

A Final Project Report
on
Multi Vendor E-Commerce Web Application

*Submitted in partial fulfillment of the
requirement for the award of the degree of*

B.Tech (CSE)



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

Under The Supervision of
Dhruv Kumar
Designation
Assistant Professor

Submitted By
Sanya Pandey(18SCSE1010391)
Saurabh Baudh(19SCSE1010497)

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
GALGOTIAS UNIVERSITY, GREATER NOIDA
INDIA
DEC/2021



**SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
GALGOTIAS UNIVERSITY, GREATER NOIDA**

CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled "**Multi Vendor E-Commerce Web Application**" in partial fulfillment of the requirements for the award of the **BACHELOR IN COMPUTER SCIENCE** submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of **JUNE - 2021** to **DEC - 2021**, under the supervision of **MR. Dhruv Kumar , Assistant Professor** , Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

Saurabh Baudh (19SCSE1010497)

Sanya Pandey(18SCSE1010831)

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Mr.Dhruv Kumar

Assistant Professor

CERTIFICATE

The Final Thesis/Project/ Dissertation Viva-Voce examination of **Saurabh Bauddh(19SCSE1010497) and Sanya Pandey(18SCSE1010381)** has been held on _____ and his/her work is recommended for the award of **Bachelor in computer science and engineering-**

Signature of Examiner(s)

Signature of Supervisor(s)

Signature of Project Coordinator

Signature of Dean

Date: **DEC , 2021**

Place: Greater Noida

ABSTRACT

Multivendor e-commerce store is an important feature used in e-commerce to attract more customers making purchases online, by having a vast variety of products. In an Open concept of a Multivendor eCommerce website, you can list out more and more seller to your store who can sell their product on your marketplace on commission based. The business-to-consumer aspect of products (e-commerce) is the most visible business use of the World Wide Web. The primary goal of an e-commerce site is to sell goods and services online.

E-commerce is fast gaining ground as an accepted and used business paradigm. More and more business houses are implementing web site providing functionality for performing commercial transactions over the web. It is reasonable to say that the process of shopping on the web is becoming a commonplace.

Multivendor is a very important feature used in e-commerce nowadays to assist people with a competitive variety and product price of products and services and therefore increasing the purchases rate of any products online.

This project deals with developing an e-commerce website for online different types of products. It provides the user with a catalogue of different types of products available for purchase in the store. In order to facilitate an online purchase, a shopping cart is provided to the user. The system is implemented using a 3-tier approach, with a backend database, a middle tier of Programming language PHP with using a best eCommerce framework like Magento-2, and a web browser as the front end client.

Target groups of the customer of the Shopping Cart are huge. The customers can have a payment option through credit card only. In order to use the load writing procedure, the customer registers itself and receives a login for its purchases name. It is an Internet application.

Users of the system: Customer is the user of the system. An administrator of the website is the superuser and can even act as a seller and the third role is a Seller or Vendors who get attached to the marketplace and sell their product on the eCommerce marketplace. When the user types in the URL of the website, a Welcome page (Landing Page) is shown which will completely depend on the custom theme that will be required by the client or a pre-built theme selected by the admin for his store. This site contains an online catalogue for the user. User has to login to Welcome Page before ordering anything. Login functionality should check the authenticity of the user from the database.

Functional Components Of The Project: Following is a list of the major functionality of the system:

- **Registration Screen:** If the user is not registered, then the registration screen should be available.
- **Become a Seller:** This is a big enhancement of an eCommerce website, that provides a facility to a simple eCommerce store to turn up into a Multivendor eCommerce store. Here your vendor/seller will get a there independent panel from where there can add the product to the marketplace and sell out their product, this provides with the variety of product and price competition for a product between sellers.
- **Catalogue Information:** This screen will show all the types of different product with their values and minimum quantity that should be ordered. Will, provide the image of each of the product. On selecting any one of the products, the user is shown the columns for the quantity to be entered. After entering the quantity, price is automatically set by the system based on the product price data. On adding to the catalogue, kindly check the inventory and take appropriate action.
- **Order Management:** This screen contains information about the orders for the user. It gives the total value of the order together with individual items ordered. On order, the validation about user's credit is made. Credit information can be kept in the database for the sake of simplicity. Once the order is accepted, inventory is updated and shipment entry is made in the database. Once the shipment is done, shipment status is updated.
- **Terms and** can be added on the website by setting up a CMS Page. There can be any number of CMS pages that can be set up as per the admin's requirements. **Conditions:** A Brief text on the website explaining terms and conditions and printable copy of it

- In order to develop a Multi-Vendor eCommerce website, a number of Technologies must be studied and understood. These include multi-tiered architecture, server scripting techniques, implementation technologies such as PHP, programming language using an eCommerce CMS like Magento 2, relational databases (such as MySQL).
- This is a project with the objective to develop a basic website where a consumer is provided with a shopping cart and also to know about the technologies used to develop such an application. This document will discuss each of the underlying technologies to create and implement an eCommerce website.

INDEX

INTRODUCTION TO PROJECT	8
OVERALL DESCRIPTION	8
ORGANIZATION PROFILE	9
SOFTWARE SOLUTION	9
CEDCOMMERCE RANGE OF EXPERTISE INCLUDE	9
PURPOSE AND SCOPE	9
DEFINITIONS ACRONYMS AND ABBREVIATIONS	10
SYSTEM ANALYSIS	11
PROJECT MODELLING	11
STUDY OF SYSTEM	13
HARDWARE SPECIFICATIONS	14
HARDWARE REQUIREMENT	14
SOFTWARE REQUIREMENTS	14
MULTIVENDOR ECOMMERCE SOLUTION	15
INTRODUCTION	15
FUNCTIONAL REQUIREMENT	16
PRODUCT MANAGEMENT	17
PROVIDE COMPREHENSIVE PRODUCT DETAILS	18
DETAILED PRODUCT CATEGORIZATIONS	18
PROVIDE SEARCH FACILITY	18
MAINTAIN CUSTOMER PROFILE	19
MAINTAIN VENDOR/SELLER PROFILE	19
PROVIDE PERSONALIZED PROFILE	19
PROVIDE CUSTOMER SUPPORT	20
EMAIL CONFIRMATION	20
DETAILED INVOICE FOR CUSTOMER	20
PROVIDE SHOPPING CART FACILITY	20
PROVIDE MULTIPLE SHIPPING METHODS	21
ONLINE TRACKING OF SHIPMENTS	21
PROVIDE ONLINE TAX CALCULATIONS (If decided)	21
ALLOW MULTIPLE PAYMENT METHODS	21
ALLOW ONLINE CHANGE OR CANCELLATION OF ORDER	22
ALLOW ONLINE PRODUCT REVIEWS AND RATINGS	22
OFFER MANAGEMENT	22
ONLINE PURCHASE OF PRODUCTS	23
SETTING UP OF COMMISSION FOR SELLERS	
BULK UPLOAD OF PRODUCTS	
EMAIL AND SMS MANAGEMENT AT EVERY INSTANCE	23

ALLOW SYSTEM TO CREATE MEMBERSHIP PACKAGE FOR SELLER	24	
ACCOUNT 25 ALLOW CUSTOMER REWARDING SYSTEM	24	
ALLOW CUSTOMERS TO INVOLVE WITH WALLET FACILITY	25	
ESTABLISH COMMUNICATION BETWEEN ENTITIES	26	
STORE SERVICE MANAGEMENT AGREEMENT FOR VENDORS	27	
GENERATE A REPORT FOR STORE AND VENDORS	27	
CREATING MULTILINGUAL AND MULTI CURRENCY STORE	28	
CREATE ROOT CATEGORIES	29	
CREATE STORE VIEW	29	
CONVERTING STORE LANGUAGE	30	
SYSTEM DESIGN	31	
SYSTEM WORKFLOW	31	
MULTIVENDOR ECOMMERCE STORE: CONTEXT DIAGRAM	32	
FLOW DIAGRAM: PRODUCT FLOW WITH FOR VENDOR, ADMIN AND CUSTOMER		33
FLOW DIAGRAM: PROCESS FOR CUSTOMER TO REVIEW AND RATE THE PRODUCT BY CUSTOMER	34	
DFD: SELLING AND PURCHASE OF PRODUCT	35	
ENTITY RELATIONSHIP DIAGRAM	36	
DATA FLOW DIAGRAM	37	
CONTEXT 0 LEVEL DFD FOR A MULTIVENDOR ECOMMERCE STORE	37	
DFD FOR LOGIN : VENDOR LOGIN / REGISTRATION(SOCIAL NETWORK)		38
DFD FOR ADMIN : MULTIVENDOR ECOMMERCE	39	
FLOW DIAGRAM: PROCESS TO ADD PRODUCT BY VENDOR	40	
FLOW DIAGRAM: CUSTOMER REFUND AND REPLACEMENT MANAGEMENT PROCESS		41
FLOW DIAGRAM : REWARD POINT PROCESS	42	
FLOW DIAGRAM : PRODUCT AVAILABILITY AND COD FACILITY AT SPECIFIC AREA VIA PINCODE / ZIPCODE / POSTAL CODE	43	
FLOW DIAGRAM: WALLET MANAGEMENT SYSTEM FOR CUSTOMER	44	
INTEGRATION OF SOLUTION WITH OTHER VENDOR STORE	45	
PRODUCT API	45	
BULK FILE UPLOAD	45	
ORDER	46	
RETURN AND REFUND		46
CATEGORY AND ATTRIBUTE MAPPING		46
BULK REPORTING		47
SYSTEM TESTING AND IMPLEMENTATION	47	
INTRODUCTION	47	
STRATEGIC APPROACH TO SOFTWARE TESTING	47	
SYSTEM SECURITY	48	
INTRODUCTION	48	

INTRODUCTION TO PROJECT

OVERALL DESCRIPTION

eCommerce 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 multivendor e-commerce store where any products can be bought from the comfort of home through the Internet. However, for implementation purposes, this document will deal with an online shopping store.

The online eCommerce store is a virtual store on the Internet where customers can browse the catalogue and select products of interest. 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, more information will be needed to complete the transaction. Usually, the customer will be asked to fill or select a billing address, shipping address, a shipping option (If multiple used), and payment information such as card number. An email notification is sent to the customer as soon as the order is placed.

The eCommerce shopping store is expanded permanently through new products and services introduced by admin and vendor/sellers in order to offer a product portfolio corresponding to the market. Private customers and business customers can order the selected products of the Shopping Cart service online quickly and comfortably.

Electronic Commerce (e-commerce) applications support the interaction between different parties participating in a commerce transaction via the network, as well as the management of the data involved in the process.

ORGANIZATION PROFILE

SOFTWARE SOLUTION

Cedcommerce is an IT solution provider mainly working towards the development of the projects for an eCommerce industry for a dynamic environment where business and technology strategies converge. CedCommerce approach focuses on new ways of eCommerce business combining IT innovation and adoption while also leveraging an organization's current IT assets. CedCommerce works with large global corporations and new Magento Based eCommerce products or services and to implement prudent business and technology strategies in today's environment.

CEDCOMMERCE RANGE OF EXPERTISE INCLUDE

Software Development Services

- Engineering Services
- Marketplace Systems Integration
- Product Development
- Electronic Commerce
- Consulting
- IT Outsourcing

PURPOSE AND SCOPE

The eCommerce shopping store needs to sell different types of products to customers living in any part of the world. The website will show all products in a categorized manner. Customer can browse any product for its price and other

details and can order the product. Orders need to accompany with shipping & billing details. A customer has to pay order amount online through credit cards. Products can be managed by a vendor or admin from their respective panels. Vendor profile can be created by them and approved by an admin. Admin can keep track of orders through the admin panel.

The main purpose of the system is to enable customers to browse and order from any part of the world and hence increasing the business scope to set up a different web-stores as per the location and language and price.

The users could subscribe for price alerts which would enable them to receive messages when the price for products fall below a particular level.

DEFINITIONS

ACRONYMS

AND

ABBREVIATIONS

- Ajax (Asynchronous JavaScript and XML): It is a technique used in javascript to create dynamic web pages.
- HTML (HyperText Markup Language): It is used to create static web pages.
- PHP: It is a programming platform, which is used for developing and running distributed applications.
- Magento 2: Magento is an open-source e-commerce platform written in PHP.
- DB2 (MySQL): MySQL is an open-source relational database management system that provides a flexible and efficient database platform to raise a strong "on-demand" business applications.

SYSTEM ANALYSIS

PROJECT MODELLING

The model that is basically being followed is the Scrum Methodology, which is a part of a is part of the Agile movement. First of all, the feasibility study is done. Once that part is over the requirement analysis and project planning begins, If the system exists one and modification and addition of new module is needed, analysis of the present system can be used as a basic model.

