



# Design Document

---

Removed

# CONTENTS

<b>1</b>	<b>Introduction</b>	<b>3</b>
1.1	Mission Statement . . . . .	3
1.2	Purpose of Document . . . . .	3
1.3	Executive Summary . . . . .	3
<b>2</b>	<b>System Features</b>	<b>4</b>
2.1	Main Page . . . . .	4
2.2	Order History . . . . .	4
2.3	Shopping Cart . . . . .	4
2.4	Checkout . . . . .	4
2.5	Product Detail Page . . . . .	4
2.6	User Accounts and Login . . . . .	5
2.7	Product Reviews . . . . .	5
2.8	Administrator Portal . . . . .	5
<b>3</b>	<b>Known Issues</b>	<b>5</b>
3.1	Incomplete Features . . . . .	5
3.2	Bugs / Errors . . . . .	5
<b>4</b>	<b>User Walkthrough</b>	<b>6</b>
4.1	Required Features . . . . .	6
4.2	Bonus Walkthrough . . . . .	11
<b>5</b>	<b>Schema</b>	<b>12</b>
5.1	Assumptions . . . . .	12
5.2	UML Diagram . . . . .	13
5.3	Relational Schema: SQL DDL . . . . .	14
5.4	Sitemap . . . . .	15
<b>6</b>	<b>Conclusions</b>	<b>15</b>

# 1 INTRODUCTION

Don't you hate lugging your bags around school? Aren't you sick of wasting time looking for parking spots? Haven't you ever wished there was a homework fairy? And what is the point of all your money if you can't spend it on a better university experience? *UBCVIP* can help you with that. From extra time with a professor to a literal mule to carry your bags, *UBCVIP*'s four-tiered system offers plans to suit every price range.

## 1.1 MISSION STATEMENT

To bring our customers the highest quality experience during their university years. To provide the most lavish and class-appropriate facilities to our customers. To ensure the perpetuation of the bourgeoisie economic supremacy in society.

## 1.2 PURPOSE OF DOCUMENT

This document outlines the design and underlying structure of *UBCVIP*'s website. This includes an overview of implemented features and known issues; a user walk-through for visitors, customers, and administrators; and technical documentation such as domain assumptions, relational assumptions, the UML diagram, and the SQL DDL.

## 1.3 EXECUTIVE SUMMARY

*UBCVIP* is a web store designed specifically for University of British Columbia students to purchase and gain access to different premiums. These premiums are fashioned to make the student life more relaxed and manageable. The website provides simple navigation which allows the user to search and filter the *UBCVIP* product database, view our various membership packages, create an account, make purchases, and learn more about our project and team. All users must make an account to proceed to checkout.

When making an account, customers may sign up for one of four monthly-membership subscriptions: Platinum, Gold, Silver, Rust. Newly registered customers are not required to pay for a membership immediately because, upon registering, they are set to have the free Rust membership with auto-renew turned on. If a user decides to upgrade or downgrade their membership, their current subscription will continue until the end of the subscription period, at which time their new subscription will begin. If the user has auto-renew disabled, their membership level will return to Rust at the end of the subscription period.

As the membership level increases (from Rust to Silver to Gold to Platinum), the number of products that are included for free in the membership package also increases; in other words, the higher the membership level, the more premiums are available to the customer. No matter what your membership level, you may purchase products for a price at any time.

All the products listed on the website contain the price of the product for the corresponding membership, a picture of the product, and a description of the product. By default, any unregistered user is considered to possess a Rust membership for the purpose of how the products are displayed.

There is also a private portion of the website that may be accessed by administrators. Admins may view a list of all customers and orders, as well as add new products to the site. Admins are not, however, customers; thus, they cannot purchase items.

