CSE 3241 Introduction to Database Systems

Group Project

Database Design and Implementation

Goal of this assignment:

Work in a group of 4 people to gain experience in database design through requirement analysis and data modeling, followed by implementation.

Requirements:

Design an online ordering system that keeps track of sales of various types of products through selling and refilling inventories. The company sets a base sale price on each type of product, which can be changed at anytime and become effective immediately. The actual sale price of an item depends on how many are in stock at the time of the sale. The price of an item increases (from the base price) when there are 10 or fewer items in stock. When there only 10 items (of that product type) available, the next item will be sold at the base price +1%. The last 9^{th} item will be priced at base price +2%, the last 8^{th} will be priced at the base price + 3%, and so on till they are all gone. Therefore, the last item will be sold at base price + 10%. The number of items in stock can go up when new shipments arrive and the only way it can go down is through sales.

Each shipment can include items from different product types; therefore, each line item contains the product type and the corresponding number of items included in the shipment. For example, a shipment arrived on 9/1 has (watershoes, 11) (OSU mug, 20) ….

Your assignment is to design an application for this company that provides the following functionality at a high level.

1. Owner can add or change or delete the base price of a product type. For example, $8 for a 'OSU mug'. The information added will become effective immediately.

2. Owner can track shipment information such as the product type and its corresponding quantity.

3. Owner can track customer information such as customer ID, name, address, phone.

4. Owner can track sales information including product type, sale price, invoice number, customer ID, tax and total. You can assume one item per sale order. (NOTE: BONUS points will

be given if you allow more than one item on a sale order from the same or different product types.)

4. Owner can track the inventories that include product type and quantity. The quantity in stock should match the total items received (through shipments) minus the number of items sold.

Your tasks:

Part 1 – Engage in the requirement discussions and work among your group members to finalize the requirements for your group. Design the EER model for the database. Your deliverables: a) Detailed requirements and b) EER schema

Part 2 – Map your EER to the relational data model. Your deliverables: a) relational database schema b) DDL for creating your database in MySQL

Part 3 – Implement the database in MySQL and user interfaces in PHP. Your implementation should match the requirements your have defined.

Rubrics for this assignment:

Item	%	Definitions
1	25	Requirements. Produce requirements that meet both the goal and customer's expectation. Enhance the original requirements to close all gaps with more details. The final product (of the requirements) must be verifiable.
2	15	EER design and schema that supports the requirements and implementations
3	15	Relational schema. Does the model match the EER design? If there are any improvements over the EER, what are they?
4	10	User interface. Is the UI easy to use or cumbersome?
5	35	Implementation. Do all the tests against the requirements pass?