
SOFTWARE REQUIREMENTS SPECIFICATION

for

Online Sales Portal(OSP)

Version 0.0.1 approved

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Revision History

Name	Date	Reason For Changes	Version

1 Introduction

1.1 Purpose

- The purpose of this project is to build an online sales portal for a business group that acts as a common platform for both buyers and sellers for trade of various products.
- This is the first version of the software, Version 0.0.1.
- We aim to build a website that acts as a one-stop online store for both buyers and sellers. It is also a shared platform for managers doing administrative tasks.
- This SRS document explains the software requirements of the Online Sales Portal.

1.2 Document Conventions

No special conventions or patterns have been used in this document.

1.3 Intended Audience and Reading Suggestions

This document is intended to assist business group owners, managers and users (both buyers and sellers) in navigating the software features in a hassle-free manner. There are no prior knowledge requirements for anyone reading this document.

1.4 Product Scope

- This product is designed to implement an interface which acts as an online store covering a wide range of products.
- Both buyers and sellers can use this website for fluid negotiations.
- The basic goal of this software is to enable all scales of businesses to sell their products online and to allow buyers to explore a wide range of options for any product.
- It helps businesses to flourish by giving them a wider customer-base. On the other hand customers get an array of prices and quality to choose from.
- Our platform provides simplicity and complete transparency of the transaction process.

- The basic features and functionalities are explained in Section 2.2

1.5 References

The documents and websites referred to are as follows :

- IEEE STD 830-1998 , IEEE Standard for Software Requirements Specification
- In-class slides of topics namely SDLC and UML.

2 Overall Description

2.1 Product Perspective

- The Online Sales Portal (OSP) is a self-contained product.
- It is a replacement to the conventional physical mode of shopping, which requires customers to travel for carrying out sales from distant premises and also restricts dealers to customers of nearby localities.
- The OSP breaks all these physical barriers and provides more control and flexibility.
- It helps to bypass un-necessary brokerage charges.
- Our product ensures a robust connection amongst the buyers, sellers and managing authorities by providing a free communication platform.
- It also establishes a strong shared online network for managing authorities to handle administrative tasks and monitoring of all ongoing activities.

2.2 Product Functions

- **Manager**
 1. **Manage buyers/sellers**

All managers have complete visibility of all actions of buyers and sellers. They are authorized to remove them from the database, if required.
 2. **Manage categories**

Managers can add or remove different categories. Also they are allowed to change the categories of items.
 3. **Review and reject items**

Managers can view the items uploaded by sellers and are authorized to delete sub-standard items from the database.
 4. **Help in negotiations**

In case of miscommunication or insufficient interaction between sellers and prospective buyers, the managers can bridge these small communication gaps.
 5. **Audit**

Managers can audit (view all details) of all transactions in history, between any seller and any buyer.

- **Seller**

1. **Add / Delete items**

Sellers can upload (or remove) various kinds of items to sell by specifying fields like category, price and other relevant details.

2. **Make changes in existing items**

Sellers can edit the various fields of items already uploaded

3. **Bargain / Negotiate**

After receiving a buy-request from a buyer, sellers can further bargain to arrive at a mutually accepted price.

4. **Accept / Reject transaction**

After all negotiations (if any), the seller can finally accept the proposal(s) made by the buyer before proceeding to dispatch the item, or can reject the proposal altogether.

- **Buyer**

1. **Search items by category**

The buyers can browse through different possibilities of items to buy by specifying the category.

2. **Raise request (offer a price and continue bargaining)** Once they wish to buy an item, they can offer a price to the seller. Until both parties are satisfied, further bargaining and negotiations can proceed through the same feature.

3. **Accept / Reject transaction (after checking current balance)** If a mutually acceptable price is arrived at, the transaction can be finalized, or it can be rejected altogether. Before accepting a check is made to ensure sufficient balance.

