Final Report

Internet Auction Web Site

University of British Columbia Okanagan

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1.0   Introduction

MyBay.ca is an online internet auction web site that allows online users a host of features associated with buying and selling goods in an online auction format.
The design is tailored towards a small company, eager to grow in a rapidly expanding internet auction marketplace.

This document outlines the design and implementation for the MyBay.ca internet auction web site developed for our client. It contains the following sections.
- o   An executive summary outlining major system features.
- o   Web sites walk through for end user orientation of the system.
- o   Entity relationship design modeled to represent the required components of the system.
- o   A detailed implementation description from a system or developer's perspective.

1.1   Mission Statement

To design and implement a compact, easy to use internet auction web site that provides users and Client Company, including administration staff and management, a secure and safe, enjoyable, fun experience. Allow users to search and browse items for sale, register to buy and sell goods in an auction format, and track the status of their sale items. The system allows MyBay.ca administrators to manage customer problems, generate reports on how the site is functioning, and track the volume and type of goods sold.

2.0 Executive Summary

MyBay.ca supports unregistered guests, registered auction users and company administrators.

Guests have the ability to search for items and review item details.
Registered auction users use the system to buy and sell items. The site also allow MyBay.ca administrators to manage user system issues (such as passwords and auction problems), to track the performance and profitability of the auction site, and to handle any problems.

The client site hosts the MyBay.ca web site, and aids buyers and sellers in completing their transactions and shipping and receiving items between their respective addresses. It is expected that no products will be stored at the MyBay.ca site.

Both guests and registered users are able to search for items, grouped in specific categories. Once a user is registered, they are able to log in and track items, register items for sale and create auctions, place bids on items and be notified if they are the winning bidder.

When registering items for sale, the users have the ability to post pictures of their items and put their own description in HTML. Users are able to retrieve their forgotten user id/password using their e-mail address.

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Administrators and managers are provided the same functionality as regular users. They are able to perform supervisory functions. The system allows client customer service representatives to aid buyers and sellers in completing auctions and arranging for payment and shipping. Company managers are able to produce summary reports on the number of items bought and sold, the number of users, auctions, and items in the system. Fees from auctions will be collected, based on a percentage of the final sale amount, and a summary report made available.

The design will allow for the current time to be manually changed, allowing the client to test auction-related timing issues without waiting out that time in real-life!

Summary of Required Features

External User

External users may be guests or registered users.

ID	Description	Comment
Registration and Login		
26	Register to use the system by providing their name, e-mail, address, etc.	100% complete
27	Email user registration information. Confirm registration.	100% complete
28	Login to MyBay.ca with username and password.	100% complete
Search and Browse		
30	Browse/Search items for sale without registering.	100% complete
31	Searching for items of interest by name, description, category, or other features.	100% complete
32	Category Search/List.	100% complete
33	Save items to shopping cart.	100% complete
Selling Items		
34	Register an item that may later be sold in auction.	100% complete
35	User register item details form.	100% complete
36	User upload of pictures.	100% complete
37	Create an auction for an item with an initial bid, reserve bid, auction end time.	100% complete
38	Assist seller in a completed auction to arrange for receiving payment and shipping.	100% complete
Buying Items		
41	Bid on an item in an auction.	100% complete
42	Informed user if they are the winning bid.	100% complete
43	Assist buyer in a completed auction to arrange for payment and shipping.	100% complete
44	Summary reports of the # of items bought and sold.	100% complete

Company Administrator

Company Administrators are employees of MyBay.ca and may perform administrative duties. MyBay.ca employees may also participate in a similar manor as external users.

ID	Description	Comments
49	Collect fees from auctions by charging a per auction fee and a percentage. of the final sale amount.	100% complete
50	Produce summary reports on the number of users.	100% complete
51	Produce summary reports on auctions, and items in the system.	100% complete

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52	Produce financial summary reports on the total value of goods sold over time.	100% complete
53	Allow administrators to login with a user id and password.	100% complete
54	Provide administrators with the same functionality as regular users.	100% complete
55	Provide the ability to manually change the current time.	100% complete

Bonus Features

The design of the MyBay.ca website at inception has included several key bonus features.
This section describes what bonus features have been completed as they relate to external users and company administrators.