## 2 SYSTEM FEATURES

### 2.1 MAIN PAGE

Points	System Features	% Complete	Code Files
2	Home page running on web server	100%	index.jsp
2	Search for a product by name	100%	searchProducts.jsp
2	Browse products by category	100%	categories.jsp
2	List products by search / browse	100%	productListing.jsp searchProducts.jsp
2	List products with image	100%	productListing.jsp searchProducts.jsp
1	Page header with menu	100%	In the <head> tag of all files.
1	Page header shows current logged in user	100%	In the <head> tag of all files.
2	Dynamic product on page based on sales	100%	index.jsp

### 2.2 ORDER HISTORY

Points	Description	% Complete	Code Files
2	Page listing all orders for user	100%	orderHistory.jsp

### 2.3 SHOPPING CART

Points	System Features	% Complete	Code Files
2	Add to shopping cart	100%	addcart.jsp addPlanCart.jsp
2	View shopping cart	100%	cart.jsp plansCart.jsp
1	Remove item from shopping cart	100%	removecart.jsp
1	Improved formatting/UI (e.g. in header bar)	100%	kevinstyle.css

### 2.4 CHECKOUT

Points	System Features	% Complete	Code Files
2	Checkout with customer id	100%	cart.jsp, plansCart.jsp, login.jsp
2	Checkout with payment/shipment info	100%	checkout.jsp plansCheckout.jsp
2	Checkout with data validation	75%	checkout.jsp plansCheckout.jsp
1	Inventory tracking per item	100%	orders.jsp
2	Calculate taxes and shipping cost	100%	checkout.jsp, plansCheckout.jsp, order.jsp, plansOrder.jsp

### 2.5 PRODUCT DETAIL PAGE

Points	System Features	% Complete	Code Files
2	Product detail page and item description	100%	productListing.jsp searchProducts.jsp
1	Product detail has an image	100%	<i>same as above</i>
3	Product detail has an image from database	100%	<i>same as above</i>

## 2.6 USER ACCOUNTS AND LOGIN

Points	System Features	% Complete	Code Files
2	Create user account page	100%	login.jsp
2	Login / logout	100%	login.jsp, <i>all pages with header</i>
2	Create user account with data validation	100%	login.jsp
2	Improved formatting / UI for create account page	100%	login.jsp

## 2.7 PRODUCT REVIEWS

Points	System Features	% Complete	Code Files
2	Ability to enter a review on a product	100%	reviewConfirmation.jsp
1	Display product review on product detail	100%	productListing.jsp searchProduct.jsp
2	Restrict to one review per user on item purchased	100%	reviewConfirmation.jsp

## 2.8 ADMINISTRATOR PORTAL

Points	System Features	% Complete	Code Files
1	Secured by login	100%	login.jsp validateLogin.jsp
1	List all customers	100%	listCustomers.jsp
1	List report showing total sales / orders	50%	listOrders.jsp productsInOrder.jsp
2	Add a new product	100%	addProduct.jsp
2	Database restore with SQL script	100%	UBCVIPdbReset

## 3 KNOWN ISSUES

### 3.1 INCOMPLETE FEATURES

- Checkout with data validation: Although we use PreparedStatement and we check for character validity when entering information, we are missing the fact that credit cards only begin with 3, 4, or 5, as well as checking to see that an expiration date for a card is actually a future date, not a past date.
- List report showing total sales / orders: We only show orders, not total sales.

### 3.2 BUGS / ERRORS

- Validate student ID doesn't work properly; although it won't allow a new customer to be added to the Customer table if the student ID already exists, it will still add their basic info to the User table.
- When listing orders for a customer, we had to take away the functionality of the menu bar for now, as it started to create a lot of bugs in the admin portion of the site. For now, you can only navigate back to the homepage (or hit the back button for your browser).
- Clicking on the *UBCVIP* logo in the admin portal will log a user out. We currently don't have full navigation functionality working well in this portal.
- For membership upgrade/downgrade to take effect, you must logout and then log back in.

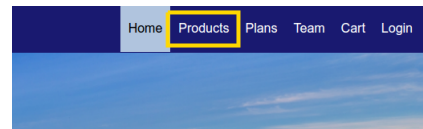
## 4 USER WALKTHROUGH

### 4.1 REQUIRED FEATURES

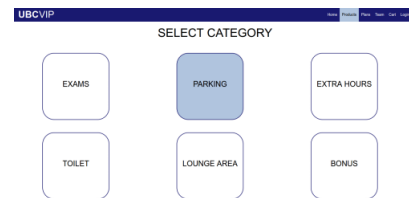
Welcome to *UBCVIP*! Please navigate to: <http://cosc304.ok.ubc.ca/group18/tomcat/index.jsp>. Please note that the pictures shown below are for reference only. The final product may be slightly different as far as style goes.



- 1 Navigate to the products page.



