American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

Central Pricing Mechanism System (Value-Vault)

A Software Engineering Project Submitted

By

Semester: Spring _23_24		**Section:C**	**Group Number:1**	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
1	Aurko, Najmus Saquib	21-45509-3		
2	Nazmul Hasan Emon	21-45829-3		
3	Shamim Reza	21-45584-3		
4	Md. Areful Amin	21-45530-3		

The project will be Evaluated for the following Course Outcomes

CO3: *Select* appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5 Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Evaluate the sustainability of the developed software in terms of both society and the environment (Impact identification)	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	
CO4: *Develop* project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
Develop the project plan, its components of the proposed software products	[5Marks]	
Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources	[5Marks]	
Identify all the potential risks in the specific project and prioritizing/categorizing those to overcome the risk factors.	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: Aurko, Najmus Saquib
Student ID: 21-45509-3
Contribution in Percentage (%): 27% Contribution in the Project:

- Prototype Designing
- Report

_____
Signature of the Student

Student Name: Nazmul Hasan Emon
Student ID: 21-45829-3
Contribution in Percentage (%): 28% Contribution in the Project:

- Prototype Designing
- Use case diagram draw, identify requirement.

_____
Signature of the Student

Student Name: Shamim Reza
Student ID: 21-45584-3
Contribution in Percentage (%): 25% Contribution in the Project:

- Class diagram draw
- Process model description.

_____
Signature of the Student

Student Name: Md Areful Amin
Student ID: 21-45530-3
Contribution in Percentage (%): 20% Contribution in the Project:

- Gannt chart draw
- Report

Signature Of the Student

1. PROJECT PROPOSAL

1.1Background to the Problem:

In Bangladesh, the economic landscape has been significantly impacted by the escalating prices of essential commodities. This inflation is not merely a result of market dynamics but is often exacerbated by the presence of syndicates that manipulate prices, creating an artificial inflationary trend. The most affected are the low-income and fixed-income groups, who find themselves unable to cope with the rising costs of necessities. The problem is further compounded by a lack of transparency in the pricing mechanisms and the absence of a standardized system for price updates. Consumers frequently encounter price variations for the same product within different regions and markets, leading to confusion and mistrust. Moreover, the existing complaint mechanisms are inadequate, leaving consumers with little to no recourse against unfair pricing practices. This situation calls for an intervention that can provide real-time price information, ensure uniformity in pricing across various markets, and establish a reliable channel for reporting and addressing grievances related to overpricing.

Problem Statement: The economic landscape of Bangladesh is currently facing a critical challenge due to the persistent surge in the prices of essential commodities. This inflationary trend is further aggravated by the actions of market syndicates, which disproportionately affect the country's low-income and fixed-income populations. The resulting economic burden has created an urgent need for mechanisms that can alleviate the financial strain on these vulnerable groups and ensure equitable access to essential goods at fair prices.

Project description:

In the app, the daily product prices can be updated, and product categories can be added, or removed by the Govt administrator system. The administrator can view comprehensive reports. Sellers can log in after completing their registration. Buyers can log in after completing their registration, allowing them to check product prices and product categorized. Upon purchasing a product, the buyer receives an invoice subtotal with detailed product information. They can also see the unique shop number and name of the seller through the app. If a seller requests a price higher than the actual price, the buyer can report the issue by adding the seller's unique shop number and attaching the cash memo copy provided by the seller. Also, buyer get regular price update through the app. Govt administrator will justify these reports and act.

1.2 Solution of the problem:

Proposed Solution: The ongoing challenge of escalating commodity prices in Bangladesh has sparked inquiries into the mechanisms behind price fixing in local markets. With prices fluctuating unpredictably and regulations often overlooked, consumers face frequent hikes in essential item costs without recourse. To tackle this issue, an innovative solution emerges: the introduction of an online application. This comprehensive platform would centralize seller data and product pricing information, ensuring uniform pricing nationwide. Empowering buyers to access real-time price data through the app, it instills transparency in market transactions. Moreover, the incorporation of a complaint mechanism allows consumers to report instances of price gouging, leveraging unique seller shop numbers stored within the app for swift action. This initiative stands as a proactive step towards addressing the challenges posed by erratic price fluctuations, fostering fairer market practices and economic stability in Bangladesh.

