Cal Poly Pomona
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Zozo Company Database Models
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CIS 3050
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Student's Academic Honesty

Statement of Academic Honesty

My name is: _____Deshol John_____, I declare that, except where fully referenced, no aspect of this project has been copied from any other source. I understand that any act of Academic Dishonesty such as plagiarism or collusion may result in serious offense and punishments. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others, nor will I help fellow students to violate the Code of Academic Honesty.

Name: _____Deshol John_____
Date: _____2/28/2024_____
Signature: _____Deshol John_____

Introduction/ Project Description and Requirements

Introduction

The following project is for Zozo Company. I, with the help of a group although submitted individually was tasked by the company to describe their primary business processes. In order to complete this I had to develop a normalized relational data model. The model involves designing a complete database management system. The need for this is to address a practical database while implementing a relational database based on that design. Using Erwin database model I'm aiming to assist Zozo Company with performing general information management tasks. This will be through multiple deliverables such as Entity Relationship Diagrams (ERDs) both physical and logical, Logical Schema Diagrams, Referential Integrity Constraints Diagrams, and a few more which you will see in the following pages. The database team conducted research and provided me with rules and requirements I must follow to help achieve Zozo Company's objective. The following pages will also show the extracted requirements from the database team.

Project Description

The project is designing a complete database management system to address a practical database need and implement a relational database based on that design. Your database system should be designed to perform general information management tasks such as systematic collection, update, and retrieval of information for a small organization.

The objective of Project #1 is to develop a normalized relational data model describing the primary business processes of the Zozo Company. The sales department of Zozo company has decided to create a database that contain the details of its sales process. The initial entities for your model are **REGION**, **STORE**, **PRODUCT**, **CUSTOMER**, and **VENDOR**. In addition to these initial entities, you are provided with several business rules.

Attributes, Keys, Null/Not Null Data Type Table

Entity	Attributes	Key	Data Type	Null/Not Null
Region				
	RegionID	Primary Key	UNIQUEID(9)	Not Null
	RegionName	Non Key	CHAR(18)	Null
Store				
	StoreID	Primary Key	UNIQUEID(9)	Not Null
	StoreZipCode	Non Key	CHAR(5)	Null
	RegionID	Foreign Key	UNIQUEID(9)	Null
Customer				
	CustomerID	Primary Key	UNIQUEID(9)	Not Null
	CustomerName	Non Key	CHAR(18)	Null
	CustomerZip	Non Key	CHAR(5)	Null
Vendor				
	VendorID	Primary Key	UNIQUEID(9)	Not Null
	VendorName	Non Key	CHAR(18)	Null
Category				
	CategoryID	Primary Key	UNIQUEID(9)	Not Null
	CategoryName	Non Key	CHAR(18)	Null
Product				
	ProductID	Primary Key	UNIQUEID(9)	Not Null
	ProductName	Non Key	CHAR(18)	Null

	ProductPrice	Non Key	CHAR(18)	Null
	VendorID	Foreign Key	UNIQUEID(9)	Null
	CategoryID	Foreign Key	UNIQUEID(9)	Null
Transaction				
	TransactionID	Primary Key	UNIQUEID(9)	Not Null
	TransactionDate	Non Key	CHAR(8)	Null
	StoreID	Foreign Key	UNIQUEID(9)	Null
	CustomerID	Foreign Key	UNIQUEID(9)	Null
Sales Transaction Product				
	TransactionID	Foreign Key	UNIQUEID(9)	Not Null
	ProductID	Foreign Key	UNIQUEID(9)	Not Null
	STP Quantity	Non Key	INTEGER(3)	Null

