



Shop India (E-Commerce Application)

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ABSTRACT

The business-to-consumer aspect of electronic commerce (e-commerce) is the most visible business use of the World Wide Web. Electronic commerce or ecommerce is a term for any type of business, or commercial transaction that involves the transfer of information across the Internet. Just like in marketplace, in market space sellers and buyers exchange goods for money. The major components of market space are digital products, consumers, sellers, infrastructure companies, intermediaries, support services, and content creators. This paper deals with developing an e-commerce website for online product sale. It provides the user with a catalog of different products available for purchase in the store. In order to facilitate online purchase, a shopping cart is provided to the user. The system is implemented using a 3-tier approach, with a backend database in MySQL, a middle tier of servlets and JSP, and a web browser as the front end client.

Keywords: - Servlets, Jsp, MySql, E-Commerce, Java

1. INTRODUCTION

E-commerce is fast gaining ground as an accepted and used business paradigm. More

and more business houses are implementing web sites providing functionality for performing commercial transactions over the web. It is reasonable to say that the process of shopping on the web is becoming commonplace. The objective of this project is to develop a general purpose e-commerce store where products from different categories such as Mobiles and Tablets, Home and Kitchen, Men's Fashion, Women's Fashion, Toy and Baby Products can be bought from the comfort of home through the Internet. In this Application customers can browse various products and also they can filter the products according to various categories and select products of interest. A search bar is also provided to facilitate searching. The user will be asked to login for ordering an item. The selected items may be collected in a shopping cart. At checkout time, the items in the shopping cart will be presented as an order. At that time, information such as shipping address will be fetched from the user account and payment information such as credit card number has to be entered by the user at the same time. As soon as the payment is complete, the user will get the information about his order no. If the user wishes to review his pending or delivered order, he can login to his account and avail the same. The main purpose of this project is to explore on developing dynamic website through j2ee (Java 2 Enterprise Edition)



using Jsp and Servlets. We will see how these mentioned api's serves the client request for dynamic content and present it to the user in an format that is understood by the web browser.

2. BACKGROUND

A. Servlets

Servlet technology is used to develop web application (resides at server side and generates dynamic web page). **Servlet** technology is sturdy and scalable because of java language. Before Servlet, CGI (Common Gateway Interface) scripting language was popular as a server-side programming language. But there were many disadvantages of this technology. There are many interfaces and classes in the servlet API such as Servlet, GenericServlet, HttpServlet, ServletRequest, ServletResponse etc.

Servlet can be described in many ways, depending on the context.

- Servlet is a technology i.e. used to create web application.
- Servlet is an API that provides many interfaces and classes including documentations.
- Servlet is an interface that must be implemented for creating any servlet.
- Servlet is a class that extends the capabilities of the servers and responds to the incoming request. It can respond to any type of requests.
- Servlet is a web component that is deployed on the server to create dynamic web page.

B. JSP

JSP technology is used to create web application just like Servlet technology. It can be thought of as an extension to servlet because it provides more functionality than servlet such as expression language, jstl etc.

A JSP page consists of HTML tags and JSP tags. The jsp pages are easier to maintain than servlet because we can separate designing and development. It provides some additional features such as Expression Language, Custom Tag etc.

Life cycle of a JSP Page follows these phases:

- Translation of JSP Page
- Compilation of JSP Page
- Classloading (class file is loaded by the classloader)
- Instantiation (Object of the Generated Servlet is created).
- Initialization (jspInit() method is invoked by the container).
- Request processing (_jspService() method is invoked by the container).
- Destroy (jspDestroy() method is invoked by the container).

C. JDBC

Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is Java based data access technology and used for Java database connectivity. It is part of the Java Standard Edition platform, from Oracle Corporation. It provides methods to query and update data in a database, and is oriented towards



relational databases. A JDBC-to-ODBC bridge enables connections to any ODBC accessible data source in the Java virtual machine (JVM) host environment.

The API provides a mechanism for dynamically loading the correct Java packages and registering them with the JDBC Driver Manager. The Driver Manager is used as a connection factory for creating JDBC connections.

JDBC connections support creating and executing statements. These may be update statements such as SQL's CREATE, INSERT, UPDATE and DELETE, or they may be query statements such as SELECT. Additionally, stored procedures may be invoked through a JDBC connection.

D. MYSQL

MySQL is a free, open-source database management system (DBMS for short). A DBMS is a system that manages databases and connects them to software. For example, a MySQL database can be used to run a website, to run the database of an ERP or any other software.

Features of MySQL are as follows:

- MySQL is released under an open-source license. So you have nothing to pay to use it.
- MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.
- MySQL uses a standard form of the well-known SQL data language.
- MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.
- MySQL works very quickly and works well even with large data sets.

- MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB).
- MySQL is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

3. RELATED WORK

An attempt has been made to put forward a brief review of literature based on few of the related studies undertaken worldwide in the area of e-commerce as follows:

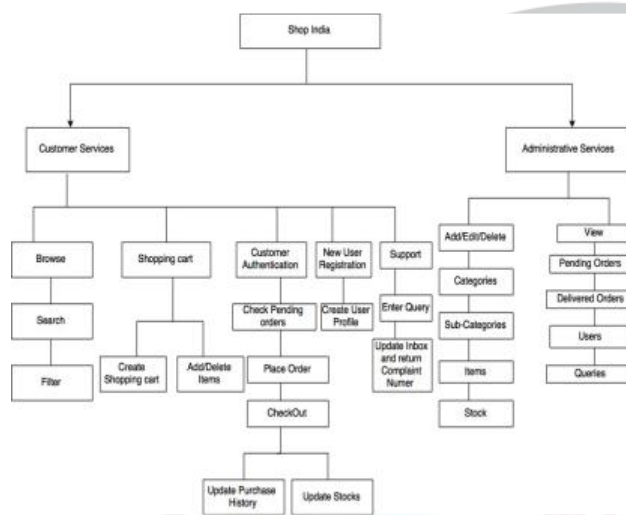
- a) Elizabeth Goldsmith and Sue L.T. McGregor (2000) analyzed the impact of e-commerce on consumers, public policy, business and education. A discussion of public policy initiatives, research questions and ideas for future research are given.
- b) Prithviraj Dasgupta and Kasturi Sengupta (2002) examined the future and prospects of e-commerce in Indian Insurance Industry.
- c) Young Jun Choi, Chung Suk Suh (2005) examined the impact of the death of geographical distance brought about by e-marketplaces on market equilibrium and social welfare.
- d) Jackie Gilbert Bette Ann Stead (2001) reviewed the incredible growth of electronic commerce (e-commerce) and presented ethical issues that have emerged. Security concerns, spamming, Web sites that



do not carry an "advertising" label, cybersquatters, online marketing to children, conflicts of interest, manufacturers competing with intermediaries online, and "dinosaurs" were discussed.

4. PROPOSED WORK

Functional Decomposition for this project



Database Design is as follows:

```
mysql> show tables;
+-----+
| Tables_in_shopindia |
+-----+
| category             |
| inbox                |
| items               |
| porders              |
| porders_det          |
| subcategory          |
| users                |
+-----+
7 rows in set (0.00 sec)
```

```
mysql> desc users;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| userid | char(10) | YES |  | NULL |  |
| password | char(10) | YES |  | NULL |  |
| usertype | enum('admin','customer') | YES |  | NULL |  |
| email | varchar(40) | YES |  | NULL |  |
| contact | varchar(40) | YES |  | NULL |  |
| address | varchar(60) | YES |  | NULL |  |
+-----+
6 rows in set (0.09 sec)
```

```
mysql> desc items;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| item_id | int(11) | NO | PRI | NULL |  |
| cat_id | int(11) | YES |  | NULL |  |
| subcat_id | int(11) | YES |  | NULL |  |
| item_name | char(20) | YES |  | NULL |  |
| price | int(11) | YES |  | NULL |  |
| image | char(20) | YES |  | NULL |  |
| stock | int(11) | YES |  | 0 |  |
| details | char(255) | YES |  | NULL |  |
+-----+
8 rows in set (0.00 sec)
```

```
mysql> desc porders;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| order_id | int(11) | NO | PRI | NULL | auto_increment |
| user | char(10) | YES |  | NULL |  |
| amount | int(11) | YES |  | NULL |  |
| delivered | int(11) | YES |  | NULL |  |
+-----+
4 rows in set (0.00 sec)
```

```
mysql> desc porders_det;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| order_id | int(11) | YES |  | NULL |  |
| item_id | int(11) | YES |  | NULL |  |
| qty | int(11) | YES |  | NULL |  |
| price | int(11) | YES |  | NULL |  |
| amount | int(11) | YES |  | NULL |  |
+-----+
5 rows in set (0.00 sec)
```

```
mysql> desc inbox;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| mail_id | varchar(40) | YES |  | NULL |  |
| query | varchar(255) | YES |  | NULL |  |
| id | int(11) | NO | PRI | 0 |  |
| response | varchar(200) | YES |  | NULL |  |
+-----+
4 rows in set (0.00 sec)
```

In this paper, various classes have been defined in the WEB-INF folder. One of the classes named DConnection class is used to create the initial database if it does not



already exist. Then the project is divided into two sections: the user section and the admin section. The user section files are directly located in the root folder while for the admin section, the files are inside the admin folder in the root. When the user opens the website for the first time the index.jsp page is loaded and user is presented with the homepage of the website. Initially the price range and category is set to 'All' so in that case user is presented with the full catalog of products available in the store. But if user wants to search the particular item then search bar is also provided which captures the item name and based on that a query is created and executed and the results are being displayed which are basically produced by using <tr> and <td> tag repeatedly. By the way query created depends on various factors as of category, sub category and price range selected by the user.

