Exercise 6

A group of entrepreneurs are establishing a new nation-wide, Internet-based discount computer supply service. The service, which will be named Discount Computer Parts, will work as other similar "shop-by-Internet" services.

Specifically, the entrepreneurs foresee the following "typical" scenario. Individuals will be required to purchase yearly memberships for a nominal fee which entitle them to use the shopping service. A member initiates a sale by accessing Discount Computer Parts' Web page and verifying their membership status with their membership number. This process will be supported through a database system of membership information that is accessed automatically by the Web page software. The system will present the current information stored in the database so that the user may verify that the database is correct. Membership information includes member identification number, name, billing address, shipping address (often the same as the billing address), telephone number, and email address.

Each member is categorized as either "good standing" (i.e., good payment history), "questionable" (i.e., 3 late payments), or "prohibited" (i.e., no longer allowed to order due to non-payment of any order). New members start with a "good standing" rating. "Prohibited" members move into the "questionable" category upon payment of any outstanding balance. Once they have promptly paid three new orders, they move into "good standing" again.

Once membership has been verified, the member may order whatever items are desired from one of many Web pages that can be accessed. Of course, all inventory displayed in the Web pages will be in a database system.

Inventory in the database system will be categorized by hardware, software, and documentation (for educational materials). Each item has an inventory number, price, manufacturer's name, and current stock level. A sale will automatically generate a shipping order which will be used (1) at a warehouse to fill the order, (2) at the company to provide a record of the sale, and (3) at the shipping center to provide a shipping label. Each inventory item has a minimum stock level.

Sales information must include all relevant member information, the product(s) ordered and shipped (product numbers, quantities, etc.), the order date and the shipping date, and the price at which the product was sold. Each sale is identified by a unique transaction number. Some products may be backordered due to insufficient inventories. When backorders occur, an additional "backorder record" must be generated to ensure the order is eventually filled. The backorder record should contain essentially the same information as a sales transaction record.

Discount Computer Parts also intends to support members after sales by providing a toll-free technical consultant telephone number. These consultants need to have access to membership data and sales data to confirm that telephone calls are from valid members and that the members are requesting information relevant to their recent purchases. A customer service log maintains records of calls, including the date and time of the call, which employee handled the call, the nature of the call, and the resolution of the call.

Employee data includes the normal name, address, title, wage or salary, and a unique employee number.

The entrepreneurs want you to prepare a data model of their situation as a basis for discussing the implementation of the database.

Your tasks:

1. Open MySQL Workbench, create a new model, and then create a new diagram.
2. Describe the database metadata for a database to support this situation by creating tables in the new diagram in MySQL Workbench.
    a. File > New Model
    b. Double click on Add Diagram
    c. Repeat the following as needed to define tables:
        i. Place a quick table (click on table icon on left) – then click on diagram area
        ii. Double click on table icon to open window at bottom
        iii. Change the table name and enter columns in window at bottom of screen.
3. Create your relationships.
    a. 1:1 Relationship
        i. Click on the appropriate 1:1 icon on the left side of the diagram.
            1. If the foreign key will be the primary key or part of the primary key, choose the Identifying Relationship 1:1 icon (the lower one). Otherwise, choose the Non-Identifying Relationship 1:1 icon (the upper one).
        ii. Click on the table that will contain the foreign key.
        iii. Click on the table that contains the corresponding primary key.
    b. 1:n Relationship
        i. Click on the 1:n icon on the left side of the diagram.
            1. If the foreign key will be the part of the primary key, choose the Identifying Relationship 1:n icon (the lower one). Otherwise, choose the Non-Identifying Relationship 1:n icon (the upper one).
        ii. Click on the table that will contain the foreign key (the n side).
        iii. Click on the table that contains the corresponding primary key (the 1 side).
    c. n:m Relationship (You should not have any because you have already created the associative tables, but here are the instructions in case you want to do it in the future. If you do this, MySQL Workbench will create the associative table for you.)
        i. Click on the n:m icon on the left side of the diagram.
            1. There is only one n:m icon. MySQL Workbench will make the foreign keys part of the primary key.
        ii. Click on one of the tables in the relationship.
        iii. Click on the other table in the relationship.
4. Save your model as *yourlastname*Ex6.
    a. File > Save Model
5. Export the model. FOLLOW THESE STEPS CLOSELY.
    a. File > Export > Forward Engineer SQL Create Script…
    b. Click on the … beside the place to enter a file name.
    c. Enter *yourlastname*SQLEx6 (example: ParadiceSQLEx6)
    d. Click Save
    e. Check the box for Omit Schema Qualifier in Object Names
    f. Click Next, Next, Finish.
6. Submit the *yourlastname*Ex6 model file and *yourlastname*SQLEx6 SQL file via email to Dr. Paradice.
7. Extra that you should do: identify the associative entities, the subtype entities, and the ID-dependent entities, if any exist. This is NOT REQUIRED for Exercise 7 but it will be good preparation for the test.