3H Home Appliances

CSE305 Final Report

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1.1 Application Descriptions

Our final project is for the people who need to purchase home appliances. The administrator organizes the website for the clients. Both the administrator and the clients are able to login or register to purchase the products. The number of each home appliance is at least 4 so that the customers can choose the best option for them. The clients can buy the products. When they are paying, they are required to write the card information. The administrator will update the status of the shipping so the customers can track their order.

1.2 Goals of Project

Our goal of this project is to make the website simple for the clients so that they can easily find and purchase the product that they want. We were to apply normalization to the tables we originally made and show the difference after the normalization.

1.3 Requirements

For our final project, we used PHP as the implementation language for the user interface. The number of tables has increased to 12 after the normalization which is in between 10 to 20. The database was hosted by MariaDB and MySQL.

2. Use Cases

No.	Use case	Description
1	log-in	User and Admin can log-in by clicking "Log in" at the top right of the website. Once the button is clicked, the page will appear.
2	log-out	User and Admin can log-out by clicking "Log out" at the top right of the website. Once the button is clicked, the homepage will appear.
3	sign-up	Users and Admin can sign-up by clicking "Create Account" in the login page.
4	View products	Users can see the brief information of each product
5	Add Cart	Users can add and save cart by clicking "Add Cart". Once the button is clicked, the cart list will be updated.
6	Delete cart	Users can add cart by clicking "Delete". Once the button is clicked, the cart list will be updated.
7	Order	Users can order products by clicking "Purchase". Once the button

		is clicked, the page for the order will appear. Users can write their personal information for the shipping.
8	Shipping status	Users can check shipping status by clicking "View My Order". Once the button is clicked, the page for the order will appear.
9	Update Products	Admin can update products by adding, deleting, and updating the number of quantity.
10	Update Personal Information	The users(clients) can change the information on one's personal page, such as id, password, address, etc.
11	Automatic discount	Users will have discounts when they are planning to pay a certain amount of money in the cart.

3. E-R Diagram

The E-R Diagram will be attached as a separate file.

4. Normalization

The explanation of the normalization and the functional dependency will be explained in the Appendix at the end of the report.
The final database tables after normalization are in BCNF form.

A table shows the initial tables and resulting tables after the normalization.

Initial Table	Main FDs	Resulting Tables
Payment (clientId, creditCardNumber, name, expiryDate, totalAmount, discountId, discountName, discountPercenatge, discountWhen)	discountId -> discountName, discountPercenatge, discountWhen	1. Payment (clientId, creditCardNumber, name, expiryDate, totalAmount, discountId) 2. Discount (discountId, discountName, discountPercenatge, discountWhen)

The table below is the final table after applying the normalization.

Table	Table name (attributes)	Explanation
1	Product (productId, maker, type, cost)	This is a parent database of TV, Fridge, Washer, and Air conditional.

		The database contains all the products' data.
2	ProductStock(<u>productId</u>, <u>stockId</u>, quantity)	The database contains the quantity of each product.
3	TV (<u>productId</u>, cost, maker)	The database contains all the data about TV.
4	Fridge (<u>productId</u>, cost, maker)	The database contains all the data about the Fridge.
5	Washer (<u>productId</u>, cost, maker)	The database contains all the data about the Washer.
6	AC (<u>productId</u>, cost, maker)	The database contains all the data about the Air conditioner.
7	Cart (productId, clientId, orderDate, cost, numberofItems, totalAmount)	Stored all products in a cart
8	Admin (<u>adminId</u> ,name, pw, address, phoneNumber, email, dateofbirth)	Stores all admins' information
9	Client (<u>clientId</u>, name, pw, address, phoneNumber, email, dateofbirth)	Stores all clients' information
10	Discount (<u>discountId</u>, discountWhen, discountName, discountPercenatge)	The database contains a list of discount percentages with discountId
11	Shipping (<u>deliveryId</u>,clientId, deliveryDate, address, currStatus)	The database store client's product shipping status.
12	Payment (<u>clientId</u>, creditCardNumber, name, expiryDate)	The database storing the payment data when purchasing the products.

*Underlined keys are primary keys.

