

Assignment #3

Overview

You must work in groups of 3 or 4 for this assignment with students selecting their own team members. This group project will allow you to apply the concepts and technologies covered in class to a “real” project situation. In this project, you will design, and implement a web storefront for a fictional on-line computer store.

By the end of the assignment you will have a working web storefront of your own design that interacts with substantial products and a customer database. It will use web services to interact with a bank credit database to emulate credit card transactions.

Groups

While the project is a group project, each member of the group is expected to contribute a fair amount of the work involved and to work steadily throughout each milestone. It is assumed that all documentation turned in for the project has been reviewed by each team member and represents the best-combined effort of the team members.

The following grading system will be established:

1. The instructor grades the final product. The grade belongs to the project not to the producers.
2. The students discuss on a regular basis among themselves exactly what contributions they each made.
3. The students privately rate each other and themselves, assigning contributions to the whole (100%). This is an individual judgment based on their analyses of each other's work as well as their own.

Each team member gives his/her expected contributions, that part of 100% divided by the group (e.g., in a four person group, each person's expected contribution would be 25%). If the averaged person's contribution is significantly higher or lower than expected, then his/her grade will be proportionately higher or lower. Students will have to list what they did or did not do to rationalize ratings significantly outside of the expected contribution.

If there is a large discrepancy between individual rating scores, the instructor shall request a group meeting to discuss the inconsistencies.

In sum, every member of the team needs to take responsibility for and complete an appropriate amount of the project work. Be sure to consult the instructor if your team is experiencing serious problems in this regard.

Milestones

The project will be organized around the below milestones.

Milestones	Descriptions	% Weight	Due Dates
1	Inception Phase #1	5%	Tues. Nov. 4
2	Construction Phase #1	95%	Fri. Dec. 5
	OVERALL	100%	

Milestone 1: Inception Phase #1

In this phase, you must determine who your group members will be and what your web site/company is going to be called. You must create and hand-in to the drop-box outside of a project inception document which contains:

- Group member names
- Web Site/Company name

Milestone 2: Construction Phase #1

In this phase you will create an ASP.NET implementation of the storefront.

Deliverables Summary

You must implement the use cases as described below in the use case section. As well, the following nonfunctional requirements **must** be met in this milestone:

- 1) The use cases must be implemented in ASP.NET. You can use either VB.NET or C# as your implementation language. You can use any IDE (e.g., Visual Studio, HomeSite, Dreamweaver, Notepad, etc.) that you like.
- 2) You will be using an SQL database called **Assign3** for this milestone. The content in this database is still changing. That is, data is still being inputted into some fields; as a result, while the structure will not change, the actual data may be different in two weeks. An Access version of the database is also provided for documentation or testing purposes only (your handed-in application **must** use the SQL version).
- 3) You will need to create additional tables to complete this assignment. Place these additional tables in a separate Microsoft Access database named after your group (i.e., GroupA, GroupB, etc).
- 4) There is an images folder on the library drive that contains standardized images for the products (full and thumb) and brands in the database. I will be adding content to this folder over the next few weeks so be sure to recopy this folder every few days. The filename of the images corresponds to the SKU field in the Products table.

