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A new approach in E-Commerce applications by using modern technologies for WEB

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Abstract

It is a fact that the field of informatics is extremely dynamic. Producers and users of software products are looking solutions to the multitude of problems they are confronted with. Everybody who wants to solve their shopping needs must access an online application and if possible, by just giving a mouse click. This paper presents some new approach, using modern technologies for the web, to resolve their needs as quickly as possible and to anticipate future wish lists for the purchaser. Services Oriented Architecture (SOA) could be such a solution and also a multi agent system.

1. Introduction

The e-commerce sector, in the century of speed and information, must find an answer for everybody who wants to solve their shopping needs as quickly as possible, if possible by just giving a mouse click [4, 5, 8, 10].
The Internet is providing a range of solutions and useful information in all fields, including a large variety of online shops. The internet became an important environment for presenting and marketing of the company products in real time that is available to everyone. The web applications offer people the possibility to buy products for every activity in their life, work or spending their vacations. When you leave in a trip in nature, you might want to buy sport clothes and accessories, and if you are in a hurry and don't have time, a web shop is the best solution. Anyone can access the web application Mountain Expert in order to buy sport products. The application is an e-shop, and has a feature to register and to create a user for connecting to his account, to navigate to a list products, to save products in the shopping card in order to buy them, and finally to send an order.

This site has a simple design and can be accessed by users with a poor internet experience or even people with disabilities.
The web application Mountain Expert has applied rules and techniques of accessibility from (Web Accessibility Initiative) [5, 8].
The server application is implemented using Java JSF and Prime-faces libraries.
Java web technologies has a great flexibility allowing to be used with other technologies and also using these languages /technologies makes possible the obtaining of remarkable results. The written application in Java will be posted on a Web server and will be accessible to any user and

only after authentication you can order an item. Usability is especially important in the case of e-commerce websites. While most usability principles of regular websites still apply for e-commerce sites as well, the different specific pages such as shopping carts, shipping methods, shipping and billing addresses, order reviews, payment options, etc. all add another layer of complexity to creating usable online shops.

2. Theoretical aspects

One of the most frequently used java technology in web applications is the Java Server Faces technology (JSF) [3]. JSF made the development of web application much easier and very interesting. The base elements of this framework are the components, which are small parts from a project that has their own attributes and behaviours. JSF is a relative new technology.

In the process of creating the application has been used for design blueprints: Mocking-Bird, for implementation: Net-Beans framework, for server side: Glassfish with Derby database, UML designs and for accessibility testing: WAVE toolbar [9].

2.1 Technologies

2.1.1 Java Server Faces (JSF)

JSF is the fastest and easiest way of creation the dynamic web applications that are server- and platform –independent [10].

JSF is based on Model View controller architecture, the View is represented by the user interface in our case the facelets.html files, the Model is the data in the application and it is represented by the Entity Classes, and the Controller is represented by the Java Managed Beans and controls the retrieving of data and also resolves user request

2.1.2. Prime-faces

Prime-faces components/modules are similar to JSF components. Prime-faces provide some extra advantages, like better appearance, dynamic actions with built in Java-script or complex actions that don't require any work for the developer aside to adapt component to the application [12].

Prime-faces modules are easy to implement and use and they bring dynamic content and appearance. Some of the Prime-faces modules used in Mountain Expert are: Accordion Panel, Capcha Module, Wizard, Mega Menu, Carousel, Password Input Box, Login module, Data table and Upload Image module.

Prime-faces offer examples for these modules and more on the demo page [12].

2.1.3 Netbeans Framework

Net-beans IDE offers support for developers for Java EE (Enterprise Edition) applications, „which typically run on "big iron" servers and can support thousands of concurrent users" [2]

Net Beans is a free open source Integrated Development Environment (IDE) and platform that has been used to develop Mountain Expert. With the help of this powerful environment, using his tools was much easier to develop the Mountain Expert website.

Net Beans framework has everything one needs to start developing JSF applications.

The application is a Java EE 6 Web type, using Glassfish server.

2.1.4. Database

A database is a collection of data arranged for ease and speed the search and retrieval (American Heritage Dictionary of the English Language).

It is a difference between a database and a database management system (DBMS). A DBMS is a special program for storing and retrieving data, such as Microsoft Access, witch requires more training than using a spreadsheet or word processor.

SQL is a database computer language designed for the retrieval and management of data in relational database management systems (RDBMS), database schema creation and modification, and database object access control management. Many database products support SQL with proprietary extensions to the standard language. The core of SQL is formed by a command language that allows the retrieval, insertion, updating, and deletion of data, and performing management and administrative functions. SQL also includes a Call Level Interface (SQL/CLI) for accessing and managing data and databases remotely. My-SQL is a relational database management system (RDBMS) which has more than 11 million installations. The program runs as a server providing multi-user's access to a number of databases [6]. For the application Mountain Expert it was used Apache Derby database on port 1527. Apache Derby is a relational database that is used in Java projects because it is implemented in Java. His advantages are: small size, is respecting SQL and Java standards and is very simple to use.