Objective: The objective of the application is to provide a technology-based solution to the major problem of price hikes faced by the people of Bangladesh. The proposed approach offers an app that can store product prices, and buyers can use this app to file complaints against sellers. Data were collected from a survey regarding the rising prices of many products. The findings indicate that the proposed solution can effectively address and solve the problem, potentially preventing price hikes and assisting people in making corrections.

Target User: The primary target demographic for this app comprises middle and lower-class. families, as they are the most severely affected by the issue of price hikes. Nonetheless, our overarching goal is to ensure that this app is inclusive and accessible to users across all segments. of society.

2. SOFTWARE DEVELOPMENT LIFE CYCLE

2.1 Process Model:

The software operates in an environment where market conditions and prices are constantly changing. Also, it must cater to a diverse user base, including government administrators, sellers, and buyers, each with unique needs. It may even need to adapt to new regulations and standards imposed by the government. So, to apply all these multiple iterations are needed to get the best outcome and it should also be mentioned that through showing prototypes of the project newer features can be implemented. The earlier stages may also need to be reworked for the best possible outcome. So, for this Dynamic environment of the project Prototype Modeling can be the best choice.

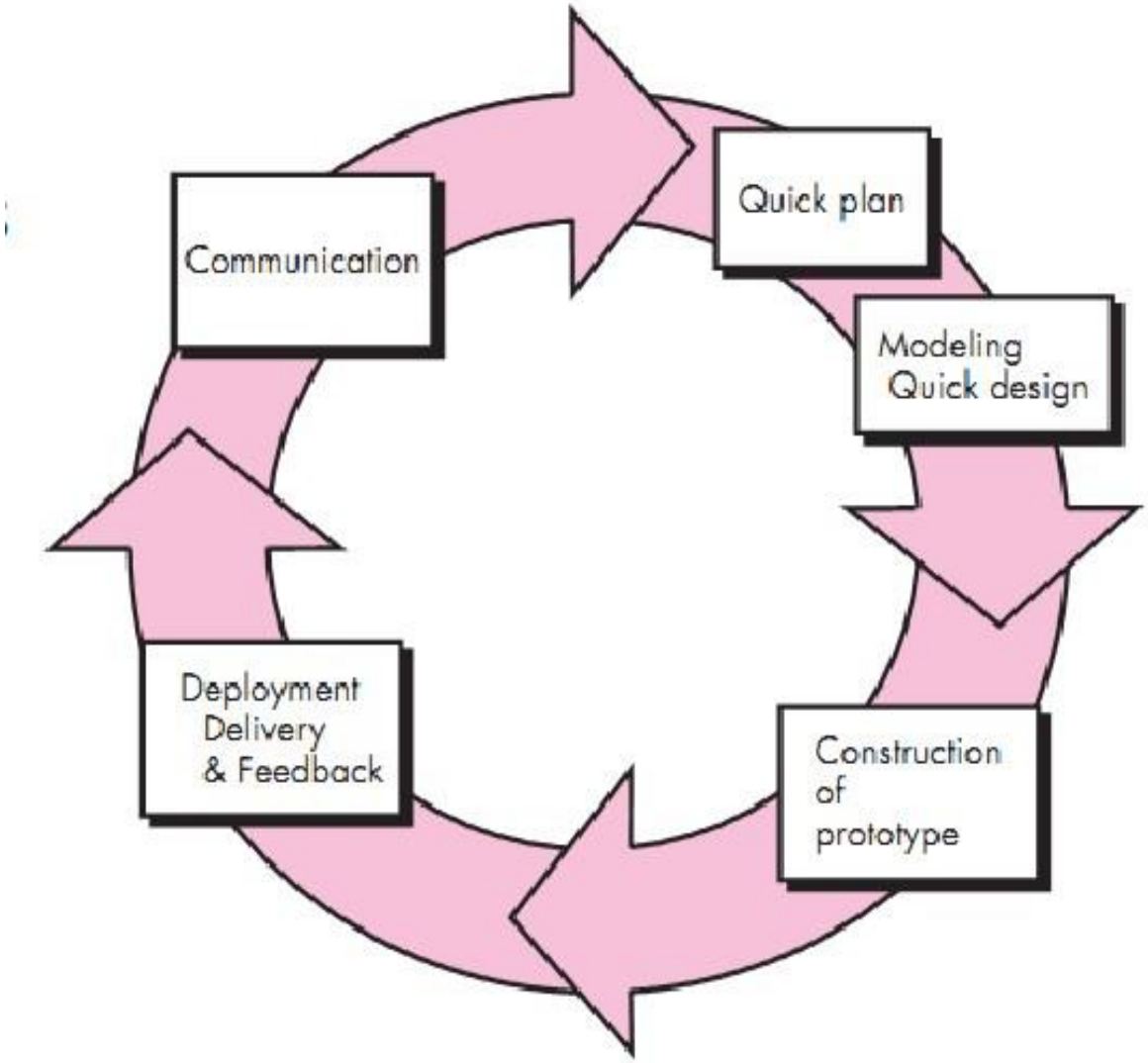
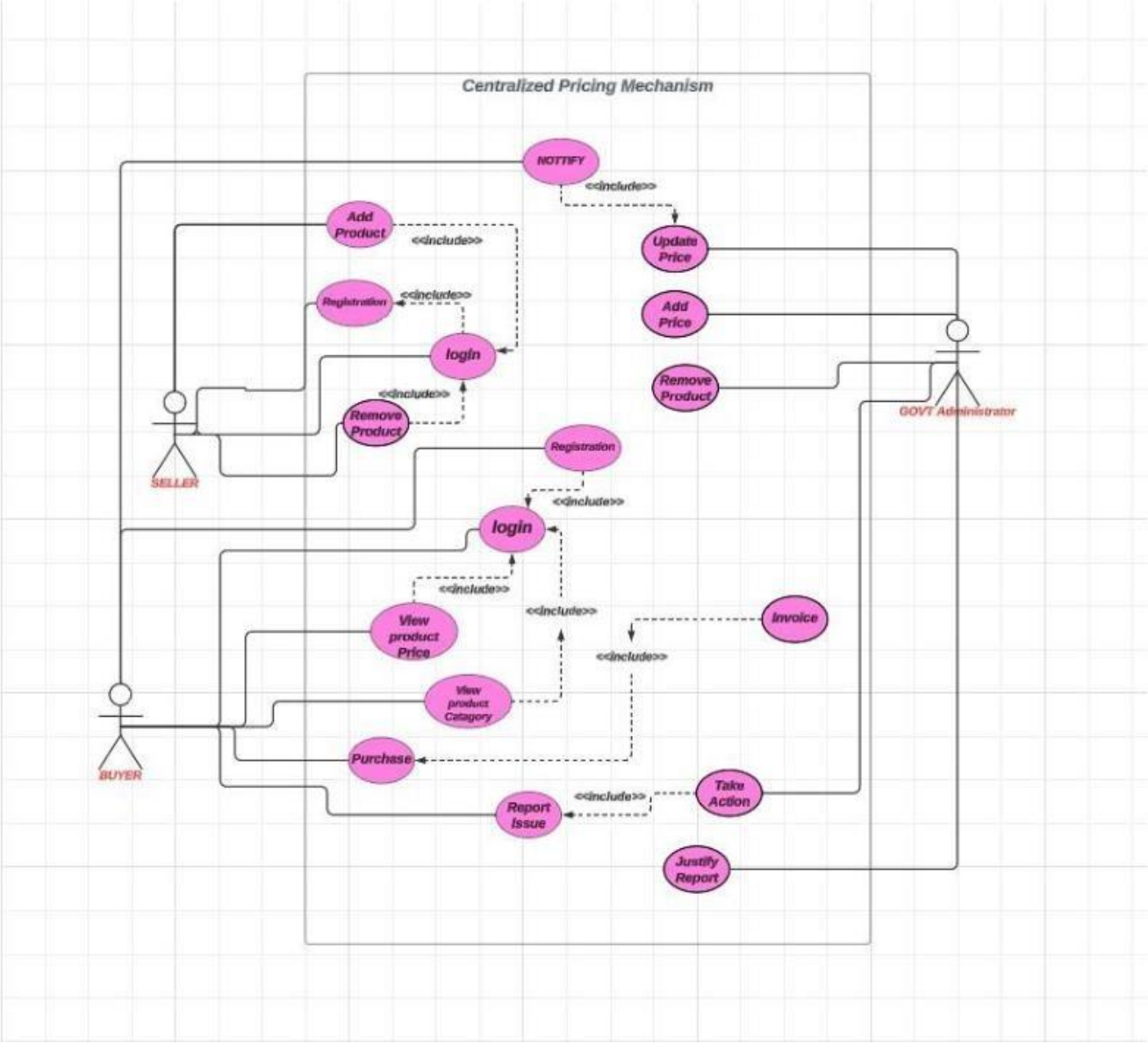


