales
10	Warehouse Updates Database	Update Database		Add Inventory items	Update Inventory items	Database
11	Sales creates SO	Sales Order	Sales	Create new Sales Order	Sales Order0/2	Sales
12	Sales forwards SO1/2	SO1/2 Forwarding	Sales	Forwards existing SO	Sales Order 1/2	Warehouse
13	Warehouse forwards SO2/2	SO2/2 Forwarding	Warehouse	Forwards existing SO	Sales Order 2/2	Accounting
14	Accounting creates SI	Reception of SO	Accounting	Creates new SI	Sales Invoice	Accounting
15	SI will be double checked	SI checking	Accounting	SI Double Checking	Sales Invoice Final	Accounting
16	Accounting forwards SI	SI Forwarding	Accounting	Forwards SI Final	Sales Invoice Final	Warehouse
17	Delivery of Products	Product Delivery	Warehouse	Delivers Product		Customer
18	Returning of SI Final	Returning of SI Final	Warehouse	Returns SI Final	Sales Invoice Final	Accounting
19	Collecting of SI Final	SI Final Collection	Accounting	Collects SI Final	Sales Invoice Final	Accounting
20	Time to Produce Per Product Sale Summary	"Daily and Monthly"		Produce Per Product Sale Summary	Per Product Sale Summary	Sales
21	Time to Produce Per Distributor Sale Summary	"Daily and Monthly"		Produce Per Distributor Sale Summary	Per Distributor Sale Summary	Sales
22	Time to Produce Distributor Ranking Summary	"Daily and Monthly"		Produce Distributor Ranking Summary	Distributor Rankin Summary	Sales
23	Time to Produce Delivery Summary	"Daily and Monthly"		Produce Delivery Summary	Delivery Summary	Warehouse
24	Time to Produce Stock Card Summary	"Daily"		Produce Stock Card Summary	Stock Card Summary	Warehouse