External User

ID	Description	Comments
56	Track buyer/seller ratings and customer feedback on their trustworthiness.	100% complete
57	Allow advanced auction features such as reserved bids, immediate buying (BuyItNow!), and canceling auctions.	0% complete
58	Notify users by email on their auction status including items they are interested in bidding on or are selling.	100% complete
59	Track the history of bids for an item put up for auction.	100% complete
60	Allow users to have pictures of their items and put their own description in HTML.	100% complete
61	Allow advanced shipping and payment information including investigating how PayPal or credit card transactions are conducted.	0% complete
62	Allow user to retrieve forgotten user id/password using their e-mail address.	100% complete

Company Administrator

ID	Description	Comments
64	Produce reports indicating the customers with most (least) auctions, bids, etc.	100%
65	Produce report giving the number of currently active auctions.	0%
66	Display items listed at real auction sites (Ebay,Yahoo) by extracting the HTML pages or querying their databases dynamically.	0%

3.0   Walkthrough

The web site is located at the University of British Columbia Okanagan Campus, and can be reached via the following link. The group2 account password is group2.

http://cs-suse-1.ok.ubc.ca/group2/tomcat/MyBay/

Logging on to the site may be accomplished by registering a new user, or by using the following test accounts which have been established for demonstration purposes.

Username	Password	Access Level (explained below)
testuser	password	1
testadmin	password	2
testmanager	password	3

3.1.1   Main Page

The main page allows all users to perform some basic auction functions such as searching for auction items, register as a new customer, or logging in to the MyBay.ca auction web site. Additionally, auction items that are ending soon are displayed automatically to the user.

If the user forgets their login information, pressing the Forgot your info? Link in the top left corner of the main page will prompt the user to enter their User ID and Email address. The system will validate the information entered and send an email message containing the username and newly generated password to the user.

3.1.2   Searching for Auction Items

Searching for auction items is accomplished in the same manor for all user types, and from every MyBay.ca web page. The user does not have to be logged into the MyBay.ca web site to perform a search.
Searching for Auction items is accomplished via the Navigation panel (left side of page), or the Search Auctions entry field (top of page) displayed on most MyBay.ca web pages.
Users may enter a Search Auctions query manually by typing in all or part of a key word. Search terms may be narrowed by selecting item name, item description or auction user via a pull down list. Additionally, searching within a specific category is accomplished by specifying the item category from a pull down list.
Pressing the Search button executes the query and returns the list of auction items to the user. From the auction items listed, the user may click on the image or the item name link to see auction item details.

The user may investigate the item further by pressing the View Bid History button.

From the auction item detail screen, pressing the Return to Auction link returns the user to the auction main page. Bidding on a specific item is not possible until the user has registered or logged into the system with a valid username.

3.1.3   Registering a New User

From the MyBay.ca main page, select the New Customer? Register! Link located in the top left corner.
A subscription page will prompt the user to enter a UserID, first and last name, email address, street, city, postal code, province, and country.
Once the user has entered these details, pressing the Register button will cause the system to send an email containing a randomly generated password to the email address specified.
Once the user has obtained this password, they will be able to log into the MyBay.ca web site.

3.1.4   Login and Logout

From the MyBay.ca main page, enter the Username and password located in the top left corner, and press the Login button.
Once successfully logged in, the user's home page will be displayed. A "Welcome user!" message will be displayed in the top left corner.

The user may log out from most any web page by pressing the Log Out button located in the top left hand corner.

Once logged in, links to MyCart, MyAuctions, Create Auction, Add an Item are displayed directly below the Log Out button in the top left corner of the page. These are main user functions that are described in detail below. If the user is an administrator or manager a Manage link will be displayed.

