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**1.1 Overview**

This project aims to develop a comprehensive system for managing and analyzing customer data. By leveraging SQL databases, data warehousing, Python programming, and cloud-based services, we will create a robust solution capable of extracting valuable insights from customer information.

**1.2 Why We Use This Project**

This project is crucial for businesses seeking to understand their customers better, improve customer satisfaction, and make data-driven decisions. By effectively managing and analyzing customer data, organizations can identify trends, predict customer behavior, and optimize their marketing and sales strategies.

**1.3 Problem Statements**

* **• Data Management Challenges: Managing large volumes of customer data from various sources can be complex and time-consuming.**
* **• Data analysis limitations: Traditional data analysis methods may not be sufficient to uncover hidden patterns and trends.**
* **• Predictive modeling needs: Accurate predictive models can help businesses anticipate customer behavior and improve marketing strategies.**
* **1.4 Contribution to the Project**
* **Database Design:** Developed a well-structured SQL database schema to efficiently store and manage customer data.
* **Data Warehousing:** Implemented a SQL Data Warehouse to aggregate and analyze large volumes of data for analytical purposes.
* **Python Programming:** Utilized Python to interact with the database, extract data, and prepare it for analysis.
* **Data Science:** Applied data science techniques to analyze customer data and build predictive models.
* **Cloud Integration:** Leveraged Azure services to manage and analyze data, as well as deploy machine learning models.
* **MLOps:** Employed MLflow to track experiments and manage machine learning models..

2

2.1 Data Management and SQL Database Setup

**Objective:** To create a well-structured SQL database schema to manage customer data, including information, transactions, and interactions.

**Schema:**

* **Customers**
  + CustomerName
  + FirstName
  + LastName
  + Email
  + PhoneNumber
  + Address
  + City
  + State
  + ZipCode
  + DateOfBirth

A computer screen shot of a computer

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