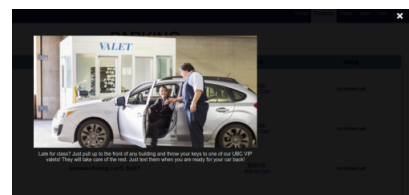
- 2 Select the Parking category.



- 3 Learn more about valet parking by clicking on the picture.



- 4 Read all about it! Then "X" out. NB: This is our "product detail" page.



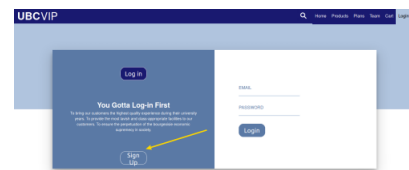
5 Go to the menu bar and search for "304".



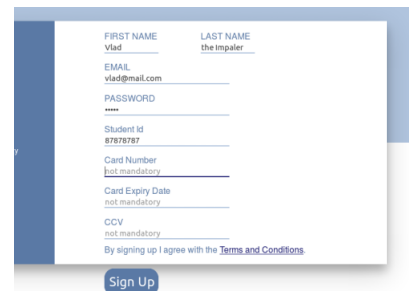
6 Add the COSC 304 Final Exam to your cart. It's got four stars, so it must be good!



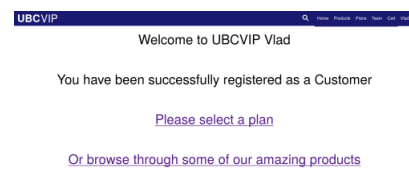
7 Uh oh... You must either log in or sign up to purchase anything. Select the "sign up" option.



8 Enter your information. Feel free to try entering weird things in for email, student ID, card number, etc. Please enter credit card information for the purposes of this walkthrough.



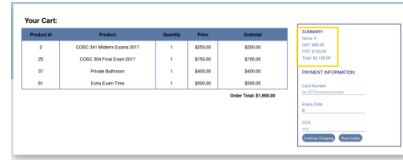
9 Welcome! Look! Your name now appears in the top right corner! Browse through some products and add to your cart (selection is up to you). When you add to the cart...



10 ...you'll be taken to the "Your Cart" page. Feel free to "Remove from Cart" or "Continue Shopping" until you're happy with the contents of your cart. When you're ready, select "Checkout".



- 11 You're now at the order validation page. Note that your taxes have been calculated for you. Also note that your payment info appears, but not the CCV. This is for security purposes. If you're happy with your order, select "Place Order".



- 12 Congrats on your first purchase! Let's make one more. Search for "parking" and add a parking spot to your cart (remember which one). Checkout, and once you get to the Order Confirmation again, search for parking one more time.

### Order Confirmation

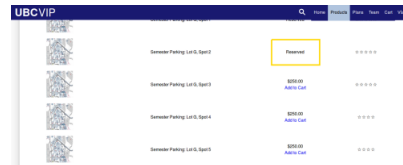
Your Order:

Product	Quantity	Price
COSC 341 Midterm Exams 2017	1	\$250.00
COSC 304 Final Exam 2017	1	\$750.00
Private Bathroom	1	\$400.00
Extra Exam Time	1	\$500.00

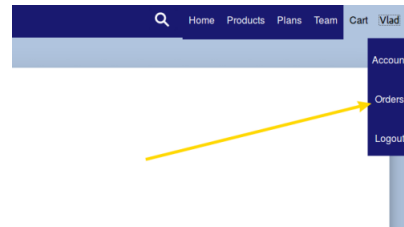
Total: \$2,565.00

Thank you for your order!

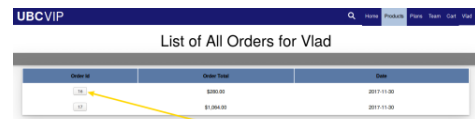
- 13 Ta da! Your spot is now reserved. *UBCVIP* tracks available parking spots so that you'll never fight for a spot again.



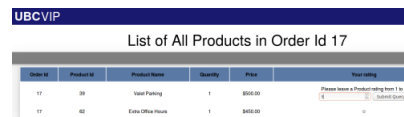
- 14 Let's check out your previous orders. Navigate via the drop down menu under your name.



- 15 Select your first order under Order ID so that we can leave some reviews.

