

B2C E-COMMERCE WEBSITE

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The World Wide Web represents a new frontier towards a global industry, leading the way for new businesses. Commerce now deals with a whole different concept: electronic commerce (e-commerce). This kind of commerce provides new means for a large variety of products to reach different markets across the world. This application was designed and implemented for a hypothetical firm called Oxygen, in order to supply a manageable website for online selling, thus reaching new customers in a whole new target market. The website has an appealing interface and allows clients from across the globe to view the company's products and buy them using cash on delivery or a credit card. The application has an administration module, permitting the owner of the shop to easily add or delete items, and to review orders.

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JEL Classification: A12, F15, M21

1 Introduction

The application is intended to provide an online shop for a hypothetical firm Oxygen. However, there is no restriction regarding the products sold. The owner has the possibility of adding anything he wants, from small objects, like pens, to large ones, like a LCD TV. The app administrator can insert or remove item categories. Each category may have other subcategories, thus the task of grouping the items becomes easier and well-structured.

For this application I have used the Apache HTTP Server, MySQL for working with the database and PHP as the server side script in order to provide dynamic content (Welling & Thomson, 2001). MySQL is currently the most used DMBS (Database Management System) online, being very simple to use in terms of manipulating information onto a relational schema (Timofte, 2002).

2 Website Database

2.1 Database Diagram

The database is called "magazin" and consists of eight tables. We can observe in the next figure the database diagram.

2.2 Tables Description

Table *users* - this table contains information regarding a client that has registered into the system. It stores a unique username, a password for the account, a unique e-mail address and also the address of the client. The client has the facility of paying for an order with a credit card. This sort of information is also stored in this table (Macklup, 1991).

Table *recuperari* - this table contains two fields. One field represents the e-mail address of a customer that had forgotten his/her password and the other a key generated by the application in order to check that the solicitant of the new password is indeed an actual client. This key will be sent to that e-mail address. If the client responds to the email with the key, the system will generate a password and send it to the user (Odlyzko, 2001).

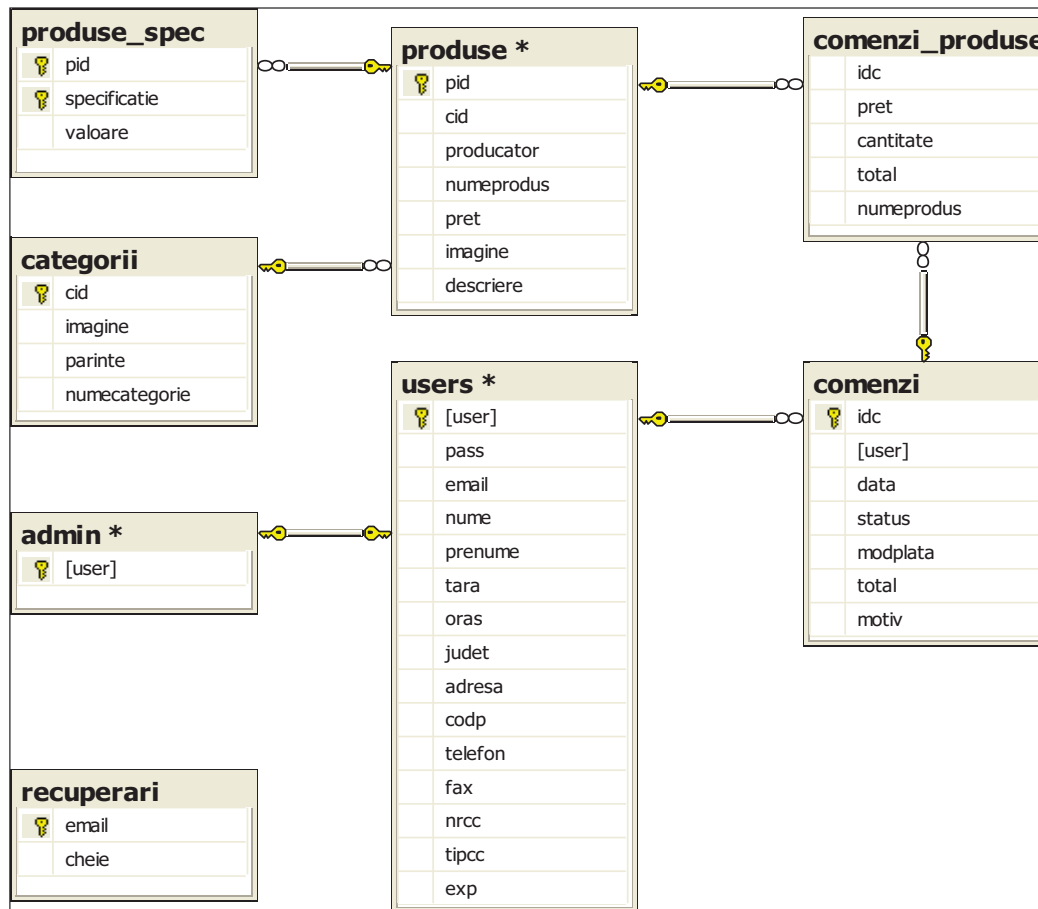


Figure 1: Database Diagram

Table *admin* - we can observe in Figure 1 that there is only one field. The purpose of this table is to indicate which of the users from the table *users* has administration rights .An administrator can add/delete new items or view/accept/reject orders made by users.