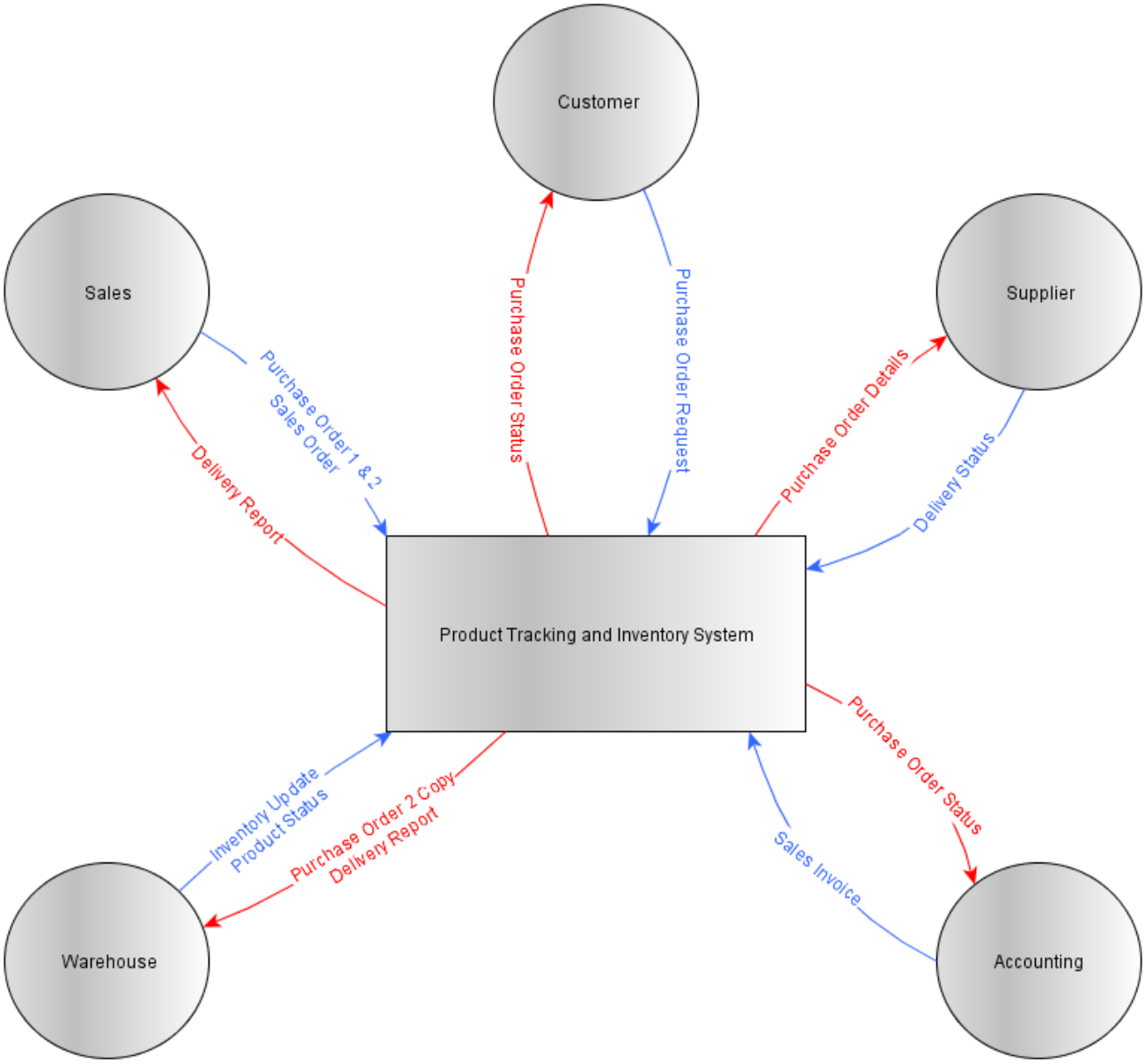
b. **Use Case Diagram**



c. **Activity Diagram**

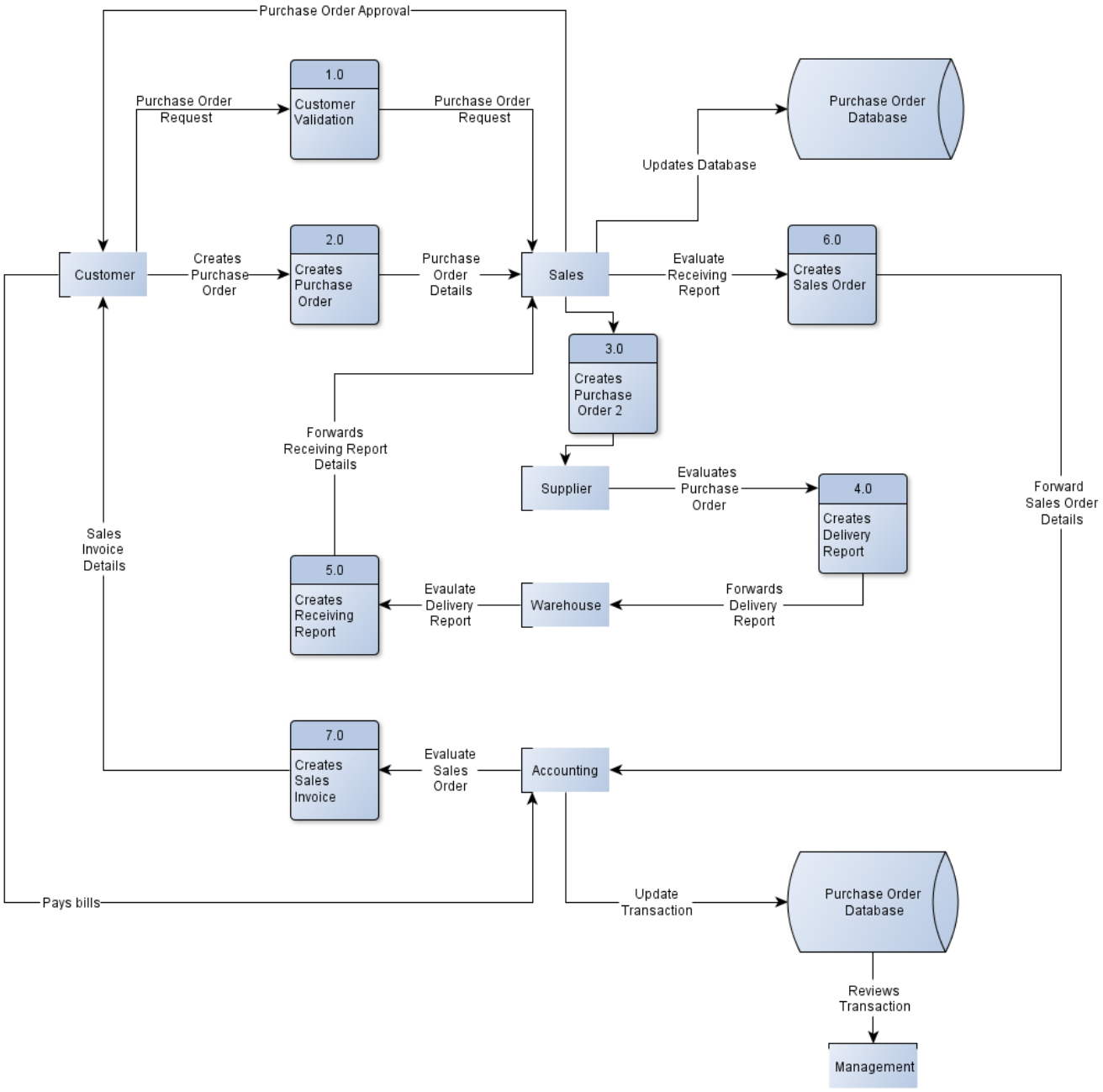


d. **Context Flow Diagram**



