MybaY.ca

Project Design

Internet Auction Web Site

University of British Columbia Okanagan

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TABLE OF CONTENTS

TABLE OF FIGURES

1.0   Introduction

MyBay.ca is an online internet auction web site that will allow online users a host of features associated with buying and selling goods in an online auction format.

This document outlines the design requirements for the MyBay.ca internet auction web site to be delivered to the client. The design is tailored towards a small company, eager to grow in a rapidly expanding internet auction marketplace.

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 will also allow MyBay.ca administrators to manage customer problems, generate reports on how the site is functioning, and track the volume and type of goods sold.

1.2   Executive Summary

MyBay.ca will support guests, registered auction users and company administrators.

Auction users use the system to buy and sell items. The site will also allow customer representatives within the Client Company 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 will host the MyBay.ca web site, and aid the 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 Client Company site.

Both guests and registered users will be able to search for items, grouped in specific categories. Once a user is registered, they will be 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 user will have the ability to post pictures of their items and put their own description in HTML. Users will be able to retrieve their forgotten user id/password using their e-mail address.

Administrators will be provided the same functionality as regular users. They will also be able to perform management functions. The system will aid client customer service representatives aiding buyers and sellers in completing auctions and arranging for payment and shipping. Company managers will be able to produce summary reports on the number of items bought and sold, the number of users, auctions, and items in the system, and to produce financial

summary reports on the total value of goods sold over time. Fees from auctions will be collected, based on a percentage of the final sale amount, and a summary report made available.

If the client's expectations are satisfied and there are no time constraints, the following features will be implemented: Buyer/seller ratings and customer feedback on their trustworthiness will be tracked; notification of users by email on their auction status including items they are interested in bidding on or are selling; track the history of bids for an item put up for auction.

Additional management features such as produce reports indicating the customers with the most (least) auctions, bids, etc., report giving the number of currently active auctions will also be considered.

The internet auction web site will be modeled using a Unified Process Model using Entity-Relationship (ER-UML) diagram. The system will be implemented using JDBC and JSP database programming technologies. The MyBay.ca web site will be hosted on the client companies Apache Tomcat servers. The MySQL DBMS product will be used to host the master database.

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!

2.0   Domain Assumptions

2.1   Users

- Users have an id (unique) and password combination used to identify the user and log in to the site.
- Users are limited to bidding on and auctioning items, commenting and reviewing other users, and searching for items and auctions.
- Administrators, moderators, and other site staff will also have an id (unique) and password combination to identify their status and access deeper levels of the site.
- Employees (including the above positions) have limited access depending on their position, with administrators having full access, as well as all user services.
- Users have a score equal to the sum of their rating and a percentage of their score to "perfect".

2.2   Items

- Anything can be put up for auction as long it is not illegal or violates company policies. Items deemed inappropriate will be removed without warning.
- Auctioning services and intangible objects (selling your soul, etc.) is prohibited.

2.3   Auctions

- Every auction has a start and end date based in PST (or PDT) time zone, but can be converted to the user's time zone.

- Auctions can be of two types:

  - **Guaranteed**: item is guaranteed sold regardless of ending price.
  - **Reserved**: minimum price must be reached for the item to be sold.

2.4   Payment Method

- Payments are recommended, but not limited to, using one of our partnered services (**Paypal®, Visa®** or **MasterCard®,** or transfers with select banks) to ensure a safe and secure transaction. Both parties must agree if other methods are used.

