**Software Requirement Specification**

1. **Product/Project Overview**

The rapid development of information technology has facilitated an elegant trading environment in the Internet. There are many trading platforms nowadays, but there is no good platform designed for direct consumer-to-consumer trading primarily for university students and people for local trading, to sell their goods and services directly through the website from which they were bought. Such a need arises in a social network where items should be traded or exchanged easily with a small community. The famous websites such as Amazon or eBay are too global in nature and does not support the direct trading of goods and services among the students in a small social network such as a campus environment.

It is a state-of-the-art platform for direct consumer-to-consumer trading in the Internet. The consumer lists items for sale. Other consumers can access the site and place an order for the required items. So, this platform provides a connection between the seller and buyer to complete the transaction. Consumer to Consumer refers to a situation where in both the seller and the buyer are consumers in an online transaction. The platform is targeted for direct consumer-to-consumer trading among university students. The items for trading include books, household items, electronics, housing rental, sports equipment,etc.

In addition, this web application also has features of a recommender system. That is, the trading system would also have the intelligence of recommending items or products to a potential buyer given his previous purchase patterns.Our approach uses the combination of Content based Recommendation as well as the collaborative recommendation and intersection between them.

Content recommendation system recommends products to the buyers based on the content of the buyers past product buying history. Buying history gives the content of the overview of the products, in which buyer is generally interested from the list of products.

Collaborative filtering system are used because they are based on opinion of the other users. Collaborative filtering is one of the way to do recommendation on the web.

Association rule mining finds interesting association and correlation relationship among data set of items .For example, in market basket analysis customer buying habit is analyzed for finding association between different items customer put together in their shopping cart.

1. **External Interface Requirements**
   1. User Interfaces

A first-time user of the application should see the log-in page when he/she opens the application.In order to register, the user will have to key in details such as first name,last name, and e-mail id and also choose a preferred password.

If the user has not registered, he/she should be able to do that on the log-in page. If the user is not a first-time user, he/she should be able to see the search page directly when the application is opened.

The user interface should be efficient in terms of both speed and user interaction. Unnecessary user interactions should be avoided. Unnecessary communications introduce both delay and additional potential failures. Where substantial processing is required the purpose of that processing should be displayed.

* 1. Hardware Interfaces

|  |  |  |
| --- | --- | --- |
| **Sl No** | **Parameter** | **Description** |
| 1 | RAM | 500MB-1GB |
| 2 | Hard Disk | 120GB-160GB |

Hardware required to connect to the internet will be required, such modem, WAN – LAN, Ethernet Cross-Cable.

2.3 Software Interfaces

|  |  |  |
| --- | --- | --- |
| **Sl No** | **Parameter Name** | **Parameter Value** |
| 1 | Development Language | JAVA |
| 2 | Java Development Kit Version | Jdk 1.8 |
| 3 | Java Run Time Environment | Jre 8 |
| 4 | Database for Routing Tables Backend | MySQL |
| 5 | Development Tool | Ecilpse |
| 6 | Sever Type | Web Server |
| 7 | Web Server | Tomcat 6.0 |
| 8 | Front End | Cascading Style Sheets (CSS) |

The system is on server so it requires the any scripting language like PHP, VBScript etc. This application requires a database to store any transactions that take place. For this, MySQL is used. The user interacts with the application, that is, he can purchase an item, put up an item for sale, etc., through a web server.

2.4Communication Interfaces

The Website Order system shall send an e-mail confirmation to the customer that the items they ordered will be delivered to the shipping address along with user identification.

3. **Functional Requirements**

3.1 Content Based Recommendation:

This function takes in the input from the users search history and the previous products bought by the customer. By using those two information the content based recommendation is generated for the users.

3.2 Collaborative Based Recommendation:

This takes in the input of the number of users register details and the rating of the product by different users and tends to recommend the best product with the best review.

3.3 Registration:

Every user need to register into our application and enter his details so as to buy the products available in our application.

3.4 Price Recommendation:

This system takes into consideration the product name, yrs of use and some other details of the users product before recommending a reasonable price for the user’s product.

3.5 Login:

This function helps the user to maintain his profile personally and to check out the list of items he would be interested in or in the list of items bought by him previously.