CART SYSTEM

Then we have the cart system which works as whenever the user clicks on add to cart button, the addcart.jsp is called with the item id and then the attributes of that item are combined in an array of strings and the resulting array is added to the vector of strings array in either conditions that is if the vector exists or not. If it does not then the vector is created and then items are added into it. The corresponding vector is added to the session as an attribute with the key name as 'cart'. Also in the current addcart.jsp page, the index.jsp is also included which has all the other sections included already. So as soon as the index.jsp is loaded the header.jsp, gets the vector from cart attribute and get the counts of element in the vector and use it to update no. of articles, and sum

of all prices to update the total cost on the page. Also, view your shopping cart link is also provided which opens up the viewcart.jsp page where all the items from the vector are displayed with their details. Also the functionality for editing and deleting the items is provided which which updates the vector by the corresponding changes too and the final sum is being displayed to the user.

LOGIN SYSTEM

When the user proceeds to check out the items from his cart he has to login to his account if he has it or else he has to first register providing all the details including the shipping address and after logging in, user is able to make payment. The user details are all coordinated through the user class and it has functions to interact with the database that is saving the new user or fetching details from the database. When the user enters his credentials to login, the details are checked with the database that whether such user exists or not and if it does then the user is redirected to the payments mode page where he is asked to select the payment mode out of cash on delivery, Debit/credit card and Net Banking. After the completion of payment, the order stands confirmed and the pending orders table inside the database gets updated for all in the items that the user ordered and rows gets inserted with a same order id for the all item ids. Also the stock inside the item table also gets updated. Then the user is sent an email about his order details by using java mail api. Then after the success.jsp page is called which is basically the confirmation page for the user.



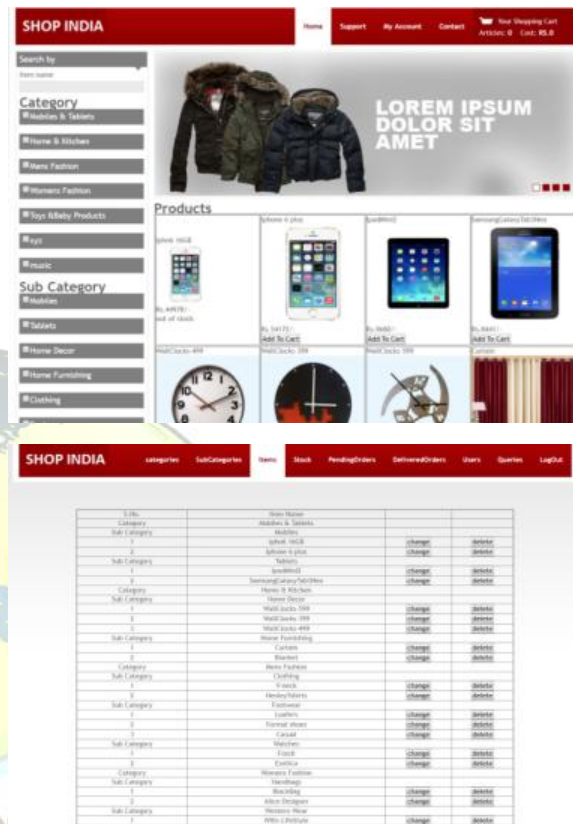
SUPPORT SYSTEM

The support system asks user for his query and mail id and when the user clicks on the send button, then the query and mail id are fetched from the corresponding form controls of the page and id is auto incremented with respect to the previous records and all this information is inserted in to inbox table with the response fields carrying null value and finally the user is presented with the screen displaying his/her query/ complaint number.

ADMIN PANEL

This is the portal for the admin secured via a valid username and password. It provides functionality for editing, updating, deleting or inserting the categories, subCategories, items, stock by corresponding pojo's(Plain old java objects) being created for them which in turn calls the function that does the database interaction part. The admin also has the functionality to review the Pending orders and Delivered orders. Also he can change or delete a particular user. The admin section has the queries section where the query id, mail Id of the customer, and queries are fetched from the inbox table and displayed. Basically all the records will have null response initially and then we ask the user for a particular response to be sent to the user to his corresponding mail id. It is all implemented through java mail api.

5. EVALUATION



Well after working on the research and then its implementation, a web application became ready as seen in the screenshots. For evaluating the application following tests were performed.

- Adding categories and sub categories followed by updating and deleting test
--Test passed
- Adding items followed by updating and deleting test
--Test passed with image stored in item images folder.
- Edit stock Test
--Test passed
- Product display test
--Test passed with all products displayed
- Filter test



- Test passed with only filtered products displayed.
 - f) Shopping cart test
 - Test passed with clicked items added to cart.
 - g) User Registration test
 - Test passed with user information inserted
 - h) Login test
 - Test passed
 - i) Session test
 - Test passed with the user able to checkout only after he logins
 - j) Support test
 - Test passed
- 3. <https://www.linkedin.com/.../e-commerce-india-scope-challenges-future->
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6. CONCLUSION

Java EE (Java Enterprise Edition) is a useful environment for building and deploying web based enterprise applications. It is platform independent and is very secure due to JVM (java virtual machine). Servlets handle the request for a dynamic page very well. Multiple requests are also handled very well due to multi-threading. Mysql also is a useful relational database management system. Also Jsp are also good to code in because it is easy to understand text formatting in it rather than coding in servlets but more or less jsp gets converted to servlets internally.

7. REFERENCES

1. SwapnaKodali- The design and implementation of an e-commerce site for online book sales.
2. E-Commerce Guide.com