CS 4750 – Database Systems

DB Project Requirement

Last updated: 11/19/2013 by Hong Moon

1. Conceptual Layout

A list of names of your 10 (or more) tables along with short descriptions about each table. Try to limit the number of tables to no more than 15 so that the scope of your project does not get too large. Please note, **a minimum of 10 tables is required**.

1. **Vendor**- details about the item vendors for our online store like location, accepted payment methods, and contact information
2. **Supplies relationship** - vendor supplies product
3. **Customer** - each has a unique username as a primary key, as well as personal information like real name and contact info.
4. **Chooses relationship** - customer chooses payment_option
5. **Payments**- how the customer will pay for the product with credit cards
6. **Writes relationship** - customer writes message and product_review
7. **Message** - written by a customer, where primary key is message_id and foreign key is customer_id. A customer sends private messages to the website for question, complaints, and follow-ups, such as "I received a wrong product."
8. **Product_review** - written by customers, contained a 1-5 star value as well as which version of the product they reviewed and the text of the review itself.
9. **Product** - contains a unique id number for each product, product name, amount left in stock, price, vendor name, and supplied date of the product.
10. **Order** - contains a unique order id number, as well as the status and shipment information.
11. **Order_history** - each customer will have a history of orders based on their username.

(Note: This is just a "conceptual layout" of what how we want to make a database. This is just a rough sketch from our October Progress Report. The documented information above might not translate to our final table design. More details are documented in the Requirements section.)

2. Requirements

Customer

- To register as a Customer, one must insert customer_id (as username), password, name, address, phone number.
- A Customer is identified with customer_id.
- There should be no customers with the same customer_id.
- A password should consist of alpha-numeric characters, and its length should be at least 8.
- We break down the customer's name into First name and Last name
- **We assume that each customer has only one address, so we do not treat address as multi-valued.**
- An address should include street address, city, state, and 5-digit zip code.
- **Since an address is a composite attribute, we made a decision to include street address, city, state, and zip code instead of one address.**
- A phone numbers should have 10 digits in the U.S.
- **We assume that we only request one phone number for a customer, so we do NOT treat phone number as multi-valued.**

Product

- A Product has a unique id number.
- A Product also has product name, amount left in stock, price, vendor name, date of the product supplied, and product description.
- **We make an assumption that vendor name is a unique identifier for a vendor.**
- A price for each product must be greater than 0 dollar.
- We also store the URL to which the picture image of each product will be provided by an external hosting website

Order

- An Order has a unique order id number for each order.
- A Customer can order many Products, and one Product can be ordered by many Customers.
- When a Customer Orders a Product, the following information should be recorded: order id, customer id, a product list id (which keeps track of the list of products purchased with the amounts), order date, total order price, order status, and payment_method_id.
- An order status is one of the following: not shipped yet, in-transit, delivered.
- An order has a payment_method_id, which is the credit card billing information from the Customer.
- When a Customer makes an Order, the order information should be stored in Order_History for that Customer.

- A Customer can only order a Product if the amount left in stock is greater than or equal to the order amount of the product. If there is not enough product left in stock, the Customer should receive a message that the order can't be done because there is not enough product left in stock.
- **We made a decision to keep the total_order_price in the Order table, because it doesn't make sense to put the price in the Payment_Method table, which is to primarily store credit card information.**

Product_list

- A Product_list includes information about the list of products with the amounts that a customer has chosen for an order.
- **We made a decision to make this Product_list table so that we keep track of the list of products a Customer intends to purchase. This decision will enable the Customer to buy more than one different products per Order.**
- A Product_list is identified with list_id and product_id.
- A Product_list should have list_id, product_id, and the amount of the product to order.

Order_history

- When a Customer makes an Order, the order information should be stored in Order History for that Customer.
- An Order_history should have a customer id and an order id.

Vendor

- A vendor supplies a particular product
- A Vendor is identified by vendor name.
- **We make an assumption that vendor name is a unique identifier for a vendor.**
- A Vendor should have contact information: vendor name, phone number, address, email address of contact personnel.
- An address should street address, city, state, and 5-digit zip code.
- **However, in our world, there seems to be no purpose to break down the vendor address into smaller parts, so we assume that the vendor address is atomic.**
- A phone number should have 10 digits in the U.S.
- **We assume that we only request one phone number from a vendor, so we do NOT treat phone number as multi-valued.**

Supply

- Each Product is supplied by one Vendor, but one Vendor can supply many different Products.
- An entry in the Supply table should include a product id and a vendor name.

- When a Vendor supplies a product, the following information should also be recorded: supplied date, supplied amount.

Message

- **A customer sends private Messages to the website for question, complaints, and follow-ups, such as "I received a wrong product."**
- A Message has message id, customer id, message title, message content, date
- A Message is identified by message id.

Write_msg

- A Write_msg table is a relationship set for a Customer to write Messages (as described earlier) to the website administrator for customer service and feedback.
- An entry in the Write_msg table should include a customer id and a message id.
- A Customer can write many Messages, and one Message can be only written by one Customer.

Write_prod

- A Write_prod table is a relationship set for Customers to write a Product_review's of products.
- A Customer can write many product reviews, and one product review can be written by many different Customers.
- An entry in the Write_prod table should include a customer id and a product id.

Product_review

- A Product_review is identified with product_review_id
- A Product_review should have a product_id, customer_id, date, star_rating.
- A star_rating must be an integer in the range of 1 to 5.

Payment_method

- A Payment_method table stores credit card payment information for the order purchase.
- To simplify the payment methods, we only allow payments with credit cards
- A Payment_method table is identified with payment_method_id
- A Payment_method table should have payment_method_id, customer_id, credit_card_num, credit_card_type, and csv number.
- A credit card number should consist of 16 digits.
- A credit card type refers to the type of the credit card, such as Visa or Master Card.
- A csv number should consist of 3 digits.

3. Tentative Tables

*** Attributes with green, bold fonts are primary keys of each relation**

Customer (**customer_id**, password, First name, Last name, street_addr, city, state, zip_code, phone_number)

Product (**product_id**, product_name, amount _left, price, vendor_name, supplied_date, product_description, URL)

Order (**order_id**, customer_id, list_id, order_date, total_order_price, order_status, payment_method_id)

Product_list (**list_id**, **product_id**, amount)

Order_history (**customer_id**, **order_id**)

Vendor (**vendor_name**, phone_number, address, contact_personnel_email)

Supply (**product_id**, **vendor_name**, supplied_date, supplied_amount)

Message (**message_id**, customer_id, message_title, message_content, date)

Write_msg (**customer_id**, **message_id**)

Write_prod (**customer_id**, **product_id**)

Product_review (**product_review_id**, product_id, customer_id, date, star_rating)

Payment_method (**payment_method_id**, customer_id, credit_card_num, credit_card_type, csv)