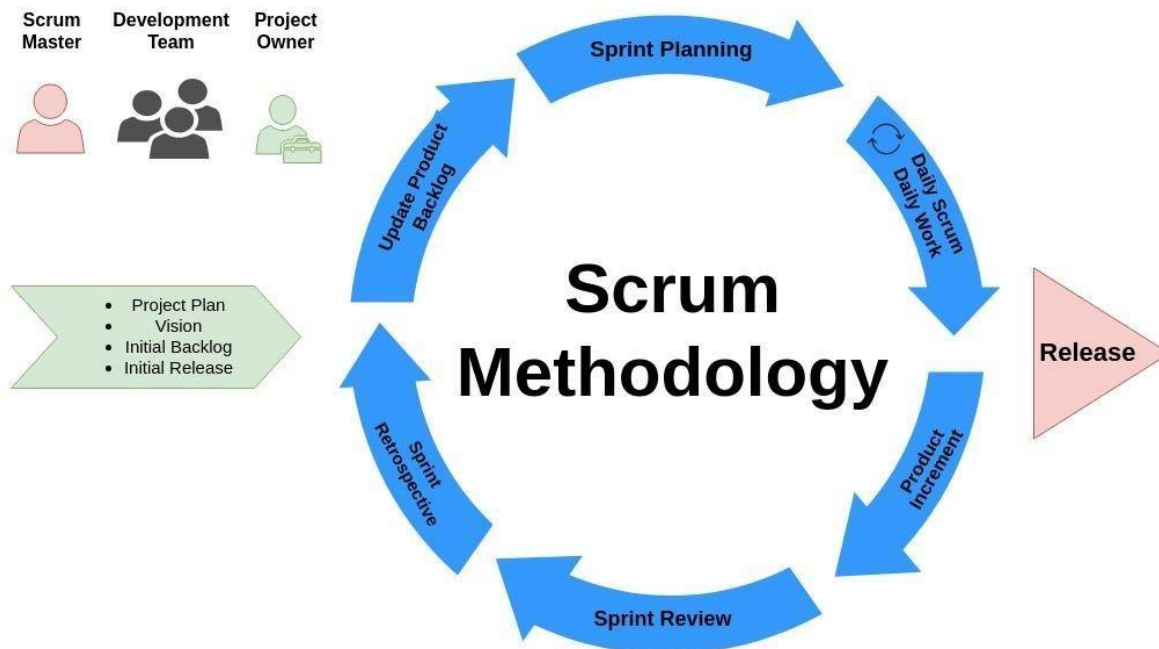
The design starts after the requirement analysis is complete and the coding begins

after the design is complete. Once the programming is completed, the testing is done. In this model the sequence of activities performed in a software development project are:

- Requirement Analysis
- Project Planning
- System design
- Detail design
- Coding
- Unit testing
- System integration & testing

Note: As we are going with the Ecommerce framework like Magento 2, so we even have prebuilt theme available for that, so if required by the customer we can even go with that, and if required we can go with custom build theme as per requirement.

Each member of the Scrum team is an integral part of the solution and is expected to carry a product from inception to completion. There are three key roles in a Scrum team



PRODUCT OWNER

Product Owner is the project's key stakeholder - usually an internal or external customer, or a spokesperson for the customer. There is only one Product Owner who conveys the overall mission and vision of the product which the team is building.

SCRUM MASTER

ScrumMaster is the project manager to the Product Owner, Development Team and Organization. With no hierarchical authority over the team but rather more of a facilitator, the ScrumMaster ensures that the team adheres to Scrum theory, practices, and rules.

DEVELOPMENT TEAM

Development Team is a self-organizing, cross-functional group armed with all of the skills to deliver shippable increments at the completion of each sprint.

STUDY OF SYSTEM

GUI

In the flexibility of the uses, the interface has been developed a graphics concept in mind, associated through a browser interface.

The administrative user interface concentrates on the consistent information that is practical, part of the organizational activities and which needs proper authentication for the data collection. The interfaces help the administrations with all the transactional states like Data insertion, Data deletion and Date updation along with the extensive data search capabilities.

NUMBER OF MODULES

The system after a careful analysis has been identified to be presented with the following modules:

This project is divided into top 8 modules:

1. Registration Module
2. Products Search Module
3. Shopping cart Module
4. Shipping & Billing Module
5. Payment Module
6. Admin User Management Module
7. Admin Catalog Management Module
8. Admin Order Management Module

ENTITIES INVOLVED IN THE PROJECT

1. Customer
2. Vendor / Seller
3. Product
4. Website Administrator
5. Order

CUSTOMER: The target user of the system. A Customer is responsible for registering them to the site, browsing site, placing orders and making payments.

PRODUCT: Product is the entity, a customer looking for. A Product will be sold to the customer.

WEBSITE ADMINISTRATOR: An entity responsible for managing users, roles and roles privileges.

VENDOR: Vendor even act as a seller on the eCommerce store, they list their product and after the product is approved by an admin, he can sell it on the store.

ORDER: Order is an entity which describes the business transaction.

HARDWARE SPECIFICATIONS

HARDWARE REQUIREMENT

- **DEDICATED SERVER** (A single dedicated server solution ideal for small eCommerce businesses with 3,000 visits per day.)

DELL R230

INTEL XEON E3-

1230V5 4-CORE

3.4 GHZ

16GB RAM

2X 250GB SSD RAID 1

- *DEDICATED FIREWALL*

CISCO ASA5506-X

SOFTWARE REQUIREMENTS

- Operating Systems: Linux x86-64
- Composer: Composer is required for developers who want to contribute to the Magento 2 codebase, or develop Magento extensions.
- Web Servers: Apache 2.2 or 2.4 /Nginx1.x
- Programming Language: PHP, 7.1.3+, 7.2.x for Magento 2.3

- eCommerce CMS: Magento 2
- Database: MySQL 5.6, 5.7

MULTIVENDOR ECOMMERCE SOLUTION

INTRODUCTION

PURPOSE: The main purpose of preparing this document is to give a general insight into the analysis and requirements of the existing system or situation and for determining the operating characteristics of the system.

SCOPE: This Document plays a vital role in the development life cycle (SDLC) and it describes the complete requirement of the system. It is meant for use by the developers and will be the basic during the testing phase. Any changes made to the requirements in the future will have to go through a formal change approval process.

DEVELOPERS RESPONSIBILITIES OVERVIEW

A developer is responsible for

- Developing the system, which meets the document and solving all the requirements of the system
- Demonstrating the system and installing the system at the client's location after the acceptance testing is successful.
- Submitting the required user manual describing the system interfaces to work on it and also the documents of the system.
- Conducting any user training that might be needed for using the system.
- Maintaining the system for a period of one year after installation.

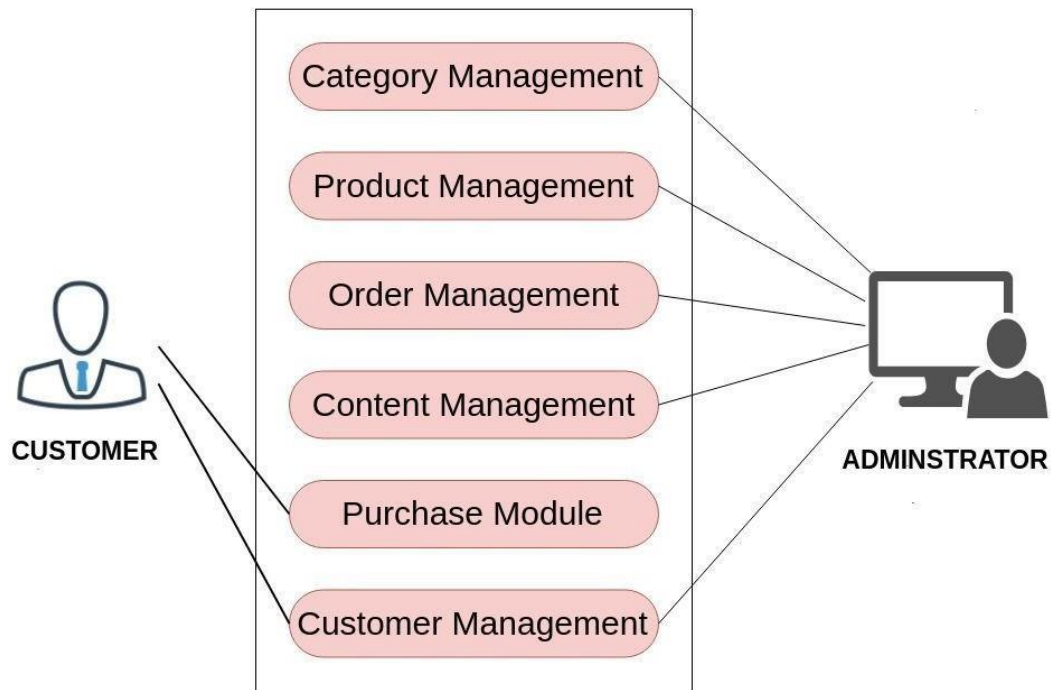
FUNCTIONAL REQUIREMENT

eCommerce Marketplace Solution has a major functionality that allows to add Vendor to your store and manage inventory and products for the Vendor as well as by adding vendor's products. As more and more vendors will add their products, the inventory of the site will also increase.

There is a number of functions that the application is supposed to perform which are as follows:

- Firstly the user has to log in for that he/she has to register him/her self, So for that, there will be a Sign-Up page where a user has to fill the entries like Username and Password.
- There will be a login page / Sign-in page where a user has to login with their username and password.
- If a person wants to register himself as a seller on the website he needs to create a vendor account, which will be permitted after the admin's confirmation and then the vendor will be allotted a panel from where a vendor can add product and manage his sales.
- There will be a searching option on any product (e.g. - title of the product)
- After that there will be a section page will be open where user can choose a product according to their choice.
- Maintaining product inventory will be the responsibility of the product owner, and if the product inventory falls the product will show as out of order.
- All the products that users have chosen will add-up to the Cart and if the user wants to delete any option than he/she can delete it by just clicking the delete button from his cart.
- To see the total bill of the product items that user have selected for that he/she has to click on the bill option then the total bill of the item selected will be displayed to the user.
- To purchase the books there will be two options given to the user through on Cash payment or through Debit account.

- In the last user can log-out, just by clicking on the logout button.



Admin has the feature to create his store to a Multilingual store, from where the admin can create several webstore based on different currency and language. To convert the store to a different language admin just need to update the specific language file for the store in the backend and therefore the specific web store will be converted as per the language file installed. The currency conversion for the store can be easily managed from the admin setting to be used.

PRODUCT MANAGEMENT

- The system shall allow admin and vendor/seller to add products to the system

- The system shall allow to select the product from a catalogue and sell the same for a different seller.
- The system shall allow comparing the price and detail of the same product sold by different sellers.

PROVIDE COMPREHENSIVE PRODUCT DETAILS

- The system shall display detailed information of the selected products.
- The system shall provide browsing options to see product details.
- The system shall allow customers to check the product availability at certain area via Pincode / zipcode / postal code.
- The system shall allow a customer to check if the product can be delivered with COD facility to a specific area with specific Pincode / zipcode / postal code.

DETAILED PRODUCT CATEGORIZATIONS

- The system shall display detailed product categorization to the user.

PROVIDE SEARCH FACILITY

- The system shall enable the user to enter the search text on the screen.
- The system shall enable the user to select multiple options on the screen to search.
- The system shall display all the matching products based on the search.
- The system shall display only 10 matching results on the current screen.
- The system shall enable the user to navigate between the search results.
- The system shall notify the user when no matching product is found on the search.

MAINTAIN CUSTOMER PROFILE

- The system shall allow a user to create a profile and set his credential.
- The system shall authenticate user credentials to view the profile.
- The system shall allow a user to update the profile information.

MAINTAIN VENDOR/SELLER PROFILE

- The system shall allow users to create a seller profile and sell their product in the marketplace.
- The system shall allow vendor profile activation only after the admin provides approval.
- The system shall allow the vendor to add a product on the store.
- The system shall allow a vendor product to be displayed only after the admin approval.
- The system shall allow vendors to manage their product and orders.
- The system shall allow admin to set special fields (Attribute) for vendor profile, to gather additional information.
- The System shall allow admin to make the vendor attribute fields created as mandatory or not.

PROVIDE PERSONALIZED PROFILE

- The system shall display both the active and completed order history in the customer profile.
- The system shall allow a user to select the order from the order history.
- The system shall display the detailed information about the selected order.
- The system shall display the most frequently searched items by the user in the profile.
- The system shall even provide a personalized portal for vendor/seller to manage all his details and activities i.e add product/order action etc.

