Use Case Modeling for *WebOrder*

User Roles

Primary (Human) Users

The human user of the WebOrder system uses it online to:
- browse the musical instrument product catalogue,
- view the comments or evaluate the product,
- purchase musical instruments, and
- view history and details of past order(s)

Secondary (External) Systems

The WebOrder system utilizes an external relational database (RDBMS) to store product information, such as name, retail price, shipping weight, comments,etc. In addition, the RDBMS stores user account information (user ids and passwords), order history, and shipping data (e.g., current costs for shipping by air or by ground).

Glossary

User Account

> Information about a user of WebOrder, including name, user id, and password.

Product

> A musical instrument that can be purchased online using WebOrder.

Product Information

> Information about a product that may be displayed to a user; data includes the instrument's name, the current price per unit, the shipping weight per unit, a description of the musical instrument, and a picture.

Product List

> A list of musical instruments presented to the user for selection to browse or purchase.

Shopping Basket

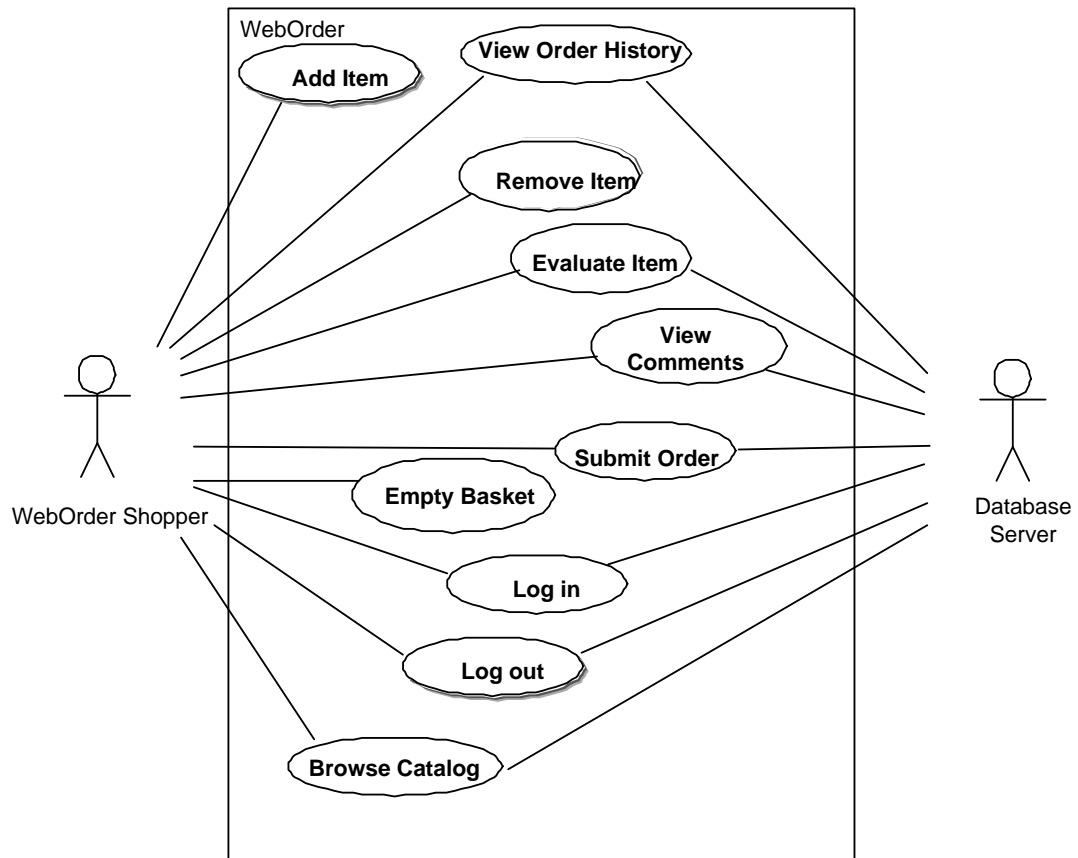> A list of musical instruments together with a non-negative count for each indicating the products that the user wishes to purchase.

Order History

> A list of purchase orders. Each entry contains the same information as a *Shopping Basket* as well as the order date, shipping mode, and total amount for the order.

Use Case Diagram

Use Case Diagram : WebOrder

WebOrder

- Add Item
- View Order History
- Remove Item
- Evaluate Item
- View Comments
- Submit Order
- Empty Basket
- Log in
- Log out
- Browse Catalog

WebOrder Shopper

Database Server

Use Cases

1. *Log in*

<u>Description:</u> Log in and start shopping session.