After logging in the list of MyAuctions is automatically displayed in the main frame. A list of active user auctions is displayed.

3.1.5   User Administration – Access Levels

At specific stages access levels will be assigned to the user account. This same process applies for external users, administrators, and managers.

Access Level		Description
0	No privileges	Account created, and prior to logging in the first time. The

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		user is granted all basic MyBay.ca auction features such as selling and buying/bidding (as described below).
1	General user	Once the user has logged on the first time, the Access Level will be changed from 0 to 1.
2	Company Administrator	View and edit a user's profile, set a user's access level, and view a user's items.
3	Company Manager	View and edit any user's profile, **view & edit user's auctions**, set a user's access level, view a user's item's, and adjust auction end date time.

3.1.6   User Administration - MyProfile

Once a user has successfully logged into the system they may change their account information by selecting the MyProfile link in the top left corner of the page. The user's current user review score and access level is displayed on the top of the page.
The user will be prompted to enter their old password, new password and confirmation. The user may change other details such as first name, last name, email address and address. This feature is available for users of all access levels.

Updating changes is accomplished by pressing the Update button.

3.1.7   Managing Accounts – Administrative Tools

Administrators and Managers may change their account information by selecting the Manage link in the top left corner of the page.

Summary Reports:
Select the report type from the pull down list. The following reports are available.
- List all users.
- List all items and auctions.
- Total value of goods sold over time.
- Number of items bought and sold.
- Top users.

View and edit user's profile:
Access level 2 (administrator) or 3 (manager).
Enter the UserID and press the View Profile button. The MyProfile page of the specific user will be displayed. Please see section 3.1.6 User Administration - MyProfile for details of editing profiles.

View and edit user's auction:
Access level 3 (manager) only
Enter the UserID and press the View Auction button. Please see section 3.1.9 Selling Items, Create Action section for details of managing auctions.

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Set a user's access level:
Access level 2 (administrator) or 3 (manager).
Enter the UserID and select the access level from the pull down list. Press the Set button to change the access level. An "Access Level Changed" message will be displayed to the user.

View a user's item's:
Access level 2 (administrator) or 3 (manager).
Enter the UserID and press the View Item(s) button. A list of unopened user items will be displayed.

3.1.8   Saving Items to the Shopping Cart and MyCart

This section describes how to watch items of interest.

To add an item to cart the user must be logged into the MyBay.ca web site.

The user may search for an item as described in section 3.1.2.
Once the user has identified a specific auction item of interest they will view the item detail by clicking on the image or by clicking on the item name.
Auction item details will be displayed to the user.

To add an auction item to the cart, press the Add to my Cart link.
The system will add the item to the users cart and display the list of items currently in the users cart automatically.

The user may view the items they are watching at any point by pressing the MyCart link located in the top left corner of the displayed page.

3.1.9   Selling Items

Selling an item requires the user to complete two steps.
*   Registering an item that may be later sold - Adding an item.
*   Creating an auction for an auction item – Create Auction.

Adding an item:
Registering an auction item starts with the user selecting the Add an Item link in the top left corner of the screen. The user is prompted to enter an item name, item description and select an item category from the pull down menu, and then press the Next Step button.
The user will then be prompted to upload a main picture and an additional three pictures (if desired).
The user may select the Browse button for each image and identify the path to the picture. Once the path to the desired pictures has been entered the user will press the Submit File button to upload the pictures to the MyBay.ca web site. If the user does not wish to upload any images,

leave the file uploads blank and select <u>Submit File</u>. The user will be returned to the <u>Add an Item</u> page, allowing the user to enter another auction item.

Create Auctions:
Once the user has completed entering items, the user will select the <u>Create Auction</u> link in the top left corner of the screen to open the auction. A list box of items the user has created will appear with the most recent item entered appearing first. Additionally a scroll list of items will be displayed. The user will select the desired item and press the <u>Continue</u> button.
To create an auction the user must complete four steps:

Step 1: Modify Auction Parameters
The user may enter the duration of the auction, the initial bid, reserve bid and other shipping costs. Press the <u>Modify</u> button to enter the values, and then press the <u>Next Step</u> button.