Conceptual and Logical ERDs

Conceptual ERD
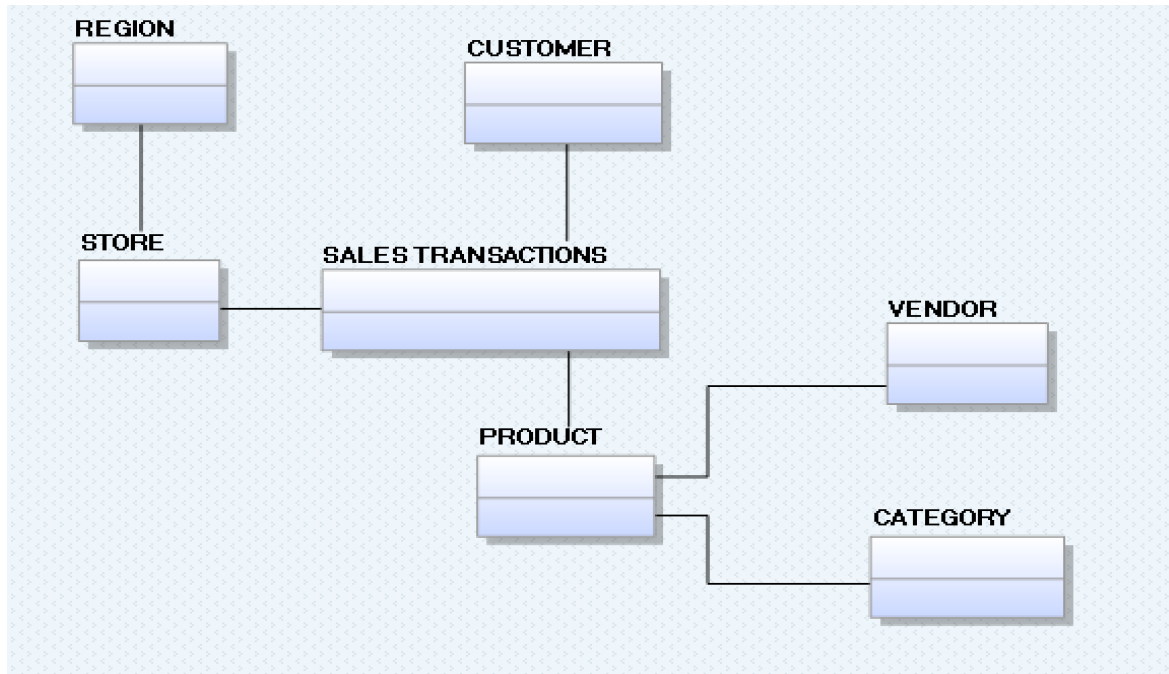
## Logical ERD
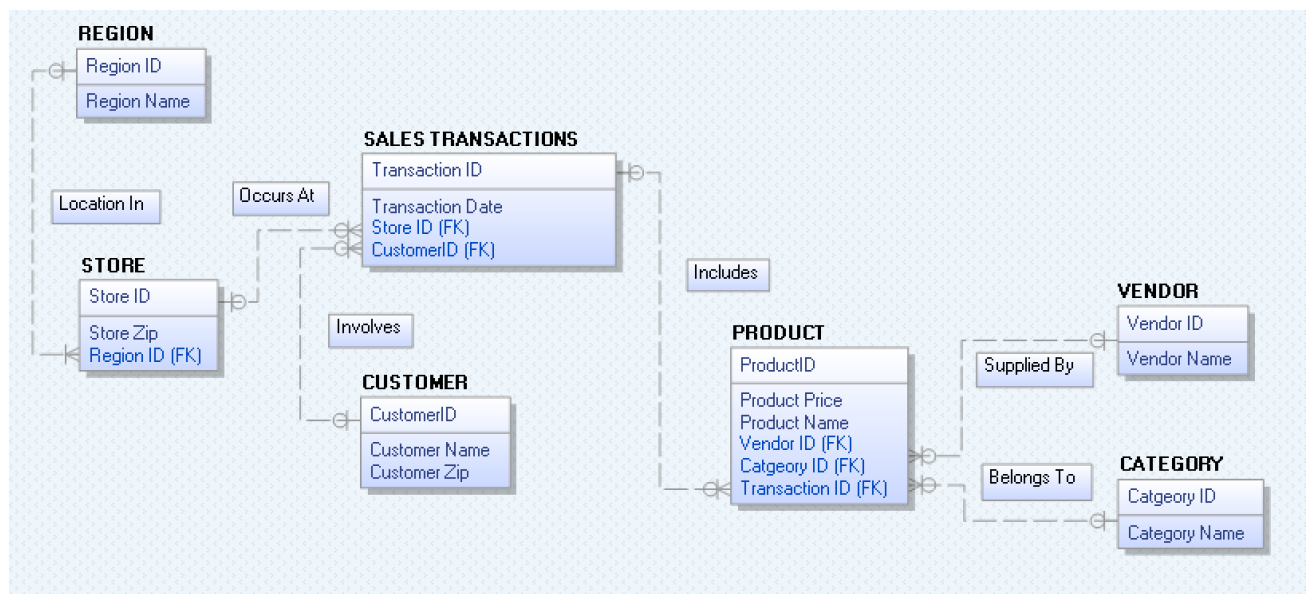
Business Rules, Additional Business Rules