5. User Documentation

5.1 For Windows

a) Download XAMPP
b) Clone the git repository into C://xampp/htdocs/305/
c) Set the username as h3 and password as kimparkryu in XAMPP MySQL

d) Start Apache and MySQL server

e) Execute the local server terminal

f) Start client from the shell by typing 'mysql -h localhost -u root'

g) Run the script file by typing 'source c://xampp/htdocs/305/backend.sql;'

h) Open the website in Chrome typing the URL 'localhost/305/intro.html'

5. 2 For MAC OS

a) Download MAMP

b) Clone the git repository into the local repository

c) Set the username as h3 and password as kimparkryu

d) Start Apache and MySQL server in MAMP

e) Execute the local server terminal

f) Open a Unix terminal window and start a client using the command '/Applications/MAMP/Library/bin/mysql -u root -p'

g) Run the script file stored in /sql_file_link to create the database

h) If created the symlink in htdocs 'ln -s~/link-of-the-project'

i) Open the website in Chrome typing the URL 'localhost/305/intro.html'

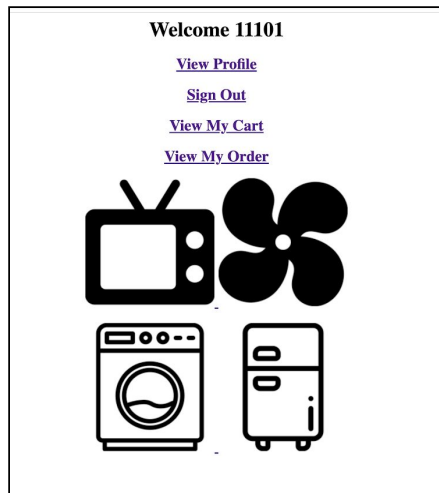# 6. Function Demonstrations

6.1 Functions for Client

a) Login as Client

This application cannot be accessed without login, so the first page of the application is "Log as Client". If a user does not have an account, click the "Create New Account".
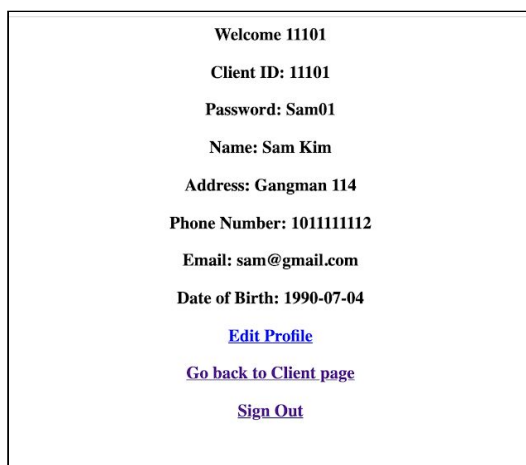

b) Create a New Account

The client should fill all the blanks for making a new account. If one of the fields is omitted, the new account cannot be created and a message, "You did not fill out the required fields.", will be shown. If the client enters a username which is already used by someone, the new account cannot be created, and a message, "Username '$username' already Exist", will be shown.

Meanwhile, the link, "Clear output", makes to clear the fields.

c) welcome page for client

After login, the "Welcome" page appears. This page links to other pages - view profile, sign out, View my Cart, View My Order. The four icons also link to each page for shopping products.

d) View client profile

This page offers a client's information - client Id, password, name, address, phone number, email, and date of birth. "Edit Profile" links the page for editing client's own profile.

e) Edit Profile

Each text fills is filled with a client's current information. A client can edit the information, and update own profile.

f) Shopping Products

According to the product type, pages offer information about products. Clients can set a product's quantity and add them to the shopping cart.

View Cart

Model Name: [_____]

[EDIT SELECTED ITEM]

Go back to Client page Purchase « Go back

Model Name: F21VDT
Cost: $1346
Number of Items: 3

[DELETE]

Discount 30% when spending at least $15000

Discount 20% when spending at least $7500

Discount 10% when spending at least $2500

Total: $4038

After Discount: $3634.2

g) View Cart

Payment information

Enter full name: Sam Kim
  Enter client ID: 11101
    Enter Delivery Code: 1234
Enter Adress: Gangman 114
    Enter card number: 1111222211112222
Enter expiry date(MM/YY): 1120

[Pay]

Clear output
Go to Client page

Discount Percentage: 10%

Total: $4038

After Discount: $3634.2

View My Order

Go back to Client page

Delivery Code: 1234
Ordered Date: 2019-06-09
Address: Gangman 114
Current Status: Processing

6.2 Functions for Admin

Login as Admin

ID: [_____]
Password: [_____]

[Login]

Login as Client?

« Go back

a) Login as Admin
Enter your ID and password to login.

Admin ID	Password
00001	San01
00002	Kyu02
00003	Song03
00004	Soo04
00005	Yoo05

Welcome 00001

View Profile

Sign Out

View Products

Manage Quantity

Manage Discount

Manage Delivery

b) welcome page for admin

After login, "Welcome Admin" page appears. This page links to other pages - view profile, sign out, View Products, Manage Quantity, Manage Discount, and Manage Delivery.