Step 2: Modify Shipping Methods
The user must enter at least one Shipping Option.
Enter the Shipping carriers name, shipping cost, and available destination, and shipping description.
To update this information the user must press the <u>Add</u> button in the shipping options frame. The system will prompt the user to enter another shipping method. Repeat step 2 to add another entry. Press the <u>Next Step</u> button to continue. Press the <u>Delete</u> button to remove a shipping method.

Step 3: Modify Payment Methods
The user must enter at least one Payment Option. Enter the payment option name, and if desired payment surcharge, and description.
To update this information the user must press the <u>Add</u> button in the payment options frame. The system will prompt the user to enter another payment method. Repeat step 2 to add another entry. Press the <u>Next Step</u> button to continue. Press the <u>Delete</u> button to remove a shipping method.

Step 4: Open Auction
Once the user has entered the required information, pressing the <u>Open Auction</u> button for the item will create an auction. An "Auction successfully opened!" message will be displayed to the user. The user may press the <u>Return to Create Auction</u> link to return to the <u>Create Auction</u> page.

If the user forgets to enter a required field, and presses Open Auction, the system will display an error message advising the user which field is required.

3.1.10 Bidding on an Auction

The user must be logged into MyBay.ca to participate in an auction.

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The user may search for a specific auction item as described in section 3.1.2 of this document. To bid on an item, select the item detail by clicking on the image or the item name link. The auction item detail will be displayed to the user.

To bid the user presses the Bid on this item button located in the auction item detail main frame.

The auction bid page will be displayed. The system will notify you if this is the first time you have bid on the auction item.
Enter the Bid amount, and if desired a bid comment, and press the Bid on Auction button. The system will notify the user if they currently have the winning bid or if the user has been outbid. The high bid value will be displayed.

Pressing the Refresh this page button will advise the user of your current bidding status.

3.1.11 Completing an Auction

Select the Update Auctions link tab located on the top of the main frame to check on the status of all auctions from time to time. A message will be displayed showing the current system time, and if any auctions have been completed.
If auctions are completed, an email will be sent automatically to the winning bidder and seller respectively. The buyer and seller are advised to go to the Complete Auctions page to finalize the auction. Select the MyAuctions page and press the View Complete Auctions button.

On the Complete Auction page, a list of all auctions belonging to the user which have been completed (bought and sold) will be displayed.
By scrolling down the Completed Auctions page, the user can see a list of User Reviews. Please refer to section 3.1.13 User Profile and User Reviews for details on managing user reviews.

For buyers, the user will select the item and be prompted to select payment and shipping options. The user selects the radial button for the desired payment and shipping option and presses the Submit Selection button. A confirmation message containing the auction total will be displayed. The user selects the Return to Auction List link to continue.

For sellers, the completed auction page displays the buyers selected payment and shipping options, and the amount of money they will receive from the auction, and the auction fees associated with the auction. At this point the auction is complete and the MyBay.ca profit records are updated automatically.

3.1.12 Administration – Updating the Auction System Time

The user must be logged in as a Manager.

The user will select the <u>Update Auctions</u> link tab located on the top of the main frame and they will be presented a form allowing them to lock, modify and reset system time. The time adjustment will be used by the update page to determine if any auctions need to be closed. Time may be adjusted forward and backwards. Once the time has been locked the time will be static until it has been reset.

The user enters values to modify the current year, month, date, hours, minutes, and presses the Modify Time button to modify and lock time.

Press the Reset time button to unlock time and set to current system time.

3.1.13 User Profile and User Reviews

The auction item detail page displays a Seller: Name link that if selected displays the seller's user profile and current user reviews.