<u>Normal scenario</u>:

1. WebOrder user invokes the WebOrder application and is presented with the WebOrder screen.
2. User enters a user id and password.
3. WebOrder requests the password associated with the given user id from the RDBMS.
4. WebOrder validates that the given password equals the stored password.
5. WebOrder initializes an empty shopping basket.
6. WebOrder displays welcome message, including product list.
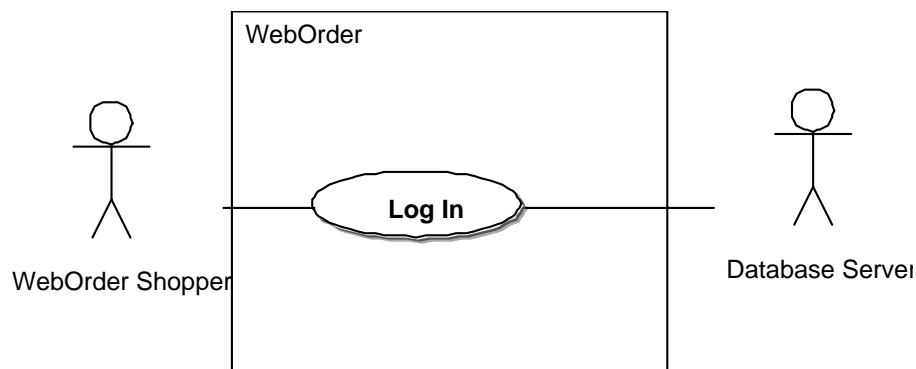
<u>Abnormal scenario (s)</u>:

(a) Unknown user

Same as the normal case, except that WebOrder displays an appropriate error message("Unknown user account") after step 2 and presents the opportunity for the user to try again.

(b) Incorrect password

Same as the normal case, except that WebOrder displays an appropriate error message ("Incorrect password") after step 3 and presents the opportunity for the user to try again.

(c) Inability to connect the RDBMS

Same as the normal case, except that WebOrder displays an appropriate error message("System error: No connection made") after step 2 and presents the opportunity for the user to try again.

2. *Browse Catalog*

Description: Browse the catalog of musical instruments available for sale.

Normal scenario:

1. After login, the user is presented with a product list.
2. The user selects a product from the list to view.
3. WebOrder requests the information for the selected product from the RDBMS.
4. WebOrder displays the stored information to the user: description, price, shipping weight, product picture, etc.
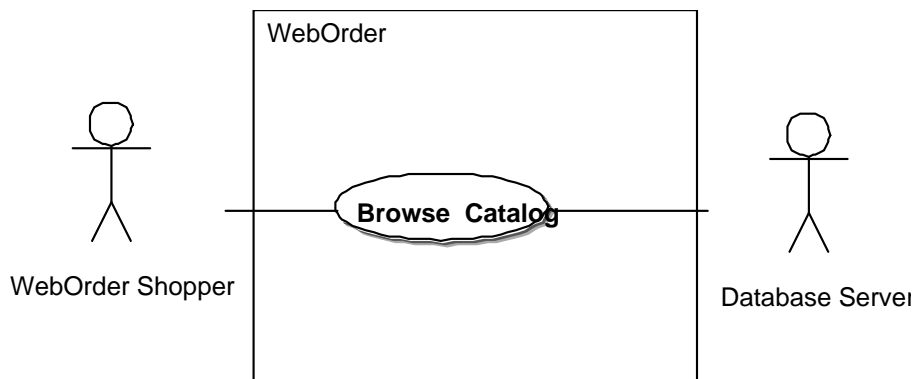
Abnormal scenario (s):

(a) Unknown product

Presumably, the displayed products are the only ones that may be selected. Furthermore, the displayed products are retrieved from the RDBMS. So, the only way the product can be unknown to the RDBMS is if it can be deleted, independently while any WebOrder instance is executing. If so, WebOrder displays an appropriate error message ("Product not found"), adjusts the product list by removing the missing product, and continues with step 1.

(b) Inability to connect the RDBMS

Same as the normal case, except that WebOrder displays an appropriate error message ("System error: No connection made") after step 3 and continues with step 1.

3. *Add Item*

Description: Add an item to the shopping basket.