PROVIDE CUSTOMER SUPPORT

- The system shall provide online help, FAQ's customer support, and sitemap options for customer support.
- The system shall allow a user to enter the customer and product information for the support (If using the Help Desk functionality).
- The system shall display the customer support contact numbers on the screen.
- The system shall allow a user to enter the contact number for support personnel to call.

EMAIL CONFIRMATION

- The system shall maintain customer email information as a required part of a customer profile.
- The system shall send an order confirmation to the user through email.
- On all notification set system set sent an email and notify to all events set for vendors, customers and admin

DETAILED INVOICE FOR CUSTOMER

- The system shall display detailed invoice for the current order once it is confirmed.
- The system shall optionally allow a user to print the invoice.

PROVIDE SHOPPING CART FACILITY

- The system shall provide a shopping cart during the online purchase.
- The system shall allow a user to add/remove products in the shopping cart.

PROVIDE MULTIPLE SHIPPING METHODS

- The system shall display different shipping options provided by the shipping department.
- The system shall enable the user to select the shipping method during the payment process.
- The system shall display the shipping charges.
- The system shall display a tentative duration for shipping.
- The system shall allow admin to create a pickup feature for customers.
- The system shall allow admin to add the open and close day and time schedule for a store added.
- The system shall allow the customer to select the store nearby him.

ONLINE TRACKING OF SHIPMENTS

- The system shall allow a user to enter the order information for tracking.
- The system shall display the current tracking information about the order.

PROVIDE ONLINE TAX CALCULATIONS (If decided)

- The system shall calculate tax for the order.
- The system shall display tax information for the order.

ALLOW MULTIPLE PAYMENT METHODS

- The system shall display available payment methods for payment.
- The system shall allow the user to select the payment method for an order.
- The system shall allow admin to integrate with the payment gateway with the API provided by the provider
- The system shall allow the admin to split the payment between the vendor and admin as per commission set.

- The system shall allow with the feature of payment refund in case of order cancellation. *(if supported by the Payment Gateway Selected)*
- The system will allow the customer to save his card information if he wants, for future purchases with supported security.

ALLOW ONLINE CHANGE OR CANCELLATION OF ORDER

- The system shall display the orders that are eligible to get a refund or replacement.
- The system shall allow a user to select the order to be changed.
- The system shall allow a user to cancel the order.
- The system shall notify the user about any changes made to the order.
- The system shall allow the product owner to set the product refund and replacement norms.
- The system shall allow order to update the refund status step by step as progressed.

ALLOW ONLINE PRODUCT REVIEWS AND RATINGS

- The system shall display the reviews and ratings of each product when it is selected.
- The system shall enable the user to enter their reviews and ratings.
- The system shall enable the guest user to view the review related to products
- The system shall allow the admin to verify the review before posting it on a live website.

OFFER MANAGEMENT

- The system can have an offer page to display all the type of offer running on the marketplace.
- The system can run deals and discount promotional offer based on a specific product or category of product.

- The system can integrate the offer for a store based on the total shopping cart amount, and many other conditions.
- The system shall allow a user to select available promotion.
- The system shall allow admin to create offer and cart rule and product rule for offer.
- The system shall allow admin to provide offer management facility to vendor

ONLINE PURCHASE OF PRODUCTS

- The system shall allow a user to confirm the purchase.
- The system shall enable the user to enter the payment information.



eCommerce Store : Multivendor eCommerce System Flow

SETTING UP OF COMMISSION FOR SELLERS

- The system will allow admin to set commission rates on vendors for selling their products.

- The system allows admin to set commission for vendor based on various types like product/category/vendor wise
- The system also allows the admin to create a rule for commission and imposed that for the vendors.
- Based on commission decided the system automatically calculate the admin commission received for a product sold, and split the payment accordingly and display.

BULK UPLOAD OF PRODUCTS

- The system shall allow the vendor to add the product in bulk.
- The system will allow the vendor to add a product with images.
- The system will allow vendors to bulk upload via CSV file.

EMAIL AND SMS MANAGEMENT AT EVERY INSTANCE

- The system shall allow integrating the solution with the SMS service provider. (As suggested by client)
- The system shall allow the user to receive SMS at every instance like order confirmed, delivered, order status change, refund accepted etc.
- The system shall allow sending the SMS to admin when a customer is successfully registered to the store.
- The system shall allow sending SMS to admin when a vendor is successfully registered to the store.
- The system shall allow admin and vendor to receive the SMS whenever their product new order is placed.
- The system will allow vendors to receive SMS when an account is approved or disapproved / product is approved/change in his products orderstatus.

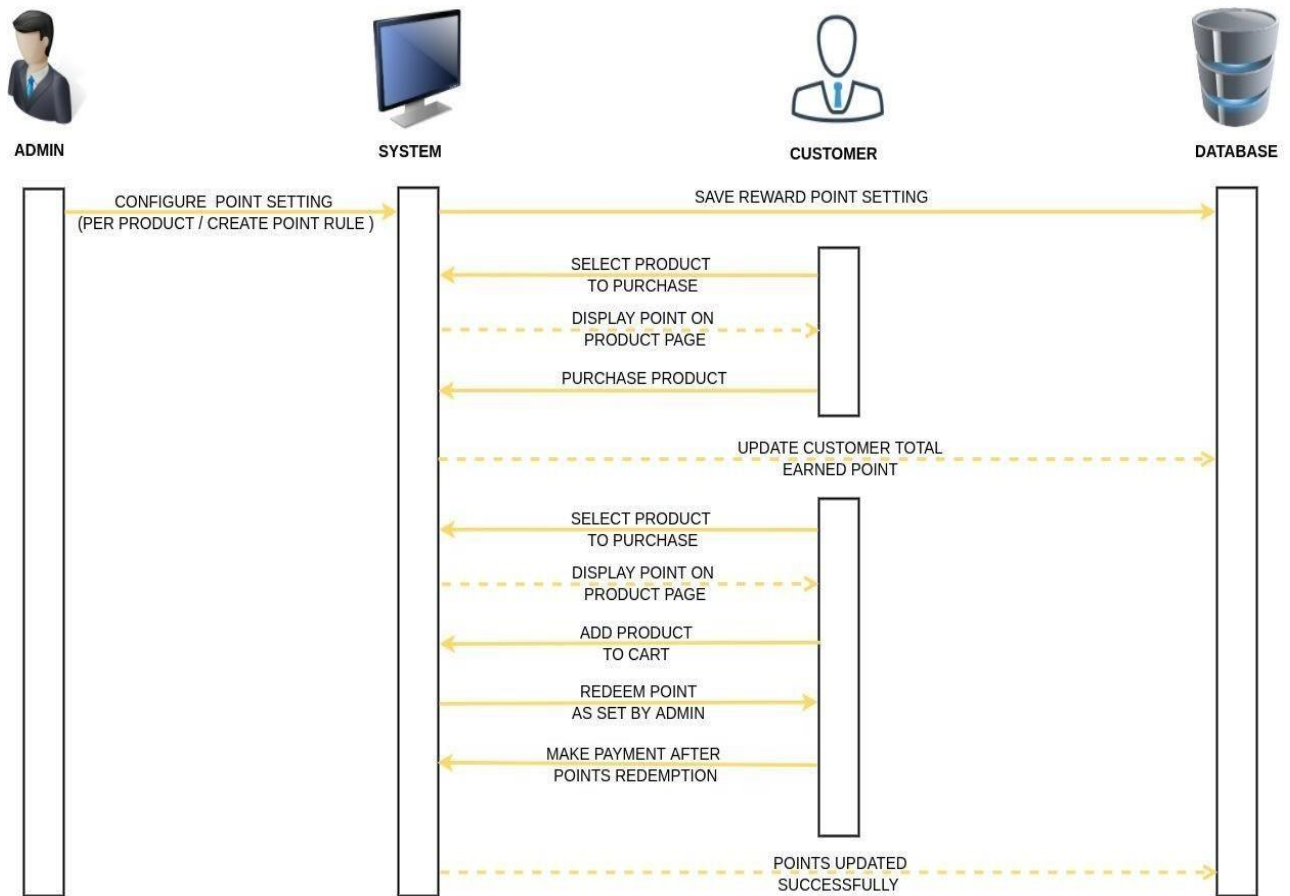
ALLOW SYSTEM TO CREATE MEMBERSHIP PACKAGE FOR SELLER ACCOUNT

- The system shall allow admin to create several packages for the vendor to get registered to his marketplace.
- The system shall allow admin to set package validity while creating a package.
- The system shall allow admin to create a membership package for vendor based on maximum numbers of product that need to be uploaded.
- The system shall allow admin to specify the number of products to be in added category wise.
- The system shall allow a vendor to see their product limit and the number of available products to add.

ALLOW CUSTOMER REWARDING SYSTEM

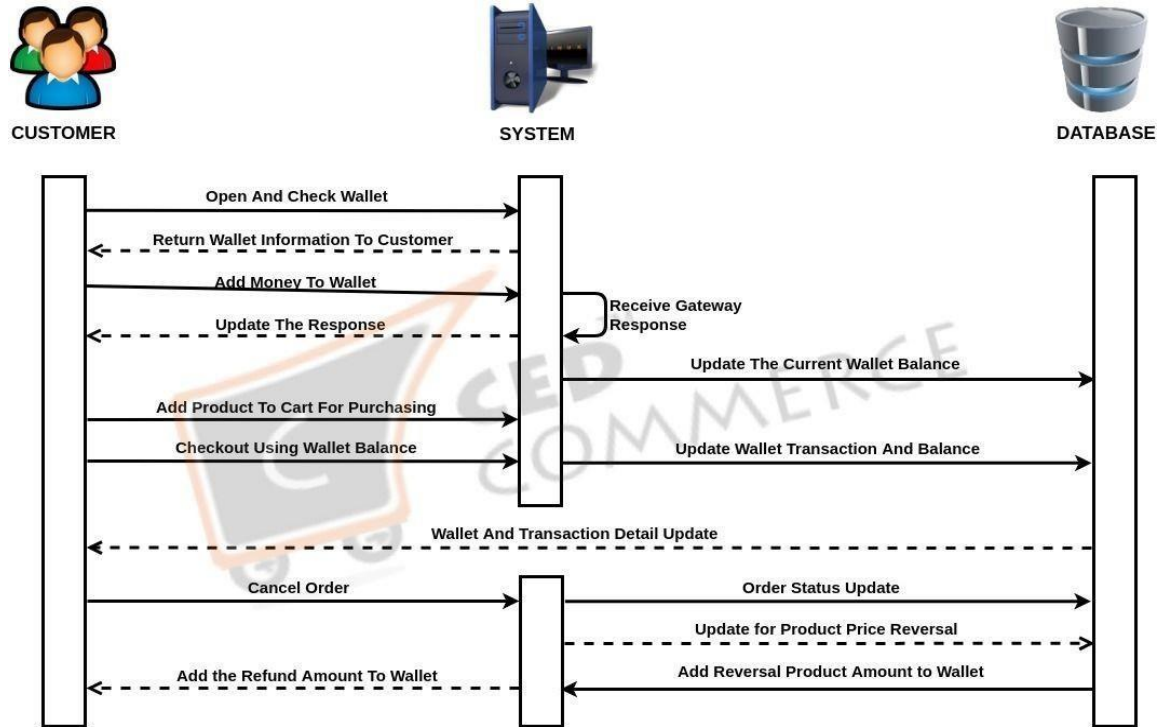
- The system shall allow a customer to collect a point on every product order generated and completed.
- The system shall allow admin to have any pattern, to allot point on order.
- The system shall allow a customer to redeem points collected as per rule set by admin.
- The system shall allow admin to set rules for an individual customer for events (referral/birthday) so that customer can earn more points.
- The system shall allow admin to set the validity of reward points earned by a customer

CUSTOMER REWARD MANAGEMENT



ALLOW CUSTOMERS TO INVOLVE WITH WALLET FACILITY

- The system will allow customers to add the amount in his wallet.
- The system will allow the customer to checkout via the wallet as a payment method.
- The system will allow admin and customer to check the wallet transaction history in detail.
- The system will allow the customer to transfer wallet amount to another customers wallet.
- The system will allow admin to setup a cashback feature for wallet transfer.
- The system shall allow a customer to request admin to transfer his wallet amount into his bank account.



ESTABLISH COMMUNICATION BETWEEN ENTITIES

- The system shall allow admin - vendor-customer to message and chat with each other.
- The system shall allow admin to send bulk message to all the vendor/seller and customer.
- The system shall allow a customer to initiate a message with vendor or admin.
- The system shall allow the vendor to initiate a message with the admin.
- The system shall allow admin to initiate a message with customer and vendor.

SERVICE QUALITY MANAGEMENT AGREEMENT FOR VENDORS

- The system shall allow to facilitate the agreement between the admin store service quality and Vendor response with respect to orders, shipment and refund and return for a vendor.