Once an auction has ended, the buyer and seller will be given the opportunity to enter a user review from the <u>Complete Auction</u> page. By scrolling down the <u>Completed Auctions</u> page, the user can see a list of User Reviews. Reviews become available after the auction has reached completion level 2 (item has been paid for and shipped).
The user can click on the <u>Seller ID</u> to enter user reviews. Enter the comment, and set the score in the pull down list box and press the <u>Submit</u> button to enter a User Review.

4.0   Entity Description
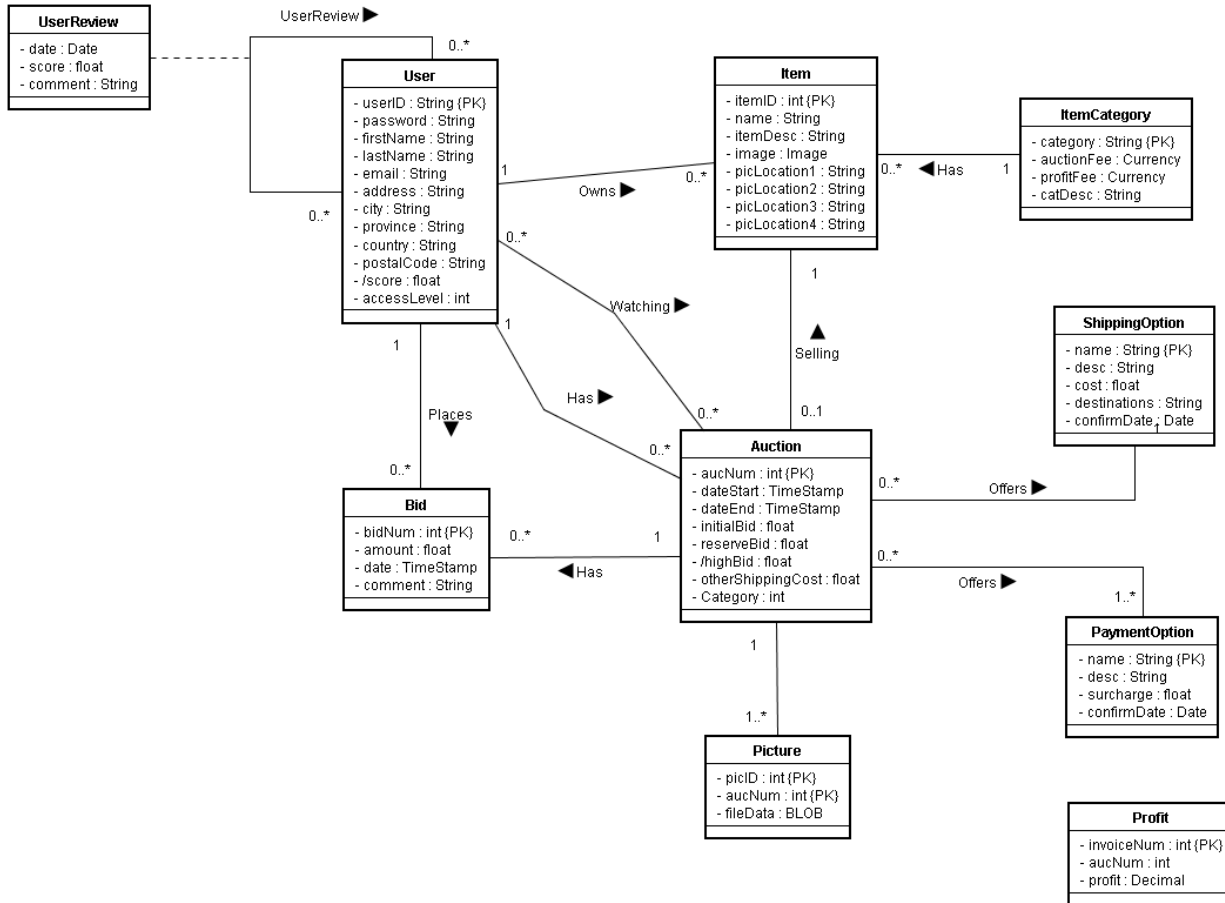
Figure 1: MyBay.com Entity Relationship Model

4.1   Relational Assumptions

The **User** relation stores the user information and the user's level of access. A user who may own multiple items can bid on or auction off many items at the same time, as well as commenting and rating other users.