Figure: Prototype Modeling

As prototype modeling gives an edge with the dynamic environment and it can be backtracked to previous implementation of the features to renovate and rework prototype modeling tends to be the best choice for the project.

Use case diagram:



Project Requirements:

Functional Requirements:

User Registration and Login:

- Secure registration process for new users.
- Authentication system for user login.

Seller Features:

- View merit .and details Buyer Features:

- Access to real-time product prices.
- Ability to view detailed shop information.
- Receive regular updates on product prices.

Buyer Reporting:

- Feature to report pricing issues against sellers.
- Functionality to upload and attach a cash memo copy as evidence.

Government Administrator Features:

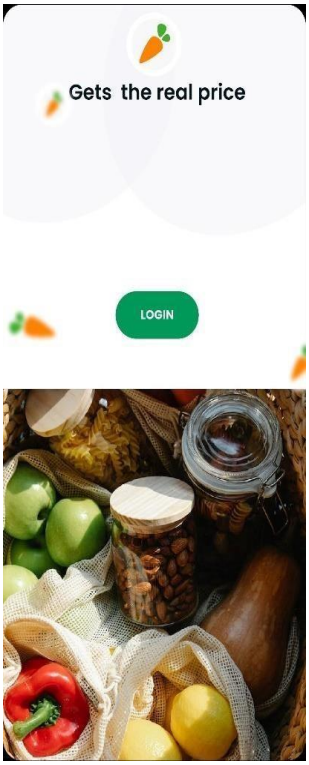
- Update and manage product prices in the system.
- Receive, review, and handle reports submitted by buyers.
- Take necessary actions based on reports.
- Update and distribute the daily product price list to buyers.

Nonfunctional Requirements:

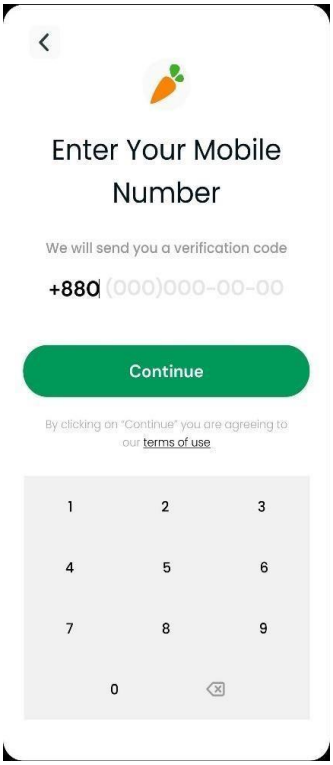
- **Performance:** The application should load within one second for users.
- **Reliability:** The application should be available 98% of the time without failure.
- **Availability:** Buyers should be able to check product prices and report issues consistently.
- **Maintainability:** Any issues with the application should be resolvable within a few hours.
- **Recoverability:** The application should be recoverable within 4-5 days in the event of a major incident.
- **Serviceability:** Users should be able to request services at any time and receive appropriate solutions.
- **Data Integrity:** The system should maintain backups of all database updates for each transaction.
- **Usability:** The user interface should be intuitive and easy to navigate.

