DAMG 6210 35199 Data Mgt and Database Design

Project 1

Part #1

1.1 Team Formation

Databosses (Group 13)

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1.2 Project Topic

WareFlex (Online Marketplace)

1.3 Problem statement

Creating a warehouse network entails various challenges, including financial risks, operational complexities, adherence to government regulations, staying abreast of technological trends, and navigating market uncertainties. Failure to address these challenges adequately could potentially impede the company's growth.

1.4 Objective

The objective is to serve as an online marketplace, facilitating seamless interaction between manufacturers and independent warehouse operators. The goal is to establish a system allowing companies to lease warehouse space for specific time frame.

Part #2

2.1 Problem

Establishing new warehouses involves navigating various business challenges. One of the primary hurdles is the substantial initial capital investment required for land, construction, and technology. Ongoing operational costs, encompassing staffing, utilities, and maintenance, pose a continuous financial challenge. Selecting an optimal location is crucial, considering factors like proximity to suppliers and transportation infrastructure. Technology integration for warehouse management and inventory tracking can be complex, requiring staff training and adaptation. Ensuring regulatory compliance with zoning laws, safety standards, and environmental regulations is imperative. External factors, such as natural disasters or supply chain disruptions, can impact timely product delivery. Market demand fluctuations may lead to inefficiencies or excess inventory. Finding and retaining skilled labor, along with potential turnover and labor strikes, adds to operational concerns. Rapid technological advancements may render implemented technology obsolete, necessitating regular updates. Furthermore, competition and market saturation can affect the warehouse's profitability and viability.

2.2 Solution

The solution operates like a marketplace that provides companies with an approach to secure warehousing space on a dynamic, on-demand basis, converting the once fixed expenditure into a variable cost. Similar to Airbnb, it operates as a "warehousing-as-a-service" solution, utilizing technology to connect retailers seeking storage space with warehouses having excess capacity. This model enables customers to pay for precisely the space they require at any given time, akin to the flexible payment structures introduced by cloud computing services such as AWS or Azure, which replaced the conventional ownership and management of data centers by companies. By adopting a pay-as-you-go system, this solution not only optimizes operational costs for companies but also maximizes the efficient use of available warehouse space, marking a dynamic shift in the conventional warehousing paradigm.

2.3 Entities and their attributes

1. Customer
   1.1 Customer_ID (VARCHAR 50) – Primary Key
   1.2 First_Name (VARCHAR 100)
   1.3 Last_Name (VARCHAR 50)
   1.4 Address (VARCHAR 100)
   1.5 Email (VARCHAR 50)
   1.6 Phone (VARCHAR 15)

2. Service_Request
   2.1 Request_ID (VARCHAR 50) – Primary Key
   2.2 Lease_Unit_ID (VARCHAR 50) – Foreign Key
   2.3 Request_Desc (VARCHAR 250)
   2.4 Request_Date (DATE)
   2.5 Request_Status (VARCHAR 50)
   2.6 Customer_ID (VARCHAR 50)

3. Payment
   3.1 Payment_ID (VARCHAR 50) – Primary Key
   3.2 Lease_ID (VARCHAR 50) – Foreign Key
   3.3 Transaction_Date (DATE)
   3.4 Payment_Mode (VARCHAR 50)
   3.5 Transaction_Amount (DOUBLE (10, 2))

4. Lease
   4.1 Lease_ID (VARCHAR 50) – Primary Key
   4.2 Warehouse_ID (VARCHAR 50) – Foreign Key
   4.3 Customer_ID (VARCHAR 50) – Foreign Key
   4.4 Start_Date (DATE)
   4.5 End_Date (DATE)
   4.6 Lease_Amount (Double (10, 2))
   4.7 Due_Date (DATE)
   4.8 Payment_Status (VARCHAR 50)
   4.9 Balance_Amount (DOUBLE (10, 2))

5. Unit
   5.1 Unit_ID (VARCHAR 50) – Primary Key
   5.2 Warehouse_ID (VARCHAR 50) – Foreign Key
   5.3 Availability (VARCHAR 50)

6. Lease_Unit
   6.1 Lease_Unit_ID (VARCHAR 100) – Primary Key
   6.2 Unit_ID (VARCHAR 50) – Foreign Key
   6.3 Lease_ID (VARCHAR 50) – Foreign Key

7. Owner
   7.1 Owner_ID (VARCHAR 50) – Primary Key
   7.2 Owner_Name (VARCHAR 100)
   7.3 Address (VARCHAR 100)
   7.4 Email (VARCHAR 50)
   7.5 Phone (VARCHAR 15)

8. Warehouse
   8.1 Warehouse_ID (VARCHAR 50) – Primary Key
   8.2 Name (VARCHAR 50)
   8.3 Address (VARCHAR 100)
   8.4 Available_Space (NUMBER 5)
   8.5 Warehouse_Type_ID (VARCHAR 50) – Foreign Key
   8.6 Location_ID (VARCHAR 50) – Foreign Key
   8.7 Owner_ID (VARCHAR 50) – Foreign Key

9. Warehouse_Type
   9.1 Warehouse_Type_ID (VARCHAR 50) – Primary Key
   9.2 Type_Name (VARCHAR 50)
   9.3 Monthly_Rate (DOUBLE (10, 2))

10. Employee
    10.1 Employee_ID (VARCHAR 50) – Primary Key
    10.2 Warehouse_ID (VARCHAR 50) – Foreign Key
    10.3 Employee_Name (VARCHAR 100)
    10.4 Address (VARCHAR 100)
    10.5 Email (VARCHAR 50)
    10.6 Phone (VARCHAR 15)
    10.7 Role (VARCHAR 20)
    10.8 Salary (DOUBLE (8, 2))

11. Location
    11.1 Location_ID (VARCHAR 50) – Primary Key
    11.2 ZIP (VARCHAR 10)
    11.3 City (VARCHAR 50)
    11.4 State (VARCHAR 25)
    11.5 Country (VARCHAR 50)
    11.6 Latitude (DECIMAL (8, 6))
    11.7 Longitude (DECIMAL (9, 6))

2.4 Entity Relationship Diagram