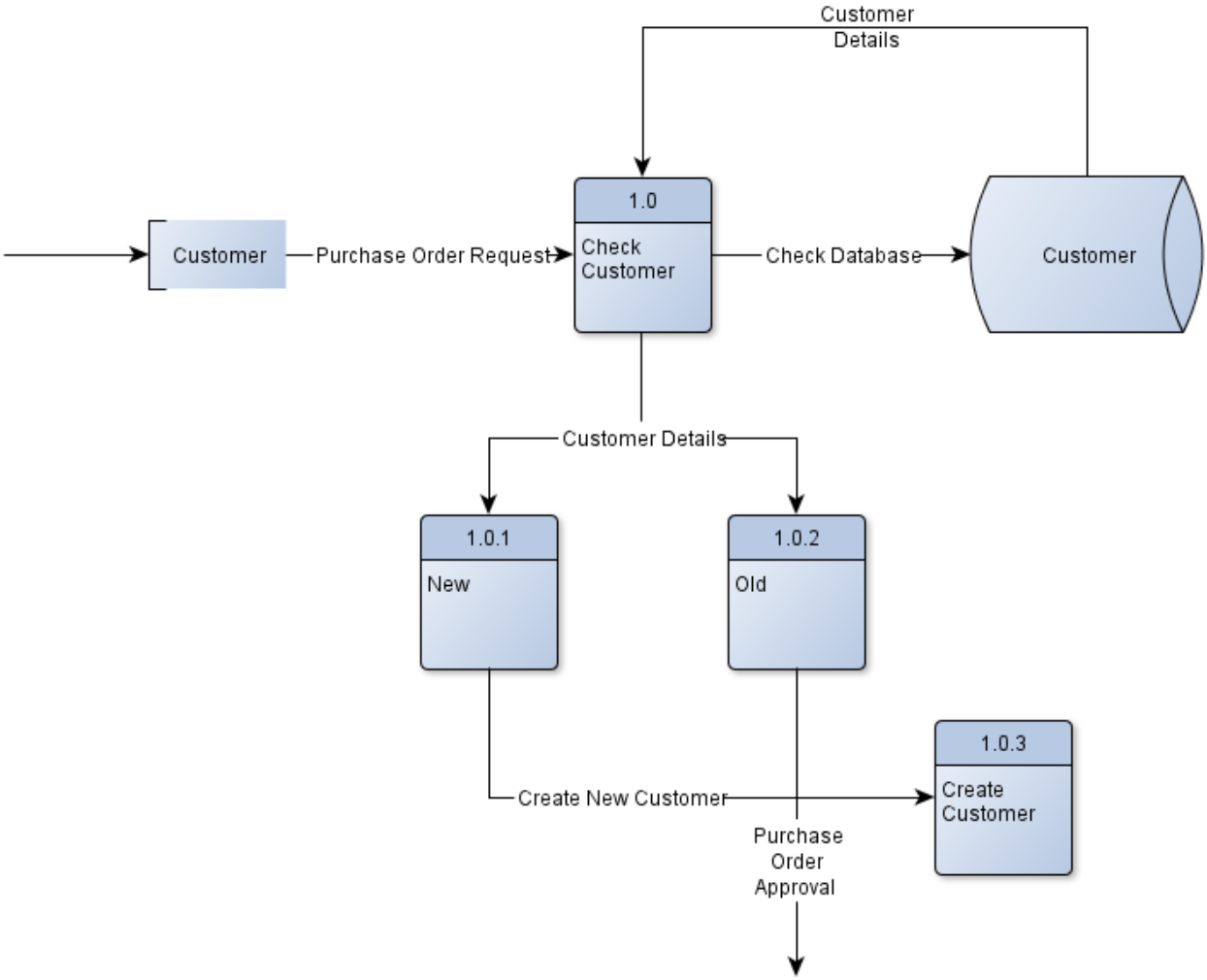
e. Data Flow Diagram

i. Level 0 Diagram

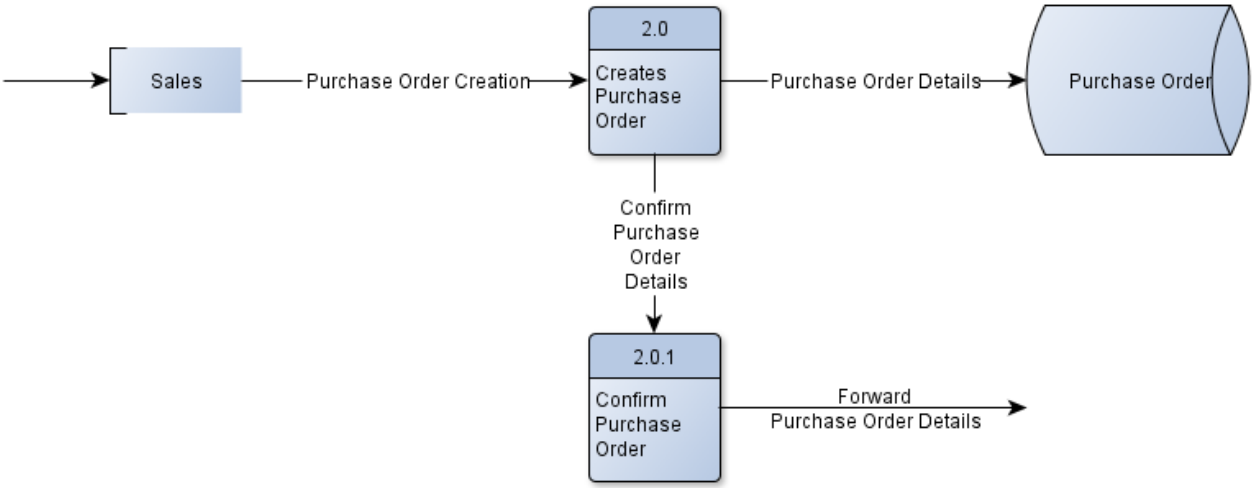