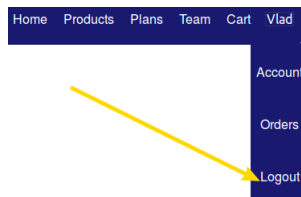


- 16 Leave ratings between 1 and 5. Note that you may only leave one review per product purchased.

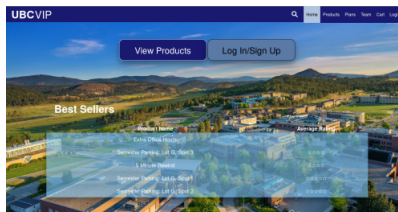




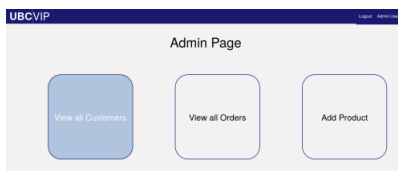
- 17 Let's logout now. Navigate to the user menu and select logout.



- 18 Note that the homepage displays best sellers, in case you needed some product advice! We're going to now sign-in with admin credentials:  
username: angie@ubcvip.com  
password: (removed)



- 19 As an admin you may view your list of either customers or orders, as well as add new products. Let's view our list of customers.



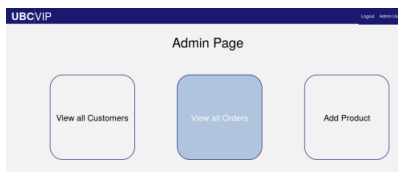
- 20 Scroll down to the bottom to find our newest user and click on the user ID.



- 21 You can click on the order ID to explore that particular customer order, but let's hit the "Admin User" button in the menu bar to navigate back to the admin homepage.



- 22 Now, let's see all the orders that have ever been made by our customers by selecting the "View all Orders" button.



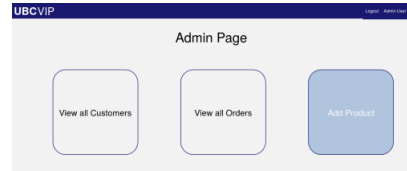
23

From here, an admin may explore orders by either order ID or user ID. Let's return to the admin homepage by hitting "Admin User" in the menu bar once more.

Order ID	User ID	Order Total	Order Number	Quantity	Date
1234567890123456	919203044546	\$1,000.00	1234567890123456	100	2017-11-29
1234567890123456	919203044546	\$500.00	1234567890123456	500	2017-11-29
1234567890123456	919203044546	\$200.00	1234567890123456	200	2017-11-29
1234567890123456	919203044546	\$1,000.00	1234567890123456	200	2017-11-29
1234567890123456	919203044546	\$1.00	1234567890123456	100	2017-11-29
1234567890123456	919203044546	\$1.00	1234567890123456	100	2017-11-29

24

Now, let's add a new product into the store. Select "Add Product".



25

We'll add the MATH 328 Final Exam (327 is being added in the picture examples). Enter the name, description, and price. From the "select category" drop down menu, choose "Exams". From the "Select Membership Level", choose "Platinum". Then, just submit!

UBCVIP

MATH 327 Final Exam

Good luck on your exam!

327

Exams

Platinum

Submit Query

26

Your product has been added! Now, let's navigate back to the home site by hitting the logo in the top left corner. This concludes our walkthrough for our required system features. Please continue to the next section to see some fun bonus features.



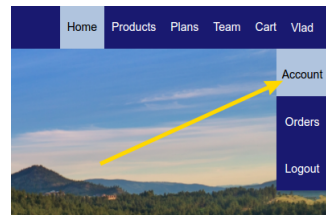
## 4.2 BONUS WALKTHROUGH

- 1 Navigate home, and then to login/signup. Select "Sign Up", and check out our terms and conditions! After that, select "login" again, and login with the information you used to sign up earlier.

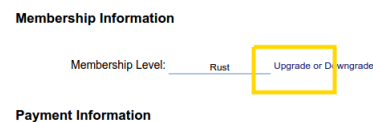


A screenshot of the UBCVIP sign-up form. The form includes fields for FIRST NAME, LAST NAME, EMAIL, PASSWORD (with a note 'Numbers and Letters Ok'), Student Id, Card Number (not mandatory), Card Expiry Date (not mandatory), and CCV (not mandatory). A 'Sign Up' button is at the bottom left, and a link to 'Terms and Conditions' is at the bottom right, highlighted with a yellow box.