The **UserReview** relation represents a comment and score rated by a user on another user. A user can review many users, and can be reviewed by multiple users.

The **Bid** relation represents the bid amount and the date of the bid. Auctions can have many bids and users can bid many times.

The **Auction** relation offers multiple methods, and a fee must be paid to the company for putting up the auction.

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The **Item** relation represents the items currently up for bid, and is categorized into many categories. An item can only have one auction for it at one time, and may be in multiple categories.

The **ItemCategory** relation is the category an item belongs to.

The **ShippingOption** is the offered courier service (at least one) by the auctioneer.

The **PaymentOption** is the offered payment company (at least one) by the auctioneer.

The **Picture** relation is where images as associated with an auction are stored.

The **Profit** relation is where profits and invoicing for auctions is stored.

4.2 Entity Attributes

4.2.1 User

Attribute	Description
userID {PK}	User-created ID that uniquely identifies a user.
password	User-set password (randomly generated if newly registered) to access their account (combined with userID).
firstName	The user's first name.
lastName	The user's last name.
email	The user's email address.
address	The user's shipping address.
city	The city where the user resides.
province	The province where the city belongs.
country	The user's country of residence.
postalCode	The user's postal code.
/score	Total score of user's reputation.
accessLevel	Level of user access to web site functions.

4.2.2 UserReview

Attribute	Description
userID {PK}	The userID of the user being reviewed.
reviewID {PK}	A unique id for each individual review given.
reviewerID	The userID of the reviewer.
date	The date the review was given.
score	The score given to the user

comment	The reviewer's comment about the reviewee.

4.2.3   Cart

Attribute	Description
userID {PK}	The userID of the cart owner.
aucNum {PK}	A unique number identifying the auction item.

4.2.4   Bid

Attribute	Description
userID {PK}	The userID performing the bid.
aucNum {PK}	A unique number identifying the auction item.
bidNum {PK}	The bid ID.
amount	The bid amount.
date	The bid date.
comment	A comment from the bidder.

4.2.5   Item

Attribute	Description
itemID {PK}	An id that uniquely identifies an item
userID	The userID associated with the item.
aucNum	A unique number identifying the auction item.
name	The name of the item.
itemDesc	A description of the item (user created).
category	The category associated with the item.

4.2.6   ItemCategory

Attribute	Description
category {PK}	Name of the category the item is in.
catDesc	Category description.
auctionFee	Base fee associated with the category type.
profitFee	Base fee in percent for hosting the auction.

4.2.7   Auction

Attribute	Description
aucNum {PK}	An unique number identifying the auction.
dateStart	The auction's start date.
dateEnd	The auction's end date.
initialBid	Starting auction amount.

reserveBid	Desired minimum auction amount or no sale.
/highBid	The highest bid so far.
otherShippingCost	Supplementary shipping costs associated with the auction.
Completed	Status of Auction. NULL-open, 0 -buyer signed off, 1- seller signed off, 2 = (Awaiting comment from either party), 3 = (Buyer commented, awaiting Seller comment), 4 = (Seller commented, awaiting Buyer comment), and 5 = (Both users have commented).

4.2.8   ShippingOption

Attribute	*Description*
name {PK}	Name of the shipping company.
aucNum {PK}	An unique number identifying the auction.
cost	The cost to ship the item.
destinations	The destination(s) of the shipping item.
confirmDate	Confirmation shipping date.
description	A description of the shipping method.

4.2.9   Payment Option

Attribute	*Description*
name {PK}	Name of the payment company (Paypal, etc.).
aucNum {PK}	A unique number identifying the auction.
surcharge	Additional charge(s) for transaction fee, etc.
description	A description of the payment method.
confirmDate	Date of confirmed completion of payment.

