Software Requirements Specification Document

LUMS Marketplace

Group Number: 15

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Contents

1 Introduction

1.1 Document Purpose

The purpose of this document is to give a detailed description of requirements of the version V.1.0.0 of Lums MarketPlace website. It is intended to assist the software's designer, developer, and maintainer. This document tends to cover all the features and scope that we will be providing to our client. It also explains system constraints, safety and security requirements as well as the interface and interactions with external applications. This document is to be proposed to the clients or audience for approval and later used as reference by our development team.it serves as a contract between the development team and the stakeholders, ensuring that everyone is on the same page regarding the project's scope and objectives.It provides a clear, concise, and comprehensive description of the requirements and expectations for the website, and helps to ensure that the final product meets the needs and expectations of all stakeholders.

1.2 Product Scope

The LUMS community will have a separate platform exclusively for buying and selling of goods. They no longer would need to scroll through general purpose facebook groups to find a product they need. Many students have expressed that there's a need for a separate platform for this purpose.Since the web app is being made exclusively for the LUMS community, only registered users would be able to buy and sell items. Unregistered users will only be able to browse through the webpage.

Problem:

The trend of buying and selling pre-owned items within the LUMS community has become increasingly popular in recent years. Transactions are primarily conducted through social media platforms such as Facebook and Instagram, however, this has led to a cluttered online space and difficulty in finding relevant posts. Additionally, privacy concerns and a lack of reputation verification for sellers have been reported. These issues have resulted in a less efficient and satisfactory experience for both buyers and sellers.

Solution:

Given how trendy, and convenient it is to have a network of selling new, and used items in a closed community, there is a need for a platform that streamlines the process and allows users to sell and buy items without restrictions.

Synopsis:

LUMS Marketplace is a comprehensive e-commerce platform that enables users to effortlessly list and sell items to a targeted audience. The website's intuitive design allows for easy navigation, with items automatically organized for optimal user experience. To further enhance the buying and selling experience, the platform offers a secure and exclusive chat option for communication

between buyers and sellers, eliminating the need for private accounts and ensuring privacy. Additionally, the platform enables users to post ratings and reviews for customers, fostering a safe and trustworthy environment for transactions. Overall, LUMS Marketplace is an innovative solution that streamlines the buying and selling process while addressing key privacy concerns.

Few features of LUMS marketplace:

User management:
- User registration and login
- Profile management
- Password reset

Product catalog:
- Product display
- Product search
- Product categorization
- Product details

Customer service:
- Buy Products
- Comments
- Update ads
- Delete Product
- Sale Products
- Contact form
- FAQs

Technical requirements:
- Platform compatibility (desktop, mobile)
- Scalability
- Performance
- Maintenance and support.

1.3 Intended Audience and Document Overview

The intended audience for this website is mainly LUMS student body, staff and faculty for now. We can increase the range of the app depending on the need. The purpose of this document is to clearly define and describe the requirements and expectations for the development of the 1.0 version of lums Marketplace. It will serve as a contract between the development team and the stakeholders, ensuring everyone is on the same page regarding the project's scope and objectives.

The different types of readers of this document could be:

- Customers/Users

- Developers
- Management
- Designers
- Admin/moderators

The document will explain the following features of the website:
- **Introduction**: Provides background information about the project and its purpose.
- **User Requirements**: Describes the target audience and their needs, including functional and non-functional requirements.
- **System Requirements:** Specifies the technical requirements for the website, including hardware and software specifications.
- **User Interface Requirements:** Describes the look and feel of the website, including the layout, navigation, and design elements.
- **Functional Requirements:** Outlines the key features and functionality of the website, such as product browsing, search, and checkout.
- **Non-Functional Requirements:** Addresses performance, security, and other quality attributes of the website.
- **Constraints:** Identifies any limitations or restrictions that may impact the development of the website.
- **Acceptance Criteria:** Defines the criteria that must be met for the website to be considered complete and ready for deployment.

1.4 Definitions, Acronyms and Abbreviations

Lums MarketPlace	An online market-based shopping system for Lums community only
Responsiveness	Responsiveness in terms of web design is an approach that creates dynamic changes to the appearance of a website, depending on the screen size and orientation of the device being used to view it.
Visual Hierarchy	Visual hierarchy is the principle of arranging elements to show their order of importance
UI	User Interface

UX	User experience
SDS	Software Design Specification

1.5 References and Acknowledgments

OLX
https://www.olx.com.pk/
DePop
https://www.depop.com/

PrivacyUs
https://privacyus.eu/wordpress/wp-content/uploads/2017/10/D4_1.pdf

2 Overall Description

2.1 Product Perspective

In LUMS and many other universities, students and faculty often have a need to buy and sell second-hand products, but the current channels for doing so, such as discussion forums or social media groups, can be cluttered and difficult to navigate. That's how we got the idea and proposed the creation of a University Based Thrift Store web app named (*Lums MarketPlace.Lums*), which would provide a dedicated platform for these transactions and offer a more user-friendly experience.

This app can be counted as the member of e-commerce software's product family and more precisely a LUMS exclusive Mini OLX or DEPOP app. The main purpose of having a university-based exclusive thrift store is to create trust among sellers and buyers of the same institutions and to declutter the discussion forums from these buying selling posts.

Like the OLX, our app will have users interacting in a way that everyone can browse through the product catalogs, and anyone can post his/her product using sell now function of our app. Moreover, our app would have a search function that allows users to easily find products based on tags included in the product descriptions. This would help to streamline the process of finding what they are looking for and reduce clutter. The *Lums MarketPlace* would not only provide a convenient platform for buying and selling second-hand products, but it would also promote sustainability by encouraging the reuse of products and reducing waste. This app would be a win-win for both buyers and sellers, providing a low-cost alternative for obtaining goods and making it easier for people to sell items they no longer need.