4. **Pay online (system generates the bill)** Once both parties accept the transaction, the system automatically generates the bill pertaining to the purchase made. Money is deducted from the buyer's balance and added to the seller's account.

2.3 User Classes and Characteristics

The buyers and sellers are the primary users of this software. Managers are the secondary users of the software (for administrative purposes only). Each user needs to sign in using login credentials to perform any operation.

- **User class 1 : Buyers**

They can only browse through existing products and perform purchases. They do not have any authority to delete or add items to the database.

- **User class 2 : Sellers**

They can add products and remove/edit only those products added by them. They can make sales when they receive buy requests from buyers.

- **User Class 3 : Managers**

All managers require a special key to create an account. On successful sign up, they are provided a user ID and password. They have specific editing access to the database as described in Section 2.2 .

2.4 Operating Environment

This software is platform independent and has no special operating system requirements since it is an online portal. The only requirement is a web browser with a reliable internet connection.

2.5 Design and Implementation Constraints

All payments made through this portal are simulations of real-life payments. They are virtual and do not involve any actual monetary transactions. Furthermore, this portal uses the free version of Heroku platform, hence is limited by 512 MB memory. Also, the usage of the free version of MongoDB database, limits database size to 512 MB.

2.6 User Documentation

A help section, specific to the user class (buyer/seller/manager) is provided on the portal. No prior technical knowledge is required to understand these documents.

2.7 Assumptions and Dependencies

- Firstly, the basic requirements for usage are :
 1. An internet connection
 2. A compatible browser
 3. It is assumed that the user has some familiarity in using websites
- It is assumed that the managers are capable of verifying and guaranteeing the reliability of products being sold.
- Our organization does not take any responsibility for delivering any items. We assume that all deliveries will take place through a mutual agreement between the buyer and seller. The OSP only allows online transactions for the payments.

- The managers are expected to coordinate well amongst themselves and keep the sign-up key confidential. Failure to do this might result in authorizing certain adversaries to make unwanted changes to the database, for which we are not responsible.
- In case any manager accidentally deletes any product or product category, the only way to retrieve that information is by requesting the respective sellers to re-upload those products.
- The MongoDB server has a database size-limit of 512 MB. Thus the OSP is constrained to only store data pertaining to these limits.
- Most of the libraries used for the development of this software are properly documented and bug-free, like flask, numpy, pymongo, pillow, etc.

3 External Interface Requirements

3.1 User Interfaces

- The webpage has a very user-friendly and self-explanatory GUI (Graphical User Interface)
- A simple and minimalistic design has been used for quick response to user actions.
- On opening the website the landing page shows the Login and Sign up options
- 3 types of user login possibilities exist : Seller, Buyer and Manager
 1. **Manager** :There are separate tabs (well-defined labels and titles) for all functionalities as specified in Section 2.2 (Product functions)
 2. **Buyer**:A search tab is provided where the user can choose the type of product. After selecting an item, the buyer can place an order and bargain using the negotiating option. On finalizing the price, the buyer can pay the required amount to complete the transaction.
 3. **Seller** :New items can be added for sale from the “Add” tab. Sellers can see the requests that they receive using the “View Requests” tab. They, too, can bargain using the negotiating option. On finalizing the price, the seller can accept the deal and *deliver the product to the respective buyer.

3.2 Hardware Interfaces

There are no hardware specifications required to use the website, apart from a robust internet connection (wired or wireless) and any well-known modern web browser.

3.3 Software Interfaces

The following components might be used for the development of this software :

- Programming language used : Python {version}
- Libraries used : Flask (back-end) , PyMongo (database)
- **Front-end : HTML, CSS, Javascript

*NOTE : Delivery of items is NOT handled by this software

**NOTE: The front-end libraries are subject to change. The only guarantee provided is that well-known, well-implemented and bug-free libraries are used for front-end development.

