Eden Landscaping – A Case Study in System Design

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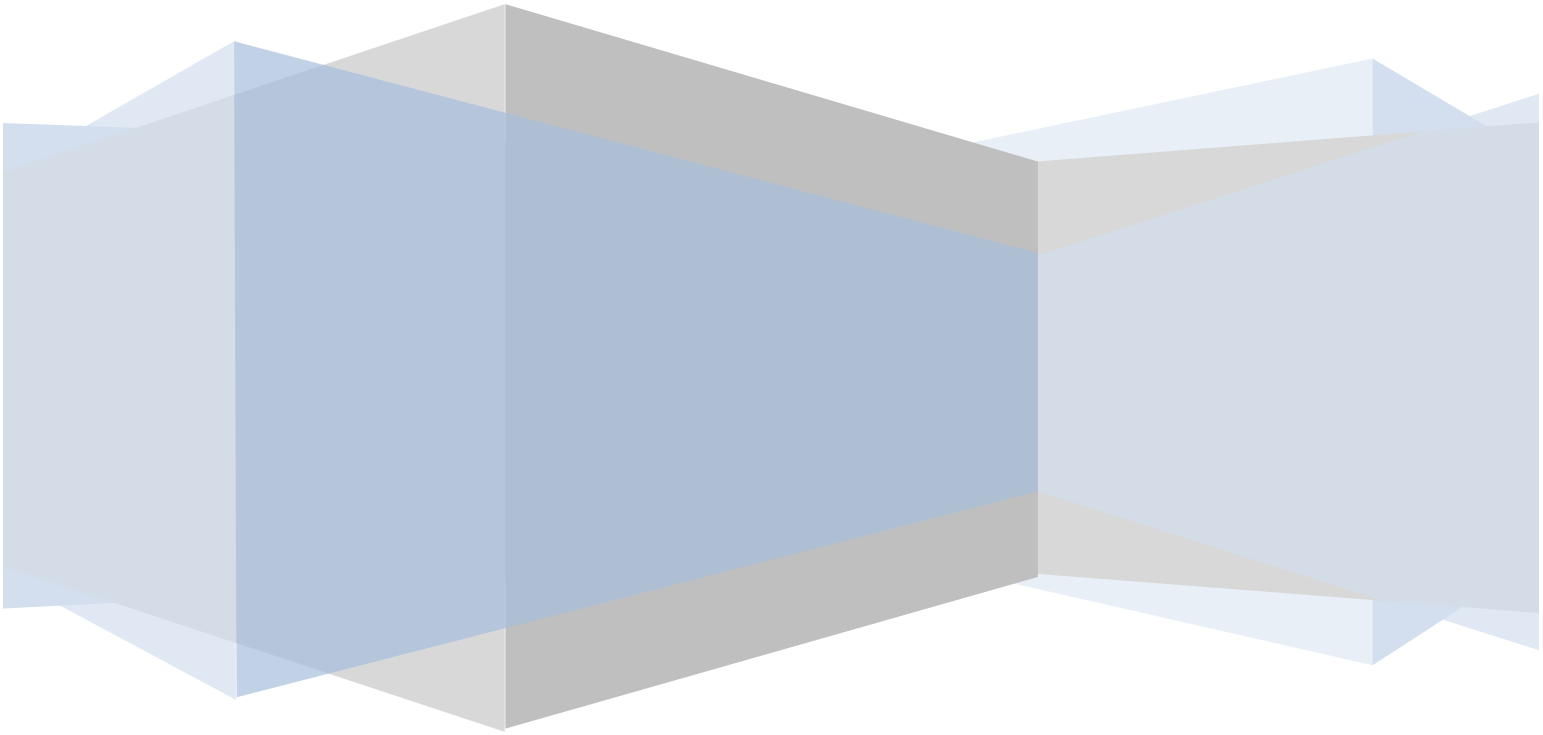
Student Design Project Number One

Database Design



Goal of this Case Study

The goal of this case study is to provide students with practical, hands-on experience in system design in order to further supplement the theoretical knowledge gained through classroom lectures, textbook and lab exercises.

Objectives

After reading this case study and successfully completing the assigned design project described below, students will have accomplished the following objectives.

- **Understand** and appreciate some typical problems encountered when you step into an unfamiliar organization and attempt to analyze business data requirements and design a database to meet those requirements.

- **Understand** and appreciate the challenges of applying database analysis and design tools and techniques in a practical and realistic business setting.

- **Practice** preparing realistic technical database design documentation in a clear, professional manner.

- **Exhibit** proficiency in performing data requirements analysis. This will focus on the creation of customer requirements documentation based on review of the client's business processes and conducting personal interviews. This objective should include the documentation of business processes using tools like Data Flow Diagrams, Functional Decomposition Diagrams, and Use Case diagrams.

- **Display** a thorough understanding and proper use of data normalization and data modeling techniques. This includes normalizing data into Third Normal Form schema descriptions and constructing a fully-attributed, key-based data model.

Project Instructions

Students should begin by reading the entire case study and becoming familiar with the client's business.

Students should fully enter into the simulation described in the case study. The scenario is this: you and your team have been hired by Eden Landscaping to automate the method in which they track their inventory of live plants and landscaping materials kept in their yard and used for landscaping jobs or sold on a retail basis to on-site customers.

After reading the case study students should proceed as follows.

1. Review ALL the materials collected by your team. This includes transcripts of all the face-to-face interviews conducted with various Eden Landscaping employees. This also includes your review of all the sample business documents collected during interviews.

2. Based on the information collected from the interview transcripts, students should document the role of each Eden Landscaping employee by their job title or job description. It is important to document how each role interacts with the business process of managing their inventory of live plant stock.

3. Focus on the business process area of inventory management. The scope of your focus includes **ONLY** the landscaping materials and live plant stock inventory that Eden sells – NOT Eden's retail store inventory.

   Your scope for this project includes:

- plants and landscaping materials that are sold to customers who come to the store, make a purchase, and pick up and carry their purchased items

- plants and landscaping materials that are sold to customers who come to the store, make a purchase, and have Eden deliver their purchased items to their home

- plants and landscaping materials that are sold to customers as part of a landscaping service contract or job where Eden loads up a truck and sends a crew to the customer's home to complete a landscaping project

4. Using all the information collected and documented in the steps above, students must design a relational database to support Eden's plant stock and landscaping materials inventory processes. The scope of business process areas should include

    - the ordering of plants and landscaping materials from suppliers

    - taking physical inventory to see what's in stock at any given point in time

    - receiving incoming shipments of plants and landscaping materials from suppliers

    - restocking on-site inventories of plants and landscaping materials from suppliers

    - fulfilling customer orders and purchases, including on-site retail sales as well as landscaping jobs at the customer's location

5. Your database design deliverables (as required by your instructor) may include

    a. An Entity Relationship Diagram, including

    - all entities must be properly named
    - all relationships must be properly named (at least one way)
    - all cardinality and optionality must be defined
    - all primary and foreign keys defined
    - all many-to-many relationships must be resolved

    b. A Fully Attributed Logical Data Model, including the information in the Entity Relationship Diagram described above, plus

    - all attributes properly named
    - data type and length for each attribute properly defined

    c. A Physical Data Model (SQL create statements) including all the information in the Fully Attributed Logical data model described above, plus

    - null/not null constraints defined
    - defaults defined
    - auto-increment or sequence constraints defined for surrogate keys
    - all primary and foreign key constraints defined