Submitting

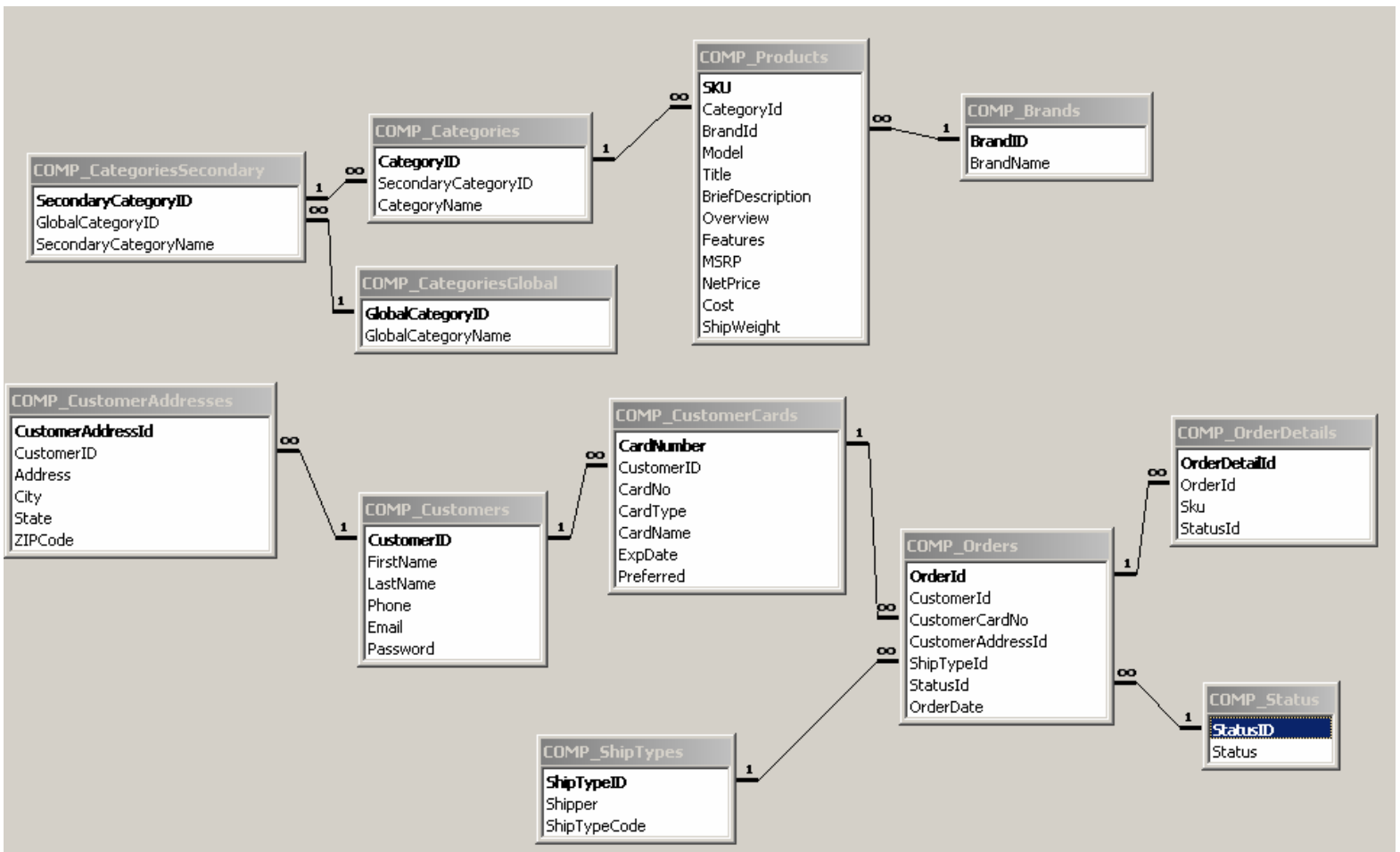
Put your assignment in a folder named after your group (i.e., GroupA, GroupB, etc). Put any resources used by your milestone into this folder. Copy folder to the submit drive in lab B215.

Grading

The grade for this assignment will be broken down as follows:

Usability and Visual Design	15%
Program Design and Documentation	25%
Features	60%
Bonus Use Cases	up to 20% bonus marks

Database Schema



USE CASE NAME:	Display Single Product	
DESCRIPTION:	System displays a single product	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. This use case is initiated when a user selects a single product to display (i.e., clicks a link that takes the user to this page).	<p>The system displays the fields from the Products table. The Features field is in XML format and may need to be parsed. Display as well the image of the product (the filename is the SKU plus ".jpg").</p> <p>This page must allow the user to add the product to a shopping cart (i.e., go to the Add Cart use case).</p> <p>This page must also display a listing of user reviews (see Rate Product use case). This page must also allow a user to rate a product (see Rate Product use case).</p>

USE CASE NAME:	Rate Product	
DESCRIPTION:	System allows user to rate/review a product	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. This use case is initiated when a user indicates that he or she would like to rate a product.	<p>The system allows the user to specify a rating between 1 and 5. The system should also allow the user to enter a paragraph of review comments for a product. These reviews will be displayed by the Display Single Product use case.</p>

USE CASE NAME:	Search for Products	
DESCRIPTION:	System allows user to search for products that match a set of criteria	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when a user selects a search link/button.	The system allows the user to specify the following search criteria: model, a SKU, a brand name, a category name, brief description, or a price range. Brand name and category name should be drop-down lists filled from the Brands and Categories tables. The product name should be a textbox that allows the user to type in a partial part of either the model or brief description.
2	The user fills in one or more of the search criteria.	The system goes to the Product Listing use case.