- Deployment : Heroku
- Operating systems : Works on all operating systems (Windows 7 and higher and Ubuntu 18 and higher are preferred)

3.4 Communications Interfaces

A fluid system has been constructed for interaction between all kinds of users. They can communicate via the email-ids and phone numbers provided in the database of this system (this data is visible to everyone universally). Moreover, during processes like sign-up, negotiations and transaction billings, the system sends automatic emails to all the persons involved.

4 System Features

4.1 User accounts and login credentials

4.1.1 Description

There are 2 types of users for this portal, Customers(buyers and sellers) and Managers. Each user-type must be able to create an account in the portal and must also have login credentials(user-id and password) to log-in.

4.1.2 Response sequence

1. **Sign-up:** Depending on the user-type, the portal asks the user to enter specific details regarding the user(name,age,email-id, etc.). On successful sign-up, the login credentials(unique user-id and password) are mailed to the user's email-id.
2. Managers require a special key for successful sign-up so as to prevent adversaries from making unwanted changes to the website database.
3. **Sign-in:** The login-credentials need to be entered by the user and the system needs to verify these credentials before allowing the user to sign-in.

4.1.3 Functional requirements

1. Users must be able to create an account on the portal and receive the login credentials via mail.
2. The user-account password can be changed by a user from the portal.
3. The user-id is unique and no changes are allowed after creation of an account.

4.2 Categorization of Products

4.2.1 Description

The products displayed on the website are divided into different categories so as to facilitate better user-experience while searching for a product, adding a product or reviewing product (done by manager).

4.2.2 Response sequence

After successful login, the user can browse through the different categories in the portal and then look at products belonging to a particular category. Broadly, the product categories are:

- a. Electronics Technology,
- b. Books,
- c. Real Estate,
- d. Cars Bikes,
- e. Education Learning,
- f. Home Lifestyle,
- g. Cellphone

These categories can be changed by a manager.

4.2.3 Functional requirements

1. The different product categories must be displayed on the portal and the products belonging to a particular category must be displayed on choosing the particular category.
2. The managers must be able to add/remove categories and also change categories of a particular product.

4.3 Add products for sale to the portal

4.3.1 Description

The sellers have the option to add products to the portal for sale. This functionality can be accessed only by a seller and not by other user categories. The seller is asked to enter specific details of the product being added before adding it to the portal database.

4.3.2 Response sequence

1. The sellers need to sign-in to their account and then they can access the option to add the product.
2. The system asks the seller to enter product details like name, photo, price, city, product category etc.
3. After all the details have been entered the product is added to the portal database and displayed for sale on the portal.

4.3.3 Functional requirements

1. The portal must provide an option only to the sellers to add a product.

2. There must be drop-down options to choose category and city so as to prevent errors.
3. The portal must allow the seller to add a product only after all the details have been entered in order to prevent incomplete product specification errors.

4.4 Search for products

4.4.1 Description

All the user-types must have the option to search for product items on the portal. This search can be done by choosing a particular category (can also search across all the categories) and then enter the name of the product they wish to search for.

4.4.2 Response sequence

1. After successful sign-in, the user has the option to search for product items from the search bar.
2. The user can either search through all the categories or choose a specific category to search from. The user then enters the name of the product in the search bar.
3. Depending on the inputs from the user for category and name, the system displays items that match the search.

4.4.3 Functional requirements

1. The portal must display a search bar(to enter name) and a drop-down option(to choose category).
2. The user must be able to enter the product item name in the search bar and the system must display the items that match the search (exact match/near-match) .

4.5 Buy products

4.5.1 Description

The buyers must have the option to raise a request to buy a product item and offer a price which may be followed by negotiations. The seller and buyer can then come to a mutual agreement for the purchase provided there are no other delivery constraints.

4.5.2 Response sequence

1. After successful login, the buyers can raise a purchase request for a product and offer a price to buy the product.

2. The system can accept the request (may reject if the item is heavy and the seller city and buyer city do not match). On acceptance of the request, the seller is notified about the purchase request(via email) and he/she also can view the purchase requests on the portal.
3. After the negotiations,the purchase can be performed only if the seller agrees to sell at the offered price.

