Student's Full Name: Rohit Yadav
Course Title: Database Design and Prototyping
Term name and year: Fall 2025
Submission Week: Week 7 Project Update 1
Instructor's Name: Nayem Rahman
Date of Submission: 15th October 2025

Project Title: Supply Chain and Logistics Management System

1. Brief Description of the Project

This project focuses on developing a relational database system for a logistics startup, SwiftLogix Inc., which manages the end-to-end flow of goods across its supply chain network. The company connects multiple suppliers, warehouses, transport carriers, and retail clients to ensure on-time and cost-efficient product delivery. The goal of this project is to design a centralized database that accurately tracks product movement, shipment schedules, warehouse inventory, and delivery performance metrics.

The proposed system will enable managers to view and analyze key logistics data such as order volumes, supplier reliability, carrier performance, and warehouse utilization. By integrating these elements into a single database, the company can reduce manual errors, improve real-time visibility into shipments, and enhance decision-making related to cost control, delivery routes, and vendor management. The project will eventually progress through the conceptual, logical, and physical stages of database design, ensuring normalization, referential integrity, and efficient query execution.

2. Data Used and Description

The dataset used for this project is the "DataCo Smart Supply Chain for Big Data Analysis" dataset, publicly available on Kaggle. It contains comprehensive information representing real-world supply chain operations. The data includes key entities such as Suppliers, Products, Orders, Shipments, Customers, and Carriers, each providing attributes necessary for tracking and analysis.

For example, the Orders table includes order dates, quantities, and shipment details; the Products table lists product categories, weights, and costs; and the Shipments table records carrier names, shipping modes, routes, and delivery times. The Customers and Suppliers tables link buyers and vendors to specific transactions, forming the basis for a multi-entity relational structure.

The dataset will be refined to a manageable size (around 100–200 rows) for the course requirements while maintaining relational integrity between entities. It will serve as the foundation for creating conceptual and logical models in subsequent phases and will support SQL queries related to performance metrics such as delivery delays, order frequency, and cost optimization.

3. Source of Data

The dataset is sourced from Kaggle:
DataCo Smart Supply Chain for Big Data Analysis (*https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis*).
This open-source dataset offers structured supply-chain data that is ideal for academic modeling and relational database prototyping.