- 2 Now, let's navigate to the user account page.

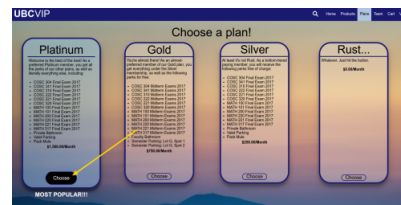


- 3 Feel free to update some of your information, noting that you are required, for security purposes, to enter your current email and password. Now, let's upgrade your membership level.

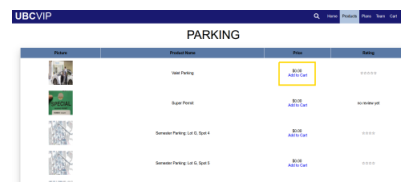


A screenshot of the UBCVIP membership information page. Under the heading 'Membership Information', there is a 'Membership Level:' field with 'Rust' selected. A yellow box highlights a link that says 'Upgrade or Downgrade'. Below this is the 'Payment Information' section.

- 4 We're going to select the Platinum membership. Note that "Valet Parking" is included in this membership. Complete the checkout process and then login.



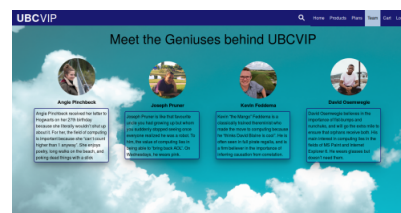
- 5 Login once more and navigate to the Parking products, either by search or browse. As you can see, Valet Parking (among other things!) is now free. Thanks for becoming a Platinum member!



A screenshot of the UBCVIP parking products page. The page is titled 'PARKING' and shows a table of parking options. The 'Valet Parking' option is highlighted with a yellow box, and its price is listed as '\$0.00'. Other parking options include 'Open Parking', 'Standard Parking Lot C, Spots 1-4', and 'Standard Parking Lot C, Spots 5-11'.

Image	Description	Price	Rating
	Valet Parking	\$0.00 Add'l Fee	5.0 (1)
	Open Parking	\$0.00 Add'l Fee	Not Rated
	Standard Parking Lot C, Spots 1-4	\$0.00 Add'l Fee	5.0 (1)
	Standard Parking Lot C, Spots 5-11	\$0.00 Add'l Fee	5.0 (1)

- 28 Navigate to the Team page by selecting this option from the menu bar. Thus concludes our walkthrough. Thank you for taking the time to explore our project!