We believe that the *Lums MarketPlace* has the potential to greatly benefit university communities and help to create a more sustainable and efficient system for buying and selling second-hand products.
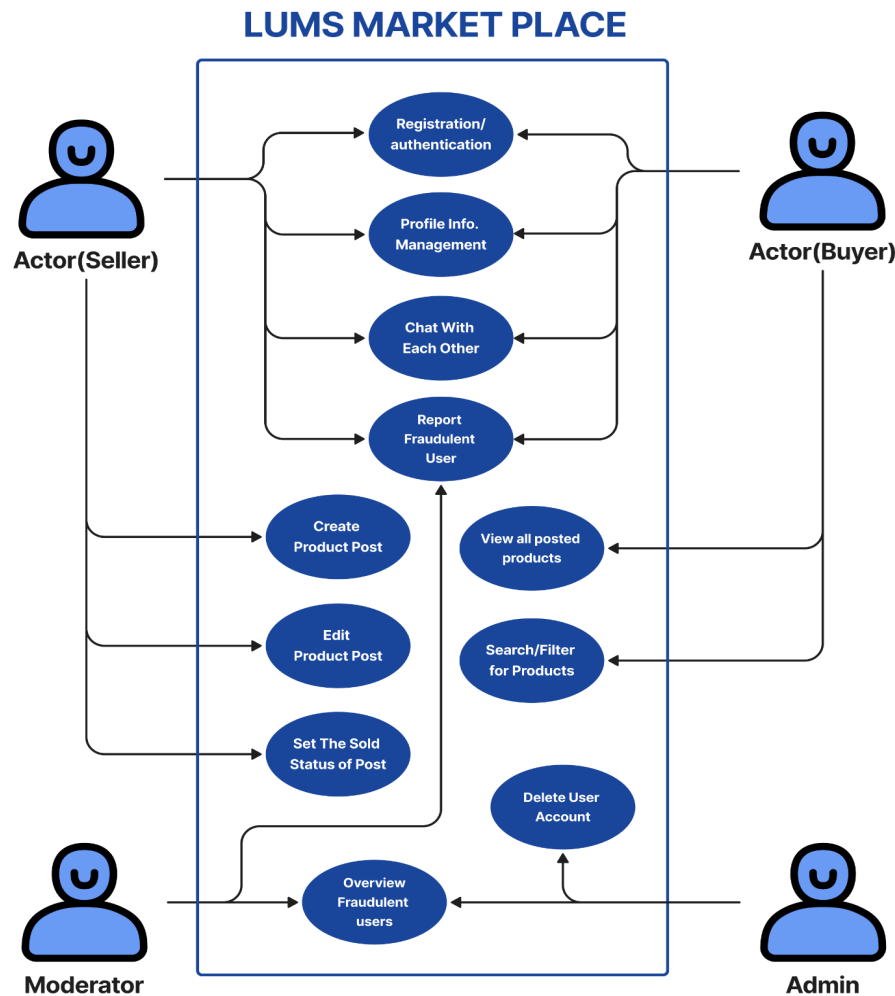
General diagram illustrating sys interaction with the environment

2.2 Product Functionality

User Side Functions:

1. User registration and login.
2. View and search for products.

3. Save products for later.
4. Leave product reviews and ratings.
5. Contact seller through messaging system.
6. View sellers profile
7. Manage personal information and settings.

A user can interact with the website through two ways. One as a seller and other as a buyer.

Seller Side Functions:

1. List products for sale.
2. Manage product listings.
3. Respond to buyer inquiries.
4. Manage personal information and settings.

Buyer Side Functions:

1. Search for products.
2. View product details.
3. Contact seller through messaging system.
4. Manage personal information and settings.

Admin Side Functions:

1. Manage user accounts.
2. Manage product listings.
3. Respond to customer support inquiries.
4. Manage site content and settings.
5. Delete user profiles

Moderator Side Functions:

1. Monitor and review product listings to ensure compliance with guidelines.
2. Resolve disputes between buyers and sellers.
3. Flag inappropriate or fraudulent product listings.
4. Respond to user complaints and concerns.
5. Maintain a safe and secure marketplace environment.
6. Provide support and assistance to users.
7. Monitor and manage site activity to ensure smooth operation.

Diagram like page 9 of TA doc

2.3 Users and Characteristics

- **Buyer**
  These are the regular users who are looking to buy items. They are the most significant users. We expect most of our users to be buyers. They will be able to browse all items available for sale, contact sellers and make purchases.

- **Seller**
  These are the users looking to sell their products. They do not need to make a special account for this. Any user can create a post for their items to put them up for sale. They are also vital users as the market ecosystem depends on these users..

- **Moderators**
  These are the users responsible for enforcing the terms of service of the marketplace. Moderators will have the ability to flag and delete posts. They will also be able to flag users.

- **Admins**
  Admins will be able to carry out all tasks that a moderator can and some additional ones too. Admins will be given access to manage accounts. They will be able to delete any user accounts. They will also be responsible for designating and removing moderators.

2.4 Assumptions and Dependencies

- Users will have a valid email ID registered on the lums domain.
- Users will have access to a web browser and sufficient understanding of the english language.
- The third party APIs used for authenticating emails, sending SMS will work correctly.

3 Specific Requirements

3.1 Functional Requirements

1. **User Registration and Authentication**

   RQ 1.1: Sign up/ Create an account

   Description
   The system will allow the customer to register to the online Marketplace
   Input
   a.   User's official LUMS Email ID

b.   A password (should be a combination of upper and lower case letters, digits and special characters and should be at-least 8 characters long
c.   Required Personal Information (First and Last Name)
d.   Optional Personal Information (Batch, Address, A profile picture)

Processing
a.   Validating and confirming the email address
b.   Checking if the email has already been registered
c.   Adding the new user to the database if email is valid and previously unregistered on the site

Output
User registered and logged in and the message is displayed

RQ 1.2: Log in/ Sign in

Description
The system will allow the customer to log into LUMS Marketplace
Input
User's credentials (email, password)

Processing
Authentication

Output
User logged in and the message is displayed

RQ 1.3: Edit Profile

Description
The system will allow logged in customers to edit their profiles
Input
User's credentials (email, password)

Processing
Saving changes to the Database

Output
Information update and the message is displayed

RQ 1.4: Delete Profile
Description
The system will allow logged in customers to permanently delete their profiles
Input
User's credentials (email, password), confirmation command

Processing

Removing relevant data from the database

Output
profile gets deleted and the message is displayed

2. Chat

RQ 2.1: Send/Receive messages
Description
The system will allow logged in users to communicate with each other

Input
User's credentials (email, password)

Processing
saving chats

Output
 chats will be visible

RQ 2.2: Delete messages
Description
The system will allow logged in users to delete messages from their side

Input
User's credentials (email, password)