4. **Software System Attributes**

4.1 Reliability:

The system is reliable as far the database and the servers are running smoothly. If we have a good server provider then surely we will have very good reliability of the system. We should even make sure that the database is big enough to accomodate all the data which is entered into the system.

4.2 Availability:

This system is available for 24/7 round the clock for the users to use and either buy or sell a product of thier choice. The users should have access to a working internet connection to access this system anytime of the day.

4.3 Security:

The security issue in this system can be by an unauthorized users access to the website’s information. We can use fundamental crypto building blocks that include encryption using symmetric and asymmetric-based key systems. There are also block and stream ciphers, MAC implementations, hash functions and symmetric cipher-based functions. These above methods help in avoiding the security problems.

4.4 Portability:

The system works with the working Internet connection so basically you can access it from where ever you want on any platform as this is available on the web.

4.5 Maintainability:

The System maintainability mainly depends on the servers. We should see to that we don’t load the servers with too much load. Once we figure out that there is too much load on the server we should try to increase the server capacity so that it can take more load on it and run without any lagging in the system.

4.6 Performance:

The performance depends on the database capacity as it depends on it for storing and obtaining the data easily. The internet speed of the user will also effect the performance as if he has a slow internet connection then it might take time for the user to obtain the and load it on his computer for him to view the items.

5. **Performance Requirements**

* The product is based on web and has to be run from a web server.
* The product shall take initial load time depending on internet connection.
* The performance of application depends upon hardware components of the customer.
* The system should support number of simultaneous users and transactions.
* 95% of transactions shall be completed in less than 5 and 10 seconds during normal and peak workload conditions respectively.

6. **Database Requirement**

* The database consists of all the details of the products which will be available on our web application. This table consists of the product id, product name, price, yrs of use. This table is updated everytime a user uploads his product or when a product is bought by any user.
* Another table which we use consists of the users personal data and other details related to the user. The variables in this table are name, number, email id.. This table details is updated whenever a new user registers or when a old user updates his personal information.
* There is also a table which consist of the order details of the user which has the variables like order no, customer name, product id, price, date and time etc. Every time a product is bought in our application the order table is updated with the details of the product and the details needed by the order table.

7. **Design Constraints**

7.1 Standards compliance

The product is developed using Java, JavaScript as primary coding languages and view and designimplemented using JSP and CSS.

The system may not behave correctly when used with Internet browsers other thanChrome, Firefox and Internet Explorer.

* Standard development tools

The system shall be built using a standard web page development tool (Eclipse) that conforms to Microsoft’s GUI standards like HTML, XML etc.

The developed system should run under any platform (Unix, Linux, Mac, Windows etc.)

that contains a web browser which supports Java, JavaScript and AJAX

7.2 Memory Constraints

We have determined that our target customer machines have between 512MB-1GB of RAM, therefore the design footprint should not exceed 512MB.

Also the secondary memory requirement is 120-160GB and hence the target design has to fall in this memory range.

7.3 Security Constraints

The main constraint here would be the checking the genuineness of the buyer, which is not always possible. There can be security risks involved.

The database may store passwords in plain text and there doesn't need to be a password recovery feature nor lockout after numerous invalid login attempts. As such, the system may not work correctly in cases when security is a concern. These cases include lack of an encrypted connection when sending personal information andforcing users to use strong passwords. A strong password is a password that meets anumber of conditions that are set in place so that user's passwords cannot be easilyguessed by an attacker. Generally, these rules include ensuring that the password containsa sufficient number of characters and contains not only lowercase letters but also capitals,numbers, and in some cases, symbols.

7.4 Software Constraints

All the inputs should be checked for validation and messages should be given for the improper data. The invalid data are to be ignored and error messages should be given.

Details provided by the customer during his sign up should be stored in database.

While adding the products to the system, mandatory fields must be checked for validation whether the vendor has filled appropriate data in these mandatory fields. If not, proper error message should be displayed or else the data is to be stored in database for later retrieval.

Adding new products to the system should not make modifications to existing products in the database.

7.5 Other Constraints

7.5.1Client Side:

* Must have Internet browser
* JavaScript must be enabled on the client browser
* A general knowledge of basic computer skills is required to use the product

7.5.2Server Side constraints:

* Server must be accessible through the Internet
* The product must be stored in such a way that allows the client easy access to it.
* Response time for loading the product should take no longer than five minutes.