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CS405G

December 10, 2016

Final Project Report

1) Team Members: James Alford-Golojuch and Mingdi Gao

For the division of work Mingdi designed the html webpage forms for each page since he was more familiar with html page setups. Mingdi helped develop the initial ER diagram which James used to set up our database which was a much more simplified version based upon your feedback. James also setup the interaction of the forms from the html pages and how they interact with the database both doing queries and then displaying the results. Mingdi drew the diagrams for this report.

2) Finalized Database Design:

The detailed ER diagram is:

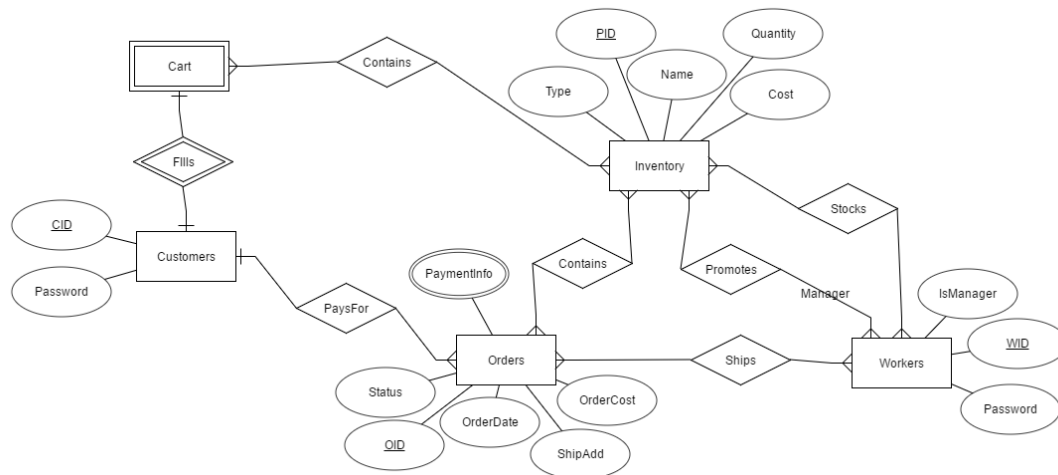


Chart 1

The detailed database schema design is shown below:

Cart						
<u>CID</u> String	PID Integer					
Customers						
<u>CID</u> String	Password: String					
Orders						
<u>OID</u> Integer	Status: String	OrderCost: Float	ShipAdd: String	OrderDate: Integer	<u>CID</u> String	PayInfo: String
Workers						
<u>WID</u> String	IsManager: String	Password: String				
Inventory						
<u>PID</u> Integer	Name: String	Quantity: Integer	Cost: Float	Type: String		
Contains_Od_Iven						
<u>PID</u> Integer	<u>OID</u> Integer					
Contains_Cus_Iven						
<u>PID</u> Integer	<u>CID</u> String					
Ships						
<u>ShipAdd</u> Integer	<u>WID</u> String					
Stocks						
<u>Quantity</u> Integer	<u>WID</u> String					
Promotes						
<u>Cost</u> Integer	<u>WID</u> String					
Orders_PaymentInfo						
<u>PaymentInfo</u> String	<u>CID</u> Integer					

Chart 2

From the charts above, we have following schema :

$R = \{CID, OID, WID, PID, Password, Status, OrderData, Name, Quantity, Cost, Type, IsManager, OrderCast, ShipAdd, PaymentInfo\}$

The functional dependencies are { CID -> Password,

OID -> Status, OrderCast, ShipAdd, CID

WID -> IsManager, Workers.Password

PID -> Name, Quantity, Cost, Type

CID -> OID

OID -> PID

WID -> Cost, Quantity}

The Candidate Keys is (CID).

Obviously, it's not BCNF because only CID is candidate key.

In some dependencies, there are non-prime attributes on the RHS while LHS is not candidate key. So not 3NF.

There are no prime attributes in R so there will be no partial dependency, which means the highest degree of form is 2NF.

3) SQL Showoff:

```
SELECT Inventory.Name,OrderedItems.OID,OrderedItems.PID,OrderedItems.Quantity
FROM OrderedItems JOIN Inventory
WHERE Inventory.PID = OrderedItems.PID AND OrderedItems.OID IN
(SELECT OID FROM Orders
WHERE OrderDate >= (CURRENT_DATE - INTERVAL 1 YEAR))
```

```
UPDATE Inventory INNER JOIN OrderedItems
SET Inventory.Quantity=Inventory.Quantity-OrderedItems.Quantity
WHERE OrderedItems.OID='$oid' AND OrderedItems.PID=Inventory.PID
```

4) Implementation details:

For the implementation we used PHP and HTML to design our website and to make the website interact with the database.