USE CASE NAME:	Home Page	
DESCRIPTION:	Home page for the web site	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when a user enters the domain or clicks a Home link/button.	The system displays a navigation system (see Navigation use case), as well as few "featured" products (see Featured Products use case). The system should allow the user to fill in a poll (see User Poll use case).

USE CASE NAME:	Product Listing	
DESCRIPTION:	System displays a listing of products.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated either from a link or as a result of the Search for Products use case.	<p>The system displays a list of products, with each row of the list containing the following fields: Model, Brand, BriefDescription, and NetPrice.</p> <p>Display as well a thumbnail version of the product image.</p> <p>This page must allow the user to view the details of any product in the listing (i.e., go to the Display Single Product use case).</p> <p>This page must allow the user to add the product to a shopping cart (i.e., go to the Add Cart use case).</p>

USE CASE NAME:	About Us	
DESCRIPTION:	Display information about this site	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	Initiated when user clicks About Us link/button.	The system will display information about this site. Be sure to mention that this site is hypothetical and was created as a term project for COMP 4409 at Mount Royal College taught by Randy Connolly. As well, be sure to list the group member names.

USE CASE NAME:	Navigation	
DESCRIPTION:	The web site's navigation system.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.		<p>The system must provide a way to navigate to different sections of the site. There needs to be a way to view the following use cases anywhere in the site: Home Page, View Cart, Log-in/Register, Search for Products, and About Us.</p> <p>As well, the system should have a secondary navigation system that displays categories and brands. The user can then click on a category or brand name, and go to the Display Product Listing use case.</p> <p>For the categories navigation system, there should be separate sections for global categories, secondary categories, and “regular” categories.</p>

USE CASE NAME:	User Poll	
DESCRIPTION:	Allow the user to answer a poll.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	Initiated when user decides to answer the poll.	The system will ask the user a question, with a list of answers available via radio buttons. The system must record the result of the poll (in a database table) and then display the results of the poll. This will probably reside on the home page.

USE CASE NAME:	Checkout	
DESCRIPTION:	System allows the user to purchase the products in the shopping cart.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when a user selects the Checkout button from the view cart page.	The system will ask the user to login or register as the first step in the checkout process. See Login/Register use case.
2.		After the user logins/registers, the user will select which of their addresses to use, or, add an additional address. See Select Address use case.
3.		After selecting the address, they will select the shipping method to use (from ShipTypes table). See Select Shipping Method use case.
4.		After selecting the shipping method, the user will either select which credit card to use (from CustomerCards table) or add an additional credit card. (NOTE: any new credit cards added will not be recognized by the Bank web service as valid credit cards). See Select Credit Card use case.
5.		After selecting the credit card, the user will be shown one more time, the products being ordered, the shipping address, the shipping method, and the credit card. At this point, the user will click a final ORDER button that will create the order (see Order use case for details).
6.		Depending on what happens with the Order use case, the user will be taken to a page that displays the status of the order (see Order Status use case).

USE CASE NAME:	Login/Register	
DESCRIPTION:	The user can register or log-in (if already registered).	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. Initiated when user selects the log-in or register link/button.	<p>The system will allow the user to login by entering his/her email and password. Use the email and password fields from the Customers table.</p> <p>The system will also allow the user to register by filling in the following information: first name, last name, phone, email, and password. The system must do validation checks on the phone, email, and password.</p> <p>Store the registration data in the Customers table.</p> <p>After the user logs in, create a cookie so that the next time the user visits the site, the site will automatically log the user back in.</p>

USE CASE NAME:	Select Shipping Method	
DESCRIPTION:	System allows user to select a shipping method	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. This use case is initiated by the system.	The system allows the user to select a shipping method from the ShipTypes table. After selecting shipping method, the use case is done.

USE CASE NAME:	Select Address	
DESCRIPTION:	System allows user to enter a new address or select an existing address	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated by the system.	The system should show the user any existing shipping addresses for the user (from the CustomerAddresses table), and provide a mechanism to select one the addresses. The system should also provide some mechanism to add a new address. When adding a new address, the system must provide validation checks on the zip code. After selecting an address, the use case is done.