ii. Level 1 Diagrams

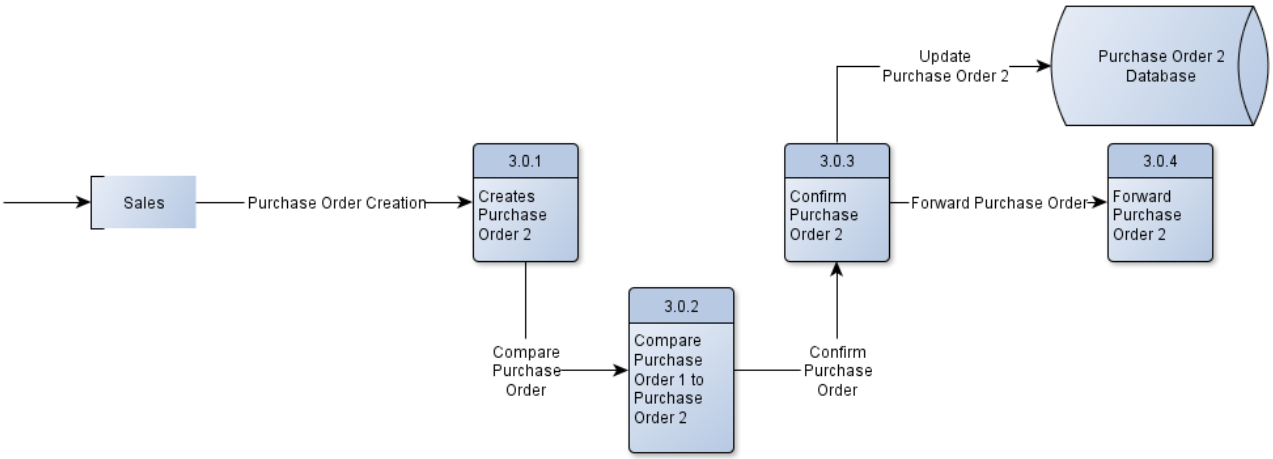
1. Diagram 1



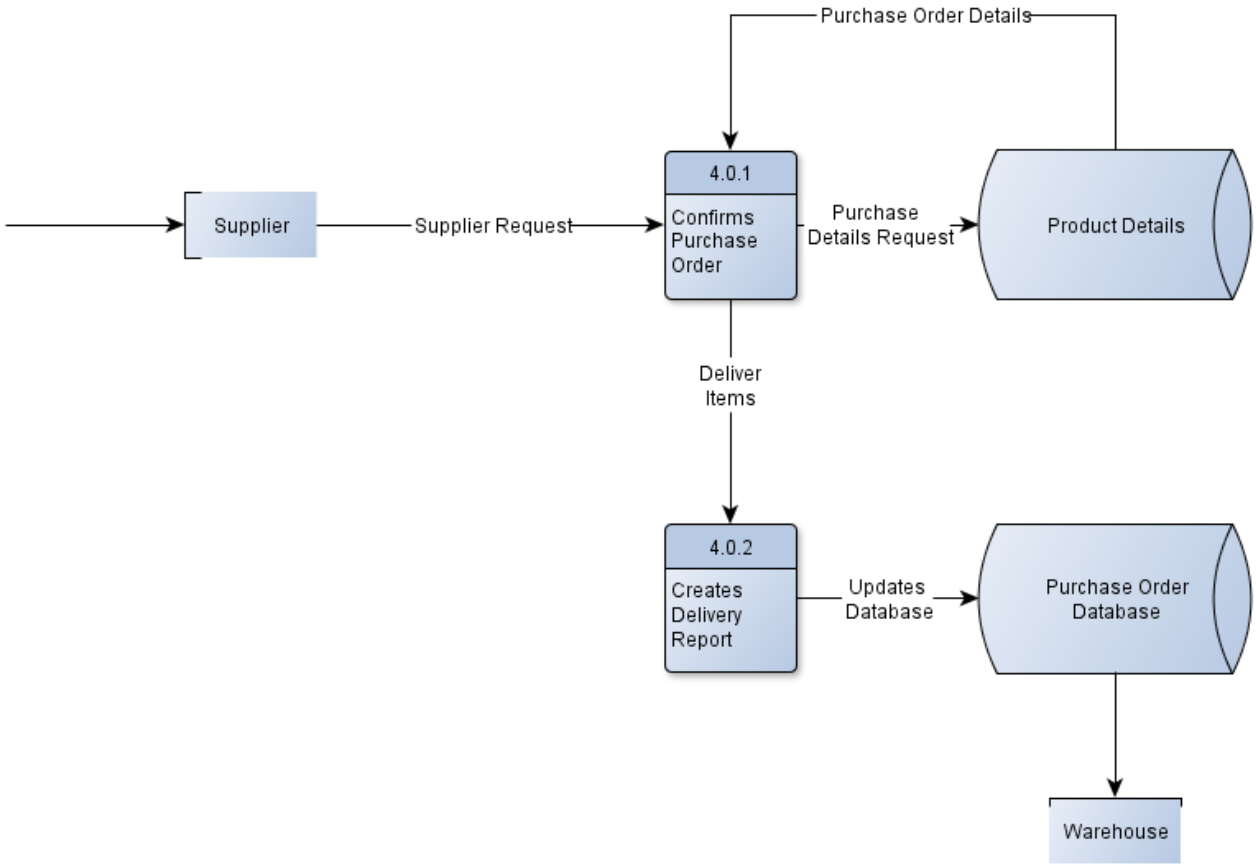
2. Diagram 2



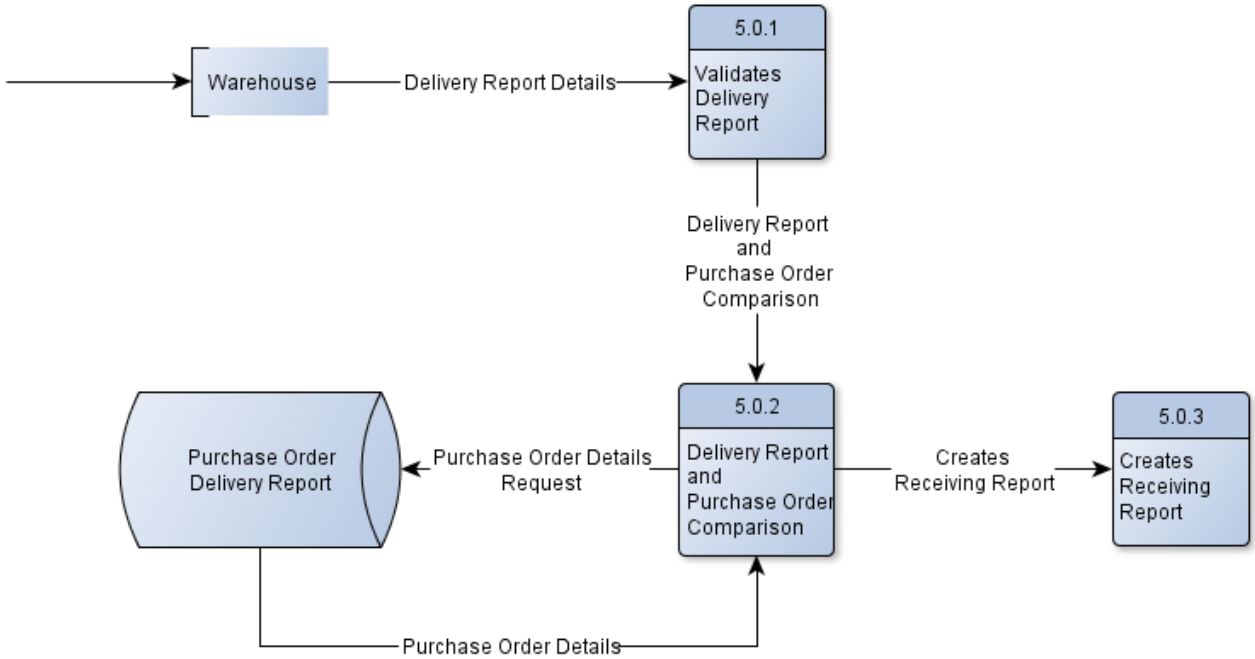