Zozo Retail Company sales Database will capture data about the
following:

- For each **product** being sold: a product ID, product name, and price;

- For each **category** of product: category ID and category name;

- For each **vendor**: vendor ID and vendor name;

- For each **Customer**: customer ID, name, and zip code;

- For each **store**, store ID, and zip code;

- For each **region**: region ID and region name;

- For each sales transaction: transaction ID, and date of Transaction;

- Each product is supplied by exactly one vendor. Each vendor supplies one or more products.

- Each product belongs to exactly one category. Each category contains one or more products.

- Each store is located in exactly one region. Each region contains one or more stores.

- Each **sale transaction** occurs in one store. Each **store** has one or more transactions occurring
at it.

- Each **sales transaction** involves exactly one **customer**. Each **customer** can be involved in one
or **more transactions**.

- Each **product** is included in one or more sales transactions. Each **sales transaction** includes
one or more **products**.

- For each **instance** of a product included in a sales transaction, the quantity of that product
included (sold) in that transaction is required.

- Each customer is shopping in many stores. Each store has many customers.

- Each store contains many products. Each product contained in many stores.
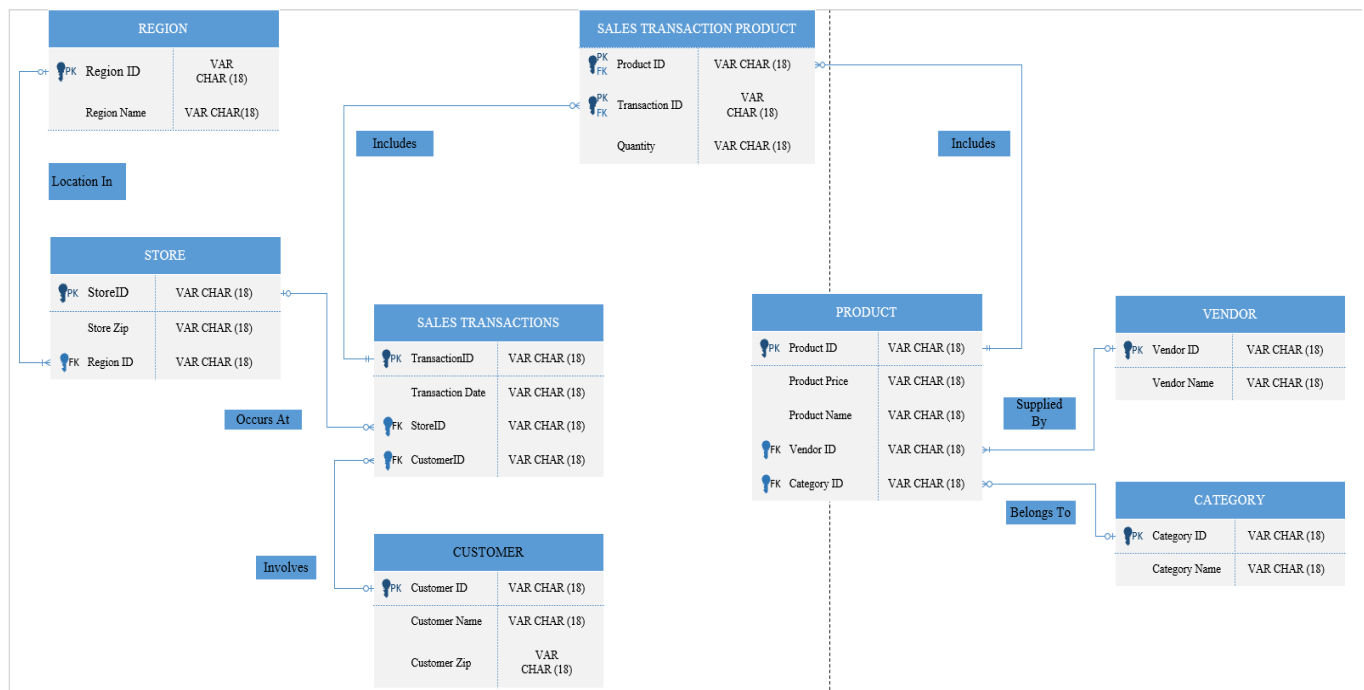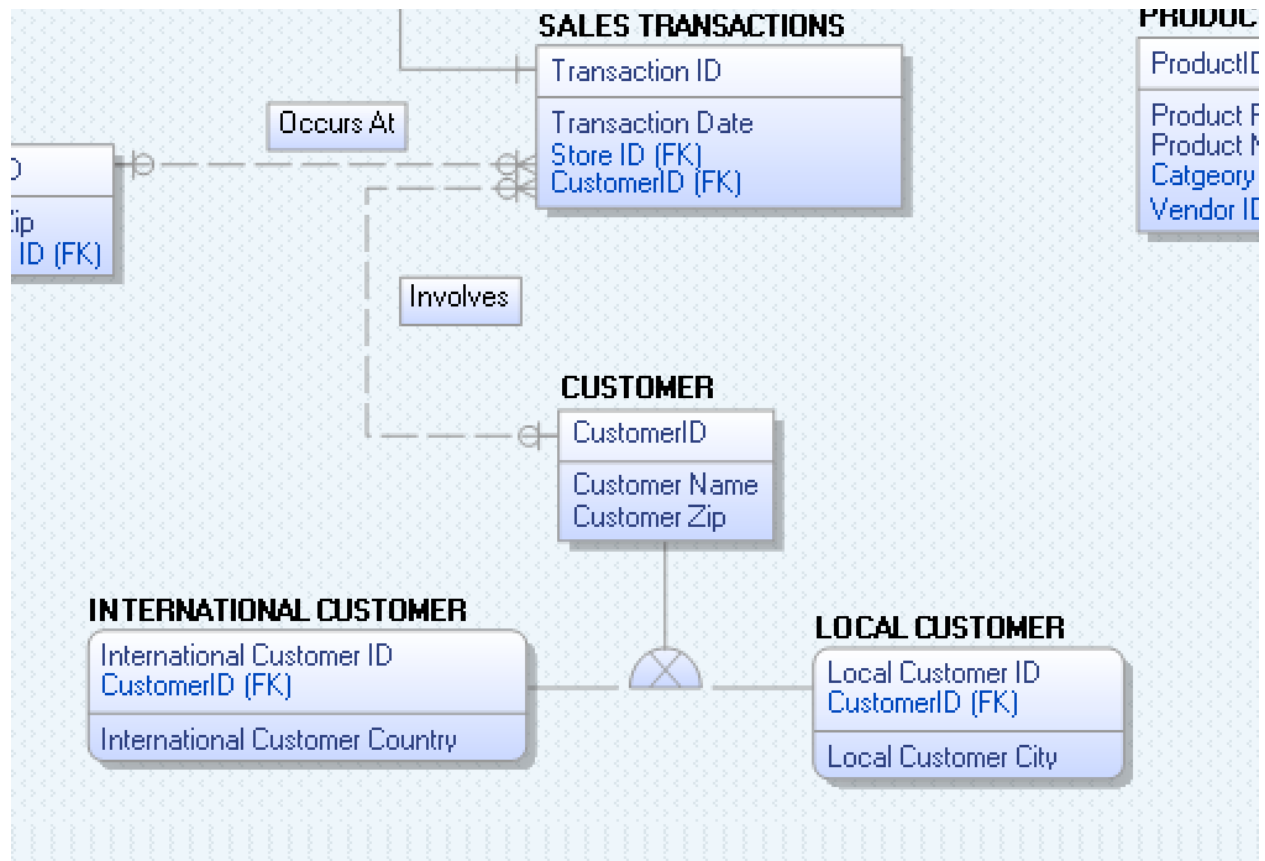
Erwin and Visio Physical ERDs

