Software Requirements Specification

for

Amazon

Version 1.0 approved

Prepared by :

1.	Aditi Ahuja	PES1201800165
2.	N Sanketh Reddy	PES1201800389
3.	Bhavana Madhuri Velakaturi	PES1201801231

PES University

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this document is to provide exhaustive documentation for the requirements of an e-commerce website where a customer makes purchases online using the website. These will be used to develop and deliver the use cases discussed in this document.

The top level use cases are View Items, Make Purchases and Client Records.
The View Items use case will include searching and browsing products, using filters for more advanced search. The Make Purchase use case will include selecting a product using the View use case and making a payment for the same. The Client Records use case will involve user registrations on the website and allied activities, such as coupon codes, etc.
The detailed use cases that will be implemented include:

1. Login and sign up
2. Search and browse items
3. Buy items and add to wish list
4. Proceed to checkout
5. Payment methods
6. Review and order items

1.2 Intended Audience

The intended audience for this document are the developers, product managers,testers and documentation writers at Amazon.
The rest of this document contains functional requirements including product and design functions and constraints,interfaces and non-functional requirements including system features and safety, business and security requirements.

The intended audience for the application are the netizens who would want to compare multiple products from different sellers and vendors who are ready to put up their products online for better exposure.

1.3 Product Scope

The application is going to enhance the shopping experience for web users by bringing the products to be purchased online, this is done by implementing 3 basic services:

1. Registration for users
2. View Items and Save items
3. Purchase system

Registration (Client/ Seller): This step is to build a community of buyers and sellers. This phase also includes the marketing strategy for bringing users to the application like referral codes , awards and coupons.

View Items and Save Items: This part of the application helps the buyers to search for the required product equipped with suitable filters and recommendation based ordering of products along with a basket system to store the products that the user is planning on buying.

Purchase system: This is one of the most crucial parts of the application, it helps the user pay for the items bought and collects enough information for seamless delivery.

1.4 References

- *https://www.amazon.in/*
- *https://gracorp.com/functional-vs-non-functional-requirements/ - [Functional vs Non-Functional Requirements: The Definitive Guide]*
- *Sample SRS Document - [Group08_(STUB)_SRS_Version_1.1.pdf]*
- *https://medium.com/trailblazer-of-salesforce/software-requirements-specification-srs-document-fd9ab103b18 - [Beginners guide to making an SRS]*

2. Overall Description

2.1 Product Perspective

The product will be a standalone e-commerce website, designed to serve as amazon.in, a subsidiary of amazon.com. It will be the Indian arm of the US online retailer, with shipping restricted to India. Functionalities will remain the same, with the only difference being in the shipping costs based on location.

2.2 Product Functions

The product has 2 types of login, one for each user type, the buyer and the vendor.
After registering and logging in there will be a UI with different products on sale and a search bar for the buyer and for the vendor there will be an option to upload a product information of what the vendors want to sell.
And finally for the buyer there will be an option to update delivery and payment info and for the seller there will be an option to add the location of the warehouse and bank details to which the money for the product will be debited to.

2.3 User Classes and Characteristics

User classes can be categorised based on the following metrics:

1. Frequency:
    a. Highly frequent users:
    This group is characterised by their high purchase frequency, with a product purchased every few hours or every day. Most of these users are Amazon regulars and their purchases span a wide variety of product categories.
    b. Moderate Frequency Users:
    This group has an average purchase frequency between 4-30 days. Their range of purchases is not as wide-ranging as the high frequency users.
    c. Infrequent/Low frequency Users:
    This group has an average purchase frequency of greater than 30 days. Most in this category purchase specific products from Amazon, which are hard to obtain in brick-and-mortar stores.
2. Technical Expertise:
    a. Technically savvy:
    A high correlation has been observed between the members of this category and the high and moderate frequency shoppers. A large number of these users prefer online payment methods and benefit from using coupon codes/referral programs.
    b. Technically inexperienced:
    These mostly comprise the infrequent users. Most users in this category prefer using cash-on-delivery.
3. Functions:
    a. Vendors/Retailers:
    This category of users uses the marketplace functions of Amazon, including targeted analytics, buyer exposure and payment processes.
    b. Purchasers/Buyers:
    This category of users forms the bulk and uses the Amazon marketplace to purchase products from the website.