2.5   Shipping Method

- Shipments are recommended, but not limited to, using one of our partnered services (**FedEx®, UPS®,** or **Purolator® Courier**) to ensure the safe arrival of an item. Both parties must agree if other couriers are used. Shipping services and rates vary between companies.
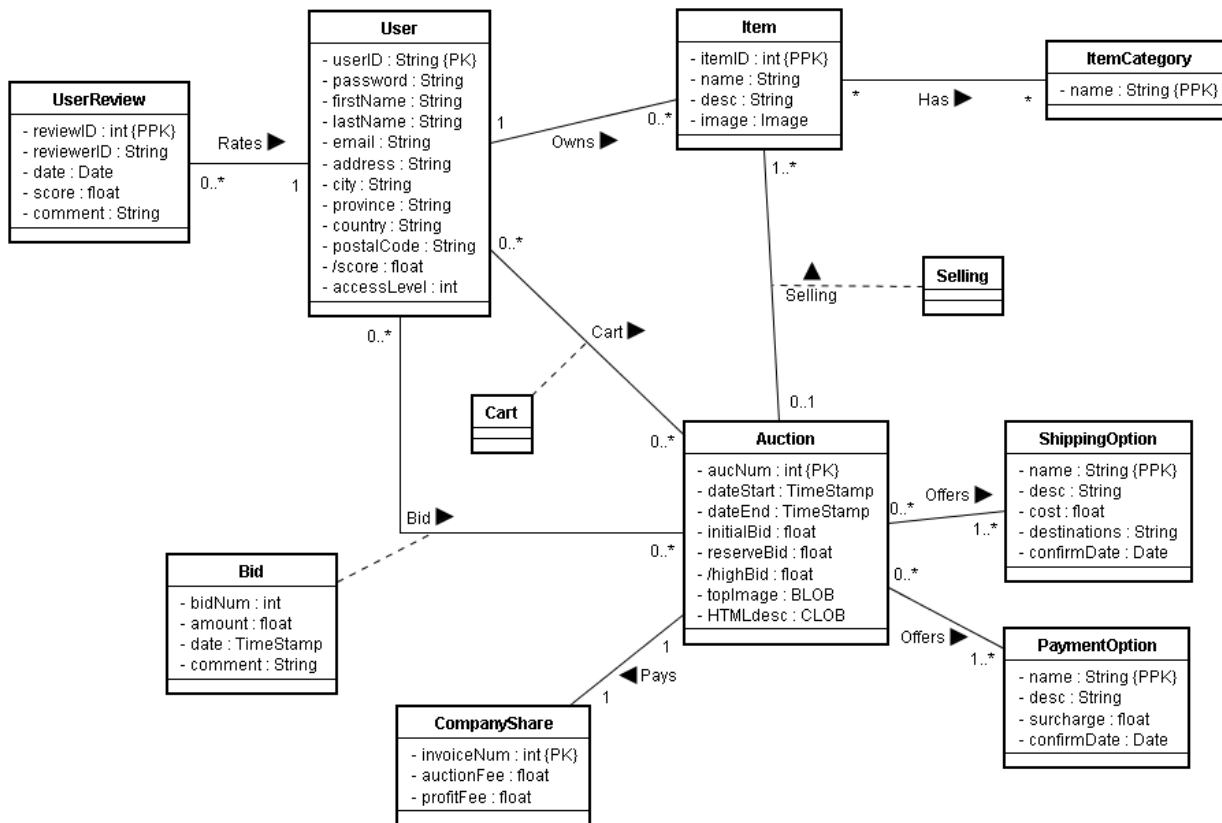
3.0   Entity Description

Figure 1: MyBay.com Entity Relationship Model

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3.1 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 **Cart** relation has the user's items and/or watched auctions. There is an association between users and auctions.

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 **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 **Selling** relation associates auctions and items to be sold.

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

The **CompanyShare** relation keeps track of the money gained from each auction.

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

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

3.2 Entity Attributes

3.2.1 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

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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

3.2.2 UserReview

Attribute	*Description*
reviewID {PPK}	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

3.2.3 Cart

Attribute	*Description*

3.2.4 Bid

Attribute	*Description*
bidNum {PPK}	the bid ID
amount	the bid amount
date	the bid date
comment	a comment from the bidder

3.2.5 Item

Attribute	*Description*
itemID {PPK}	an id that uniquely identifies an item
name	the name of the item
desc	a description of the item (user created)
image	an image of the item up for bid

3.2.6 ItemCategory

Attribute	*Description*
name {PPK}	name of the category the item is in

3.2.7   Selling

Attribute	Description

3.2.8   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
topImage	the image of the item up for bid
HTMLdesc	a description of the auction in HTML format

3.2.9   CompanyShare

Attribute	Description
invoiceNum {PK}	the invoice ID
auctionFee	fee for putting up an auction
profitFee	fee gained from profit

3.2.10   ShippingOption

Attribute	Description
name {PPK}	name of the shipping company
cost	the cost to ship the item
destinations	the destination(s) of the shipping item
desc	a description of the shipping method
confirmDate	date of confirmed completion of shipping

3.2.11   PaymentOption

Attribute	Description
name {PPK}	name of the payment company (Paypal, etc.)
desc	a description of the payment method
surcharge	additional charge(s) for transaction fee, etc.
confirmDate	date of confirmed completion of payment