USE CASE NAME:	Select Credit Card	
DESCRIPTION:	System allows user to select a credit card or enter a new credit card	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated by the system.	The system should show the user any existing credit cards for the user (from the CustomerCards table) and provide a mechanism to select one of them. The system should also provide a mechanism for adding a new customer credit card (with simple validations). After selecting card, the use case is done.

USE CASE NAME:	Add Cart	
DESCRIPTION:	Way to add an item to the user's shopping cart.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. Initiated when user clicks the Add item to cart link/button.	The system will add the item to the cart and then go to the View Cart use case. If the user has not yet logged in, the cart items will only last as long as that session. If however, the user is logged on (or later logs on), then the cart must be persisted (that is, stored in a database). Next time the user logs in/visits, the shopping cart will still be filled.

USE CASE NAME:	View Cart	
DESCRIPTION:	Way to view and modify the contents of user's shopping cart.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
	1. Initiated when user adds a product to the cart, or when user clicks the view cart link/button.	The system will display a listing of the contents of the cart (with the same behaviour as the Product Listing use case). Allow the user to modify the cart's contents (i.e., remove product). There should be a link/button (non-functional for this milestone) to proceed to the check-out.

USE CASE NAME:	Order Status	
DESCRIPTION:	Displays the status of the user's orders	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	Initiated when user clicks the Order Status link/button or after an order.	If the user is not logged in, the user will be asked to log in (see LogIn/Register use case), then redirected to order status page. The order status page will display the amount and status of each order.

USE CASE NAME:	Order	
DESCRIPTION:	System records the customer's order	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when user clicks the final ORDER button/link.	The system will first find out from the Bank web service (see below) whether the customer's credit card accepts the purchase. If not, display appropriate message to user (see Status table).
2.		If Bank web service approves the purchase, then add appropriate data to Orders and OrderDetails tables (including the appropriate status value from status table).
3		The user's shopping cart is emptied, and the user sees the Order Status (see Order Status use case).

NOTE: The use of the Bank web service is optional and for extra credit. If you choose not to use the web service, just assume that the purchase has been approved. The rest of the use case still is required.

USE CASE NAME:	Featured Products (Extra Credit)	
DESCRIPTION:	A way to manage and display featured products	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when Home Page is displayed (or any other page in which you wish to display featured products).	The system should provide a mechanism for dynamic display of featured/special/on sale products. That is, you will have a database table that contains the featured products (probably just the SKU and perhaps a “Featured Description” field.

USE CASE NAME:	Wish List (Extra Credit)	
DESCRIPTION:	A way for user to add products to his or her wish list.	
TYPICAL COURSE OF EVENTS:	Actor Action	System Response
1.	This use case is initiated when user clicks add to wish list link/button.	The product will be added to wish list, then redirected to View Wish List page, which will be similar to the View Cart page (except of course no checkout). From the View Wish List page, the user should have the option to remove items from wish list. This wish list should be persistent. If the user is not logged in, the user will be asked to log in first (see LogIn/Register use case), then redirected to View Wish List page.

Sigma Bank Service Details

The **Order** use case specifies that you must use a Banking web service.

The web service's URL is:

`http://csisnets2/bank/services/SigmaBankService.asmx`

The Sigma Bank Service has two methods (details on next page):

- `VerifyOrHold()`
- `DebitOrCharge()`

These methods **must** be used as follows:

1. When user clicks the final ORDER button/link in the checkout, then create an order record and the appropriate LineItems records. For all these new records, set the StatusID fields to 11.
2. The credit card and purchase must now be verified. Use the `VerifyOrHold()` method to verify the card and place a hold for the purchase amount (set the `applyHold` parameter to false). You must pass this method your group's merchant id (on your last milestone mark sheet) and a reference number (you should use the `OrderID` value for the Order record just created in step one). If an error is received, then you must change the `StatusID` field to the appropriate value from the Status table (see screen capture), display a message to the user, and then quit the ordering process. If the hold was successful, the `VerifyOrHold()` method returns a string which contains the Transaction ID (TRID). Save this TRID in the `CCTransactionID` field of the Orders table. Change the `StatusID` fields to 12.
3. The credit card must then be debited for the purchase amount via the `DebitOrCharge()` method. You must pass the TRID given to you from the `VerifyOrHold()` method, the reference number used in step two. The parameters `releaseHold` must be set to false, and `credit` to false. If the debit was successful, then change the `StatusID` field to 61, and save the new TRID returned from the `DebitOrCharge()` method in `CCTransactionID` field. If the debit is unsuccessful, then change the `StatusID` field to the appropriate value.