2.4 Operating Environment

1. This is a desktop web application that will be hosted on AWS and is expected to work on PCs and laptops that can access the internet using a browser and so the application will be independent of the operating system.
2. Database of choice PostgreSQL/MongoDB
3. As a second phase of the project, a mobile app will be developed for ease of use.

2.5 Design and Implementation Constraints

1. If the number of users increases, there are two constraints that can be faced:
    a. Increase in size of database and consequent
    b. Increase in number of concurrent requests and consequent lag in processing user requests.
2. The user should be familiar with basic browser application navigation and be able to understand the functionalities provided by the system.
3. Minor UI changes across different browsers, especially apart from the common browsers.
4. Since the application will be hosted on AWS, appropriate system design decisions have to be taken to ensure high availability and prevent unexpected downtime.

2.6 Assumptions and Dependencies

- This application is in English only, it is assumed that the user knows English.
- The application marketplace is highly dependent on the customers who use it and the vendors that wish to be tied up with it.
- This is the first proof of concept and therefore, not all details are covered now.
- It is also assumed that the customer and the vendor have a laptop/desktop with internet connection.

3. External Interface Requirements

3.1 User Interfaces

These are some of the common screens in the website:

1. User home page: The first screen a user lands on when logged in. This page shows the recommended deals based on current offers and past buying history, along with buttons common to each page such as search, option to view cart, change language preferences and current sales.

2. Cart: This page shows complete cart details of a user, including current item details and monthly purchases.
3. Category specific pages: These can be accessed via the hamburger menu on the top left of the home page. Each page shows the best deals for a specific category and possible subcategories, which lead to subcategory specific pages.
4. Payment page: This page will display the various payment options and related information such as taxes levied, discounts, coupon codes, etc.

3.2 Software Interfaces

The software infrastructure can be broadly divided into two parts:

1. Server side:
    a. The backend will be coded in PHP(or NodeJS)
    b. During the development phase we will be using an Apache web server to process requests. The data will be stored in a MongoDB instance.
    c. And for the production phase we will be deploying the application using AWS's elastic beanstalk
2. Client side:
    a. Use a combination of HTML, CSS and JavaScript for the frontend.