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4.0 Relational Schema – SQL DDL

```
CREATE TABLE User (
        userID              VARCHAR(30)      NOT NULL,
        password            VARCHAR(20)      NOT NULL,
        firstName           VARCHAR(30)      NOT NULL,
        lastName            VARCHAR(30)      NOT NULL,
        email               VARCHAR(30)      NOT NULL,
        address             VARCHAR(20),
        city                VARCHAR(20),
        province            VARCHAR(20),
        country             VARCHAR(20),
        postalCode          VARCHAR(10),
        score               DECIMAL(5,2),
        accessLevel         SMALLINT         NOT NULL,
        PRIMARY KEY (userID)
);

CREATE TABLE UserReview (
        userID              VARCHAR(30)      NOT NULL,
        reviewID            INTEGER          NOT NULL,
        reviewerID          VARCHAR(30),
        date                DATE             NOT NULL,
        score               DECIMAL(3,2)     NOT NULL,
        comment             VARCHAR(60),
        PRIMARY KEY (userID, reviewID)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (reviewerID) REFERENCES User(userID)
           ON DELETE SET NULL ON UPDATE CASCADE
);

CREATE TABLE ItemCategory (
        userID              VARCHAR(30)      NOT NULL,
        itemID              INTEGER          NOT NULL,
        category            VARCHAR(20)      NOT NULL,
        PRIMARY KEY (userID, itemID, category)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (itemID) REFERENCES Item(itemID)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE ShippingOption (
        aucNum              INTEGER          NOT NULL,
        name                VARCHAR(20)      NOT NULL,
        cost                DECIMAL(10,2)    DEFAULT '0.00',
        destinations        VARCHAR(60),
        confirmDate         DATE,
        desc                VARCHAR(60),
        PRIMARY KEY (aucNum, name)
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE Selling (
        userID              VARCHAR(30)      NOT NULL,
        itemID              INTEGER          NOT NULL,
        aucNum              INTEGER          NOT NULL,
        PRIMARY KEY (userID, itemID, aucNum)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (itemID) REFERENCES Item(itemID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE Auction (
        aucNum              INTEGER          NOT NULL,
        dateStart           TIMESTAMP,
        dateEnd             TIMESTAMP    CHECK(dateEnd > dateStart),
        initialBid          DECIMAL(10,2)    DEFAULT '0.00',
        reserveBid          DECIMAL(10,2)    DEFAULT '0.00',
        topImage            BINARY LARGE OBJECT,
        HTMLdesc            CHARACTER LARGE OBJECT,
        PRIMARY KEY (aucNum)
);

CREATE TABLE Item (
        userID              VARCHAR(30)      NOT NULL,
        itemID              INTEGER          NOT NULL,
        name                VARCHAR(30)      NOT NULL,
        desc                VARCHAR(60),
        image               BINARY LARGE OBJECT,
        PRIMARY KEY (userID, itemID)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE PaymentOption (
        aucNum              INTEGER          NOT NULL,
        name                VARCHAR(20)      NOT NULL,
        surcharge           DECIMAL(10,2)    DEFAULT '0.00',
        confirmDate         DATE,
        desc                VARCHAR(60),
        PRIMARY KEY (aucNum, name)
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE Bid (
        userID              VARCHAR(30)      NOT NULL,
        aucNum              INTEGER          NOT NULL,
        bidNum              INTEGER          NOT NULL,
        amount              DECIMAL(10,2)    NOT NULL,
        date                TIMESTAMP,
        comment             VARCHAR(60),
        PRIMARY KEY (userID, aucNum, bidNum)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE CompanyShare (
        invoiceNum          INTEGER          NOT NULL,
        aucNum              INTEGER,
        auctionFee          DECIMAL(10,2)    DEFAULT '0.00',
        profitFee           DECIMAL(10,2)    DEFAULT '0.00',
        PRIMARY KEY (invoiceNum)
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE SET NULL ON UPDATE CASCADE
);

CREATE TABLE Cart (
        userID              VARCHAR(30)      NOT NULL,
        aucNum              INTEGER          NOT NULL,
        PRIMARY KEY (userID, aucNum)
        FOREIGN KEY (userID) REFERENCES User(userID)
           ON DELETE CASCADE ON UPDATE CASCADE
        FOREIGN KEY (aucNum) REFERENCES Auction(aucNum)
           ON DELETE CASCADE ON UPDATE CASCADE
);
```