3. Diagram 3



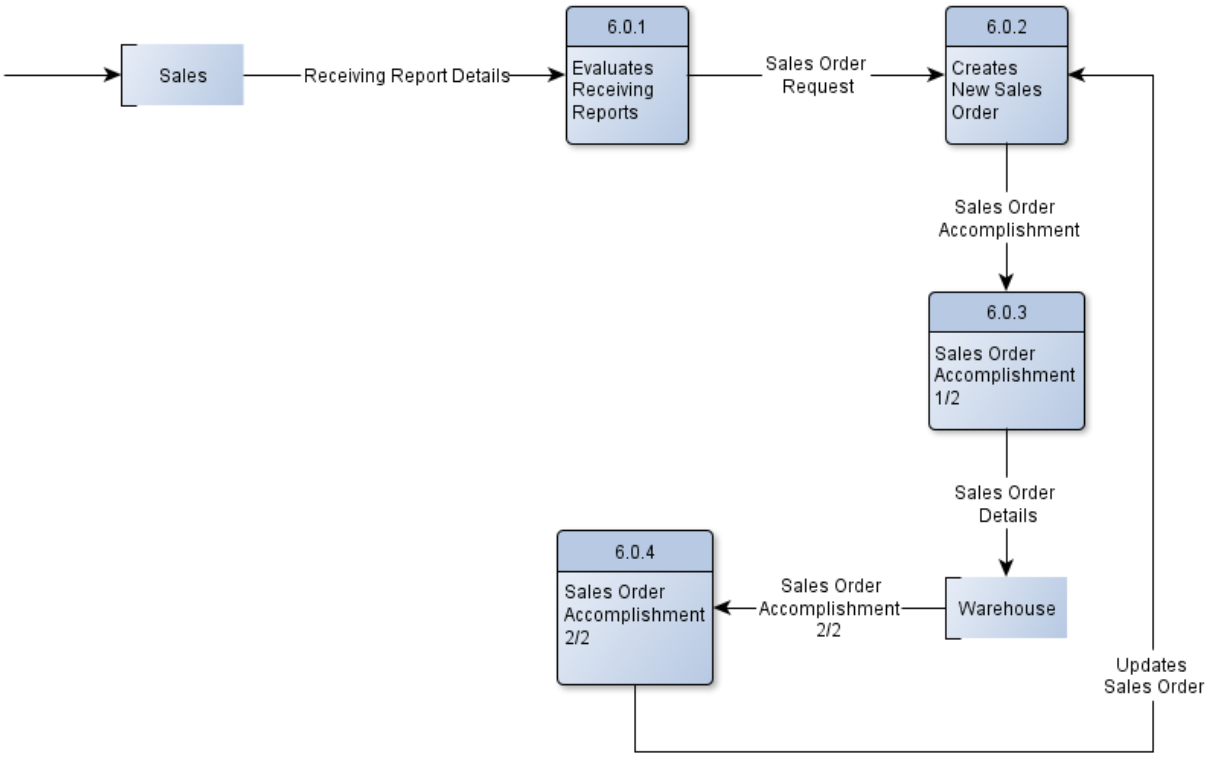
4. Diagram 4


Purchase Order Details
Supplier
Supplier Request
4.0.1
Confirms Purchase Order
Purchase Details Request
Product Details
Deliver Items
4.0.2
Creates Delivery Report
Updates Database
Purchase Order Database
Warehouse