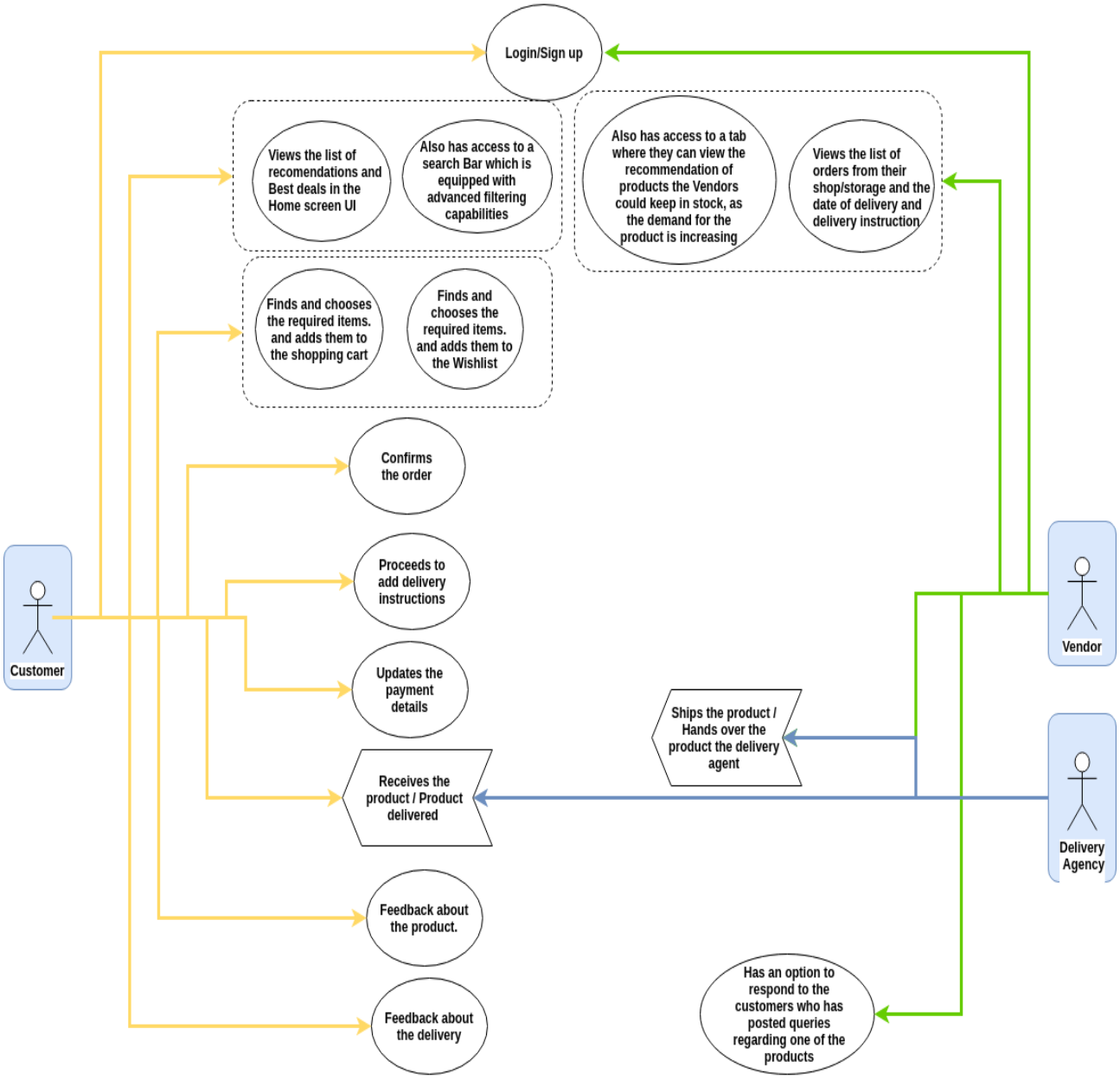
3.3 Communications Interfaces

- Web browsers are used as a medium of communication between the client and the server.
- HTTP protocols will be used to facilitate communication.
- Communications for payments will be secure and encrypted.
- Any APIs used for the same will follow REST protocol.
- Data will be passed to and from the database as JSON objects.

