CS405G Spring 2010 Final Project
Assigned: **Feb 17th**
Due: **April 21st**

Objectives
The aim of this project is to implement a client-side database e-commerce application. You may implement this in any language. You are also responsible for setting up the server-side database. You are required to team up with another student. Let's assume that you have been hired by Big Blue Nation gift store to keep track of their inventory. The company sells two types of products: books and toys.

Requirements
Your goal is to create an online store for the Big Blue Nation gift store. There will be three types of users:

- customers
- staff
- manager

Customers In order to purchase from the store, customers must first register. Once they are registered, they query and purchase books or toys. These items are first placed in a shopping basket, and then ordered. Customers can see the status of orders (i.e., pending or shipped).

Staff can check inventory, re-stock the online store with more components, view all customer orders, and ship orders to customers. A staff member has an on-line ID and a pass word that he/she can use to login into the company's website to perform the previous listed tasks

Manager can do all tasks a staff member can do. In addition, manager can (1) view statistics about sale information (in the previous week, month, or year), and (2) decide sales promotions. Manager needs to login into the company's website to perform the tasks.

Your project must include the following functionality:

Customer Forms

Register Allows a new customer to register with the store.
Shopping Allows a registered customer to list books or toys. The purchased items may be stored in a shopping basket.
Purchase Allows a registered customer to view their shopping basket and click "Purchase". This creates an order for the items that can then be viewed (and filled) by the store staff. The staff cannot see shopping baskets.
Orders Allows a registered customer to view the orders they have places and see the status (either Pending or Shipped).

Staff Forms

Login Screen Staff must login in order to perform these functions. A single login for all staff is fine.
View Inventory See a list of all items and their quantity.
Update Inventory Same as above, but with editable text boxes to change the quantity of any component.
Ship Pending Orders View the list of pending orders (components, price, customer info).
The staff member can click a "Ship It" button and, if all the components are available, the status of the order changes from "Pending" to "Shipped" and the quantities in the inventory are decreased. If the components are not available, some error page listing the missing components is generated and the order remains "Pending".

Manager Forms

Login Screen may use the staff login form
View Inventory, Update Inventory, Ship Pending Orders: the same as those of staff
Sales Statistics View the list of all items and sales history in the previous (week, month, or year)

Sales Promotion View the list of all items and decide the promotion rate.

Submission

Due Feb 24th

1. Group members and proposal about how work will be split between members.
2. Description of database requirement.
3. Corresponding ER diagram.
4. Database Schema Design (table names and uses, fields names, data types) with sound design principle applied.

Due March 31st

Schedule a project mid-point meeting.

Due April 21st

Submit the code and the executables and a printed report in the following format for each group:

1. Finalized database design
    a. Detailed ER diagram.
    b. Detailed database schema design.
    c. Explanation of functional dependencies and the highest degree of form.
2. Description of programs (data structures, algorithms, and filenames)
    a. Program flow
    b. Data structures
    c. Algorithms if there is any
3. Program functions:
    a. Sample input and output screens for each function
4. Testing
    a. Explain what you have tested to make sure your software works correctly.
    b. Describe your project experience.

Grading

20 Database Design (ER correctness, 3NF? Constraints listed? Domains used? Style)
40 Embedded SQL programs (5 styles, 25 correctness, 10 efficiency)
20 Interface (5 styles, 15 correctness)
10 Testing
10 Reports

Bonus:

(15 points) Add VIP customers. A VIP customer is the customer that has the privilege to open a mini-store of his/her own. He/she can list items for sale in the mini-store and can cancel them at any time before the items are sold. The sale can be in the format of regular sale and bidding. If the item is for regular sale, registered customers can purchase it. If the item is for bidding, customers can bid on the item and bidding history should be kept for each item in the database. When the bidding finishes, customer offering the highest price wins the item. The item will be shipped to the winning customer by the original seller.

Write down your assumptions or constraints and draw a complete ER diagram including the VIP customers.

(5 points) Implement the function of regular sale for the VIP customers with SQL programs.

(10 points) Implement the function of bidding for the VIP customers with SQL programs.

(5 points) Add a search form for customer, staff, and manager to search for items. You may search by title of a book, the ISBN of a book and the subject of a book. For toys, you may search by name, age group, or theme (like Thomas the train, Bob the builder, etc.)