Table *produse_spec* - this table contains product specifications for a product. Every product can have none or many specs, which are stored in this table.

Table *comenzi* - a user can place as many orders as he likes. An order is stored here, with info like the user who made it, the date of the order, the total price and payment option. The order has a status. When placed, a new order has the status “pending”. After it has been reviewed by the administrator it can have the status “approved” or “rejected” in which case we will store in this table the reason for the denial of the order, to later present it to the user.

Table *categorii* - in order for the shop to be well-structured, we have to organize the items into categories. Each category can have products or many subcategories with products.

Table *comenzi_produce* - this table stores information concerning to the product that correspond with a certain order (Roşu-Hamzescu, Mitu, 2001).

3 Structural Design

3.1 Website Module Interaction Diagram

The application has two main modules: the user interface module and the administration module. These modules depend on the existence of the database “magazin”. In Figure 2 we can observe the interaction between the modules, regarding the DB (Loshin & Vacca, 2004).

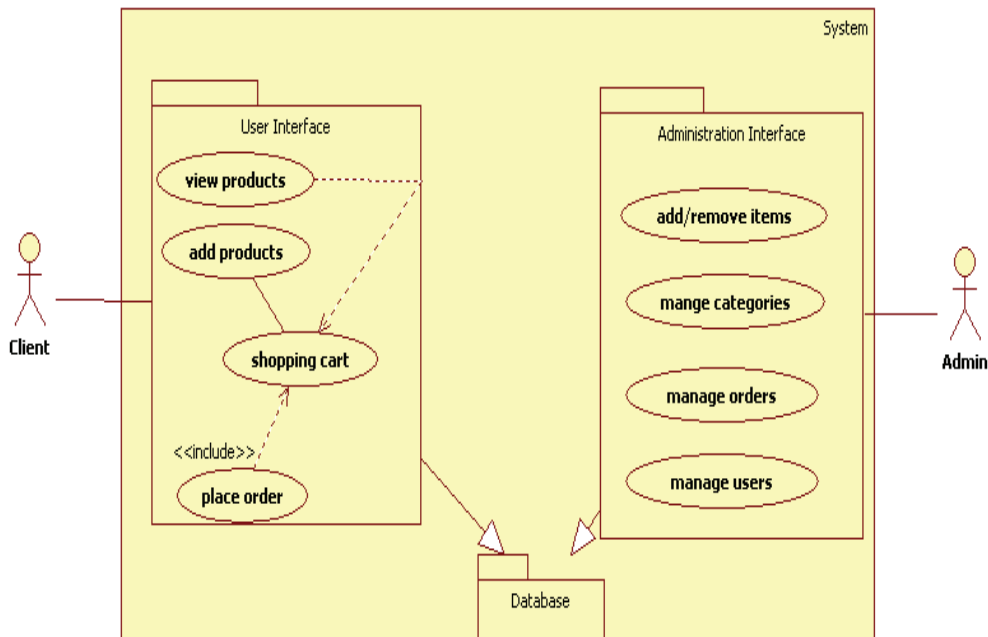


Figure 2: Module Interaction Diagram

3.2 User Interface Module Prospect

This module consists of many PHP modules (Năstase, Năstase, 2002). There are a few modules that are stored in a separate directory, INC. All off these are included in the rest of the interface. We will explain the modules first:

Module *sus.php* - this module is responsible for supplying the header for the other modules in the user interface. It displays the Oxygen logo and links to the contact and how to buy page.

Module *jos.php* - this module simply displays in all the modules the footer (the copyright to be more specific).

Module *login.php* - if the user inputs in the login form a correct combination of username and password, the login form is substituted with account options links (logout, order history, account details and to change password). This operation logs in the user into the system.

Module *cosdecumparaturi.php* - I implemented here a class that symbolizes a shopping cart. This class will be used to store information on the products that the customer wants to buy. It provides methods for adding, deleting and manipulating the quantity of a product. It will store data like the products ids, their price and quantities.

Module *util.php* - this module is the most important module of the application. It contains definitions of functions that fully interact with the DB. Functions for logging in, checking if a user is logged and logging out are implemented here. There are also all the functions needed to manipulate information from the database, including functions that are needed by the administration module.

The modules that deal with the actual user interface are stored in the root directory. Their functionality is based on the *util.php* and *cosdecumparaturi.php* modules. We will explain them next:

Module *index.php* - this module displays shopping cart overview with two buttons that can redirect to the shopping cart manipulation module and one that can empty the cart, the catalog that contains the main categories, a login form or account options if the user is correctly logged into the system, and at last two buttons for creating a new user and for retrieving a forgotten password. These are present in the rest of the modules, though there are some exceptions. As we will present other modules it will be specified if any of these aren't the same.