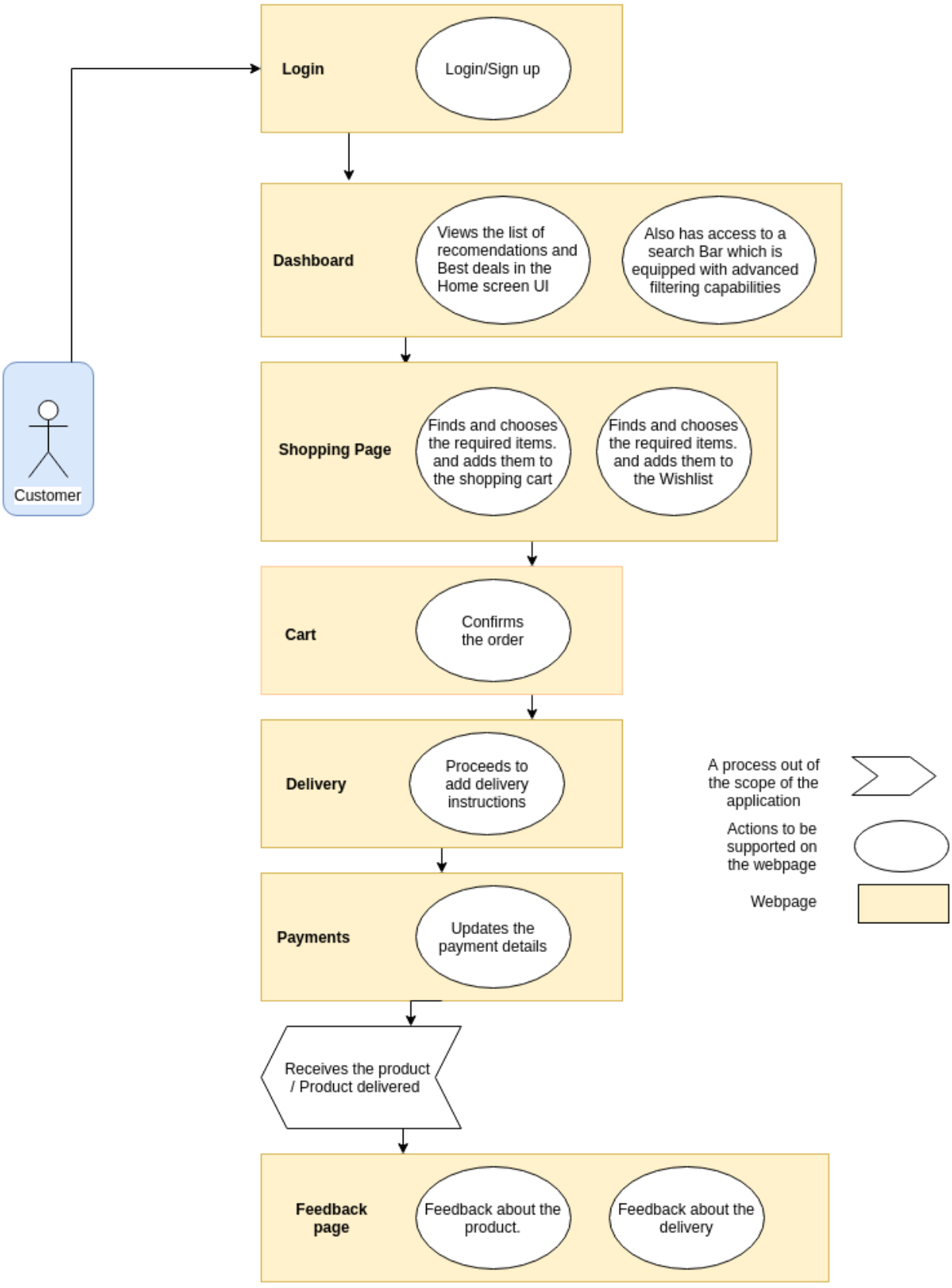
4. Analysis Models

- Actors
    - Customer :Buys products
    - Vendor: Sells products
    - Delivery agency: Distributes products