## 5 SCHEMA

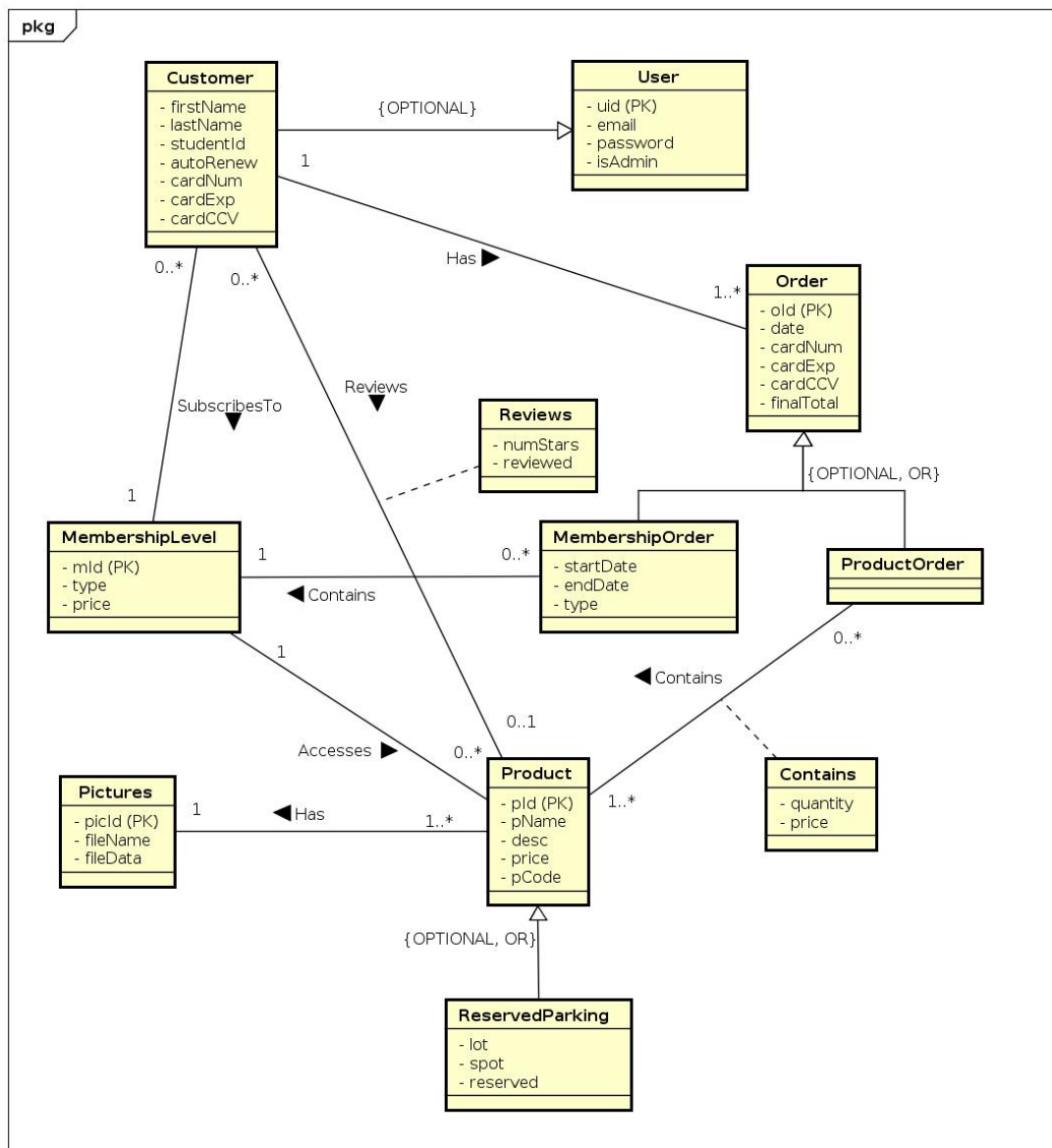
### 5.1 ASSUMPTIONS

Entity / Relationship	Assumptions
User	For a User to be an admin, they must be added via the backend where their flag, isAdmin, is set to be true. A User account that is not a Customer account may not be created via the website.
Customer (extends user)	Customer student ID numbers must be unique and not null, thus a Customer must be a UBC student.
MembershipLevel	Non-customers may browse the website, but you must sign up for a MembershipLevel to make a purchase. MembershipLevel is a monthly subscription. The membership level Rust (MembershipLevel.mid = 1) is the free membership package; Rust auto-renews by default.
Customer SubscribesTo MembershipLevel	If autoRenew is true and the Customer has valid credit card information (cardNum, cardExp, cardCCV), then their MembershipLevel will be renewed. Else, they will be downgraded to Rust. A customer must have a membership level, but a membership level might not have any customers.
Order	Orders for memberships and orders for products are recorded separately. A customer may not sign up for a membership and purchase products at the same time. Customers can only pay via credit card.
Customer Has Order	As there are two types of orders (membership orders and product orders), a customer necessarily must have at least one order (for membership level).
MembershipOrder	MembershipOrder tracks the start date and end date for a membership subscription for renewal purposes. A downgrade is considered an Order, though the Customer will not be charged any money.
MembershipOrder Contains MembershipLevel	A membership order may only be for one membership level at a time, but membership levels may have never been purchased or may have been purchased multiple times.
Product	Products are type-identified by their product code (Product.pcode): EX: Exam Access      BR: Bathrooms      PK: Parking LO: Lounge      BA: Bonus Accessories      BT: Bonus Time
ReservedParking (extends Parking)	ReservedParking is the only item sold on the website which has limited availability. When a reserved spot is purchased, its reserved attribute changes to true.
MembershipLevel GetsAccessTo Product	A membership level might have access to either no products (Rust) or many products, but a product is only associated with one membership level. This is because if it is associated with, for example, Silver (MembershipLevel.mid = 2), then every membership level with MembershipLevel.mid >=2 will have access to it.
Customer Reviews Product	A Product may have been reviewed by many Customers, but a Customer may only leave one Review per Product purchased. A Customer may not leave a Review for a Product that they have not purchased.