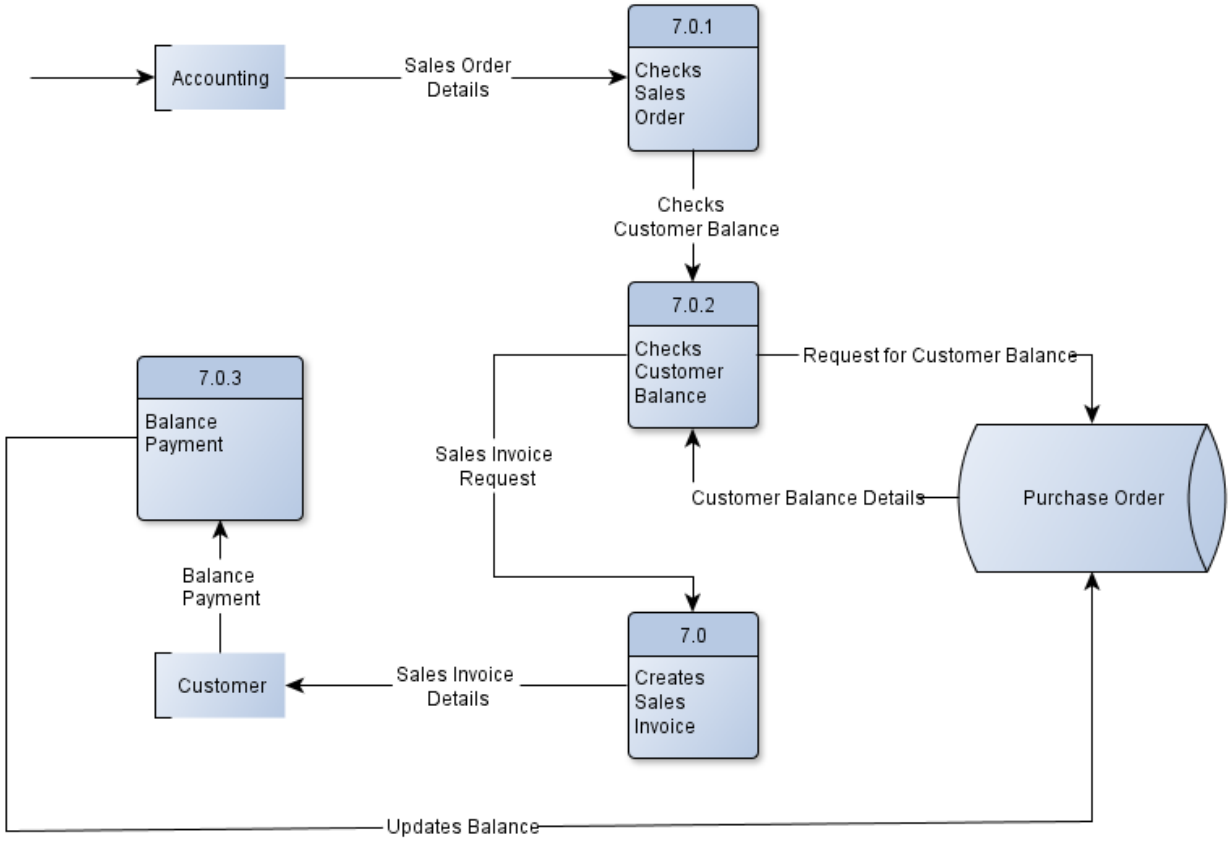
5. Diagram 5



6. Diagram 6

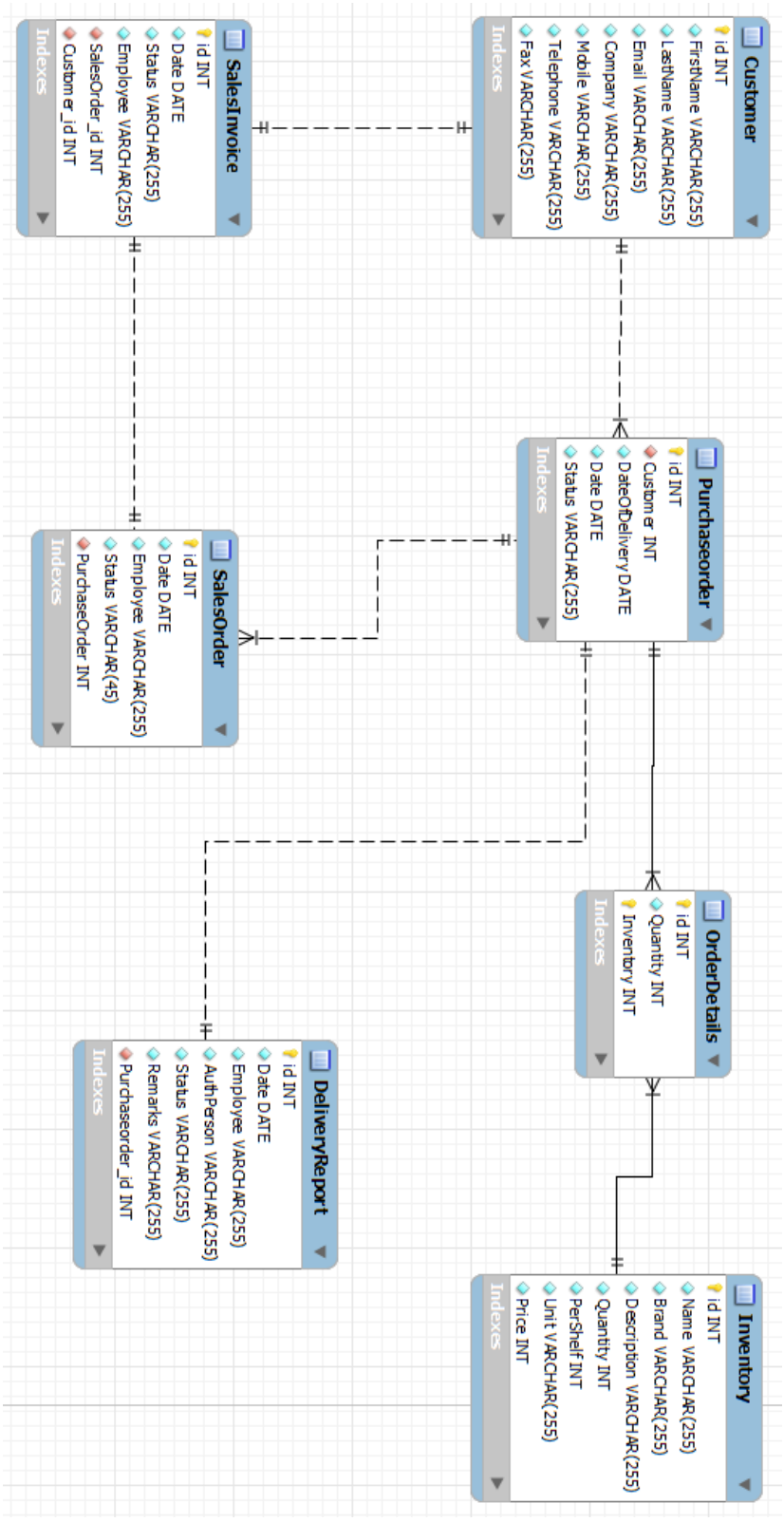


7. Diagram 7


7.0.1
Checks Sales Order
Accounting
Sales Order Details
Checks Customer Balance
7.0.2
Checks Customer Balance
Request for Customer Balance
7.0.3
Balance Payment
Sales Invoice Request
Customer Balance Details
Purchase Order
Balance Payment
7.0
Creates Sales Invoice
Customer
Sales Invoice Details
Updates Balance