4.5.3 Functional requirements

1. The portal must provide buyers an option to buy product items and also allow the user to offer a price. Other user-types must not have access to this feature.
2. The system must have the functionality to mail the corresponding seller about the purchase request and also provide contact details about the buyer. Similarly the system must provide contact details of the seller to the buyer.
3. The manager must also have access to all the pending purchase requests so that he/she can help in negotiations.
4. The system must provide an option to the seller to view the purchase requests that have been made for his/her products.
5. The seller must also have an option to accept/decline a purchase request from the portal.
6. The buyer must also be able to view the purchase requests made by him/her in the portal.
7. After the acceptance by the seller, the system must provide the buyer an option to pay online and also reduce the quantity of the purchased products accordingly.

4.6 Negotiations of selling price

4.6.1 Description

After the acceptance of purchase request by the system, there must be a functionality provided to the corresponding buyer and the product seller to negotiate about the price. The manager also has the ability to help the two parties with negotiations.

4.6.2 Response sequence

1. After raising a purchase request, the seller and buyer are provided with the contact details of the other party for negotiations via mail/phone.
2. The negotiations about the price are completely dependent on the choice of the two parties. However the manager may help them reach faster agreement via email communication to the buyer and/or seller.

4.6.3 Functional requirements

1. On acceptance of purchase request, the portal must have the functionality to send emails to buyer and the seller so as to share the contact details of the other party.
2. The system has a feature to show(to the buyer/seller) the offered price by the other party for sale/purchase of products. Any updates in the offered price are also communicated via mail to the two parties.

4.7 Manager specific features and special access

4.7.1 Description

The managers have special access to the portal database. They can perform various operations like managing categories, managing products, managing the negotiations and audit the purchases performed so far.

4.7.2 Response sequence

1. The manager needs to sign into the system before performing any operation.
2. The manager can add a new category or delete an existing category. In case of deletion of a category, all the products of the category are deleted by the system (the purchase requests are not deleted) and the system no longer displays the category on the portal.
3. In case the manager changes the category of an item, the system edits the portal database. The system now needs to display the product in the updated category and not in the older category.
4. In case, the manager decides to delete a product due to quality concerns, the system needs to remove that product from its database. All the pending purchase requests for that product are removed.
5. In any case of changing/removing a category or product, the previously performed transitions should not be changed by the system.
6. The system must also provide details of the pending purchase requests to the manager if he/she wants to help in negotiation.
7. The system must store all the transactions performed in the database and must display the same when the manager wants to perform an audit.

4.7.3 Functional requirements

1. The system must ensure that the sign-up of managers cannot be done without verification of the special-key otherwise it will lead to severe issues if adversaries enter the portal as managers and edit the database.

2. Only the managers must have all these special features and they should not be accessible to buyers and sellers.
3. The portal must provide separate options for category-specific editing, product-specific editing, viewing purchase requests and performing an audit.

4.8 Payment and delivery of products

4.8.1 Description

After the seller accepts the purchase requests of a customer, the portal needs to display the option to the buyer for payment. After successful payment, the seller delivers the product to the address of the buyer.

4.8.2 Response sequence

1. After all the possible negotiations, if the seller accepts the purchase request of the buyer, then the buyer has the option to pay from the portal.
2. Once the payment has been completed, the seller has to dispatch the product for delivery.
3. The system has no role to play in the delivery logistics after the payment has been made. Delivery is done by the seller.

4.8.3 Functional requirements

1. The system must be able to provide options to the seller to accept a purchase request and the buyer to make payment.
2. The system also needs to change the database after successful payment
3. After the payment the pending purchase request needs to be removed and the new transaction must be added to the database for audit.
4. The system needs to display the payment status on the website to the seller after successful payment. This payment is transferred to the portal's bank account.
5. The buyer needs to confirm delivery of product from the portal following which the payment is transferred to the seller's account from the portal's bank account.