## 5.1 ASSUMPTIONS...CONT

Entity / Relationship	Assumptions
Order Contains ProductOrder	<p>There are two attributes stored in the relationship: quantity, an integer greater than zero, and a price, which is differentiated from the price attribute in product so that customers can be offered discounts, etc.</p> <p>A customer may buy any product at any time, despite their membership level.</p> <p>A product may never have been ordered, but an order must contain at least one product.</p>
Pictures	The fileData attribute stores the actual bits, or hexadecimal.
Product Has Pictures	A Picture may be for more than one Product, but a Product only has one Picture.

## 5.2 UML DIAGRAM



### 5.3 RELATIONAL SCHEMA: SQL DDL

```
CREATE TABLE User(
  uid INT AUTO_INCREMENT,
  email VARCHAR(50) UNIQUE NOT NULL,
  password VARCHAR(50) NOT NULL,
  isAdmin BOOLEAN NOT NULL,
  PRIMARY KEY (uid)
);

CREATE TABLE MembershipLevel (
  mld INT CHECK (mld in (4,3,2,1)),
  type VARCHAR(10) CHECK (type in
    ('Platinum', 'Gold', 'Silver', 'Rust')),
  price DECIMAL(9,2),
  PRIMARY KEY (mld)
);

CREATE TABLE Customer (
  uid INT NOT NULL,
  firstName VARCHAR(50) NOT NULL,
  lastName VARCHAR(50) NOT NULL,
  studentId char(8) UNIQUE NOT NULL,
  autoRenew BOOLEAN NOT NULL,
  cardNum char(16),
  cardExp char(4),
  cardCCV char(3),
  mld INT CHECK(mld in (4,3,2,1)),
  PRIMARY KEY (uid),
  FOREIGN KEY (uid) REFERENCES User(uid),
  FOREIGN KEY (mld)
    REFERENCES MembershipLevel(mld)
);

CREATE TABLE Product (
  pld INT AUTO_INCREMENT,
  pname VARCHAR(50) NOT NULL,
  description VARCHAR(5000) NOT NULL,
  price DECIMAL(9,2) NOT NULL,
  pCode CHAR(2) CHECK (pCode in
    ('EX', 'BR', 'PK', 'LO', 'BA', 'BT')),
  mld INT CHECK (mld in (4,3,2,1)),
  picld INT,
  PRIMARY KEY (pld),
  FOREIGN KEY (mld)
    REFERENCES MembershipLevel (mld)
  FOREIGN KEY (picld) REFERENCES Pictures (picld)
);

CREATE TABLE ReservedParking (
  pld INT,
  lot CHAR(1) CHECK(lot in('G','E','H')),
  spot TINYINT CHECK(spot in (5,4,3,2,1)),
  reserved BOOLEAN NOT NULL,
  PRIMARY KEY (pld),
  FOREIGN KEY (pld) REFERENCES Product(pld)
);