Processing
the messages will be removed from the user's related database

Output
 deleted chats will disappear

RQ 2.3: Delete messages
Description
The system will allow logged in users to delete messages from their side
Input
User's credentials (email, password)

Processing
the messages will be removed from the user's related database

Output
 deleted chats will disappear

3. Search and Filter

RQ 3.1: Search an item

Description
The system will allow logged in users to search items
Input
User's credentials (email, password), keywords in the search bar

Processing
relevant items will be fetched from the database

Output
 searched items will be visible

RQ 3.2: Filter items

Description
The system will allow logged in users to filter items
Input
User's credentials (email, password), keywords in the search bar

Processing
relevant items will be fetched from the database

Output
filtered items will be visible

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4. Trade Items

RQ 4.1: Create a post

Description
The system will allow logged in users to create a post to sell an item
Input
User's credentials (email, password), A picture, name, description and price of the item

Processing
Database update

Output
 Newly created post will be visible to everyone

RQ 4.2: Edit Post

Description
Users will be able to edit the post

Input
User's credentials (email, password), changes to be made

Processing
Database update

Output
 Post with updates/changes will be visible to everyone

RQ 4.3: Delete Post

Description
Users will be able to delete the post

Input
User's credentials (email, password), command to delete the post

Processing
Post will be removed from the Database

Output
 Post will be removed from user's profile

RQ 4.4: Add "Sold" tag

Description
Users acting as sellers will be able to flag a post as sold

Input
User's credentials (email, password), command to flag the post

Processing
Post will be moved to "sold" in Database

Output
 Sold tag will be visible on the post

RQ 4.5: Navigation

Description
Users will be able to navigate through the posted items for sale

Input
User's credentials (email, password), command to flag the post

Processing
Data fetching

Output
 Posts will be displayed on user's Homepage

<u>**RQ 4.6**</u>**: View Post**

Description
Users will be able to view a particular post

Input
User's credentials (email, password), command to flag the post

Processing
Data fetching

Output
 A detailed page about the selected post will be shown

5. Admins Control

<u>**RQ 5.1**</u>**: Flag posts as "Fraudulent/Offensive/Harmful content"**

Description
Admins and moderators will be able to flag posts

Input
User's credentials (email, password), command to flag the post

Processing
Post will be moved to "flagged" in Database. If the post's already there then it gets deleted

Output
 If the post only gets flagged no changes will be visible. If the post gets deleted it'll disappear from the creator's profile and everywhere else.

<u>**RQ 5.2**</u>**: Delete other users' posts**

Description
Admins will be able to delete posts and profiles
Input
User's credentials (email, password), command to flag the post
Processing
Posts/profiles will be removed from the database

Output
 Posts/Profiles will no longer show on the website.

3.2 External Interface Requirements

3.2.1 User Interfaces

LUMS Marketplace will be a web application, people will interact with the platform using Graphic User Interface (GUI). Our users include people from the LUMS community so for the sake of ease and convenience the design will be similar to the other platforms that the community have been using and it'll align with their needs.
The UI will be consistent with standard design approaches and practices. Even though our users are not visually impaired accessibility and inclusivity will be our top priority while designing the web application.

3.2.2 Hardware Interfaces

The users will be required to have an internet connection to access the web application on a browser. The web application will only be accessible through a web browser. They'll also need a device like laptop, smartphone etc. To have the best experience using a pc or a laptop is recommended.

3.2.3 Software Interfaces

Operating System	Linux, Windows
Browser	Any (Google Chrome, Safari, Mozilla Firefox etc.)
Database	MongoDB
Backend	Node.js/ Express.js
Frontend	React.js

Additionally, we will also use some external libraries to implement complex functionalities
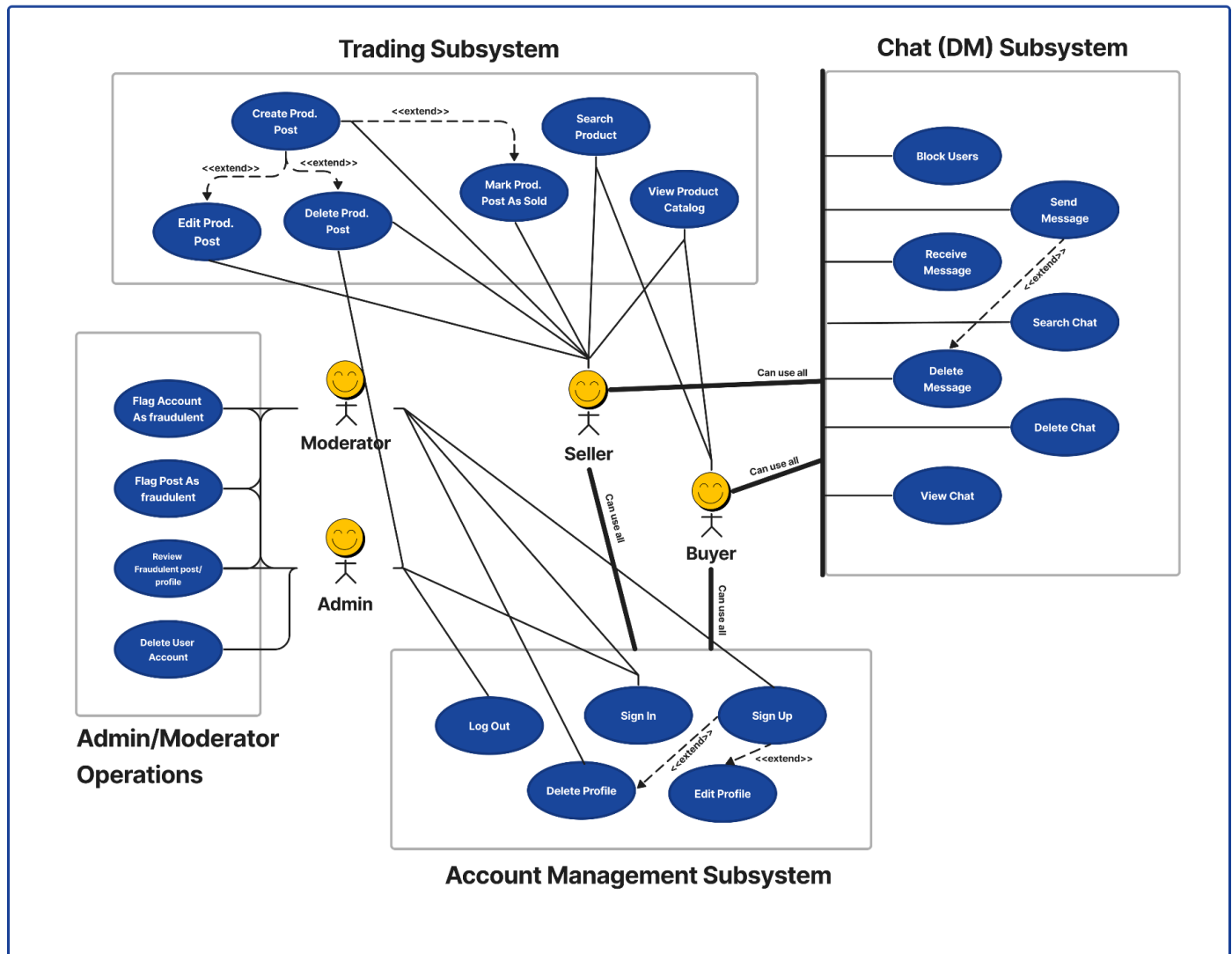
3.3 Use Case View