2.2. Design and Implementation of *Mountain Expert* site

The website *Mountain Expert* can be accessed by different people for the same reason: to acquire mountains clothes and other accessories to use for their trips in the nature. Figure 1 presents the structure of the website and the relationships between modules.

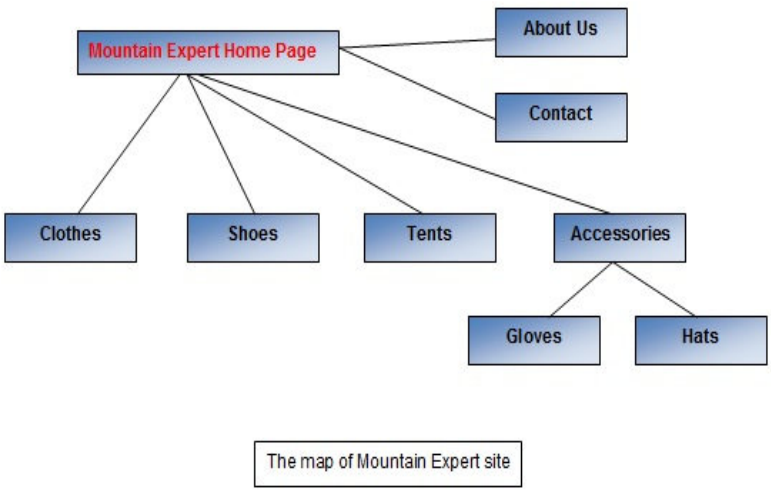

Fig.1 The map of *Mountain Expert* site

2.2.1 Design rules

For a good structure and an easy navigation, the application is respecting a part of usability standard rules of Jakob Nielsen [11]:

- Aesthetic and minimalist design;
- Help and documentation;
- Flexibility and efficiency of use;
- In order to be used by impaired people the applications is respecting the accessibility standard created by W3C called WAI - web accessibility initiative.

The colours and simple design of web pages are respecting the ergonomic standards that help users with eye problems to navigate in the application.

Using templates for all pages
For the web interface and styling in this application, created in JSF, we use Facelets tags to provide a standard web interface layout. For the design of the pages *Facelets templates* and *Faceletes template client* were used. The template is declaring parts of composition items by using tags like <ui:insert>, and the client is defining the composition using tags like <ui:composition> and <ui:define>. This way the modification of the appearance of the application is less time consuming and easier to do. It also eliminates redundant code and the flux of actions become more fluid [1].

Choosing the colours
One have chose simple colours for the design of the website because when using a e-commerce website is important that the attention is focused on the content rather on design elements that pop or move around. To make of comparison between an e-shop and real life, when one walk into a store with very loud music, it's very hard to focus on what you had in mind to shop from there, because is hard to concentrate and take any actions, if there is a disturbing element in the environment.

Consistency and placement of the content
The design of the content is kept consistent in every page, the user is being able to quickly learn how to use the website and this results in a more usable application. People are expecting to find a certain item in certain places and the site *Mountain Expert* is build to respect that rule placing:

- The logo in the left upper corner;
- The navigation bars in the middle of the page;
- Shopping cart and login module in the upper right corner.

Pagination vs. scrolling navigation
"It's the structure of a site that determines its success, a well organized site will lead users effortlessly toward their goals" [1]

Main menu is simple and we have avoided using a drop down menu because it's covering the content of the page.

The local menu is available on every page of the products and it is called breadcrumb menu that it's a list of links in order to visually see the level hierarchy from first page.

This website **is structured by category of products** like clothes, shoes, tents and accessories. Category based websites are the most common type of sites especially if is about an e-commerce application divided into the category of the products they are selling.

2.2.2 UML Diagrams

Use case diagram (Figure 2) - shows a scenario for two types of users, the administrator and a normal user. It describes the main activities performed by the users on the website.