4.2.10   Picture

Attribute	*Description*
picID {PK}	A unique number identifying the picture to the specific auction.
aucNum {PK}	A unique number identifying the auction.
fileData	Picture associated with the auction item.

4.2.11   Profit

Attribute	*Description*
invoiceNum {PK}	A unique number identifying the invoice used for auction billing.
aucNum	A unique number identifying the auction.
profit	The company profit from the auction.

5.0 Detailed Implementation Description

5.1   File Descriptions and Features

The MyBay.ca web site was designed in two sections. The front end was developed using
HTML, CSS and one embedded/inline frame. The backend system was developed using Java
Server Pages exclusively.
The system was implemented using JDBC and JSP programming technologies. The MyBay.ca
web site is hosted on the clients Apache Tomcat server. The MySQL DBMS product was used
to host the master database.
All JSP pages are located at:

<div align="center">http://cs-suse-1.ok.ubc.ca/group2/tomcat/MyBay/</div>

5.1.1   User Front End

The main login page is index.html. This page displays a banner that allows the user to perform
basic non registered user function.
 Company.html, contact.html, faq.html are frame tabs on the index.html banner page and are
used for MyBay.ca

5.1.2   login.jsp

Used for logging in and out of the MyBay.ca index page.

5.1.3   myBay.jsp

The main user page displayed after logging into the MyBay.ca web site.

5.1.4   viewAuction.jsp

This is the auction item detail page for the individual auction item page. This page is displayed
from the item overview.

5.1.5   viewProfile.jsp

Used to display user profile and user review details in the auction item detail screen

5.1.6   home.jsp

Accessed from index.html main frame tab. Displays the auction items soon to expire as well as
other sales information.

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5.1.7　validater.jsp

Set of methods used to validate input parameters. validateString(String s), validateString(String s, int minLen, int maxLen), validateInteger(String s), validateCurrency(String s), validateTimeStamp(String s), checkCharacters(String s), checkCharacters(String s, String allowedCharacters), validateUserID(String s), validatePassword(String s), validateEmail(String s), validatePostalCode(String s), getValidaterErrorMessage().

5.1.8　userRegister.jsp

Used to registering a user from the index.html page.

5.1.9　myAuction.jsp

Lists the open auctions for a defined user.

5.1.10　showCart.jsp

Display items that are currently being watched by a user.

5.1.11　sendmail.jsp

Used to send a mail message to a user when registering an account, forgot your password, and during auction completion.

5.1.12　addItem.jsp

Add an item to the myBay.ca site.

5.1.13　processFileUpload.jsp

Used when adding an image to the MyBay.ca site. Upload a maximum of four images.

5.1.14　regAuction.jsp

Main page that displays a pull down list of users items that need to be registered in an auction.

5.1.15　editAuction1.jsp

Modify auction parameters.

5.1.16　editAuction2.jsp

Modify shipping methods.

5.1.17 editAuction3.jsp

Modify payment methods.

5.1.18 editAuction4.jsp and openAuction.jsp

Commit details and open an auction.

5.1.19 displayImage.jsp

Display's an image used by most MyBay.ca JSP functions.

5.1.20 dbAccess.jsp

General database methods. initJDBCDriver(), dbQuery(String sql), closeQuery(), dbUpdate(String sql) , getDBErrorMessage().

5.1.21 bid.jsp

Manages the bidding process for buyers.

5.1.22 userCP.jsp

This is the user profile or MyProfile page.

5.1.23 update.jsp

Checks if all auctions are finished.

5.1.24 passwordRetreival.jsp

Generate a new password.

5.1.25 manage.jsp

Administration functions and tools.

5.1.26 listItems.jsp

Lists the items not yet open for auction.

5.1.27 completeAuctions.jsp

Used to confirm the shipping and payment details after the auction has closed.

5.1.28 chooseOptions.jsp

Select shipping and payment options.

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