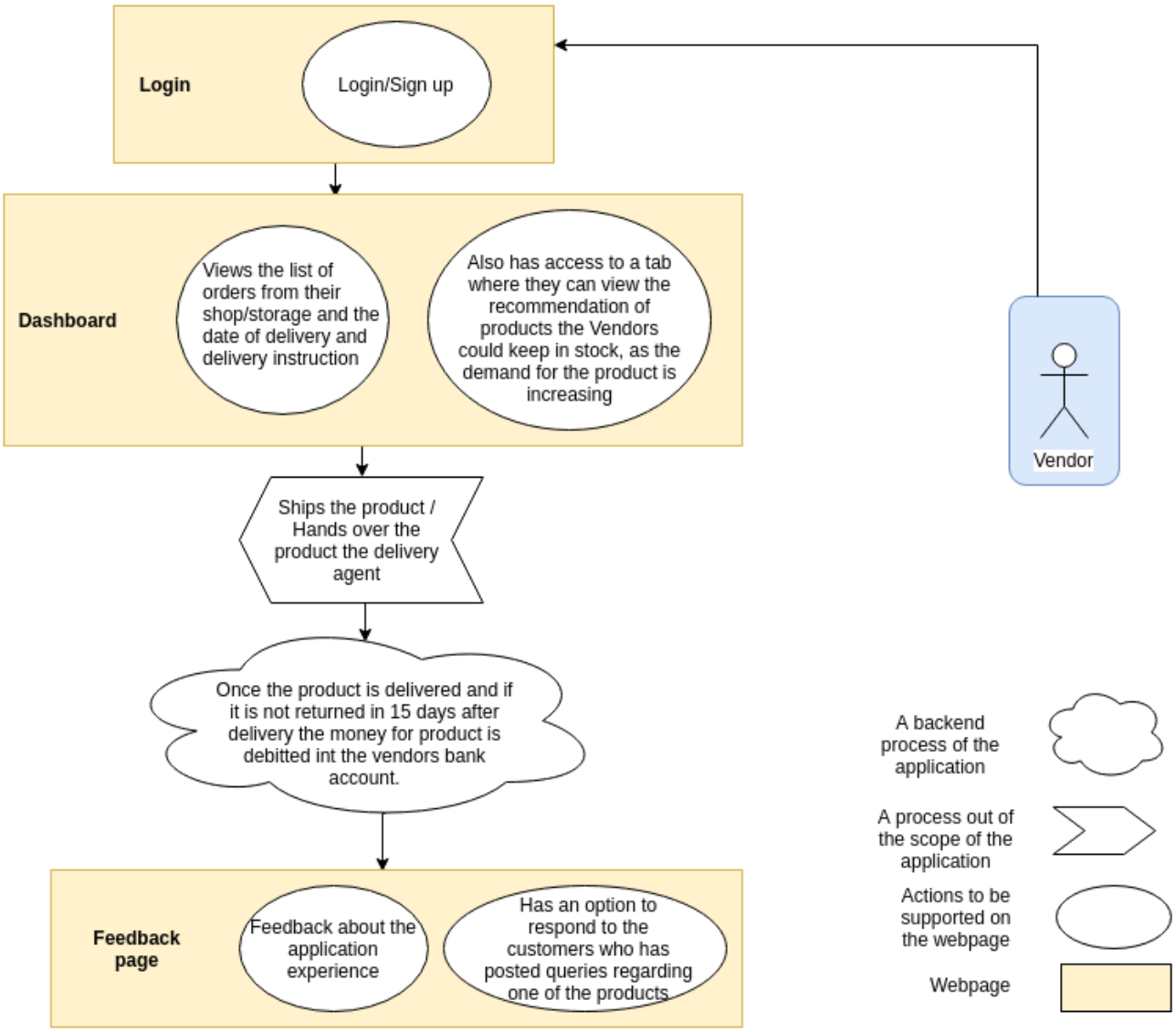
- Application use-case diagram :



- Customer Flow diagram :



- Vendor flow diagram:



- Other crucial backend processes that are related to the Customer and vendor use case diagram.
    - The recommendations in the dashboard for the customer's next session will be generated by the sum of products currently in trend, the customer's previous search queries and the customer's wish list.
    - The recommendation of products suggested for the vendor to keep in stock is generated by the current trend of products, and the wishlists of the users geographically close to the storage facility.
    - Using the feedback provided by the vendor admin to bring about some necessary changes to the application.

- Using the user's feedback on the product, the admin could rank the product with better ratings on the top of the search query response.
- The admin could send the user's feedback on the delivery to the delivery agent to better their service.

5. System Features

5.1 Amazon Payments

5.1.1 Description and Priority

Payments describes the various payment methods Amazon offers users, including credit and debit cards, cash on delivery and Amazon Pay.

Amazon has payment gateways supporting all major banks to enable cart payments.

Amazon Pay allows the user to maintain an Amazon wallet, by transferring from one of their linked bank accounts. This allows for an easy, hassle-free payment completed in 1 step.

5.1.2 Stimulus/Response Sequences

1. The user navigates to payment options either from 'Your Account->Payment Options' or after 'Add to Cart->Proceed to Buy'.
2. The user selects their preferred payment option.
   i. If debit/credit cards are selected, the user is redirected to the payment gateway.
   ii. If cash on delivery is selected, the user can just checkout at this stage.
   iii. If Amazon Pay is selected, the user can instantly complete the transaction.
3. The appropriate 'Transaction Successful' message is displayed once the transaction is completed.

5.1.3 Functional Requirements

PAYREQ-1: Secure means to transfer money from a bank account to Amazon Wallet.

PAYREQ-2: Secure connection to payment gateways for transfers.

5.2 WishList

5.2.1 Description and Priority

A wish list can be used to add items the user is considering buying at a later time.