5 Other Nonfunctional Requirements

5.1 Performance Requirements

- **Internet:** OSP is a web application hence will require access to the internet to work.
- **Response time:** The portal has various types of users(sellers, buyers or managers) who could be using the application simultaneously hence there is a need to efficiently handle all user queries to avoid any kind of delay. To ensure this the code must be lean.
- **User-Friendly:** OSP will be directly used by users who may not have prior experience of web applications hence it must be interactive and convenient to use for all.
- **Throttling:** OSP would throttle database operations to stay within the API limits of MongoDB. The performance will also be throttled to ensure that the program doesn't take more than 512 MB of RAM available in Heroku.

5.2 Safety Requirements

- For buyers: Be very sure before placing and finalizing the order, once confirmed, cannot be withdrawn (except for legal issues) Delay in payment under ANY circumstances is not acceptable, can cause a legal lawsuit.
- For sellers: selling of sub-standard products is a serious offense, buyers are free to file a Consumer court lawsuit.
- For items produced by a third-party legally approved company, stating prices beyond the MRP is not allowed.

5.3 Security Requirements

- All users are provided with a Login ID and password on the creation of their account.
- For everyone (especially Managers): Sharing of passwords is NOT advisable, in such a case, leaking of data can very well happen. OSP Organization is NOT responsible for any such damages caused.

- In case the recovery email ID is hacked and consequently your OSP profile, OSP Organization is NOT responsible for it
- Data encryption isn't handled by the OSP. We use MongoDB, a third-party service for data storage, which may have security issues.

5.4 Software Quality Attributes

- **Availability:** The online portal will be available 24 hours a day, 7 days a week.
- **Maintainability:** The various components of this online portal are easily maintainable. Object Oriented programming Design principles will ensure that it is easy to add new codes and modify the existing codes.
- **Reliability:** The software stores its data in a cloud database making it quite reliable. Even if the app shuts down there will not be any kind of data loss.
- **Robustness:** The software shall be robust enough to withstand various faults. For example when a user enters an invalid input, the software will not crash and will instead show an error message.
- **Usability:** The codes will be open sourced and therefore it shall be highly readable, well commented and documented to help other developers to contribute easily. The interface shall be interactive and easily navigable.