- The system shall allow admin to apply a fee on the vendor if he cancels any order.
- The system shall allow admin to apply a fee on the vendor if he exceeds the shipment time for the order.
- The system shall allow admin to apply a fee on the vendor if he exceeds the refund and replacement time for the order as per the solution norms.

GENERATE A REPORT FOR STORE AND VENDORS

- The system shall allow admin to generate various types of reports as per the marketplace.
- The system shall allow admin to generate a report for his vendors.
- The system shall allow admin to check the reports like marketing report, sales report, customer report, product report, product review report based on various categories.
- The system shall allow even vendors to generate their specific report for them.
- The system shall even allow a vendor to check Out of Stock, Sold Products, Product Views, Sales Report and Payment Report.
- The system shall allow admin to check returned management reports for the store, and for the vendor to check for his products only.

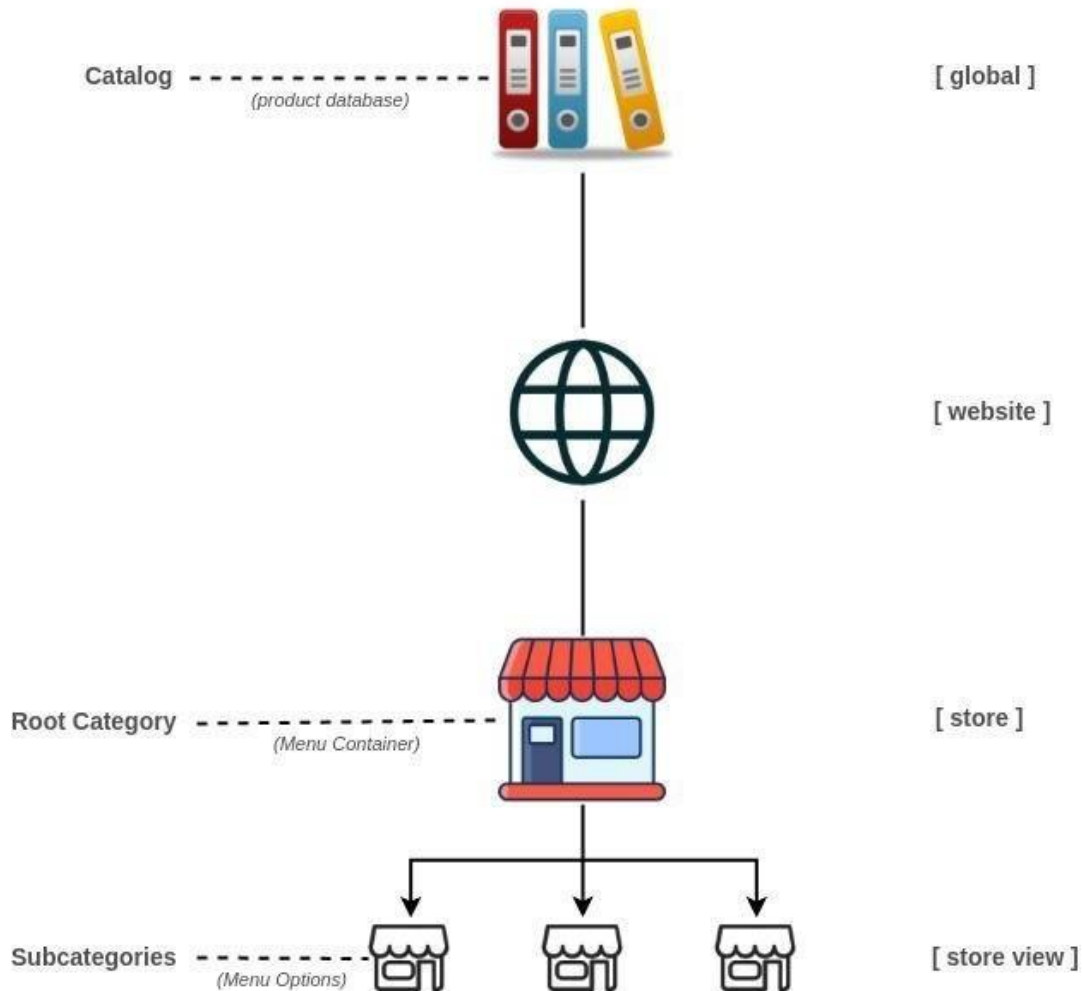
CREATING MULTILINGUAL AND MULTI CURRENCY STORE

The system will allow you to set up and manage multiple instances of stores in

a backend. The feature to set up multiple stores with different sub-domains, help at the point when the admin needs to set the store also at different language or different currency or both. This point will inform admin with the features and set up the stores, and store views in your store. There are several ways to do this but setting up through backend admin panel will be is the most convenient way.

To create admin need you to create a root category (and additional categories if desired) for each store. Further, the process in the document will discuss the topic provide one way to set up multiple stores.

- Categories
- Adding Websites
- Store URLs
- Content



CREATE ROOT CATEGORIES

Admin can manage to create a *root category*, but to do it this you want each website to have a unique root category. You can create additional categories if you choose.

CREATE STORE VIEW

To create the store view admin need to select the store with which to associate this store view and further can set the base URL for his store.

CONVERTING STORE LANGUAGE

Many merchants were in a situation where, upon expanding an online business, they needed to provide a localized version of their store, adjusted to local markets and languages. Creating a multi-language (localized) store will be very much easier and configurable.

The first step in creating a multi-language store is to download and install a language pack file that will be provided for the specific language (as discussed). If you need to make an adjustment on a specific language or need to adjust to a specific local situation, then you can easily make all those changes.

As always, in solution terms, we are talking about .csv (comma-separated value), translation dictionary file.

THERE ARE TWO TYPES OF LANGUAGE PACKAGES

- **Module and theme packages.** Included in the i18n directory of a module or theme, in the solution the eCommerce framework used will auto-discovers these packages.
- **An entire dictionary in one directory.** This is intended to be used and distributed as a standalone component (similar to modules and themes).

You can use the ready-to-use language packages prepared by other users or you can create your own. You can create localizations based on existing, or parent, translations using language inheritance.

Inheritance means (among other things) that if you missed or omitted to localize some phrases or terms, parent translations are used. You can customize your translations even further by creating more than one version of a translation for the same language.

SYSTEM DESIGN

SYSTEM WORKFLOW

(Login via customer Detail)

/

Product Search/ Listing

/

Selecting a Particular Product

/

Selection product configuration and quantity (Temp order record record *)

/

**Billing/ Shipping Info
(Recording Customer's Data)**

/

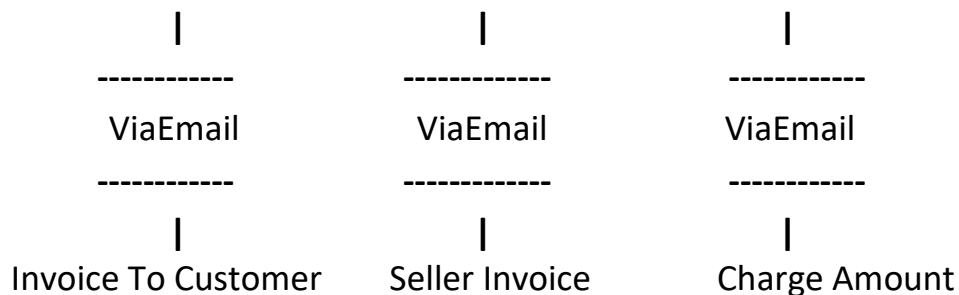
**Shipping + Product Price Calculated
(if shipped via 3rd party then a charge is calculated from their linked server)**

/

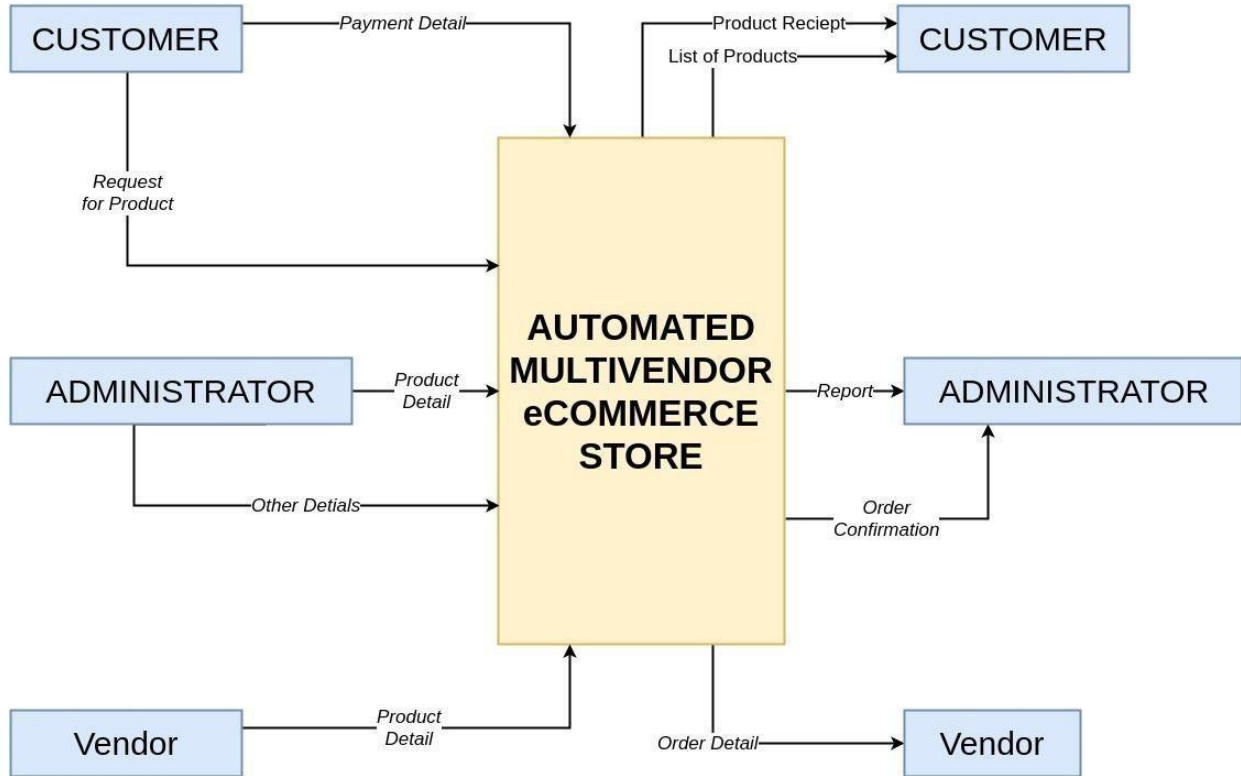
**Order Confirmation & Accept Order
(Entry into main database including temp records*)**