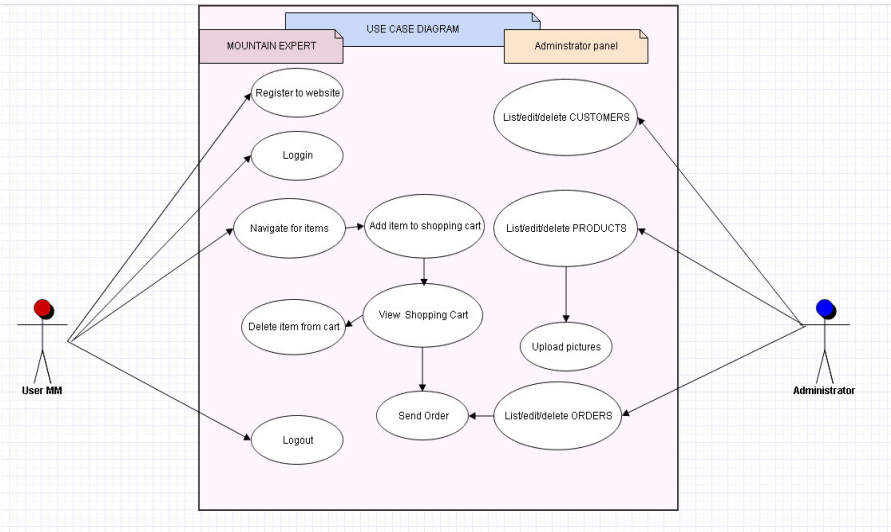

Fig.2. The Use Case Diagram

In Figure 3 one can see the home page of Mountain Expert website build with JavaServer FacesTechnology (JSF) taking into consideration the issues outlined above.

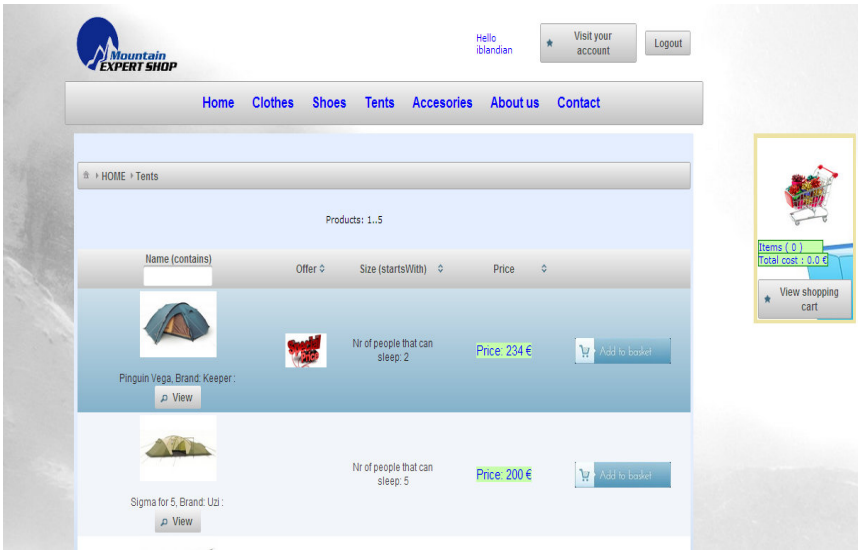

Fig.3 Home page of Mountain Expert website build with JavaServer FacesTechnology

3. Conclusion

An online shop is the physical analogy of buying your products or services from the real shops. Nowadays people don't have enough time to spend going shopping or want to have the power of searching the best product with little effort, so that is why everything went online now.

On line application can be developed using PHP, HTML and CSS3 technologies and also with Java

technologies.

Java technologies are changing rapidly from JSP to JSF .The complexity of JSF is outstanding.

But even if Java is more complex, has more power in more aspects than PHP.

If you're building a very large application that is complex and need to be scalable then Java is the best choice for development but for small applications PHP might be a better choice, being simple and easy to learn and use.

An important advantage of JSF is the component libraries like ICE, Richfaces or Primefaces. JSF can be use rather for enterprise applications, very large scale and complex ones.

An important advantage of PHP is that PHP has a big community and one can find a lot of resources about it. It is easier to use and better documented. Web hosting your website: solutions to host PHP applications are available on a bigger scale.

Mountain Expert is a website that has the purpose to present the products to the client and let you choose whatever you would like to buy and send your order and a new approach in creating a powerful e-commerce website. Being an e-shop, it has a feature to register and to create a user for connecting to your account, to navigate to a list products, to save products in the shopping card in order to buy them, to send an order. The equipments shown are for people who are experts in mountain climbing or surfing. But this site is intended also to those who are lovers of nature and they want to become an expert in the field and they choose performing equipment.

E-commerce and e-business has grown faster than all the predictions and will continue to grow. It is beginning to be part of business and is expected. Some applications, like bill paying over the internet have been successful beyond anyone's imagination. This increase in the online e-commerce market will generate new job and business opportunities for people having the skills to market on-line and for developers of applications on-line. Hence, the search engines PPC programs, SEO Services, social media co-ordination, secure on-line payments, handling the integration of on-line accounts are some of the services which surely be in demand to support this e-commerce trend in the coming years.

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