6 Other Requirements

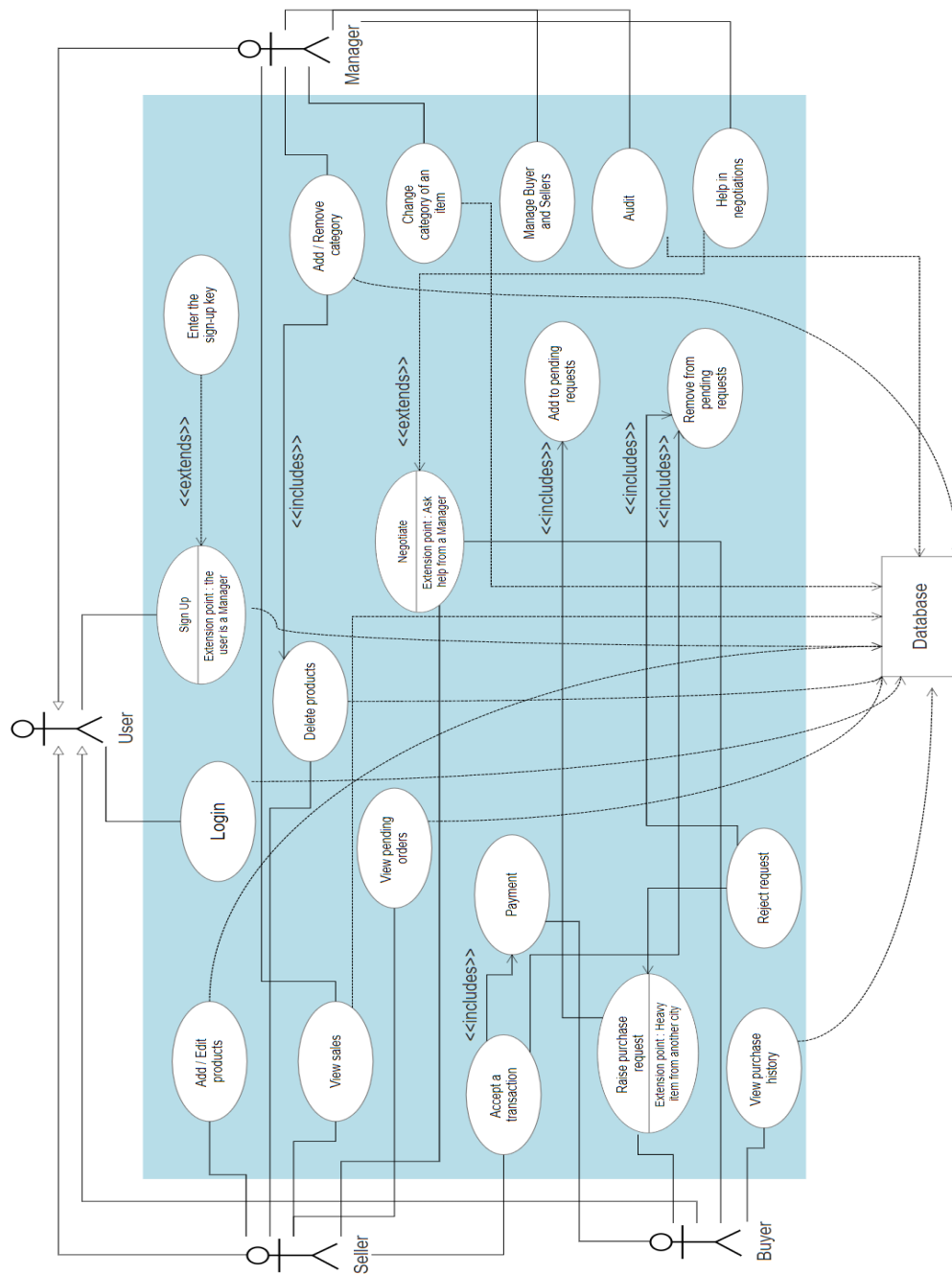
6.1 Appendix A: Glossary

- SRS: A document which describes the functionality of a software and also describes the expected performance of the software. For eg. this document
- OSP: Online Sales Portal which is a website that hosts buyers, sellers and managers for different functionalities like purchase, sale and management of website.
- Buyer: A customer who visits the website and is expected to buy/purchase products available in the OSP. The customer is the person who pays for the items bought.
- Seller: A customer who visits the website and is expected to sell products on the OSP. The seller is the person who earns money from the products sold via OSP and is also the one who ensures product delivery.
- Manager: The manager is the one who has the highest level of access to the OSP. The manager is also responsible to ensure better functioning of the website by updating categories, helping in negotiations and performing other important tasks.
- Transaction: A transaction typically means a purchase history which includes details of the buyer, the seller, the product ,the price etc.
- Heavy Items: If the seller considers that the item is too large in weight to be transported to a different city then the item is said to be heavy. The seller decides whether the item being sold is heavy or not.
- Negotiations: The act of discussion between a buyer and a seller which involves the two parties coming to a mutual agreement on the final selling price of the product.
- Product/Item: Anything that can be manufactured and can be sold to a customer in return for monetary benefits. A product is anything that can fulfil the consumer demand by providing finished goods and services.

6.2 Appendix B: Analysis Models

6.2.1 USE-CASE DIAGRAM

6.2.2 CLASS DIAGRAM



CLASS DIAGRAM