Normal scenario:

1. User selects an item in the list of products and reviews product information.
2. User enters the number of units to purchase, and clicks the "Add Item" button.
3. WebOrder requests the shipping weight and current cost per unit for the selected product from the RDBMS.
4. WebOrder adds the specified count of the selected product to the shopping basket:
    (a) If the shopping basket already has an entry for the selected product, WebOrder adds the specified count to the existing entry in the shopping basket and continues with step 5.
    (b) If the shopping basket does not already have an entry for the selected product, WebOrder adds a new entry into the shopping basket for the specified count of the selected product and continues with step 5.
5. WebOrder updates the total shipping weight and cost.
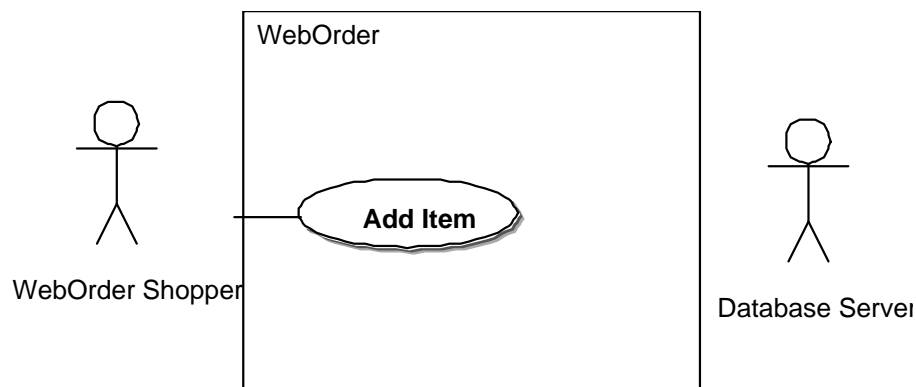6. WebOrder updates the display of the shopping basket contents.

Abnormal scenario (s):

(a) Inappropriate count

If the user does not enter the number of units to purchase or enters a zero or negative count to purchase, WebOrder displays an appropriate error message ("Please select a non-negative amount") after step 2 and continues with step 1.

(b) Inability to connect the RDBMS

Same as the normal case, except that WebOrder displays an appropriate error message ("System error: No connection made") after step 3 and continues with step 1.

4. *Remove item*

Description: Remove an item from the shopping basket.

Normal scenario:

1. User selects products for purchase as indicated in the shopping basket.
2. User selects product in basket and clicks the "Remove Item" button.
3. WebOrder removes the corresponding entry from the shopping basket.
4. WebOrder updates the total shipping weight and purchase amount.
5. WebOrder updates the display of the shopping basket contents.
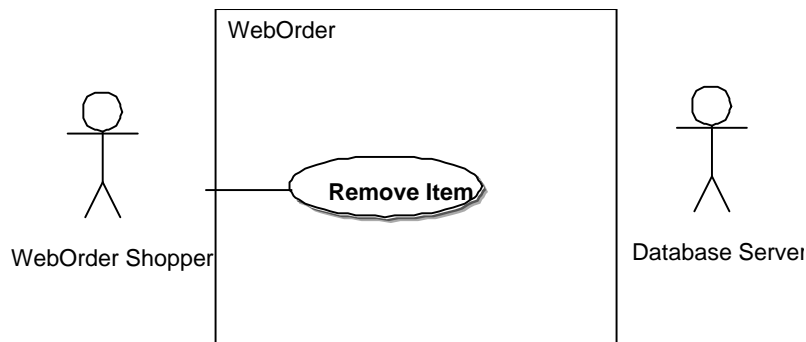
Abnormal scenario (s):

(a) No product selected

If the user tries to remove without selecting a product (e.g., by clicking the "Remove Item" button without selecting a product first), WebOrder displays an appropriate error message ("Please select a product to remove") after step 2 and continues with step 1.

(b) Shopping basket is empty

If the user tries to remove without selecting a product because there are no products currently in the shopping basket, WebOrder displays an appropriate error message ("There are no products to remove") after step 2 and continues with step 1.

5. *Empty basket*
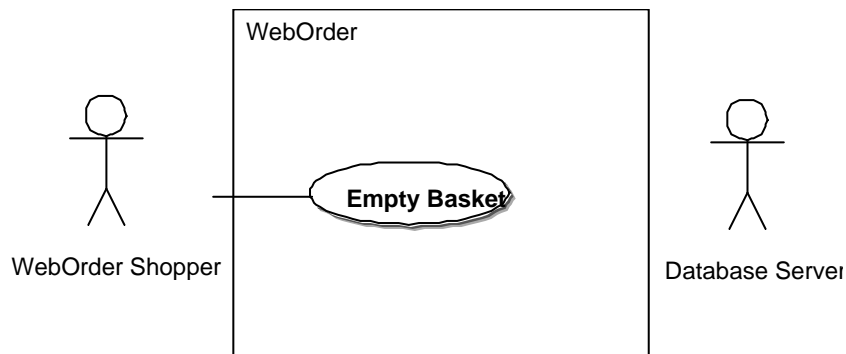
Description: Empty the shopping basket.