CREATE TABLE Pictures (
  picld INT,
  fileName VARCHAR,
  fileData MEDIUM BLOB,
  PRIMARY KEY (picld)
);

CREATE TABLE Reviews(
  uid INT,
  pld INT,
  numStars INT CHECK (numStars in (1,2,3,4,5)),
  reviewed bit default 1,
  PRIMARY KEY (uid, pld),
  FOREIGN KEY (uid)
    REFERENCES Customer(uid),
  FOREIGN KEY (pld) REFERENCES Product(pld)
);

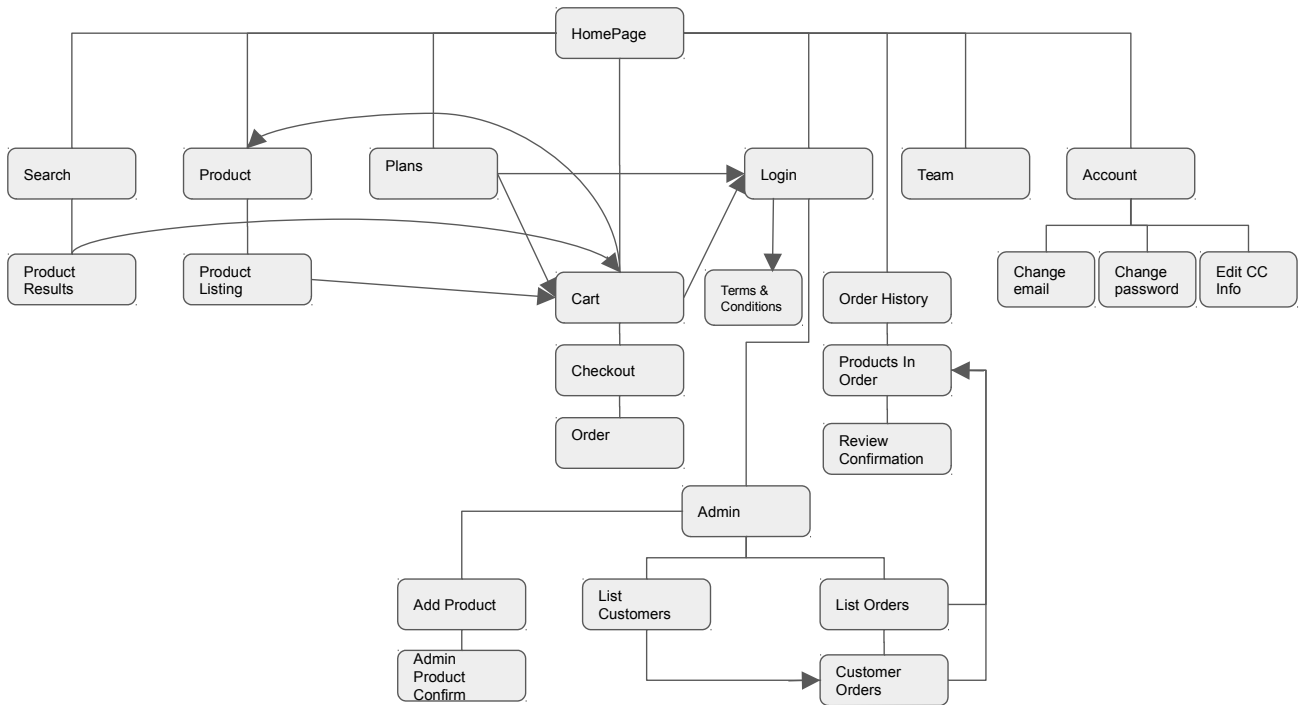
CREATE TABLE MembershipOrder (
  old INT,
  startDate DATE NOT NULL,
  endDate DATE NOT NULL,
  type VARCHAR(10) CHECK (type in
    ('Initial', 'Upgrade', 'Downgrade')),
  mld INT NOT NULL,
  PRIMARY KEY (old),
  FOREIGN KEY (mld)
    REFERENCES MembershipLevel(mld)
);

CREATE TABLE Orders (
  old INT AUTO_INCREMENT,
  date DATE NOT NULL,
  cardNum CHAR(16),
  cardExp CHAR(4),
  cardCCV CHAR(3),
  finalTotal DECIMAL (9,2),
  uid INT NOT NULL,
  PRIMARY KEY (old),
  FOREIGN KEY (uid) REFERENCES Customer (uid)
);

CREATE TABLE ProductOrder (
  old INT,
  PRIMARY KEY (old),
  FOREIGN KEY (old) REFERENCES Orders(old)
);

CREATE TABLE Contains (
  pld INT,
  old INT,
  quantity INT CHECK(quantity >0),
  price DECIMAL(9,2) NOT NULL,
  PRIMARY KEY (pld, old),
  FOREIGN KEY (pld) REFERENCES Product(pld),
  FOREIGN KEY (old) REFERENCES ProductOrder(old)
);
```

## 5.4 SITEMAP



## 6 CONCLUSIONS

Unfortunately, *UBCVIP* is unlikely to launch any time in the near future. Between the final exams that we would likely get expelled for selling and the fact that fairies (probably) aren't real, this is, in all likelihood, the end of the road for *UBCVIP*.

However, we are happy to say that this project was an amazing learning experience for all of us. One of our major takeaways was the value of the project development process, and the value of tools like GitHub—which we did not use and regretted almost immediately.

Almost equally beneficial was the experience we garnered in working with databases. Throughout almost every phase, we were easily able to either reference or imagine situations in which our current learning would be useful.

All in all, it was a fun project, and we are all very happy with the results.