Erwin Physical ERD
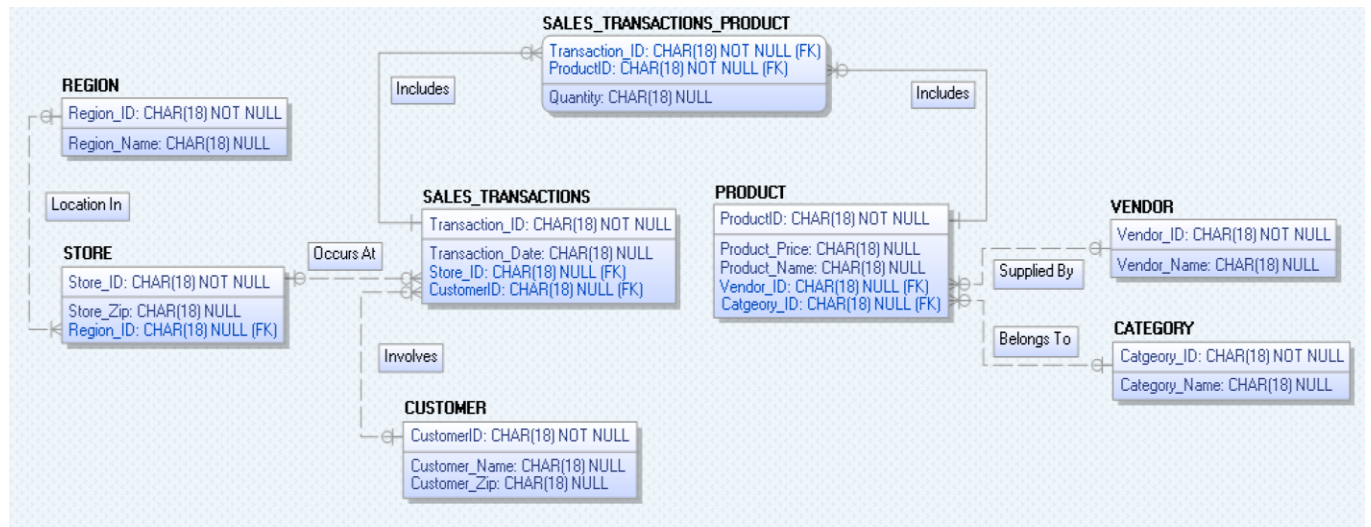
Visio Physical ERD

Enhanced ERD

Schema for All RELATIONS

Schema All RELATION

Region

RegionID	Region Name

Store

StoreID	Store Zip Code	RegionID

Sales Transactions

TransactionID	Transaction Date	StoreID	CustomerID

Customer

CustomerID	Customer Name	Customer Zip

Sales Transactions Product

TransactionID	ProductID	Quantity

Product

ProductID	Product Price	Product Name	VendorID	CategoryID

Vendor

VendorID	Vendor Name

Category

CategoryID	Category Name

Referential Integrity Constraints

Referential Integrity Constraints

Region

RegionID	Region Name

Store

StoreID	Store Zip Code	RegionID

Sales Transactions

TransactionID	Transaction Date	StoreID	CustomerID

Customer

CustomerID	Customer Name	Customer Zip

Sales Transactions Product

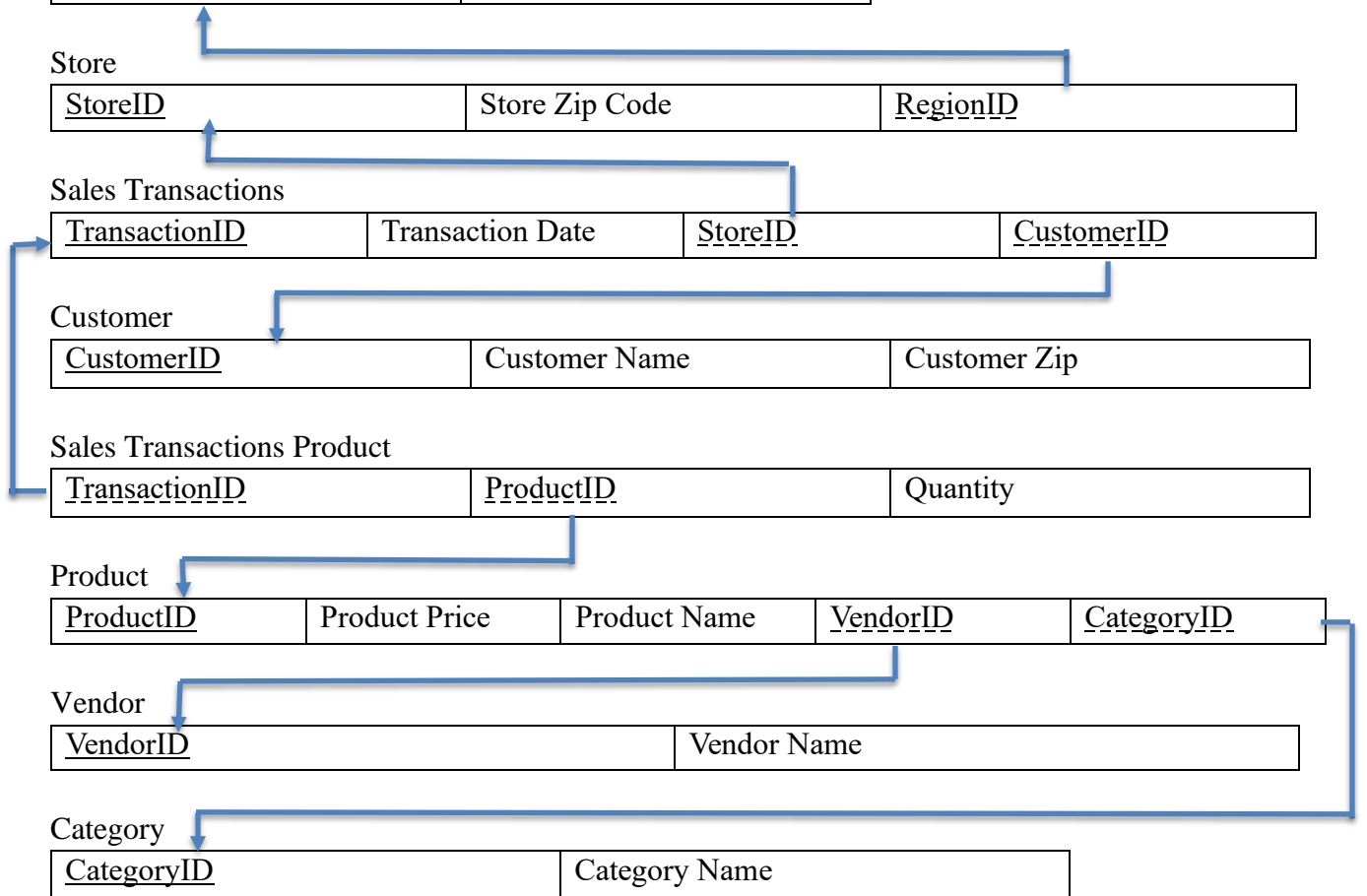| TransactionID	ProductID	Quantity

Product

ProductID	Product Price	Product Name	VendorID	CategoryID

Vendor

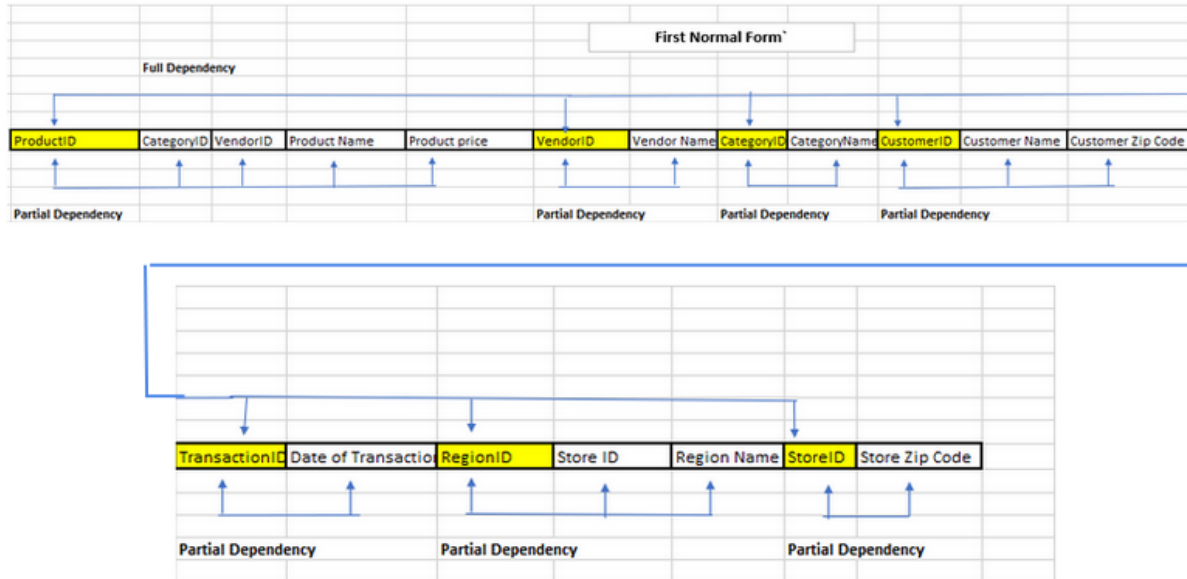| VendorID	Vendor Name

Category

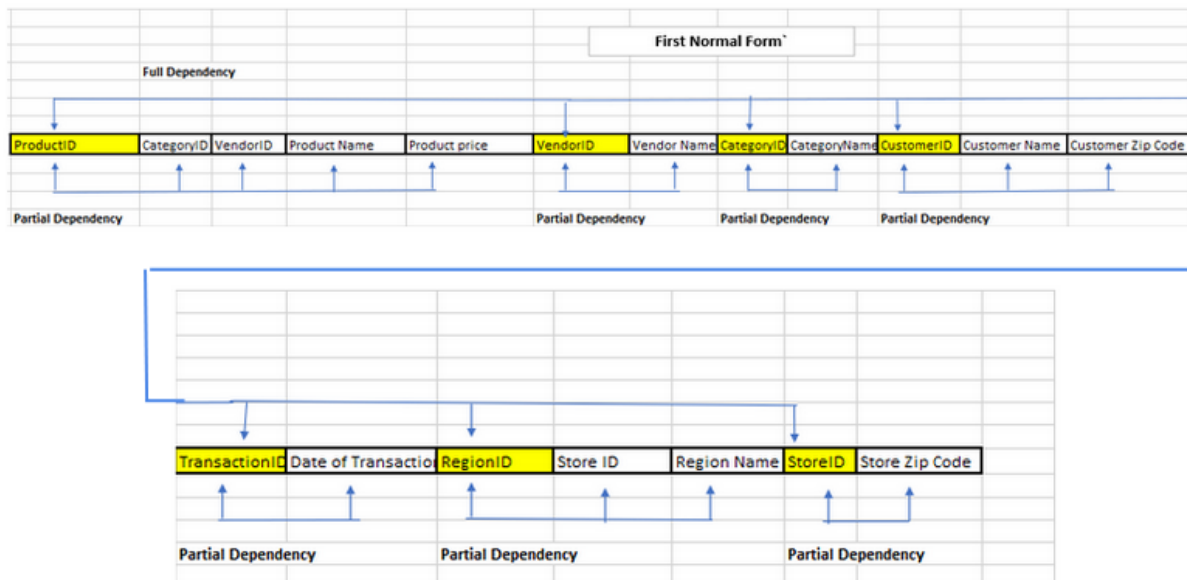| CategoryID	Category Name

Functional Dependencies and First Normal Form

Full Functional Dependency

First Normal Form