Normal scenario:

1. User selects products for purchase as indicated in the shopping basket.
2. User clicks the "Empty Basket" button.
3. WebOrder removes all of the entries from the shopping basket.
4. WebOrder updates the total shipping weight and purchase amount to zero.
5. WebOrder updates the display of the shopping basket contents.

Abnormal scenario (s):

(a) Shopping basket is empty

If the user tries to empty a shopping basket that is already empty, WebOrder displays an appropriate error message ("The shopping basket is already empty") after step 2 and continues with step 1.

6. *Submit order*

Description: Submit an order.

Normal scenario:

1. User has selected products for purchase as indicated in the shopping basket.
2. WebOrder updates the total cost including shipping and weight as indicated on the screen.
3. User selects the shipping mode (air vs. ground) and clicks the "Submit Order" button.
4. WebOrder updates the order history information in the RDBMS for the user.
5. On success, WebOrder removes all of the entries from the shopping basket.
6. WebOrder resets the total shipping weight and purchase amount to zero.
7. WebOrder updates the display of the shopping basket contents.
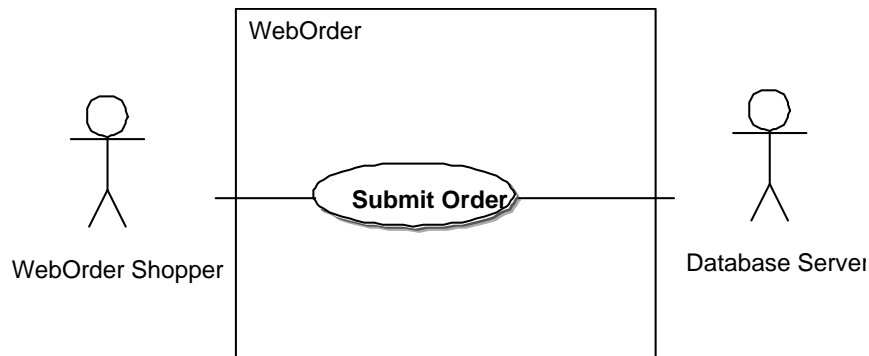8. WebOrder displays a successful order placement message to user.

Abnormal scenario (s):

(a) Shopping basket is empty

If the user tries to place an order with an empty shopping basket, WebOrder displays an appropriate error screen ("The shopping basket is empty") after step 3.

(b) Inability to connect the RDBMS

Same as the normal scenario, except that WebOrder displays an appropriate error screen ("System error: No connection made") after step 4 and continues with step 1.

WebOrder

Submit Order

WebOrder Shopper

Database Server

7. *View Order History*

Description: View history of orders.

Normal scenario(s):

(a) User views list of orders

1. User clicks on "Order History" button.
2. WebOrder requests the order history information for the user from the RDBMS.
3. User is presented with the "Order History" screen.
4. WebOrder displays the list of orders submitted by the user.
5. User clicks the "Done" button.
6. The "Order History" window closes and the user is returned to the main screen.

(b) User views details of an order

1. User clicks on "Order History" button.
2. WebOrder requests the order history information for the user from the RDBMS.
3. User is presented with the "Order History" screen.
4. WebOrder displays the list of orders submitted by the user.
5. User selects an order from the list of orders.
6. WebOrder displays details of the order selected: order id, date, shipment mode, total cost, total weight, and the names and quantities of items in the order.
7. User clicks the "Done" button.
8. The "Order History" window closes and the user is returned to the main screen.
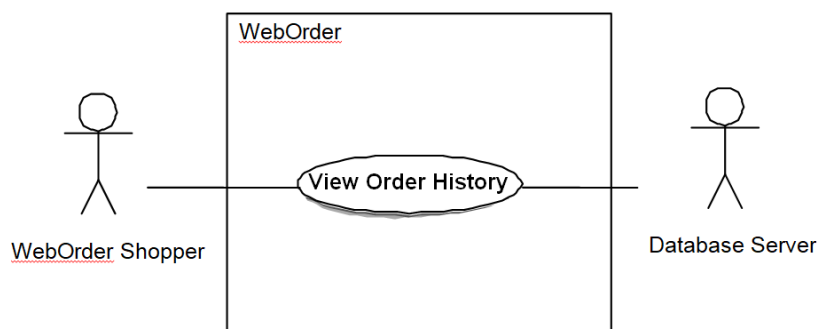
Abnormal scenario (s):

(a) Order History is empty

If the user tries to view the history of orders and there are none, the list of orders in the "Order History" screen is empty.