f. **Entity Relationship Diagram**

i. **Normalized Diagram**



g. Data Dictionary

II. TableName	Attribute Name	Contents	Type	Format	Required	PK	FK
Customer	Cust_No	Customer ID Number	INT	XXX-XXXX	Y	Y	
	Cust_Fname	Cust.'s First Name	VARCHAR(45)	XXXXXXX	Y		
	Cust_Lname	Cust.'s Last Name	VARCHAR(45)	XXXXXXX	Y		
	Cust_Email	Cust.'s Email	VARCHAR(45)	XXX@XXX.X	Y		
	Cust_Telephone	Cust.'s Telephone No.	INT	XXX-XXXX			
	Cust_Mobile	Cust.'s Mobile No.	INT	XXX-XXXX-X			
	Cust_Address	Cust.'s Home Address	VARCHAR(45)	XX,XX,XX	Y		
	Cust_Zip	Cust.'s Zip Code	VARCHAR(45)	XXXX	Y		
Purchase Order	PO_Num	Purchase Order Number	INT	XXX-XXXX	Y	Y	
	PO_Date	Date PO was made	DATE	XX/XX/XXXX	Y		
	PO_Address	Address of PO	VARCHAR(45)	XX,XX,XX	Y		
	PO_Status	Status of PO	VARCHAR(45)	XXXX	Y		
	Cust_No	Customer ID Number	INT	XXX-XXXX	Y		Y
Product	Product_No	Product's unique ID No	INT	XXX-XXXX	Y	Y	
	Product_Qty	Product Quantity	INT	XXXX	Y		
	Product_Amt	Product Net Amount	INT	XXX.XX	Y		
	Product_Store	Product's Storage	VARCHAR(45)	XXXXXXX	Y		
Product Details	PO_No	Purchase Order Number	INT	XXX-XXXX	Y	Y	Y
	Product_No	Product's unique ID No	INT	XXX-XXXX	Y	Y	Y
Delivery Report	DR_No	DeliveryReportNumber	INT	XXX-XXXX	Y	Y	
	DR_Date	Delivery Date	DATE	XX/XX/XXXX	Y		
	DR_Time	Delivery Time	TIME	XX:XX	Y		
	DR_Aperson	Authorized	VARCHAR(45)	XXXXXXX	Y		
	DR_EName	Person(Sup)	VARCHAR(45)	XXXXXXX	Y		
	DR_Status	Warehouse Employee Status of Items Delivered	VARCHAR(45)	XXXX	Y		
PODR (Connection of Purchase Order and Delivery Report tables)	DR_No	DeliveryReportNumber	INT	XXX-XXXX	Y	Y	Y
	PO_No	Purchase Order Number	INT	XXX-XXXX	Y	Y	Y
Sales Order	SO_No	Sales Order Number	INT	XXX-XXXX	Y	Y	
	PO_No	Purchase Order Number	INT	XXX-XXXX	Y		Y
	SO_Date	Date SO was created	DATE	XX/XX/XXXX	Y		
	SO_Time	Time SO was created	TIME	XX:XX	Y		
	SO_Employee	Employee who created SO	VARCHAR(45)	XXXXXXXX	Y		
Sales Invoice	SI_No	Sales Invoice Number	INT	XXX-XXXX	Y	Y	
	SO_No	Sales Order Number	INT	XXX-XXXX	Y		Y
	SI_Date	Date SI was created	DATE	XX/XX/XXXX	Y		
	SI_Time	Time SI was Created	TIME	XX:XX	Y		
	SI_Employee	Employee who created SI	VARCHAR(45)	XXXXXXX	Y		
	SI_OR	SI's Official Receit	VARCHAR(45)	XXXXXXXX	Y		
	SI_Status	Status (Paid/Not)	VARCHAR(45)	XXXXX	Y		
Inventory	Product_Name	Name of the Product	VARCHAR(45)	XXXXXXXXX	Y		
	Product_Brand	Brand of the Product	VARCHAR(45)	XXXXXXXXX	Y		
	Product_PerShelf	Prod Quantity Per Shelf	INT	XXXX	Y		
	Product_Qty		INT	XXXX	Y		

	Product_Class Product_Store Product_ID Product_Unit	Quantity of the Product Class of the Product Product Storage Product Identification Unit of Measurement	VARCHAR(45) VARCHAR(45) INT VARCHAR(45)	XXXX-XX XXXX XXX-XXXX XXXX.XX	Y Y Y Y	Y	