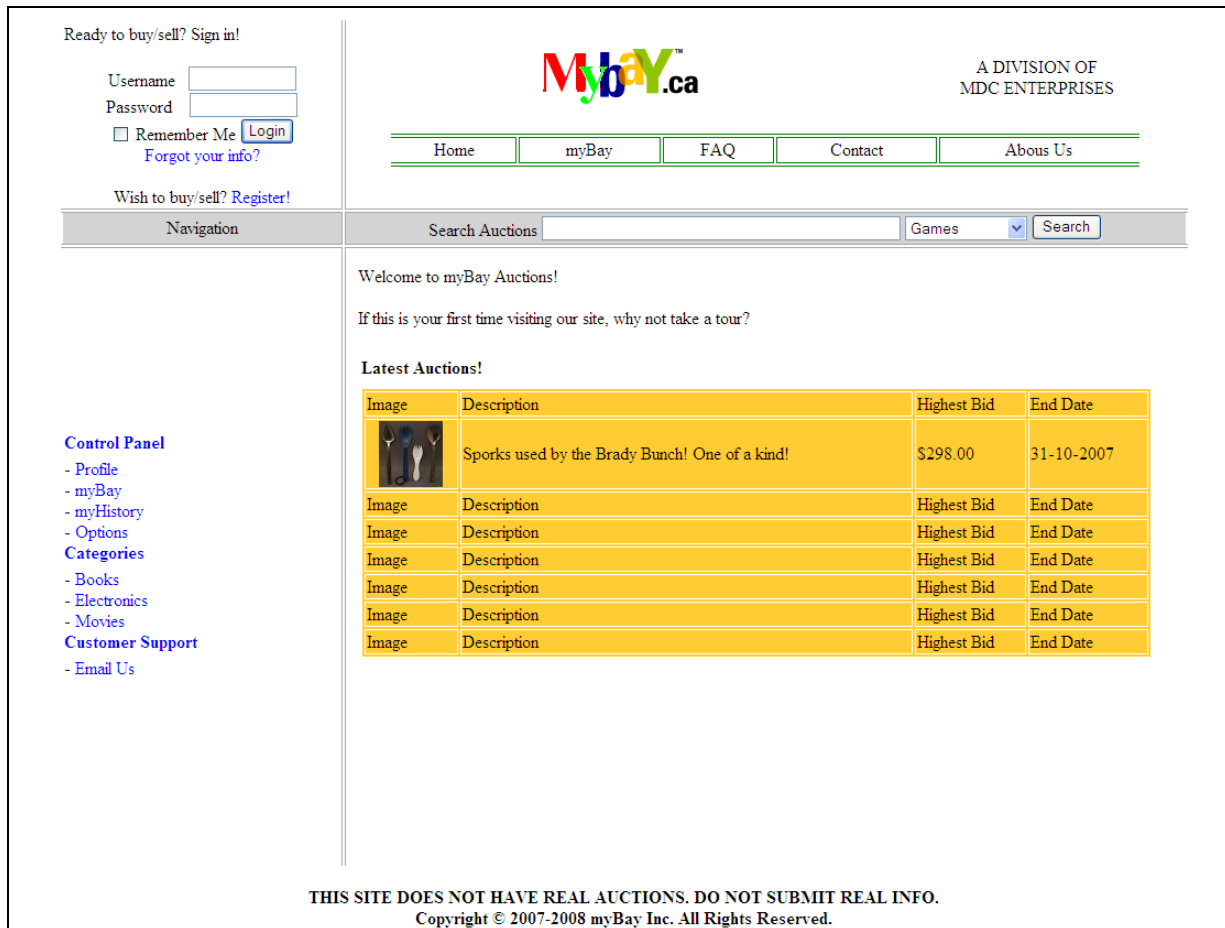University of British Columbia Okanagan

5.0 Human Interface

Figure 2: MyBay.com Home Page Prototype

5.1 Web Interface

The home page consists of the navigation, search bar, login, welcome page, and the site logo. The navigation uses a collapse-style format, which shows or hides sub-links when clicked on, to allow the user quick access to useful links such as all the item categories. The welcome page will provide the user with information on the newest auctions, latest news, and many more. The user can enter keywords in the search bar to search for items in specific categories or all categories. Guests may only browse, view, and search for auctions and items.

The login located at the top left corner will change into a mini user control panel when logged in. The post-login screen will greet the user and have a couple quick links that users would often use, such as *log out* or *MyBay* (shows the user's auctions, etc.).

Most of the site is static, meaning only a portion of the site will change. The main focus is the embedded frame below the site logo. Most links will open up in the embedded frame

University of British Columbia Okanagan

instead of switching to a whole new page in order to decrease load time and keep the site functionalities consistent and ready.

When viewing a list of auctions only the image of the item, its description, the current top bid, and the end date will be shown. Lists that are over a certain length will be broken up into several pages, depending on the user's preference (max 50 per page).

There will be many ways a user can interact with other users. For example, after an auction has completed, the winner user can comment on the seller and award the seller reputation points. Users can also message each other to inquire about the auction or to confirm information.

Staff, when logged in, will have extra functions (depends on user access level) that allow them to perform tasks specific to their job, but they can also bid and auction off items.

5.2   Planned Features

5.2.1   User

- Browse auctions by categories or keyword
- Search for items and auctions by categories
- Individual history of all participated auctions for each user
- Bidding on and auctioning off items
- Reputation Point System
- Account creation and maintenance
- Feedback system (reviews, comments, etc.)
- Login information retrieval (other means of identification required)

5.2.2   Staff

- Generate reports on various aspects of the site.
- Customer Service.
- Maintain auctions, user information, etc.
- System recovery.
- Notify users of auction status, etc.
- Manual change of bid time.