3.3.1 Use Case Table

1. Use Case table

Primary Actor	Associated Use cases	
Seller, Buyer	1. Sign up 2. Log in 3. Edit Profile 4. Delete Profile 5. View Posts 6. Send Messages 7. Receive Messages 8. Delete Messages/Chats 9. Block other users 10. Search 11. Filter	
Seller	12. Create a Post 13. Edit a post 14. Delete a post 15. Tag posts as "Sold"	
Admin, Moderators	16. Flag a post as "Fraudulent", "Harmful",or "Offensive" 17. Delete a post 18. Flg user profiles as "Fraudulent", "Harmful",or "Offensive"	
Admin	19. Delete user profiles	

3.3.2 Use Case Diagram

LUMS MARKET PLACE (WEB APP)

3.3.3 Use Case Description

Top 5 Use Cases and their descriptions:

Use Case ID	1.1
Use Case Name	Sign-Up
Created By	Talha Husnain
Date Created	14/02/2023
Actors	All the actors that want to sell or buy something(Customers, Buyers,Sellers, Admin)
Description	The purpose of the sign-up process is to create a unique user account that allows the user to access personalized content, features, and services on the site. This process involves collecting the user's basic information, such as their name, email address(containing Lums extensions), and password(Must be 8 digits long), and may include optional fields for additional details. Once the user has signed up, they can log in to the site using their username and password, and their account information can be used to tailor their experience on the site, such as by showing them relevant content, suggesting products or services, and enabling them to save preferences or settings. Additionally, the sign-up process may be required in order to participate in certain activities on the site, such as admin for specific tasks, user,and customers have their own usage.It will help to authenticate them later on at the time of sign up.
Trigger	Clicking the "Sign-Up" button on the system's website.

Preconditions	1. Users must have an active Internet connection. 2. Users need to go to the website. 3. Users must be a part of the Lums community. 4. User Must have valid Lums email Id.
Postconditions	1. The user is satisfied with the response. 2. The user must be logged in to his account. 3. The user must be directed to the home page in the case of successful Sign-up. 4. The user is partially satisfied from the response.
Normal Flow	1. Go to the e-commerce website and click on the "Sign Up" or "Register" button. 2. Enter your personal information such as name, email address(Must be valid Lums id), and password(Must be 8 digits long). 3. Review the information you have provided and ensure its accuracy. 4. Agree to the terms and conditions of the website. 5. Click the "Submit" or "Create Account" button to complete the sign-up process. 6. Verify your email address through a confirmation email sent to the email address provided during the sign-up process. 7. Once your email address has been confirmed, you can start shopping on the website.

Alternative Flows	1. Go to the e-commerce website and click on the "Sign Up" or "Register" button. 2. Instead of providing personal information at your own, you can do it by autofill. 3. The website automatically pulls your name and email address from saved information, and you only need to create a password and confirm it. 4. Review the information you have provided and ensure its accuracy. 5. Agree to the terms and conditions of the website. 6. Click the "Submit" or "Create Account" button to complete the sign-up process. 7. A confirmation email is sent to the email address provided during the sign-up process, which you need to verify to complete the registration process. 8. Once your email address has been confirmed, you can start shopping on the website
Exceptions	You must be a Lums student or staff member.
Includes	None
Priority	High
Frequency of Use	It is a highly used feature. Everyone has to sign up if he/she wants to sell or buy anything. Admin also has to sign up once.
Business Rules	1. A unique Lums email address is required for each user account. 2. Passwords must meet minimum security requirements (e.g., at least 8 characters, contain both letters and numbers). 3. Payment information must be accurate and up-to-date. 4. Users must agree to the website's terms and conditions before creating an account. 5. Users must be at least 18 years old to create an account. 6. The website may use email addresses provided during the sign-up process for marketing purposes.

7. The website may limit the number of user accounts per household or IP address.
8. Users may not share their accounts with others or allow others to use their login credentials.
9. The website reserves the right to terminate user accounts for violations of its policies or for any other reason.

Use Case ID	4.1
Use Case Name	Create a Product Post
Created By	Abdul Moez
Date Created	14/02/2023
Actors	User (Seller)
Description	On using the Create post (Or Sell Now) button users will be able to enter following details in the popped up form or page. ● Title for Product ● Images of Product (max 3 of 1:1 ratio) ● Description ● Price ● Related Tags (optional)
Trigger	Clicking the "Sell Now (Or Create Post)" button on the system's website.