Second and Third Normal Forms

Second Normal Form

Second Form Normal				
ProductID	CategoryID	VendorID	Product Name	Product Price
VendorID	Vendor Name			
CategoryID	CategoryName			
CustomerID	CustomerName	Customer ZipCode		
Transaction	Date of Transaction			
RegionID	StoreID	Region Name	CustomerID	
StoreID	RegionID	Store Zip Code		
		Primary Key		
		Foreign Key		

Third Normal Form

ProductID	CategoryID	VendorID	Product Name	Product Price
VendorID	Vendor Name			
CategoryID	CategoryName			
CustomerID	CustomerName	Customer ZipCode		
Transaction	Date of Transaction			
RegionID	StoreID	Region Name	CustomerID	
StoreID	RegionID	Store Zip Code		
		Primary Key		
		Foreign Key		

Lessons Learned & Recommendations

Upon completing this project I found it difficult yet eye opening. There were a lot of obstacles and moments of confusion on the road to completion. I learned numerous amounts of things apart from just learning how to use Erwin. Although that was my main learning factor, I was able to learn more about businesses processes through the software. Learning about entities, attributes, and relationships allowed me to discover a side of databases that knew little to nothing about. By drawing out graphical versions of the deliverables on the software I was able to further grasp what was taught in class to me. Since I am a hands-on learner, the graphs started to make more sense once applying the knowledge learned in class to Erwin. In addition to the re-enforcements of the concepts I learned that it's extremely important to work close with the company whom you are working for. A company may not always provide all their business rules upfront so it's important to communicate thoroughly to understand what they want. Developing the database management system is difficult without all the details known in the beginning. For my recommendation on this project I would recommend to confirm with the company on project vision and updates as you complete the processes. Also to not use Visio as it was slow and a bit more tedious to use in my opinion.

Conclusion

In conclusion, creating a database management system for Zozo Company was not an easy process. As stated above in my lessons learned the project contained numerous obstacles all the up until the finish line. Some of which were not as difficult than others. Learning the Erwin software was the first of many obstacles within the project. Through the help of my Database Design and Development class and playing around with Erwin for a few hours I was able to get the hang of it. In addition, after I reviewed the rules and requirements from Zozo's database team the project only started to get clearer from that point on. I was able to help Zozo company perform general information management tasks through Logical and Physical ERDs, Schema Diagrams, Referential Integrity Constraints Diagrams, and etc…. Each diagram constructed allowed me to overall describe Zozo company's primary business processes.

References

Hoffer, Jeff, et al. Modern Database Management. Available from: VitalSource Bookshelf, (13th Edition). Pearson Education (US), 2018.

(https://www.erwin.com/products/erwin-data-modeler/)

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bookshelf.erwin.com/bookshelf/public_html/12.5/Content/User%20Guides/erwin%20Help/Relationships%20and%20Domains.html. Accessed 26 Feb. 2024.

Logical and Physical Modeling,

bookshelf.erwin.com/bookshelf/public_html/12.5/Content/User%20Guides/erwin%20Help/Logical_and_Physical_Modeling.html. Accessed 26 Feb. 2024.

Database Tutorial for Beginners https://www.youtube.com/watch?v=wR0jg0eQsZA