/

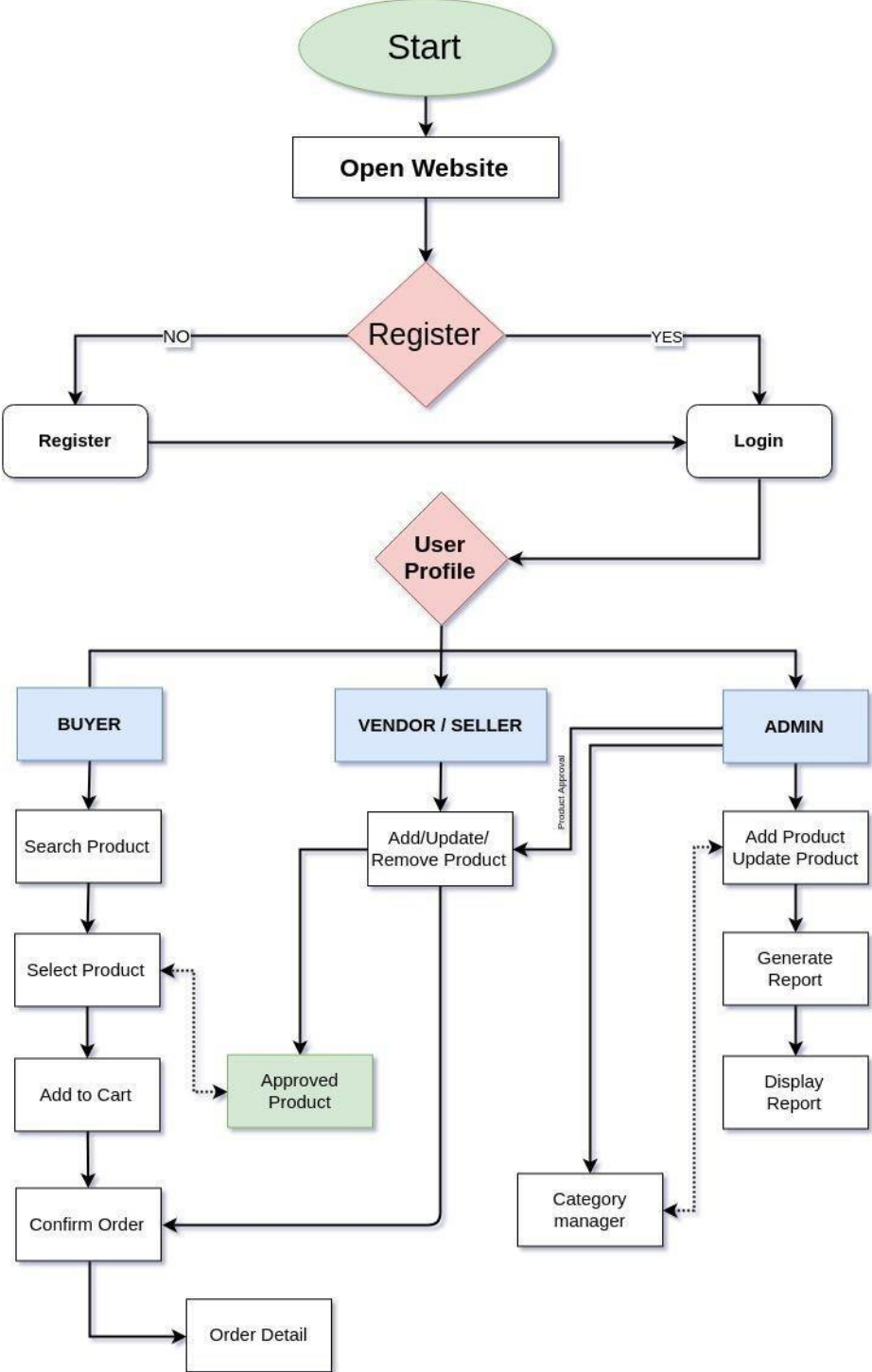
**Ccard/ PayPal/ Offline Pay
Process (Payment Method
Applicable)**



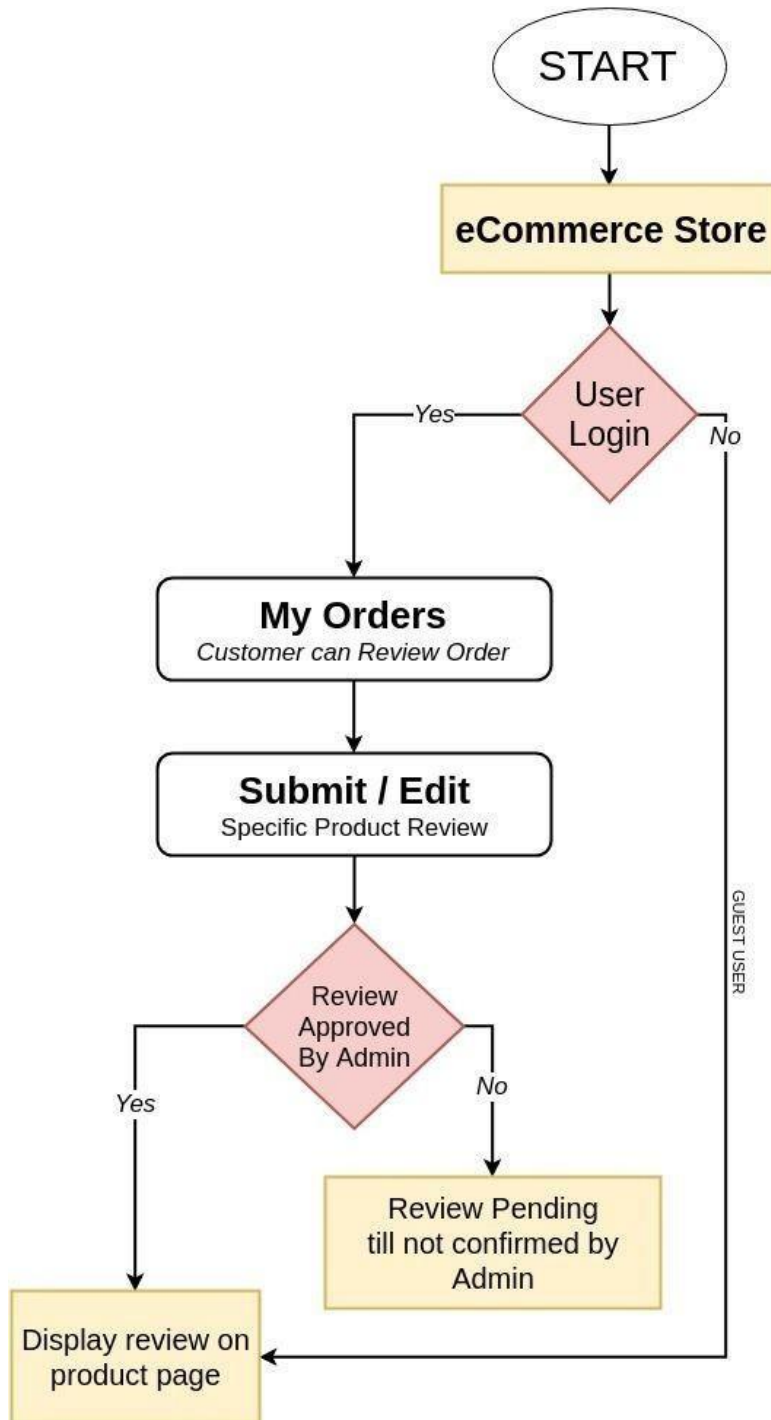
MULTIVENDOR ECOMMERCE STORE: CONTEXT DIAGRAM