Preconditions	Users must have an active Internet connection and need to be logged in to the website. and have completed profile information.
Postconditions	The user will be redirected to the page where his/her product will be shown.(Or user will get prompt of posted and post details will be added into database)
Normal Flow	1. User will click on the create post button 2. User will enter the Title for product 3. User will upload the images for product 4. User will write a description of (max 200) words. 5. User will add Price for the product. 6. User will add relevant tags to the product.
Alternative Flows	None
Exceptions	**Cannot Upload image** 1. User will click create post button 2. user will select image to upload 3. Click on upload button 4. Due to some technical issues image cannot be uploaded 5. Display error message
Includes	None
Priority	High
Frequency of Use	High (User will Post their products according to the need of selling)
Business Rules	None

Use Case ID	4.4
Use Case Name	Tag post as sold
Created By	Syeda Mah Noor Asad.
Date Created	14/02/2023
Actors	All registered users who have posted an ad.
Description	Once the item has been sold, the seller can use his/her dashboard to update the status on the sold item. Once the status has been updated to sold, it will be a sin for the prospective buyers that the item is no longer available, moreover the item will be archived and will not show in the available items for shopping.
Trigger	Completion of sale of an item.
Preconditions	1. Users must have an active Internet connection. 2. The item must have a corresponding post on the website in order to be tagged.
Postconditions	1. The status on the item is updated to 'Sold'. 2. The item no longer appears in search or in the available items during browsing.

Normal Flow	1. User/Seller navigates to the dashboard. 2. Click on the relevant ad. 3. Click tagged as sold option in the drop down menu.
Alternative Flows	None
Exceptions	None
Includes	None
Priority	High
Frequency of Use	Frequent, once per item.
Business Rules	None

Use Case ID	2.1
Use Case Name	Chat (Send messages)
Created By	Muhammad Hasnain Mubeen

Date Created	14/02/2023
Actors	All Registered Buyers and Users
Description	The chatting use case provides a real-time way for customers to interact with sellers (or vice versa) so that they may inquire about anything related to their selected item from the seller, and the seller can cater their queries accordingly.
Trigger	Clicking the "Chat" button on the system's website.
Preconditions	1. Users must have an active Internet connection 2. Users need to be logged in to the website. 3. The receiving end entity should be available to send messages back.
Postconditions	1. The user is satisfied with the response. 2. The user is partially satisfied from the response. 3. The user has intentionally ended the chat. 4. The conversation is recorded for the future.
Normal Flow	User logs in as a buyer/seller and accesses the homepage. The user may click the 'chat' button shown on the webpage, then type and send the message. The contacted person receives a message and then replies back. The sender will receive the response and they can continue the communication until the desired purpose is fulfilled.

Alternative Flows	1. If the contacted person is not available, then the message can be left there, and as soon as the desired person sees it, he will respond back. 2. In case, the 'chat' option gets unavailable due to technical issues, the customer can contact the seller through his email address, or phone number.
Exceptions	None
Includes	None
Priority	High
Frequency of Use	Variable: It highly depends upon the customer's choice of inquiring about the product through chatting, or through ways of communicating, such as emails etc.
Business Rules	None

Use Case ID	4.6
Use Case Name	View post
Created By	Rimsha Sarfaraz
Date Created	14/02/2023
Actors	Seller + Buyer + Admin + Moderator
Description	Users will be able view the details of the posts. The details include description, picture, price and categories/tags of the product.
Trigger	Clicking on the post title or picture
Preconditions	Users must have an active Internet connection and need to be logged in to the website. and have completed profile information.
Postconditions	The user will be redirected to the page where the product will be shown.
Normal Flow	1. User will log in 2. User will go to the homepage 3. User will navigate to the post he wants to see 4. User will click on the page 5. Post detail screen will be shown

Alternative Flows	1. User will log in 2. User will go to the homepage 3. User will search for the product via search bar 4. User will navigate to the post he wants to see 5. User will click on the page 6. Post detail screen will be shown
Exceptions	None
Includes	None
Priority	High
Frequency of Use	High
Business Rules	None

4 Other Non-functional Requirements

4.1 Performance Requirements

Following are the performance requirements for our software:

- The website should have the ability to deal with peak/ increasing traffic without downtime.
- Load time of pages should not exceed 5 seconds.
- The website should be operational and available 24/7 to all users.
- The website will have a standardized system of managing products such as adding, removing, or editing products in order to provide a seamless user experience.
- The website would be secure and ensure the sensitive data such user information remains protected.

4.2 Safety and Security Requirements

Safety requirements:

Database Backup:

- The database could be affected in possible ways, e.g, due to OS failure, or a virus attack in the system. To prevent such essential loss of data, it is mandatory that we use a reliable hosting service for storing backups of our data.

Verification of User Accounts:

- Another safety measure would be the user authentication. The user will be required to create an account and login only from his/her LUMS account only. Any third-party/ anonymous person cannot modify or edit other user's personal data/information.

Preventing Fake Entries:

- There may be cases where the real user might not be present. To prevent fraudulent transactions (such as if another user enters from some student's LUMS account), the website can take necessary steps to avoid such situations. One example could be making an immediate phone call to that user, or generating an OTP and sending it to that specific user to confirm if he actually made the transaction or not.

Security Requirements:

Secured Communication:

- Safe end-to-end interaction between users will be ensured through implementing strong secured protocols (such as HTTPS) and encryption.

Reliable Database:

- The system would use a secured database for reliably storing users' data..

Strict User Credentials Policies:

- Users will be strictly advised to not share any of their sensitive information such as personal addresses, phone numbers and passwords. In fact, strong password policies will be implemented upon users (which includes a mixture of upper and lower case characters with length of at least 9 characters).

No Third-Party Interference:

- Only authenticated users (in this case LUMS community) can use the software. Customers cannot access/interfere in the administrative side. The administration tasks should solely be performed by administrators only.

Expected Level of Security:

Users of our software can expect that:

- Moderators of the application can remove/ flag posts of users in case they are found indulged in any inappropriate activity.
- User's sensitive data (for example, personal addresses, phone numbers, or passwords) will not be disclosed/revealed to any third party.
- Moderators will review a seller's account in case his/her customers repeatedly give negative feedback about that seller(for example, if the seller exchanges defective items with buyers without mentioning the defect, or sells products at higher prices other than mentioned on the website).

4.3 Software Quality Attributes

- **Usability**: The website would be appealing, user-friendly and easier to navigate. For this purpose,we will incorporate our test users feedback into our main consideration for our usability aspect.

- **Availability:** The website server will always be available to all users 24/7. Hence, users can access it anytime.

- **Correctness:** This feature ensures that all items shown to users are up-to-date. If a certain item has been bought by a user, it will be marked 'sold' for all other users.

- **Compatibility**: Our application shall support multiple devices (mobile phones, laptops, PCs etc.) and across multiple browsers (Chrome, Microsoft Edge, Mozilla Firefox) and resolve any compatibility issues that might arise (such as screen size fitting, icon sizes etc.)