Module *logout.php* - after a user is done with his actions, he can log out of the system using the logout link.

Module *catalog.php* - when a user clicks on a main category he will be redirected to this catalog module. The category's picture is shown. If the category contains products, they will be displayed along with a link to the *produs.php* module and add to cart button; if there are subcategories they will be displayed along with the picture and number of products contained. A subcategory becomes a category when it is clicked.

Module *produs.php* - When a product link is clicked, this module is responsible to output the product information stored in the database and a button for adding the product into the shopping cart.

Module *cosulmeu.php* - a user can modify the content of the basket. He can remove or change the quantities of a product. This page displays a schema for the operations needed to complete an order. The client can go back to shopping or he can continue the order process.

Module *comanda.php* - this is the second in the order process after viewing the cart items. This module is only accessible if the user has successfully logged in. If so, the shopping cart content is showed alongside with a button

that links to the cart manipulation module, the address of delivery with a button that links to the account details manipulation module and a form for choosing the payment option.

Module *plaseazacomanda.php* - accessible only from the *comanda.php* module, this is responsible for adding a new order into the database, in compliance with the shopping cart content.

Module *contulmeu.php* - a client can modify his details here, for example if he wants to change the delivery address or to add a credit card. This is accessible only if the client has successfully logged in.

Module *comenzi.php* - a client can view the details of his order here. He can see the actual orders or the ones he has completed in the past. If an order is denied, he can see the reason here and try to remedy the problem. Further he can reconfirm the order using the module *reconfirmare.php* or cancel it using *anuleaza.php*, both of these being available through links. This is accessible only if the client has successfully logged in.

Module *schimbaparola.php* - a client can change his account password if he wishes. This is accessible only if the client has successfully logged in.

Module *register.php* - a new client can browse the catalog and add products to the shopping basket. If he wants to place the order but he doesn't have an account he can click the link for creating one, thus leading to this module. There is a form that has to be completed with personal information, choosing a username and password and providing his email. Optionally he can add a credit card to his account for online purchasing.

3.3 Administration Module Prospect

The PHP modules needed for the administration are stored in a separate directory ADMIN. The administrator can reach this module simply by specifying the path to this directory in the URL (ex.: oxygen.ro/admin). Many of the modules just perform an action to update the database and then return to modules that also display information (Kleinberg & Lawrence, 2001).

Module *index.php* - this module displays a login form. If the user has successfully logged in and his username can be found in the "admin" table, then he is redirected to the *admin.php* module.

Module *admin.php* - this module outputs the number of products, categories, subcategories, users and orders. There is also a menu with links to the products, users and orders manipulation modules.

Module *produse.php* - the admin can see a list of the main categories alongside with the subcategories, that can be selected and deleted using the module *delc.php*. Here the administrator can specify a new category name and a picture for it, and using *addc.php* he can add the new category. Clicking on a category leads to the same module, but there are other options like adding a subcategory (*addc.php*) or adding/modifying/deleting (*produs.php/addp.php/delp.php*).

Module *produs.php* - a product can be modified. This module displays the product information which can be modified and updated using the PHP module *actualizeaza.php*. Specification can also be inserted here.

Module *users.php* - this module displays the list of users, and the possibility of deleting them using the module *delu.php*. Also, it is specified if the user has a credit card and if he has any orders.

Module *comenzi.php* - this module displays the orders grouped into "pending", "confirmed" and "denied". Clicking on the edit button will let the administrator use the *detaliicomanda.php* module, responsible for outputting the order details.

Module *detaliicomanda.php* - an order is shown here. The administrator can approve/deny/delete an order using *confirma.php/refuza.php/sterge.php*. When an order is denied the administrator can specify the reason why it was denied. When the user click on the order details in his account he can see the reason and try to remediate the problem if he wishes, or to cancel the order.

Module *logout.php* - this module logs out the administrator from the administration area, redirecting him to the *index.php* module located in the root directory.

3.4 Install Note

Copy the application files into the *htdcos* directory. Using the *phpMyAdmin* application, the database "magazine" must be created. In the SQL directory there can be found a text file containing the structure of the database in SQL language. Thus, the database can be up and running in no time (Timofte, 2002).

After the query, the administrator must visit the page and use the *register.php* module to create the administrator account. He must specify the username *admin*.

4 Conclusion

Computers, communication networks, and a wide variety of newer, rapidly developing technologies are increasingly important ways in which individuals, companies, and organizations of all kinds conduct business (Boboila, 2007). These technological changes present challenges that must be faced not only by technologists but also by lawyers, policy-makers, economists, entrepreneurs, ethicists, and other stakeholders. Potential topics to be addressed from both technical and non-technical points of view include but are not limited to: internet bussiness

management; web searching, as a technology and as a business; B2B, B2C, and C2C technology and business models (Camp, 2000).

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