Welcome 00001

Admin ID: 00001

Password: San01

Name: San Hae Kim

Address: Seocho 99

Phone Number: 01011112222

Email: San@H3.com

Date of Birth: 1996-01-17

Sign Out

Go back to Admin page

c) View Profile

This page offers an Admin's information - admin Id, password, name, address, phone number, email, and date of birth.

d) Manage Products

Go back to Admin page « Go back

Maker: LG
Model Name: FQ19L9DRA1
Type: AC

DELETE

Maker: LG
Model Name: SQO6M9JWAS
Type: AC

DELETE

Maker: Samsung
Model Name: AF16R5773WSR
Type: AC

Manage Products

Maker: [_____]
Model Name: [_____]
Cost: $[_____]
Product Type: ○ AC ○ Fridge ○ Washer ○ TV
Stock ID: [_____]
Quantity: [_____]

ADD PRODUCT

e) Manage Quantity

On "manageQuantity" page, a list of stock id and status are shown. When an admin enters the products' Id number, the more information about the entered Id number is shown. If an admin wants to change the quantity of the product, click the hyperlink "Update Quantity".

f) Update Quantity

Text fills for quantity are filled with current information. An admin can edit the information of the fields, and update the quantity.

g) Change discount percentage

h) Update delivery

Client ID:		
Delivery Code:		

Search

Go back to Admin page

List of Delievery

Client ID: 11101
Delivery Code: 1234
Current Delivery Status: Processing

« Go back

Welcome 11101

Delivery Code: 1234

Ordered Date: 2019-06-09

Address: Gangman 114

Current Delivery Status: Processing

Update Delivery Status

Update Different Client's Delivery

Update Delivery

Client ID: 11101
Delivery Code: 1234
Ordered Date: 2019-06-09
Address: Gangman 114
Current Delivery Status: Processing
Delivery Status

○ Processing   ○ Payment Accepted   ○ Payment Declined
◉ On it's way   ○ Delivered

Cancel Edit   Update Delivery Status

« Go back

Client's order page

View My Order

Go back to Client page

Delivery Code: 1234
Ordered Date: 2019-06-09
Address: Gangman 114
Current Status: On it's way

7. Goals Satisfaction

Our first idea for the project was a rental website. We wanted the clients to choose any home appliances they want to rent for a certain period of time. However, setting the date for the start and end date of the rent was difficult and time-consuming. Therefore, we decided to remove the start and end date but keeping the order date and set the website as the purchasing website. This made our group work on more easily and the result came out as we wanted.

8. Future Improvements

The goals we set up for this project were generally done well as stated in the previous section. For the improvements, we could have added the photos for each product so the clients can see the difference more easily. Also, even though we wanted to add HTML for our final project website, we did not have enough time for HTML due to the lack of contribution. For small details, requiring a strong password, the combination of upper case and numbers and having at least 8 characters, for each client would be better.

9. Code

https://github.com/duck4611/htdocs.git

10. Contribution

Our group members are San Hae Kim, Kyu Hee Park, and Song Hee Ryu. Until the second progress report, the contribution of all the members was satisfying as we did not focus much on the coding. However, as we started coding, Song Hee did not participate and delayed most of the meetings. Also, when the other two members were coding, she did not come out to help or support our project. Even though she set the time, she was late and other members had to keep work on the project. The parts she coded could not be used. Therefore, San Hae Kim had to change what Song Hee coded and finalized.

For the final report, she was asked to write the Goals Satisfaction and Future Improvements, however, what she wrote was not relevant to the project we did. Also, the goals and requirements at the start of the report were copied from the handout and fixed only a little bit. As Song Hee did not participate and contribute to the project, she was also asked to write the explanation of applied normalization. The explanation was not accurate and satisfying. In the end, she only wrote description for Function Demonstrations. Therefore, Kyu Hee Park had to change most of what she wrote and finalized.

Appendix (explanation of normalization)

The Payment table before normalization was Payment (clientId, creditCardNumber, name, expiryDate, totalAmount, discountId, discountName, discountPercenatge, discountWhen).

Let R1(cId, CCN, N, expD, dId, dN, dP, dW) be the notation for the original Payment.
The set of functional dependencies are:
1. cId -> CCN, N, expD, dId, dN, dP, dW
2. dId -> dN, dP, dW

Decomposing R1 into:
R1(cId, CCN, N, expD, dId)
R2(dId, dN, dP, dW)

Let R1(cId, CCN, N, expD, dId) be R1(ABCDE) and R2(dId, dN, dP, dW) be R2(EFGH).
R1∩R2 = ABCDE ∩ EFGH = E which is dId.

The closure of the functional dependency from the result of the intersection is
E^+ = {EFGH} and EFGH is the super key of R1 and R2.
Therefore, this decomposition is lossless join.