- **Maintainability**: We shall implement this software's code in an easy-to-understand and well-documented way. Hence, it does not become difficult for future developers to make changes to it, or maintain it, if needed.

- **Interoperability:** Our website shall be developed in a way that its components can be integrated to other applications or projects (or vice versa) without much modifications.

- **Portability:** Our application also supports portability features i.e.,only an online up-to-date web browser is required to allow users to access our website. This can be done through any personal devices such as a mobile phone, laptop, or a tablet.

Appendix A – Top 10 User Stories

1. As a user, I should be able to create an account.

2. As a seller, I should be able to post an ad or edit one for an item that I wish to sell.

3. As a buyer, I should be able to view items, their prices, and availability status.

4. As a user I should be able to send messages to the seller/buyer on the app for seamless communication.

5. As a user I should be able to view my chats.

6. As a buyer I should be able to add and remove items in my shopping cart.

7. As a buyer, I should be able to sort and filter items for easy browsing.

8. As a buyer I should be able to choose a payment method for the items I wish to buy.

9. As an admin I should be able to remove users, posts and flag inappropriate behaviour.

10. As a user, I should be able to customize and edit my account settings.

Appendix B – Architectural Spike

MERN (MongoDB, Express, Node.js, React) stack will be used as an architecture for LUMS Marketplace web application.

Complex use case

LUMS Marketplace is being built for an exclusive community - people of LUMS. It is highly important to make sure that only people with official LUMS email ID can register and access the platform.

To ensure the exclusivity (for the sake of privacy) an OTP style sign-up system will be implemented within the system. Anyone who wants to register will have to sign up using an existing email which includes "lums.edu.pk".

Other similar platforms let anyone register to their website.

Appendix C - Group Log

Meeting Minutes:
30/01/2023
Items discussed: We discussed the initial requirement of the SRS, such as the description of our software and its basic functionalities.
Progress: All the initial details of the software were then subsequently filled in.

Meeting Minutes:
05/02/2023
Items discussed: We discussed system constraints and architectural strategies in a very detailed fashion.
Progress: We discussed our software architecture and accordingly came up with the constraints that we would face and the assumptions we were making. We also discussed the security features we would implement for our software. All of this was then accordingly written in the SRS document.

Meeting Minutes:
07/02/2023
Items discussed: Finalization of use cases and division of labor.
Progress: We discussed our software requirements and made use cases accordingly. In this way, we came up with more than 25 use cases. We categorized our use cases into 24 important and the rest unimportant. Then the 24 use cases were divided amongst the team to work on. All of these use cases were compiled in the SRS document.

Meeting Minutes:
14/02/2023
Items discussed: Finalization of SRS document
Progress: A final meeting was held to discuss all the final changes that were needed to be made to the SRS before submitting.

Appendix E – User Survey

To achieve the goal to provide a seamless and efficient platform for the exchange of second-hand goods within the university community, a thorough research process has been undertaken to gather insights and feedback from potential users.

Through online surveys and face-to-face interviews, the team has gathered a wealth of information and data, which has been used to create system requirements document SRS. This document outlines the specific functional requirements of the app, ensuring that it will be tailored to meet the specific needs and expectations of LUMS students and faculty.

The data collected has shown a clear demand for a user-friendly platform that is simple and intuitive to use, allowing users to buy and sell products quickly and easily, without the clutter and confusion of a traditional online marketplace. With this in mind, we are working to create a web app that will revolutionize the way in which second-hand goods are exchanged within the university community.

With its powerful search functionality, sleek and modern design, and intuitive navigation, the LUMS exclusive thrift store app is poised to become the go-to platform for buying and selling second-hand goods. It will be a testament to what can be achieved when we can together try to solve a real-world problem and create a product that truly serves the needs of its users.

For Research Purposes we divided the process into to two main streams one to collect info from online survey and other to go and get inut from the potential users and took their interviews.

The videos of the interviews from the public can be seen in the attached link. Moreover Detail on online survey can be found below

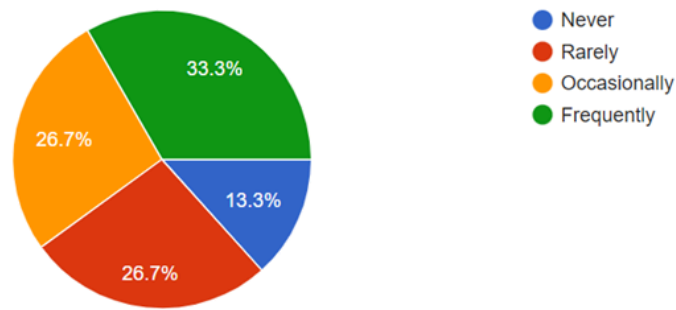## *Interviews Video Link*

Survey Response

We made a google form. Asked people about their experience while buying or selling on LDF, OLX and other selling platforms. We asked specific questions about features(Interface, search, browsing), their expectations and difficulties they face and what kind of features they want in an online selling platform. Based on their experience people suggested different things. Everyone shared what kind of features they want and what drawbacks existing products have in the market. Security and privacy is one of the key features that everyone wants. So to make sure about it we restrict our website to the LUMS community only. Based on people reviews we add all the features

in our app and try to minimize the issues that people are facing in an already existing app. Here are the outcomes of our survey.

How often do you buy or sell items, either second-hand or new?   Copy
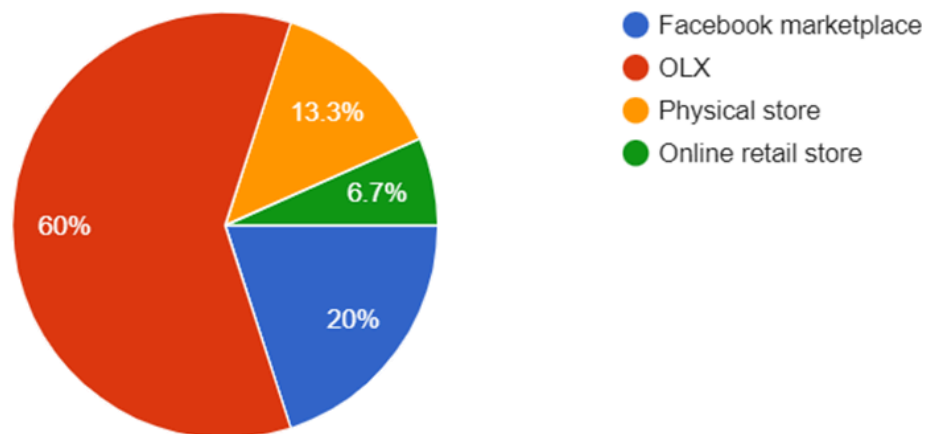
15 responses

- Never
- Rarely
- Occasionally
- Frequently

What is your preferred method for buying or selling items,   Copy
either second-hand or new?