The SigmaBank is a (fictional) full-service credit and debit card transaction-processing facility for merchants accepting American Express, Discover, MasterCard, and VISA cards. The SigmaBank Web service's VerifyOrHold method enables merchants to verify credit availability and place holds against available credit. The ChargeOrCredit method debits or credits the specified cardholder's account, and releases the credit hold based on its transaction ID.

The following operations are supported. For a formal definition, please review the [Service Description](#).

- **VerifyOrHold**

The VerifyOrHold method requires the following parameter values:

- [1] merchantID: Your merchant ID for the specified issuer (xsd:integer)
- [2] refNum: Your transaction reference, such as an order number (xsd:integer)
- [3] issuer: AMEX, DISC, MAST, or VISA (xsd:string)
- [4] cardNumber: All 16 digits of the card number with no hyphens or spaces (xsd:string)
- [5] cardName: The cardholder's name as it appears on the card (xsd:string)
- [6] zipCode: The cardholders ZIP or ZIP+4 code (xsd:string)
- [7] expDate: The card expiration date in MM-YY format (xsd:string)
- [8] transactAmt: The amount to verify or hold, in ####.## format (xsd:decimal)
- [9] applyHold: False to verify, True to hold (xsd:boolean)

The method returns one of the following:

[Verify Response] If credit availability is greater than the transaction amount, the service returns the following string:
407162 Verify Code: 705SIGMA53342 (12)
The initial number is your refNum value.

[Declined Response] If credit availability is less than the transaction amount, the service returns the following string:
407166 Declined: Insufficient credit available (14)
Other possible declined responses are:
Declined: Issuer mismatch (18)
Declined: Cardholder ZIP code mismatch (16)
Declined: Cardholder name mismatch (17)
Declined: Expiration date mismatch (15)

[Hold Response] If credit availability is greater than the transaction amount, the service returns the following string:
407168 Hold on \$726.23 applied by TRID 5287716 (12)
You use the transaction ID (TRID) when debiting the card for the hold amount or less. Otherwise, the string returns a declined response.

- **DebitOrCredit**

The DebitOrCredit method requires the following parameter values:

- [1] merchantID: Your merchant ID for the specified issuer (xsd:integer)
- [2] refNum: Your transaction reference, such as an order number (xsd:integer)
- [3] cardNumber: All 16 digits of the card number with no hyphens or spaces (xsd:string)
- [4] transactID: The TRID value returned by the hold transaction (xsd:integer)
- [5] transactAmt: The amount to charge or credit, in ####.## format (xsd:decimal)
- [6] releaseHold: True to release the entire amount held; False otherwise (allows for credit/debit) (xsd:boolean)
- [7] credit: True to issue a credit for the transaction amount; False to debit card (xsd:boolean)

The method returns one of the following:

[Debit Response] If the charge transaction succeeds, you receive the following string:
407168 Debit -\$686.88 applied by TRID 5287718 (61)
The initial number is your refNum value.

[Credit Response] If the credit transaction succeeds, you receive the following string:
407168 Credit \$686.88 applied by TRID 5287722 (71)

Other possible declined responses are:

- Error: Status of transaction is not Apply Hold*
- Error: Transaction didn't commit (99)*
- Error: Transaction 2342342 not found*
- Error: Card number 12346895473 not found*
- Error: Merchant account 23481 not found*

StatusID	Status
0	Unknown
11	Order Received
12	Credit Card Validated
13	Card expired
14	Insufficient credit availability
15	Expiration date mismatch
16	Cardholder ZIP Code mismatch
17	Cardholder name mismatch
18	Card type mismatch
19	Bad card number
21	Inventory Checked (Local)
22	Inventory Checked (Distributor)
23	Out-of-Stock Notice Sent
24	Extended Shipment OK
25	Partial Shipment OK
31	Order to Warehouse (Commit)
32	Order to Distributor
40	Item Backordered
41	Item Shipped from Warehouse
42	Item Shipped by Distributor
51	Partial Shipment 1
52	Partial Shipment 2
53	Partial Shipment 3
54	Partial Shipment 4
55	Partial Shipment 5
59	Shipment Complete
61	Credit Card Debit Applied
88	Order Cancelled
91	Invoice Contested
92	Credit Card Payment Revoked
99	Processing Error
*	