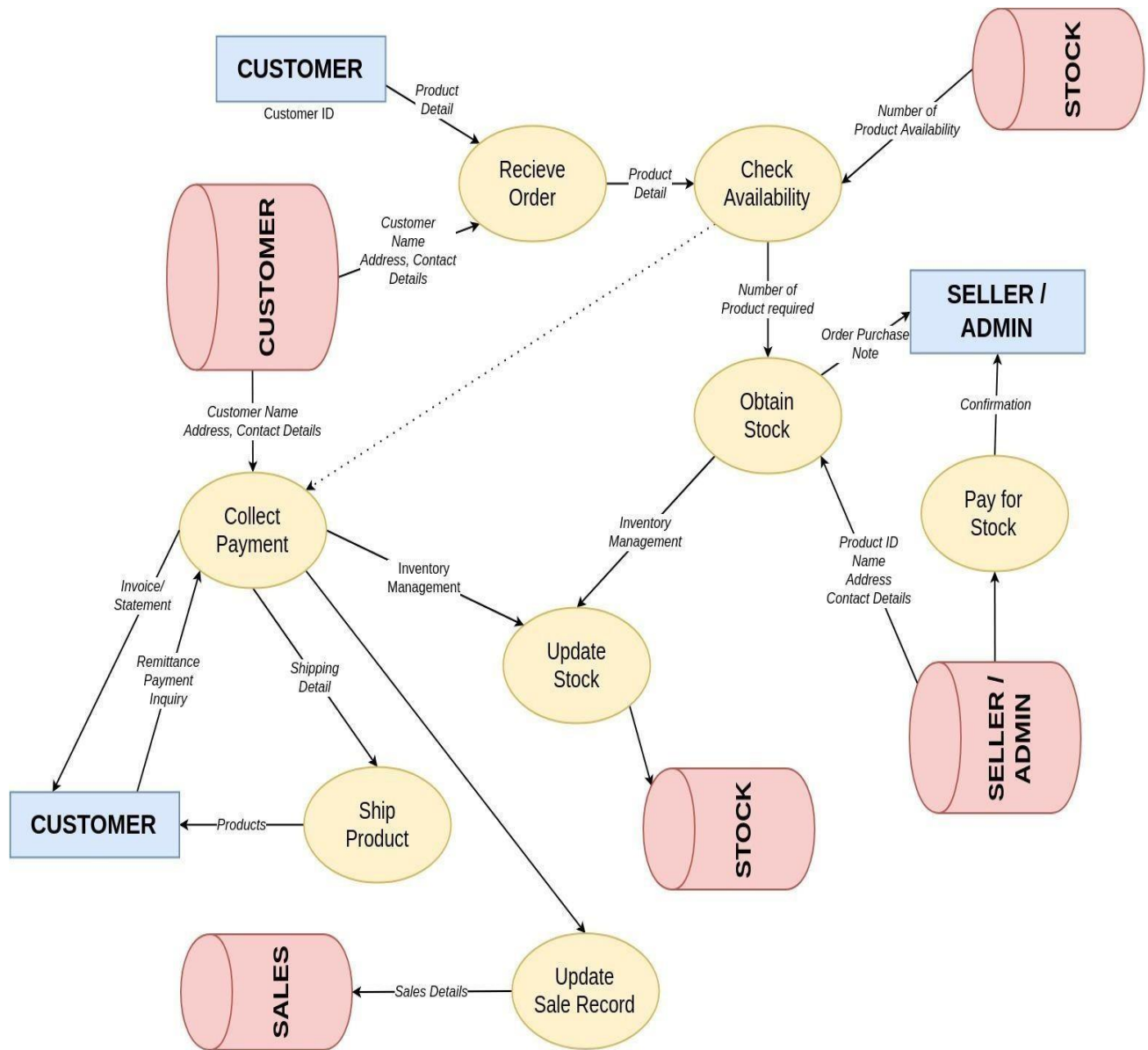
FLOW DIAGRAM: PRODUCT FLOW WITH FOR VENDOR, ADMIN AND CUSTOMER



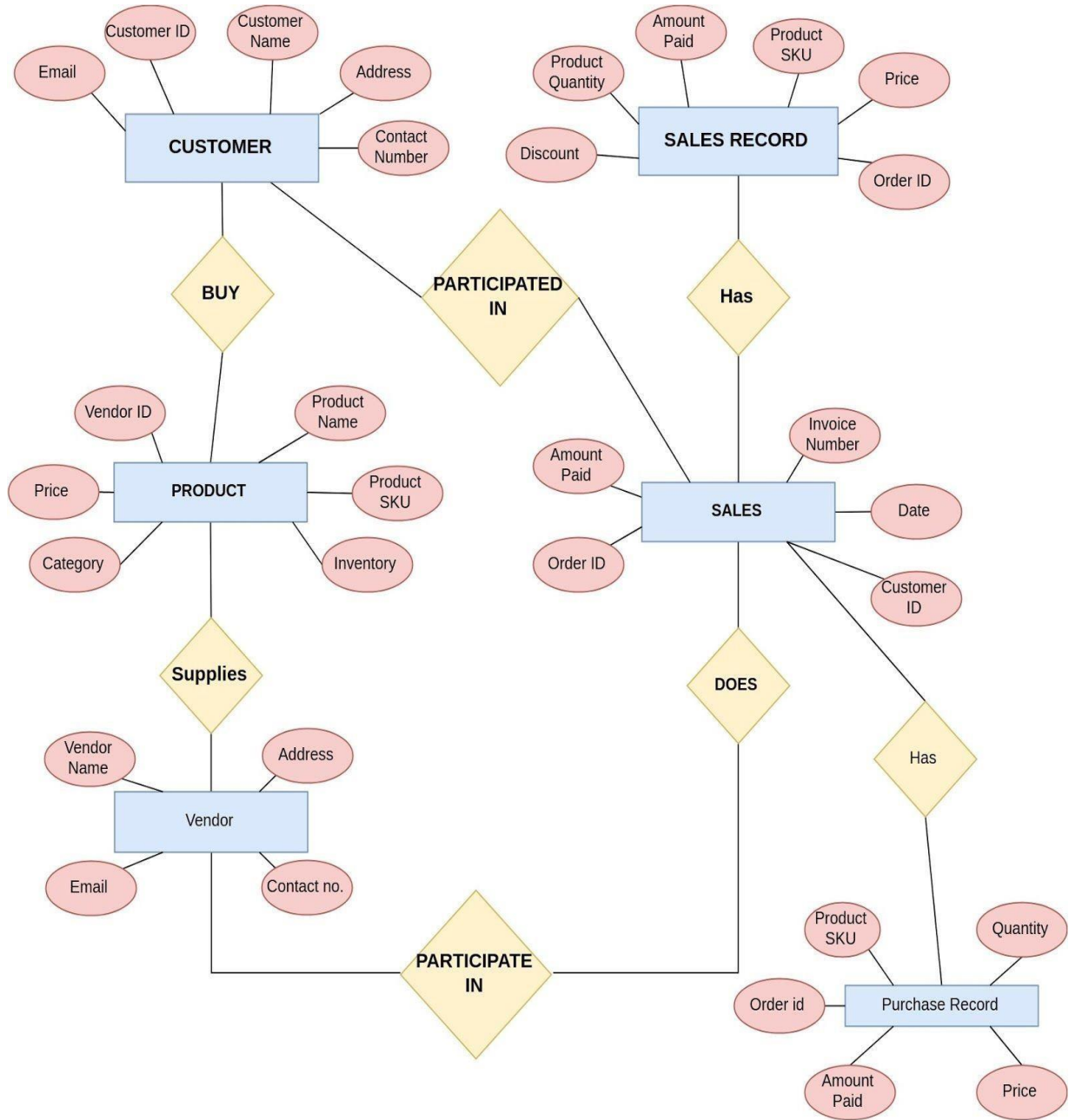
FLOW DIAGRAM: PROCESS FOR CUSTOMER TO REVIEW AND RATE THE PRODUCT BY CUSTOMER



DFD: SELLING AND PURCHASE OF PRODUCT

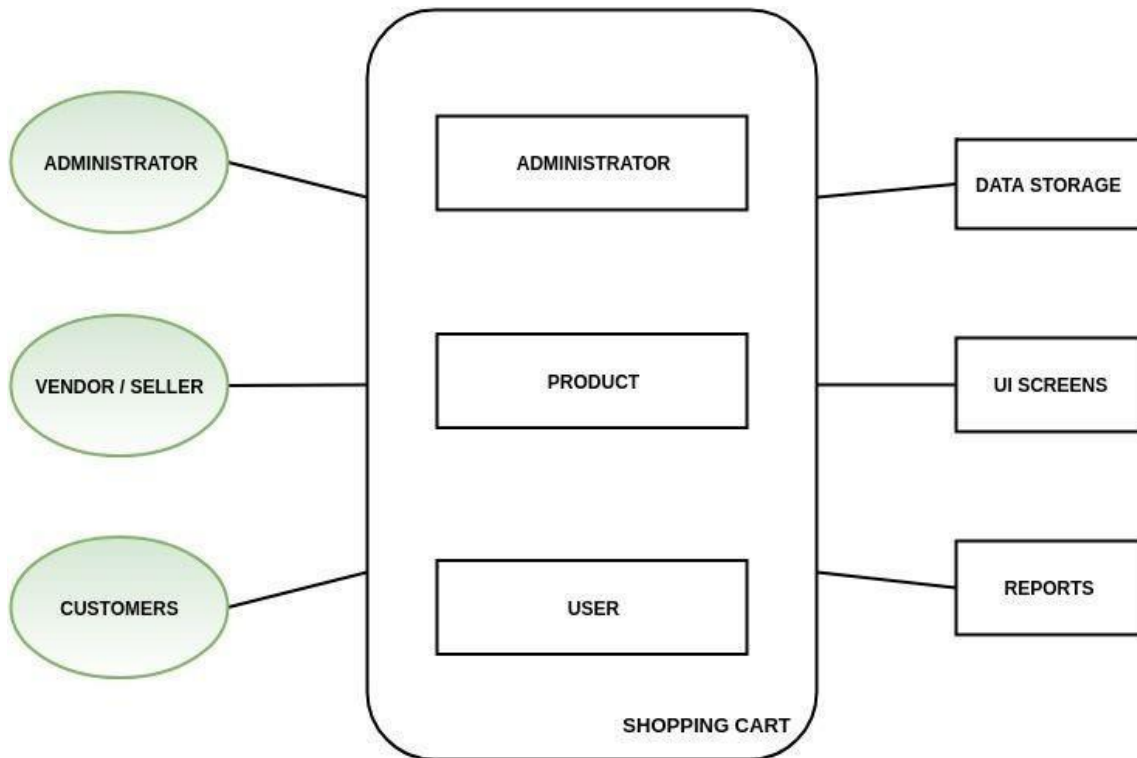


ENTITY RELATIONSHIP DIAGRAM

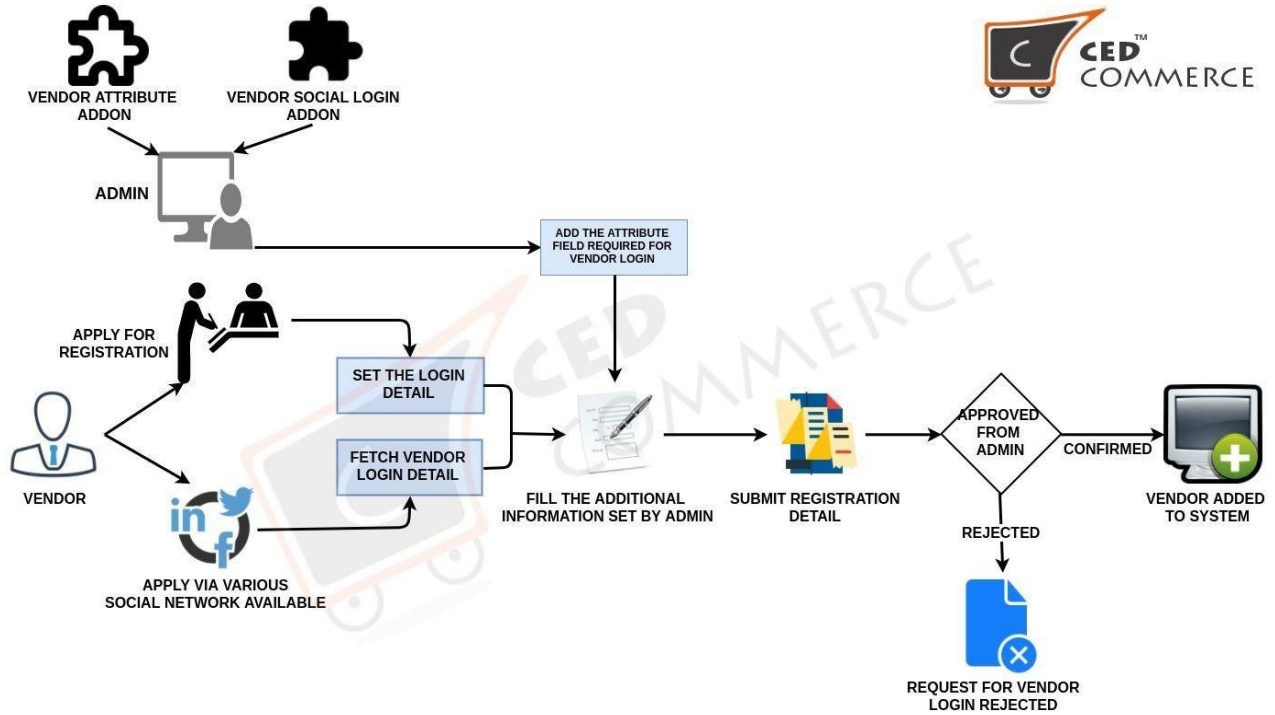


DATA FLOW DIAGRAM

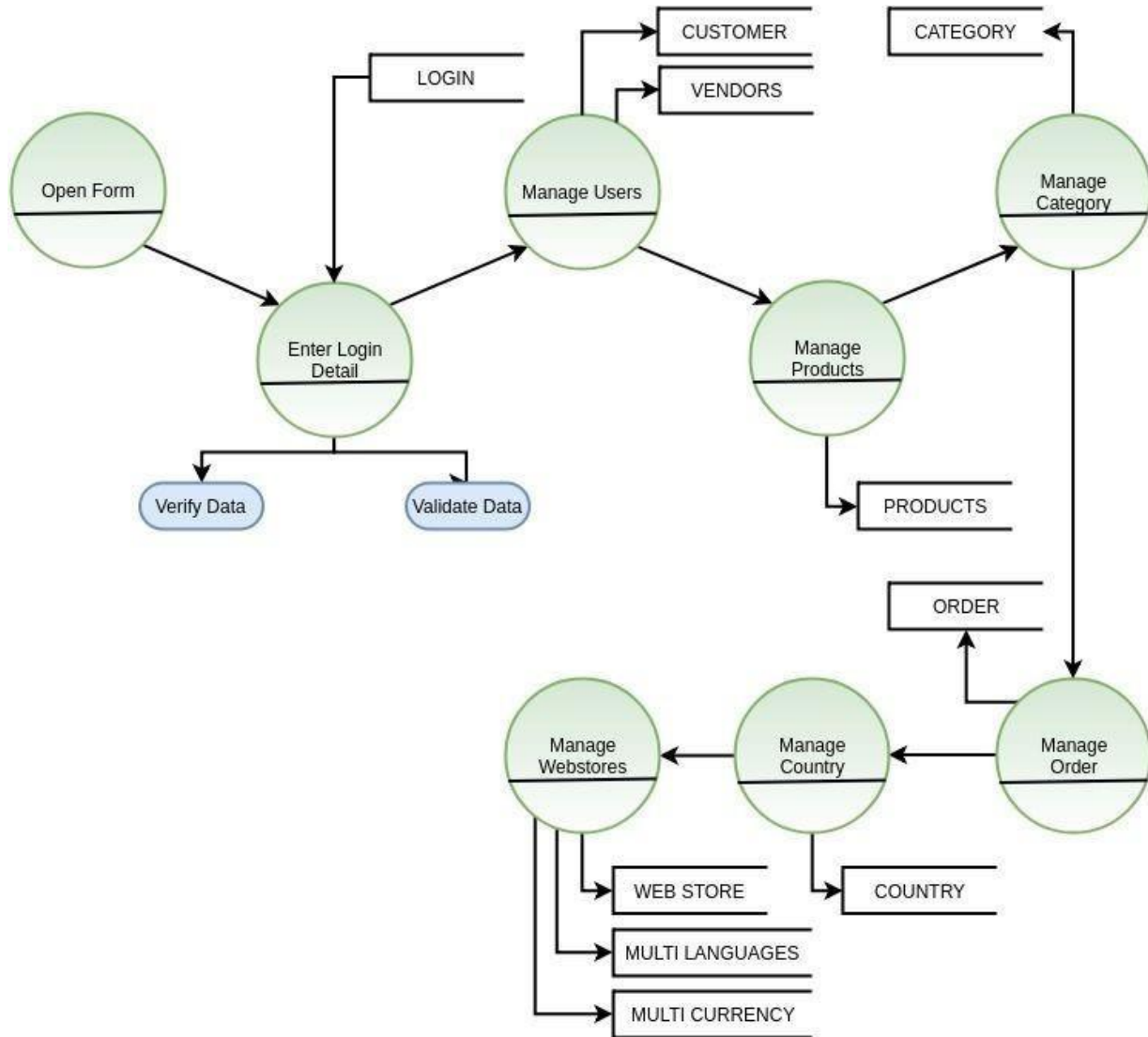
CONTEXT 0 LEVEL DFD FOR A MULTIVENDOR ECOMMERCE STORE



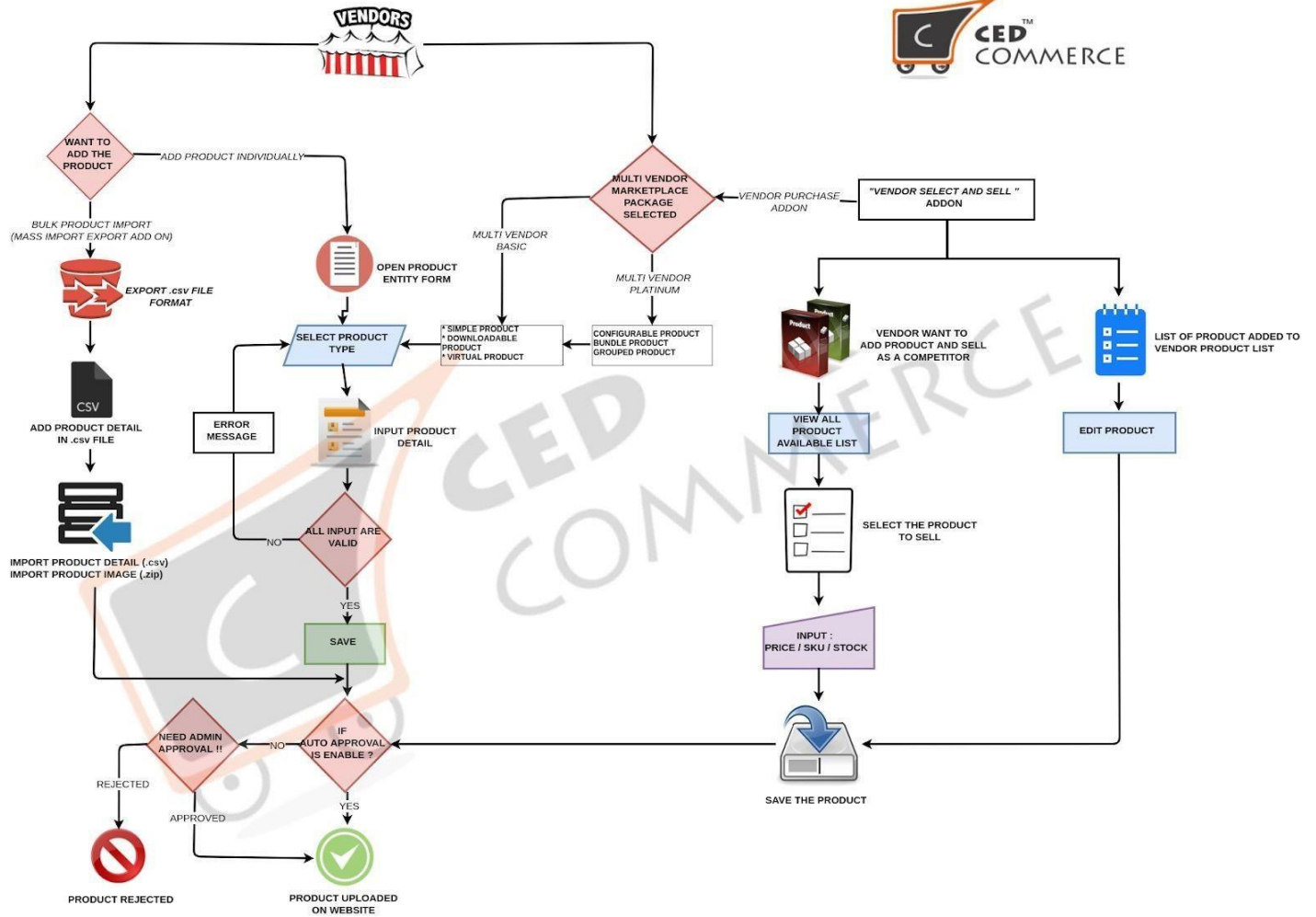
DFD FOR LOGIN : VENDOR LOGIN / REGISTRATION (SOCIAL NETWORK)