15 responses
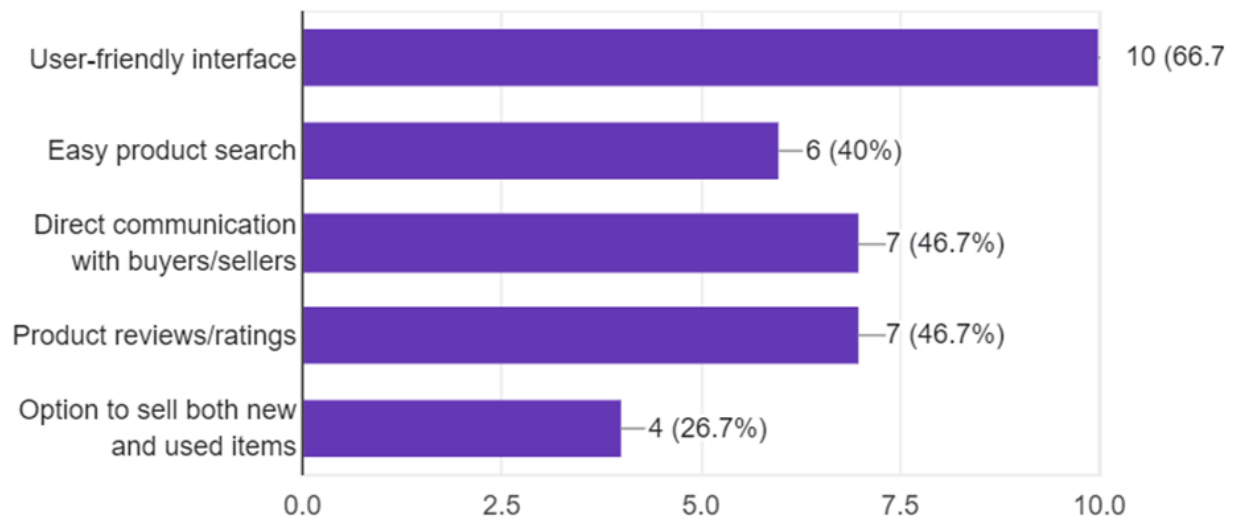

- Facebook marketplace
- OLX
- Physical store
- Online retail store

What features are most important to you in a thrift store web app for both second-hand and new items?

□ Copy

15 responses

User-friendly interface	10 (66.7
Easy product search	6 (40%)
Direct communication with buyers/sellers	7 (46.7%)
Product reviews/ratings	7 (46.7%)
Option to sell both new and used items	4 (26.7%)

How would you rate the importance of a user-friendly interface when buying and selling products online?

□ Copy

15 responses

- Not important at all
- Somewhat important
- Very important

60%

20%

Not important at all
3 (20%)
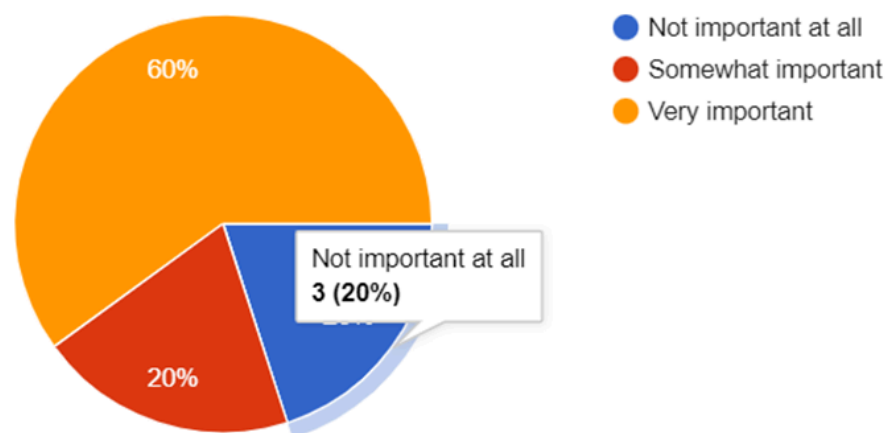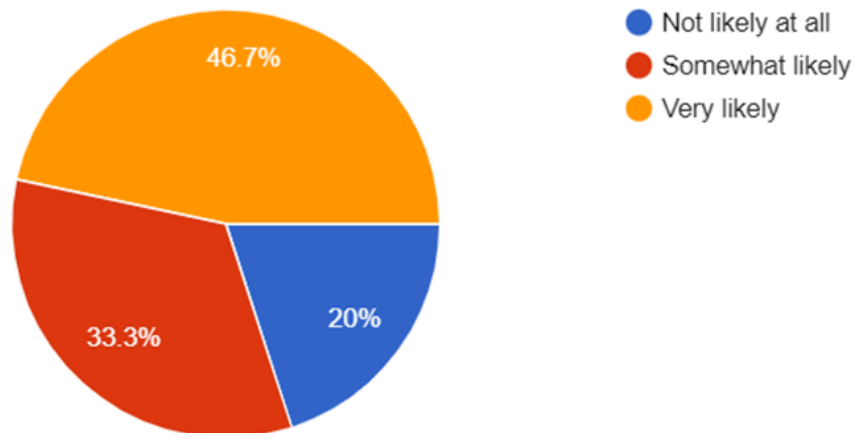
How likely are you to use a thrift store web app for both second-hand and new items in the future?

15 responses

Copy

- Not likely at all
- Somewhat likely
- Very likely

46.7%

33.3%

20%

Have you used any similar apps in the past, and if so, what was your experience like?