(b) Inability to connect the RDBMS

Same as the normal scenario, except that WebOrder displays an appropriate error screen ("System error: No connection made") after step 3.

8. Evaluate Item

Description: Evaluate the purchased products.

Normal scenario(s):

1. User clicks on "Order History" button.
2. WebOrder requests the order history information for the user from the RDBMS.
3. User is presented with the "Order History" screen.
4. WebOrder displays the list of orders submitted by the user.
5. User selects an order from the list of orders.
6. WebOrder displays details of the order selected: order id, date, shipment mode, total cost, total weight, and the names and quantities of items in the order.
7. User clicks the "Evaluate" button.
8. User is presented with the "Order Evaluation" screen.
9. User inputs evaluation information, including text, images, and star ratings (1-5 stars).
10. User clicks the "Done" button.
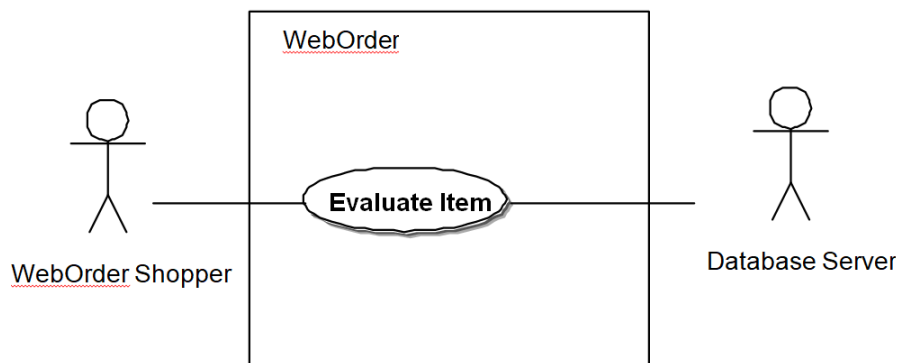11. The "Order Evaluation" window closes and the user is returned to the main screen.

Abnormal scenario (s):

(a) User has evaluated this product before

WebOrder displays "This product has been evaluated." after step 2.

(b) Inability to connect the RDBMS

Same as the normal scenario, except that WebOrder displays an appropriate error screen ("System error: No connection made") after step 1.

9. View Comments

Description: User views the comments about the product.

Normal scenario:

1. After login, the user is presented with a product list.
2. The user selects a product from the list to view.
3. WebOrder requests the information for the selected product from the RDBMS.
4. WebOrder displays the stored information to the user: description, price, shipping weight, product picture, etc.
5. User selects "view comments" button on the product information page.
6. WebOrder requests the comments information for the selected product from the RDBMS.
7. User is presented with the "Product Comments" screen.
8. WebOrder displays the list of comments.
9. User clicks the "Done" button.
10. The "Product Comments" window closes and the user is returned to the main screen.
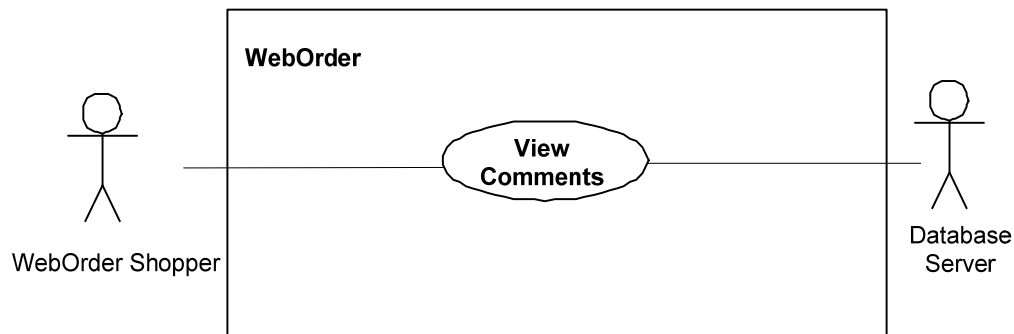
Abnormal scenario (s):

(a) No comments about the product

If the user tries to view the comments of a product and there are none, the list of comments in the "Product Comments" screen is empty.

(b) Inability to connect the RDBMS

Same as the normal case, except that WebOrder displays an appropriate error message ("System error: No connection made") after step 1.

10. *Logout*

Description: Log out and end shopping session.

Normal scenario:

1. User clicks on "Log out" button.
2. If there are any pending purchases, WebOrder clears the shopping basket.
3. WebOrder deletes the shopping basket for this user.
4. WebOrder displays the login screen, indicating that the user has been logged out.