DFD FOR ADMIN : MULTIVENDOR ECOMMERCE

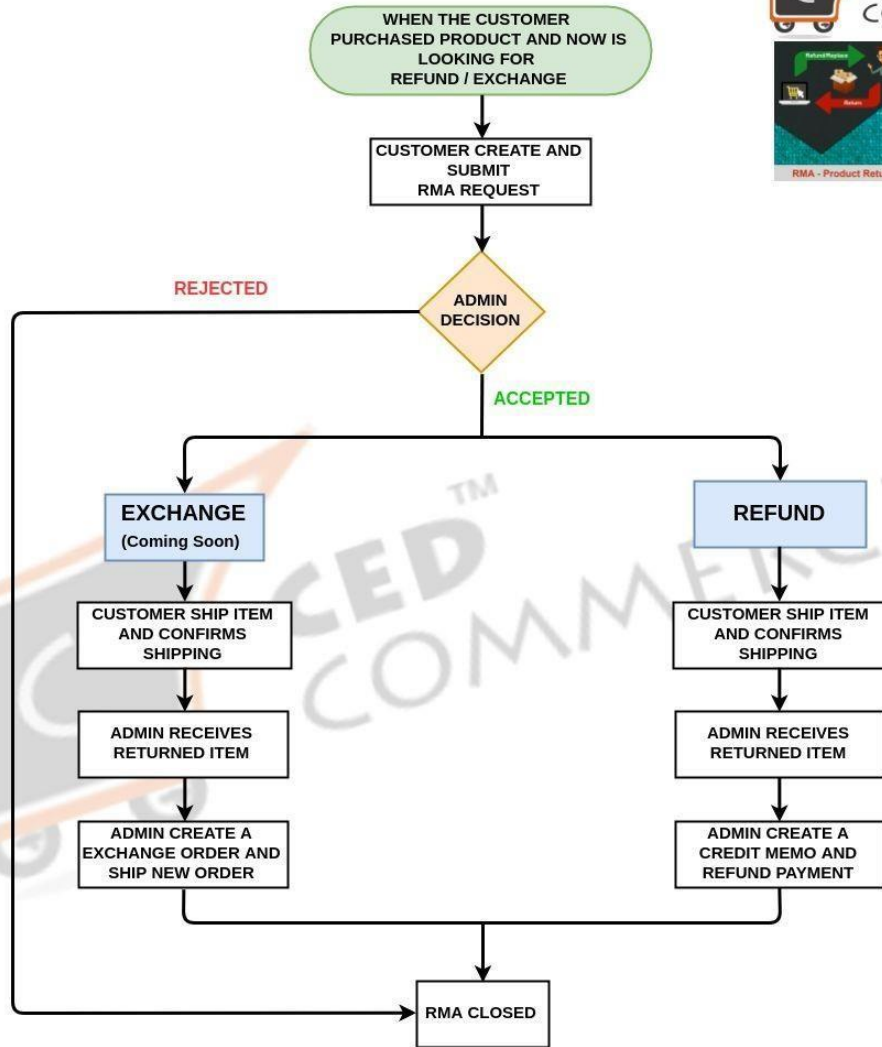


FLOW DIAGRAM: PROCESS TO ADD PRODUCT BY VENDOR



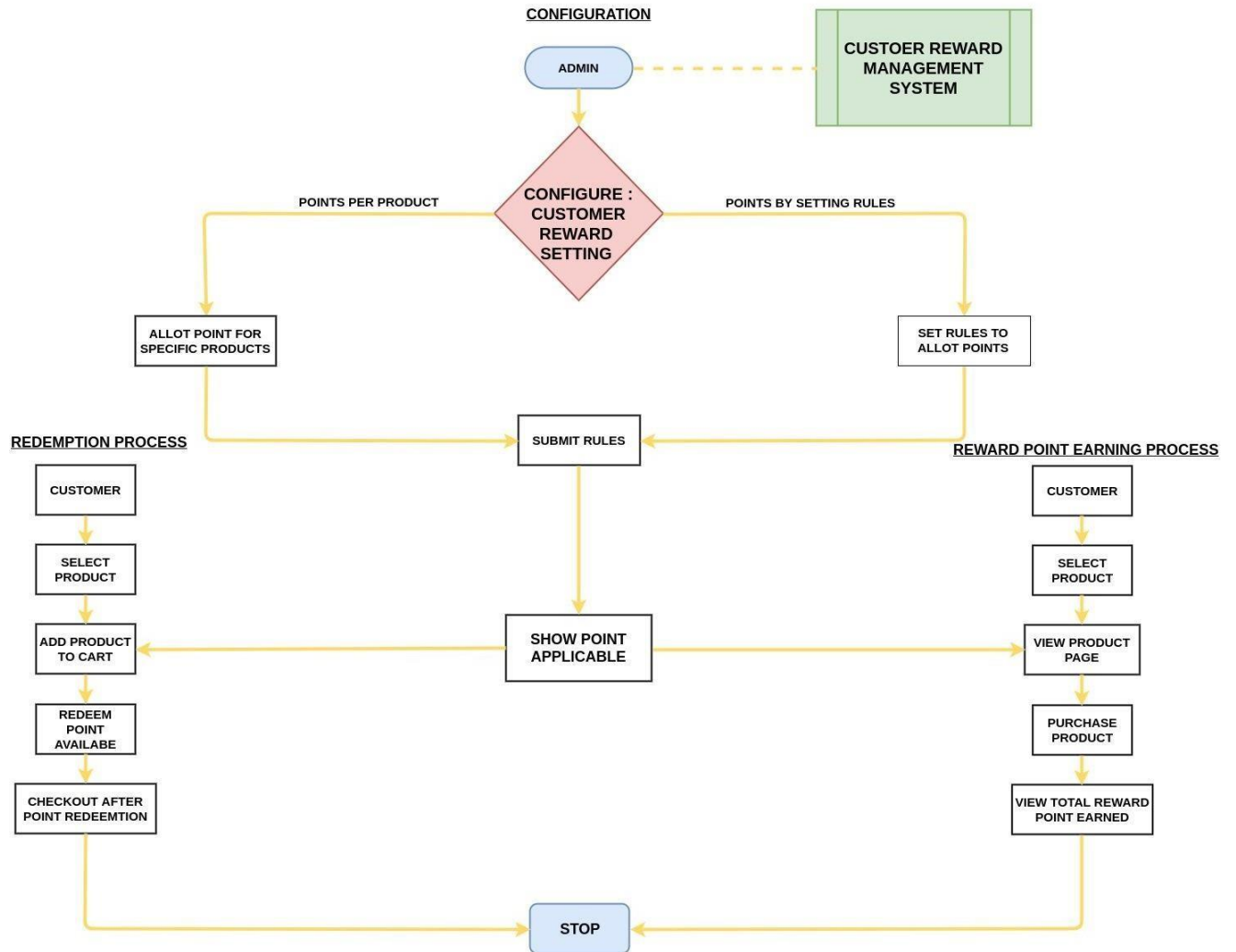
FLOW DIAGRAM: CUSTOMER REFUND AND REPLACEMENT MANAGEMENT PROCESS

Return Merchandise Authorisation (RMA) : FLOW DIAGRAM

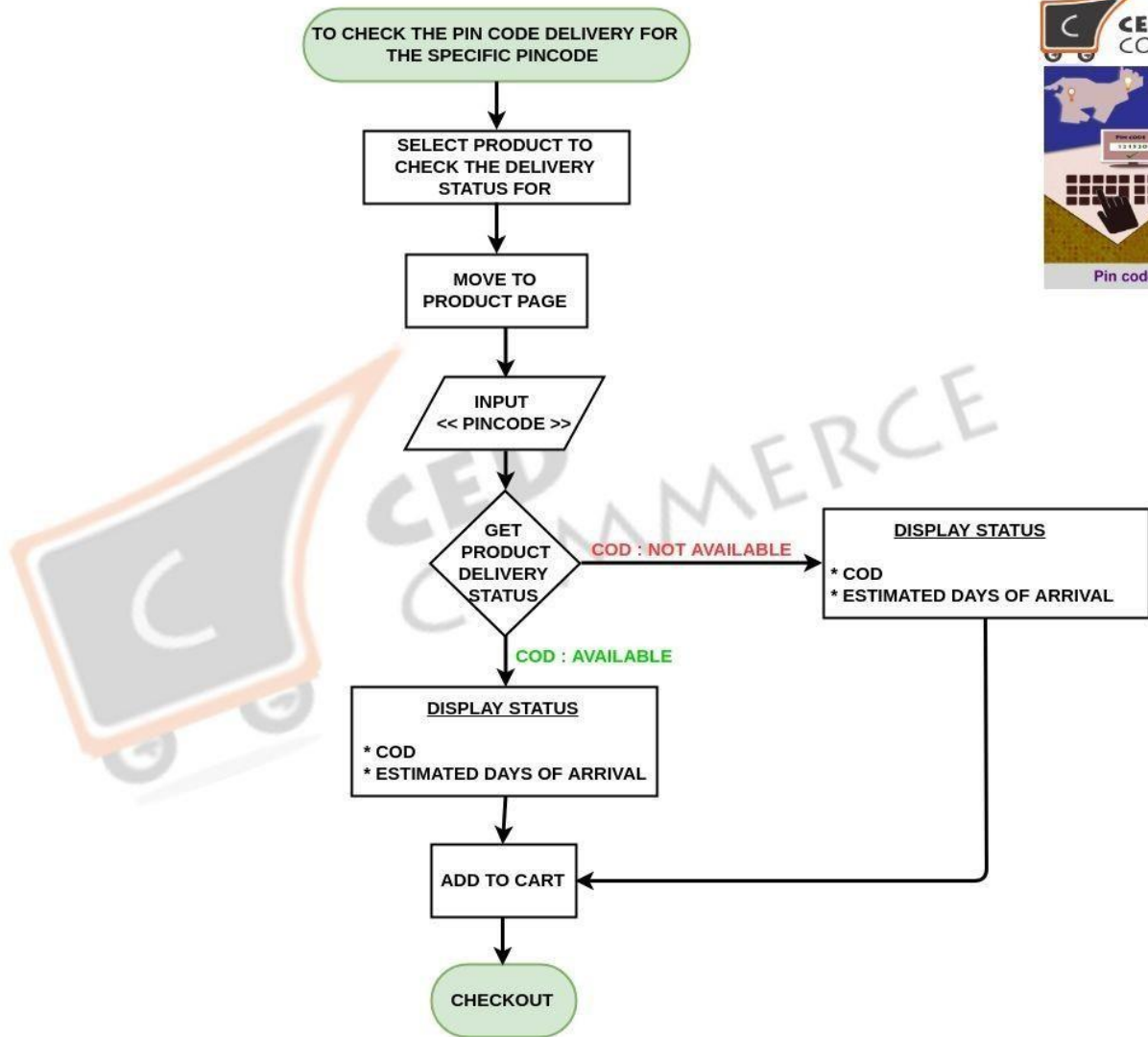


FLOW DIAGRAM : REWARD POINT PROCESS

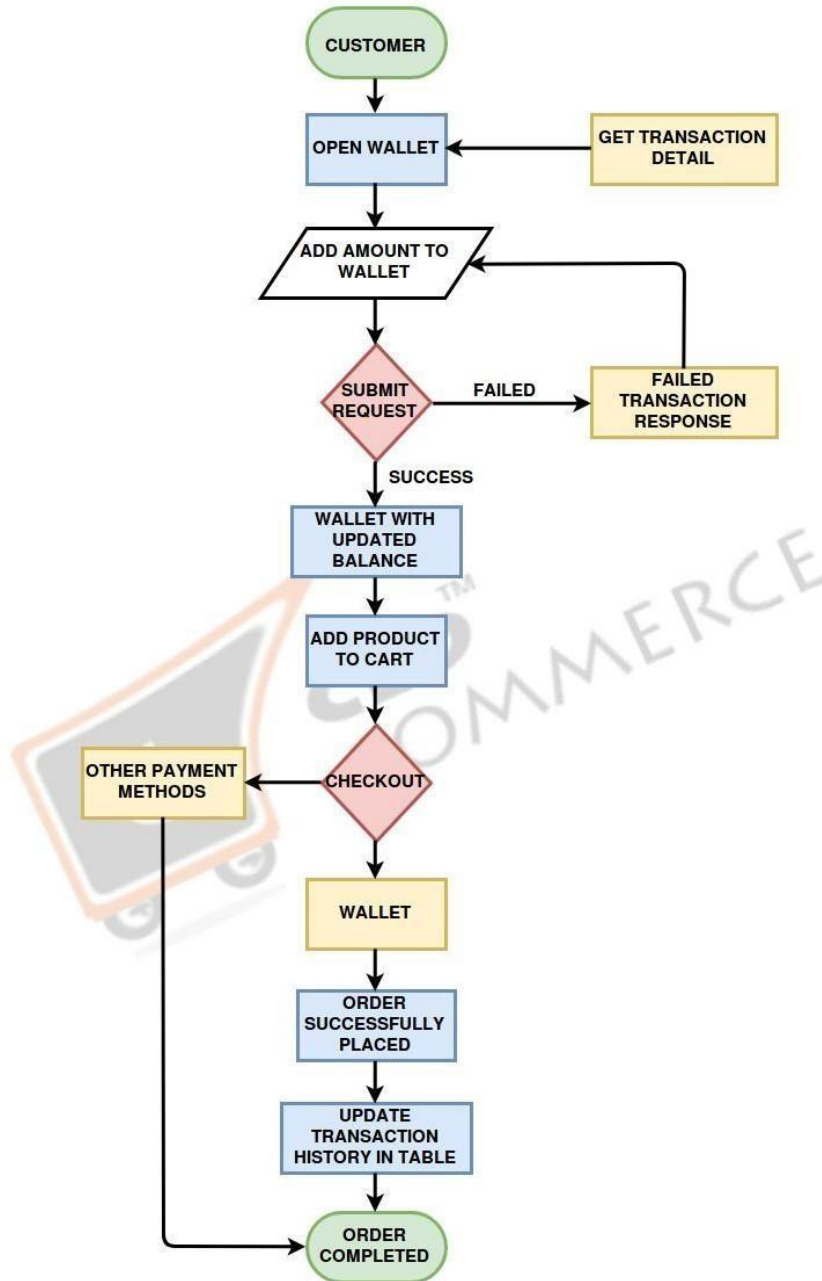
CUSTOMER REWARD MANAGEMENT SYSTEM



FLOW DIAGRAM : PRODUCT AVAILABILITY AND COD FACILITY AT SPECIFIC AREA VIA PINCODE / ZIPCODE / POSTAL CODE



WALLET SYSTEM : FLOW CHART



INTEGRATION OF SOLUTION WITH OTHER VENDOR STORE

When a customer wants to list on your website as a vendor and is already running an eCommerce store. Then he will be requiring the API to integrate his shop with admin's multivendor marketplace so that all the product can be synced and can be sold.

We will be providing the API for the modules of the marketplace so that the integration with the store can be done.

The HTTP request methods get, put, post will be used to retrieve the data, and at the time the detail can be fetched by the vendor if required. The automatic sync for the solution will be scheduled for the store integration.

PRODUCT API

The Products API is used to perform specific actions to a single product and changes. For vendors with large catalogues, a vendor should go for the Bulk JSON File Upload. In product detail we will be providing you with the API for the below-mentioned section, HTTP request method that will be availed are GET / PUT / POST

- Price Upload
- SKU Upload
- Return and Refund
- Inventory

BULK FILE UPLOAD

The File Upload API supports processing SKU information in bulk. This is the preferred method of integration for retailers with large catalogues.

The following product files are accepted:

- MerchantSKUs
- Price
- Inventory
- ShippingException
- ReturnsException
- Variation
- Archive

ORDER

- Check for Order
- Order Detail
- Order Acknowledgement
- Order Shipment
- Order Status

RETURN AND REFUND

- Check for Returns
- Return Status
- Check Refund
- Check Refund State

CATEGORY AND ATTRIBUTE MAPPING

This will allow the vendor to map their product to the marketplace available category, and even as per the multivendor marketplace attribute.

BULK REPORTING

- Create a report
- Report status
- Report type

SYSTEM TESTING AND IMPLEMENTATION

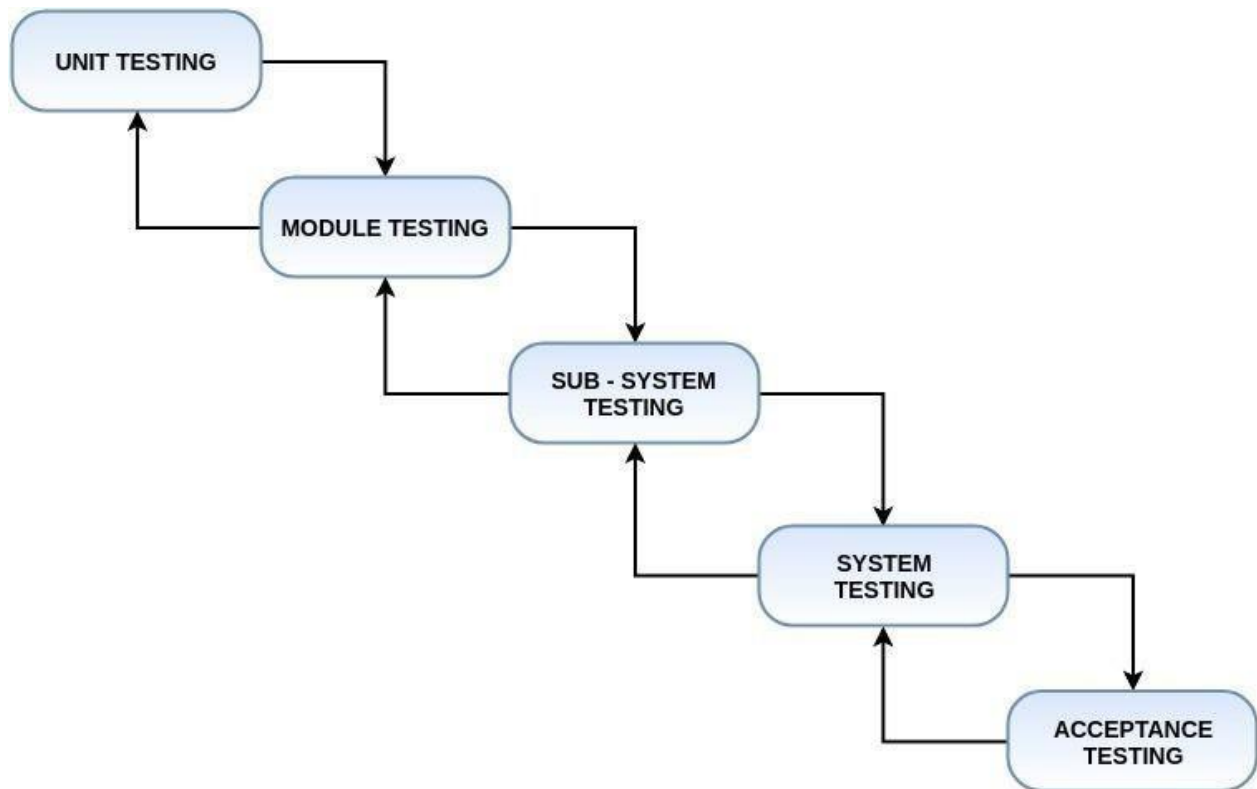
INTRODUCTION

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. In fact, testing is the one step in the software engineering process that could be viewed as destructive rather than constructive. A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of your multi-vendor eCommerce website. Testing a set of activities that can be planned in advance and conducted systematically module wise.

STRATEGIC APPROACH TO SOFTWARE TESTING

The software engineering process can be viewed as a spiral. Initially, system engineering defines the role of software and leads to software requirement analysis where the information domain, functions, behaviour, performance, constraints and validation criteria for software are established. Moving inward along the spiral, we come to design and finally to coding. While developing an

eCommerce multivendor store the spiral in along streamlines that decrease the level of abstraction on each turn.



Each unit will be separately tested by the development and the testing team itself and all the input will be validated, before the delivery of the project module.

SYSTEM SECURITY

INTRODUCTION