15 responses

Copy

- Yes, positive experience
- Yes, negative experience
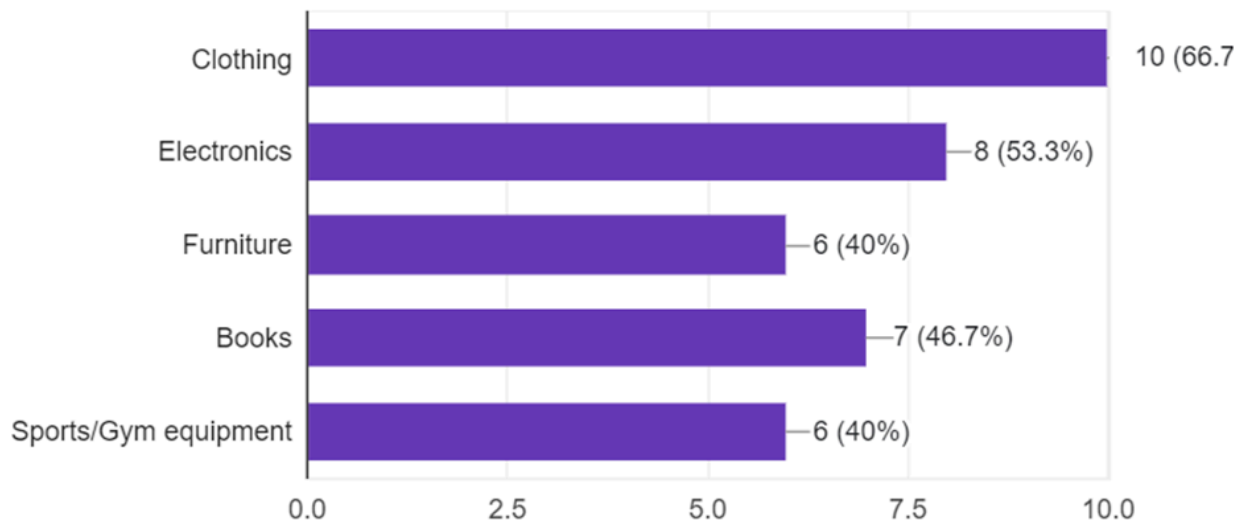- No, I haven't used any similar apps

40%

20%

40%
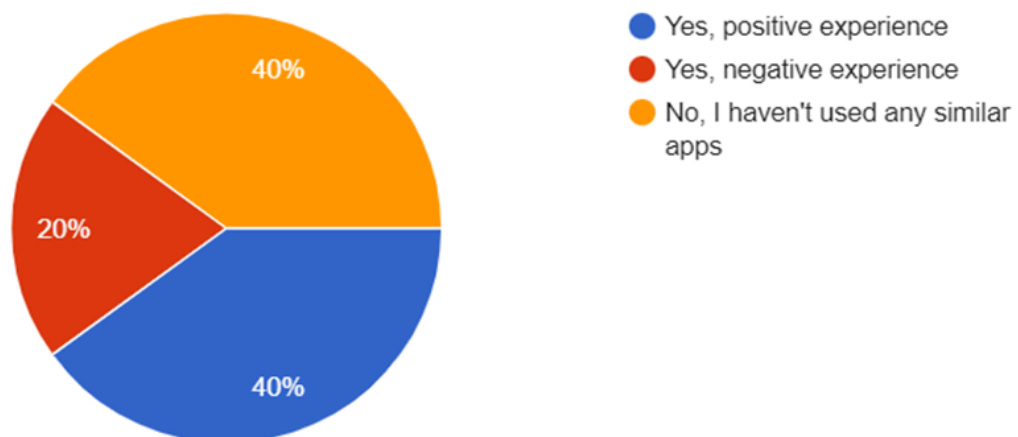
What categories of products would you like to be able to buy or sell on the app?   Copy
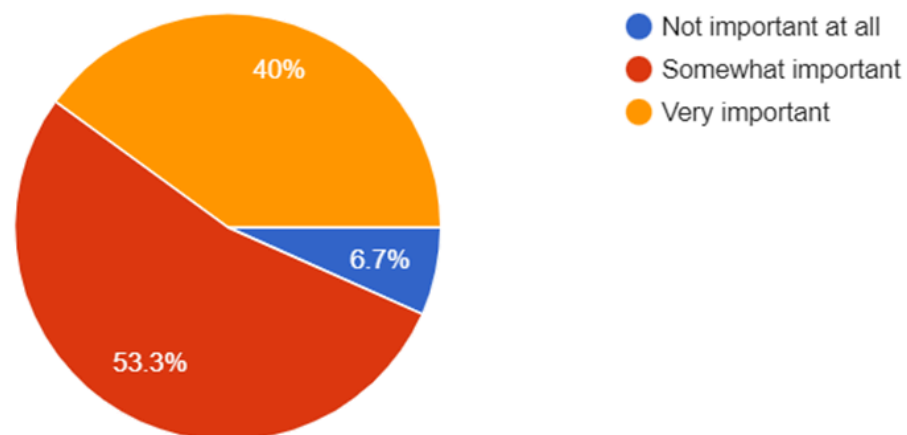
15 responses

How important is the seller's location to you when buying products through the app?   Copy

15 responses

Appendix D – Contribution Statement

Name	Contributions in this phase	Approx. Number of hours	Remarks
Rimsha Sarfaraz	*Specific Requirements including functional requirements, user interface requirements ,hardware requirements and Software requirements, Use case Diagram(Section 3), Architectural spike*	*12*	
Talha Husnain	*1- Introduction* ● *Document Purpose* ● *Product Scope* ● *Intended Audience and document Overview* ● *Definition and abbreviation References* *2- Use Case* ● *5 normal Use Cases* ● *1 from top 5 use cases* *3- Survey Form* ● *Made survey form* ● *Collect all the responses*	*15*	

	● Analyze the survey data **4- Interviews** ● Conduct interviews to collect reviews		
Abdul Moez	Overall Description including product perspective, product functionality, users and characteristics, assumptions and Independencies	12	
Abdullah Ehsan	Users and Characteristics. Assumptions and dependencies. Use cases.	10	
Syeda Mah Noor Asad	10 User Stories, architectural spike, tag post as sold use case, in addition to 4 other functional requirements.	10	
Muhammad Hasnain Mubeen	Srs, Non-functional requirements, including Performance Attributes, Safety/Security Requirements and attributes,Use Cases, Documentation.	11	