SQL Programming
Project Specification 1

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Business Outline and Specifications

This project will focus on building a database for a website, owned by a company, Dean Electronics, which deals in selling guitar amplifier and effects equipment, which may be custom built from scratch, or involve modifying existing products bought from a third party.

The site will be open to anyone to browse; however, to order products, a person must create a user account by registering to the site. Once registered, a person, now a user, is then considered to be a customer. Customers and staff and site administrators are treated similarly, in that they all login to the site in the same way, however, their privileges and what parts of the site they have access to will be controlled according to user roles and with the use of PHP scripting. When a new user registers, they are automatically assigned the "customer" role. Accounts may be created by administrators for new staff if required. As an added security precaution, it is required that the general user information and the user's password be stored logically separate from each other, so that in the event that the user information is compromised via access to the user table, user passwords remain secured. This does not protect against a site wide compromise, but will mean an attacker needs to gain access to two tables in the database to gain user login credentials rather than just one. Passwords are to be MD5 hashed with PHP scripting.

The site will sell products, which are guitar amplifiers or guitar effects pedals, which may be custom built or be modified from an existing third party product. The product must therefore have a type associated with it, such as "Modified Effects Pedals" or "Custom Built Amplifier" etc.

Products must have a brand. Products based on existing third party items are given the brand name of their original manufacturer. For example, a customer may order a modified Boss DS-1 Distortion pedal. The product retains its original brand, "Boss". For products that are custom built from scratch, but are designed to emulate an existing third party product, they also will retain the Brand name of the original product's manufacturer. For example, a custom built amplifier that is intended to replicate a Marshall JCM-2000 will retain the brand name "Marshall". Products that are based entirely on the company's own designs will take on the company's own brand name, "Dean Electronics". Thus, products will always have a brand name associated with them.

Products may have categories associated with them, but are not required to, as the type of product and its brand are enough for the most basic level of classification. Also, there are occasionally products that may not fit into any well-defined category, so it is acceptable to not have any assigned. Products may have any number of categories. For example, a guitar effects pedal may have the category of "Distortion", but also be classified as "Vintage" etc.

When a user has registered and is then considered a customer, they may then make orders. A customer may make an order which will include multiple products, with varying quantities for each.

Products are not a pre-stocked commodity; they are items which are built upon request. Furthermore, when a customer orders a product, the transaction is not executed immediately. Rather, the customer is contacted, and their requirements confirmed, before any further action is taken. This is to ensure that a customer is fully aware of what they are ordering, but more importantly, it allows them to request alternative options for their product. As the products are built by the company, there are a great number of alternative build options or amplifier specifications

that can be chosen. Therefore, the company will always contact the customer and either confirm their order, or discuss the details of the order with them until an agreement is made on the specifics. This means that an order should have a status, which allows the company to distinguish between orders at different stages of completion. All orders must have a status, and are assigned a status of "Submitted" when the order is first made. The company may update the status throughout the process of the order, from when it is placed, up to completion. Additionally, there should be an option to add notes to an order item, to facilitate record keeping of any extra or alternative measures requested by the customer.

Dean Electronics is presently a small company with a low volume of orders, therefore, parts are ordered when needed, and records of such are not required.

Business Rules

These are the specific business rules that are inferred from the business specifications given.

- Users of all classes are a single entity, but their access to the site is governed by their role.
- Users must have a password and username, which will be their login credentials.
- User passwords must be stored logically separate from the user table for added security.
- Products must have a type and a brand, and may have only one of each.
- Products are not required to have a category, but may have multiple categories.
- Customers may make many orders. An order is specific to one customer only.
- An order may have a number of products, each with associated quantity.
- An order must have an associated status.
- There must be an option to add notes to an order item, detailing requests by the customer.

Database Layout

The following is a list of all tables, one for each entity, and also extra junction tables where required.

users (u_id, u_fname, u_lname, u_dob, u_phone, u_email, u_address, *pass_id, r_id*)

passwords (pass_id, pass_name)

roles (r_id, r_name)

orders (o_id, *u_id*, *s_id,* date_ordered)

order_status (s_id, s_name)

order_products(o_id, p_id, quantity, notes)

products(p_id, p_name, p_price, *t_id*, *b_id*)

type(t_id, t_name)

brand(b_id, b_name)

category(c_id, c_name)

product_category(p_id, c_id)