5.2.2 Stimulus/Response Sequences

1. The user selects the ‘Add to Wishlist’ button when viewing a product.
2. On clicking, the button changes colour and product is added to the WishList.
3. On navigating to the WishList, the user can now see the newly added item.
4. The user can add an item from WishList to Cart by clicking on the ‘Add to Cart’ button next to each item in the WishList.

5.2.3 Functional Requirements

WISHREQ-1: WishList table in the database with a unique user identification as the foreign key to map it to the other tables.

5.3 Cart

5.3.1 Description and Priority
Cart is the repository of items selected by the user before the payment stage. Items added to cart generally have a high possibility of being purchased.

5.3.2 Stimulus/Response Sequences
1. The user views a product page and clicks the ‘Add to Cart’ button.
2. The button changes colour on click and the user can now navigate to ‘Your Cart’ from the top menu bar and view the item in their cart.

5.3.3 Functional Requirements
CARTREQ-1: Product table in the database identifying which products are in stock and hence, can be added to Cart.
CARTREQ-2: Multi valued field in the user table identifying the products in their Cart.

5.4 Gifting

5.4.1 Description and Priority
The Gifting option allows a user to deliver a product, from a certain set, as a gift to another address, complete with gift wrapping and a personal message. Amazon also allows users to send gift cards of a fixed amount.

5.4.2 Stimulus/Response Sequences

1. The user clicks the ‘This will be a gift’ option next to the product when viewing a product or the ‘Gifting this to someone?’ option when viewing in Cart.
2. The gifting options will show up when checking out, including delivery address and options for gift wrapping.

5.4.3 Functional Requirements

GIFTREQ-1: Dynamic display of the relevant gift option if the product is in the set of products that can be gifted.

GIFTREQ-2: Sellers need to specify whether their products can be a part of the Gift Store.

5.5 Dashboard

5.5.1 Description and Priority

The Dashboard is the centralised interface a user first interacts with when logged into Amazon. It consists of recommendations and products across categories and Amazon services. Often, it is also the most visited page and leads to a large number of successful sales conversions since the recommendations are tailored based on the user’s history.

5.5.2 Stimulus/Response Sequences

1. The Dashboard is visible as the first page when navigating to Amazon.
2. A variety of deals and product categories are displayed based on recommendations based on the user’s history.
3. Multiple deals are presented using a carousel.

5.5.3 Functional Requirements

1. DASHREQ-1: Recommendation systems to recommend targeted products, categories and offers to a user based on their purchase and search history.
2. DASHREQ-2: Integration across Amazon services such as Prime, Music, Kindle, etc. for building a comprehensive user profile across

6. Other Non functional Requirements

Requirements that specify criterias that can be used to judge the operation of a system, rather than specific behaviors. Therefore contrasted with functional requirements that define specific behavior or functions.

6.1 Performance Requirements

There are adequate performance requirements :

- It does not take more than 10 seconds to match typed-in username and password, and login. After selecting the features and preferences, the buyer obtains a result in 5-10 seconds.
- This system is also built to handle multiple concurrent users making it extremely reliable.
- An ODR is monitored based on the number of negative reviews, chargebacks and returns the vendor has. It should always be below 1%.
- A LSR is also monitored and calculated every 7-30 days and should be kept below 4%.

6.2 Safety Requirements

- Amazon does not develop its own safety standards but refers to national standards in the target market. Therefore, a vendor on Amazon must ensure compliance with safety standards and labeling requirements.
- The system is capable of restoring itself to its previous state in the event of a failure (e.g. network loss or system crash)
- Physical, electronic, and procedural safeguards are maintained in connection with the collection, storage, processing, and disclosure of personal customer information.
- Based on the product to be delivered, it is sealed and secured respectively.

6.3 Security Requirements

- User's personal information is protected during transmission by using encryption protocols and software.
- The system's security procedures mean that a proof of identity may be occasionally requested before any personal information is disclosed.
- System follows PCI DSS when handling payment card data.
- Security features are offered by the system to protect against unauthorized access and loss of data.

- The system displays an error message if an incorrect username or password is entered in the login page by the buyer.