The protection of computer-based resources that includes hardware, software, data, procedures and people against unauthorized use is known as System Security.

System Security can be divided into four related issues:

- Security

- Integrity
- Privacy
- Confidentiality

SECURITY IN SOFTWARE

System security refers to various validations on data in the form of checks and controls to avoid the system from failing. It is always important to ensure that only valid data is entered and only valid operations are performed on the system. The system employees two types of checks and controls:

CLIENT SIDE VALIDATION

Various client-side validations are used to ensure on the client-side that only valid data is entered. Client-side validation saves server time and loads to handle invalid data. Some checks imposed are:

- Javascript is used to ensure those required fields are filled with suitable data only. Maximum lengths of the fields of the forms are appropriately defined.
- Forms cannot be submitted without filling up the mandatory data so that manual mistakes of submitting empty fields that are mandatory can be sorted out at the client-side to save the server time and load.
- Tab-indexes are set according to the need and taking into account the ease of user while working with the system.

SERVER SIDE VALIDATION

Some checks cannot be applied on the client-side. Server-side checks are necessary to save the system from failing and intimating the user that some invalid operation has been performed or the performed operation is restricted. Some of the server-side checks imposed are:

- The server-side constraint has been imposed to check for the validity of primary key and foreign key. A primary key value cannot be duplicated. Any attempt to duplicate the primary value results into a message intimating

the user about those values through the forms using foreign key can be updated only of the existing foreign key values.

- User is intimating through appropriate messages about the successful operations or exceptions occurring at the server-side.

REFERENCES

- [1] Wikipedia
- [2] Gunasekaran, A., Marri, H., McGaughey, R., & Nebhwani, **M. (2002). E-commerce and its impact on operations management. International Journal Of Production Economics, 185-197.**
- [3] Gupta, A. (2014, January). E-Commerce : Role Of E- Commerce In Today's Business. International Journal of Computing and Corporate Research, 4(1).
- [4] Mac, R. (2014, October). Retrieved from <https://www.google.co.in/amp/www.forbes.com/sites/ryanmac/2014/10/28/softbank-betsbig-on-india-with-627-million-snapdeal-investment/amp/>
- [5] Mishra, S. V., & Kotkar, D. S. (2015, February). A Study on Current Status of E-Commerce in India: A Comparative Analysis of Flipkart and Amazon. International Journal of Advance Research in Computer Science and Management Studies, 3(2), 133-137.
- [6] Numberger, S., & Renhank, C. (2005). The Future of B2C E-Commerce. Electronic Markets, 269-282.
- [7] Raghunath, A., & Panga, M. D. (2013). Problem and Prospects of E-Commerce. International Journal of Research and Development - A Management Review, 2(1), 59-68.
- [8] Ray, S. (2011). Emerging Trend of E-Commerce in India: Some Crucial Issues, Prospects and Challenges. Computer Engineering and Intelligent Systems, 18-36.
- [9] Rina, D. (2016, March-April). Challenges and Future Scope of E-commerce in India. International Journal of Emerging Trends & Technology in Computer Science, 5(2), 232-235.
- [10] Shankar, S. (2016, May). Retrieved from <http://economictimes.indiatimes.com/small-biz/sme-sector/b2b-e-commerce-market-6-times-larger-than-b2c-sme-lenders/articleshow/52499816.cms>