Our database was hosted on James' virtual machine with mysql and had the following configuration for the tables:

```
mysql> use FinalProject
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----+
| Tables_in_FinalProject |
+-----+
| CartItems               |
| Customers               |
| Inventory               |
| OrderedItems            |
| Orders                  |
| Promotions              |
| Workers                 |
+-----+
7 rows in set (0.00 sec)

mysql>
```

```
mysql> describe CartItems;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| CID        | varchar(20)   | NO   | MUL | NULL    |       |
| PID        | int(11)       | NO   | MUL | NULL    |       |
| Quantity   | int(11)       | NO   |     | NULL    |       |
+-----+
3 rows in set (0.01 sec)

mysql> describe Customers;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| CID        | varchar(20)   | NO   | PRI | NULL    |       |
| Password   | varchar(20)   | NO   |     | NULL    |       |
+-----+
2 rows in set (0.00 sec)

mysql> describe Inventory;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| PID        | int(11)       | NO   | PRI | NULL    | auto_increment |
| Name       | varchar(100)  | NO   |     | NULL    |               |
| Cost       | double(10,2)  | NO   |     | NULL    |               |
| Quantity   | int(11)       | NO   |     | NULL    |               |
| Type       | enum('Books','Games') | NO   |     | NULL    |               |
+-----+
5 rows in set (0.03 sec)
```

```
mysql> describe OrderedItems;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| OID        | int(11)       | NO   | MUL | NULL    |       |
| PID        | int(11)       | NO   | MUL | NULL    |       |
| Quantity   | int(11)       | NO   |     | NULL    |       |
+-----+
3 rows in set (0.00 sec)

mysql> describe Orders;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| CID        | varchar(20)   | NO   | MUL | NULL    |       |
| OID        | int(11)       | NO   | PRI | NULL    | auto_increment |
| Status     | enum('Pending','Shipped') | NO   |     | NULL    |       |
| OrderDate  | date          | NO   |     | NULL    |       |
| OrderCost  | double(10,2)  | NO   |     | NULL    |       |
| ShipAddr  | varchar(255)  | NO   |     | NULL    |       |
| CName      | varchar(50)   | NO   |     | NULL    |       |
| CName      | varchar(50)   | NO   |     | NULL    |       |
| BillAddr   | varchar(255)  | NO   |     | NULL    |       |
+-----+
9 rows in set (0.00 sec)
```

```
mysql> describe Promotions;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| PID        | int(11)       | NO   | MUL | NULL    |       |
| SaleCost   | double(10,2)  | NO   |     | NULL    |       |
+-----+
2 rows in set (0.00 sec)

mysql> describe Workers;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| MID        | varchar(20)   | NO   | PRI | NULL    |       |
| Password   | varchar(20)   | NO   |     | NULL    |       |
| IsManager  | enum('Yes','No') | NO   |     | NULL    |       |
+-----+
3 rows in set (0.00 sec)
```

For the functions we implemented for each user first we will start with the Customers. For the Customers we implemented a registration page where a user is able to sign up for an account on the webpage which will be used to access our other functions. We also implemented the ability for the customer to login with their account information. Whether or not a customer is logged in we implemented the ability for a user to search for items in the inventory of our database. The rest of the functions require the user to be logged into a customer account. They can add items to a cart and then they can also remove items from their cart. For the customers we also implemented the ability to complete an order with the items in their cart and to check on their past orders.

For the staff and managers we implemented the ability for them to login which is required to access the other functions. Once signed in the staff and managers can add new items to the inventory and update the amount of each item in the inventory. We also added the ability for the staff and managers to check on pending orders and to be able to ship those items which changes the order status and ships the order to the customer if all items from the order are currently available in the inventory to be shipped. For just the managers we implemented the functionality of being able to check on monthly, weekly and yearly sales which looks at orders and items in the orders. We also implemented the ability for the manager to add promotions for items in the inventory or remove promotions. When an item is promoted it will have update cost appear when customers search the inventory and when they complete an order.

5) Peer Evaluation:

ID of our team: Team 2

ID of the evaluated team: Team3

URL of the evaluated website: <http://dram222.netlab.uky.edu/index.php>

1. Test Case:

Username: gmd123
Password: 123gmd
Firstname: firstname
Lastname: lastname
Street address: 1135 Southlimestone
City: Lexington
State: Kentucky
Zipcode: 40507

2. Purchasing

Customer purchase one or multiple items in an order:

Works correctly.

Appropriate inventory numbers got reduced. If out of stock, certain warning are given or actions are taken:

Works well.

Appropriate total price (including) discount or promotion price is calculated:

Total price can be calculated correctly, but it seems there is no option for promotion or discount.

Customer can check the order status:

Yes. Customer can check their order status by clicking “My order” option.

Staff is notified of the order and can ship the order:

It seems there is no staff account given so this part cannot be evaluated. Customer can place the order by click “submitting order” in “My Cart” option.

Once shipped, order status is changed when queried by users.

Cannot check this one because there is no employee account to log in. All orders are pending.

3. Staff functionality.

Cannot check this because no employee log in option

4. Interface

Very good interface. All items have images with simple and clear description.

Appropriate font-size and image size. Appealing layout to make the whole page looks great.

5. Bonuses

Bonus1: There are mini store items under the normal item’s description which can be purchased by customers. However due to there is no VIP account given, I cannot check the functionality of VIP customers.

Bonus2: no

6. Would you nominate the team for the database final project award?

I would if staff functionality works well.

7. More to say?

Very good work on customer functionality. Staff account should be attached in the comment for evaluation