6.4 Software Quality Attributes

- Usability : This system provides adequate usability requirements and meets client requirements along with having a decent look and feel.
- Maintainability : There are no maintainability requirements or support requirements for this system. They can however be added in the future.
- Availability & Portability : Since this system can easily be accessed from a laptop, desktop computer or any device with an internet connection, operational and environmental requirements of this system do not require too much equipment. Thus, the system is also available at all times.
- Efficiency : System is capable of providing appropriate performance, relative to the amount of resources used, under stated conditions.
- Navigation : Navigation is an important design element that allows users to acquire the information they are seeking and make that information easier to find. Defaults are set based on the type of device the system is accessed from (keyboard shortcuts, limitations in display, input mechanisms etc.).

7. Other Requirements

- Compatibility Database : A good database is required since all the data including customer/vendor account information will be saved to the database. The system provides a way to browse products based on their compatibility with the items the user already owns. Compatibility databases come into use so that the user does not have to plow through multiple products just to find a few products which are potentially relevant to them.

- Internalization Requirements : E-commerce system internalization is very important as studies proved that around 65% of consumers purchase products online from outside their own country. Therefore, having information available in their native language is very important. System's technology is adapted to be capable of supporting any language, local formats and ways of doing business. Translators and regional stakeholders can alter content and more. System provides an accurate and immediate sales tax calculation.

- Legal Requirements : Account and other personal information are released when it is believed that release is appropriate to comply with the law; enforce or apply system's *Conditions of Use* and other agreements; or protect the rights, property, or safety of Amazon, its users, or others. This includes exchanging information with other companies and organizations for fraud protection and credit risk reduction.

Appendix A: Glossary

There are a variety of terms used in this Software Requirement Specification relating to the system. Most of the terms are self-explanatory and are common to online shopping. For completeness, however, related terms are :

- UI - User Interface
- PHP - Hypertext Preprocessor
- AWS - Amazon Web Services (Subsidiary of Amazon)
- HTML - Hypertext Markup Language
- CSS - Cascading Style Sheets
- HTTP - Hypertext Transfer Protocol
- API - Application Programming Interface
- REST - Representational state transfer
- JSON - JavaScript Object Notation
- PCI DSS - Payment Card Industry Data Security Standard
- ODR - Order Defect Rate
- LSR - Late Shipment Rate
- Browse - Reading superficially or at random.
- Filter - Process or assess (items) in order to reject those that are unwanted.
- Brick-and-Mortar stores - Refers to a traditional street-side business that offers products and services to its customers face-to-face in an office or store that the business owns or rents
- Website - An address that is connected to the internet to provide one or more web pages.
- Cart - A handcart that holds items while shopping.
- Checkout - To confirm and pay goods using a payment facility.

Appendix B: Field Layouts

An Excel sheet containing field layouts and properties/attributes and report requirements.

Sample sheet with information required to register the customer

Field	Length	Data Type	Description	Is Mandatory
User Name	30	Alphanumeric		Y
Password	30	Alphanumeric		Y
Customer Name	60	String		Y
Address	120	String	Address of Customer	N
Mobile Number	10	Numeric	CustomerMobileNumber	Y
Email ID	40	Alphanumeric		N

Sample sheet with information required to register the Vendor

Field	Length	Data Type	Description	Is Mandatory
Work Email ID	60	Alphanumeric	Business Email address	Y
User Name	30	Alphanumeric		Y
Password	30	Alphanumeric		Y
Mobile Number	10	Numeric	Vendor's Mobile Number	Y

Appendix C: Requirement Traceability Matrix

Sl. No	Requirement ID	Brief Description of Requirement	Architecture Reference	Design Reference	Code File Reference	Test Case ID	System Test Case ID
01	R1	Login		After successfully logging in, the user is redirected to the home page.	main.py, login.html, register.html	UT - 01	

02	R2	Proper display of the window		When the website is loaded, every element and link must be properly loaded	main.py, home.html	UT - 21	
03	R3	Breadcrumb Navigation		Users must be able to navigate between different windows by clicking on the respective links	main.py	UT - 22	
04	R4	Managing the inventory		Items availability should be updated as they are added or purchased	main.py, home.html	UT - 23	
05	R5	Checking Out Cart		After checking out the cart, the product's stock should be decreased automatically	main.py, cart.html,	UT - 13	