Prototype Desing

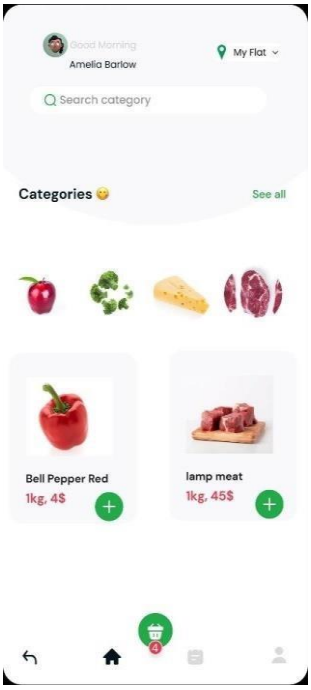
1- Well, come page



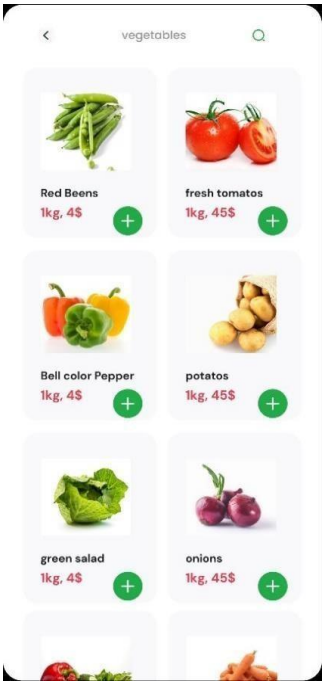
2-login page



3-Verification page.

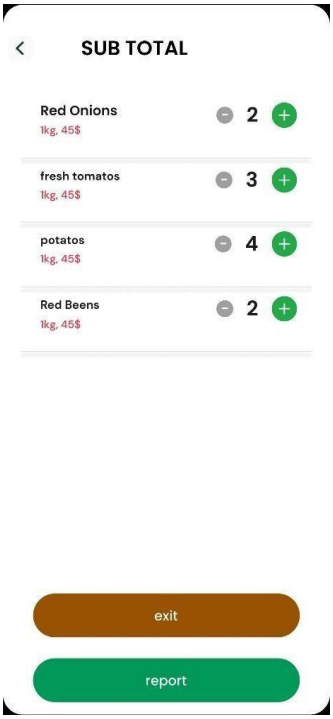


4-Item page

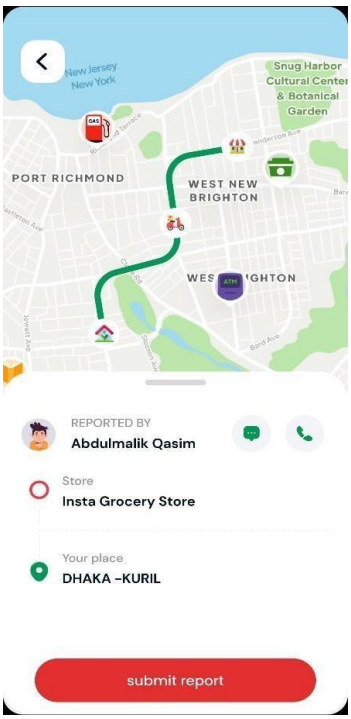


5-Item details page

6-Basket page



7-Sub total page



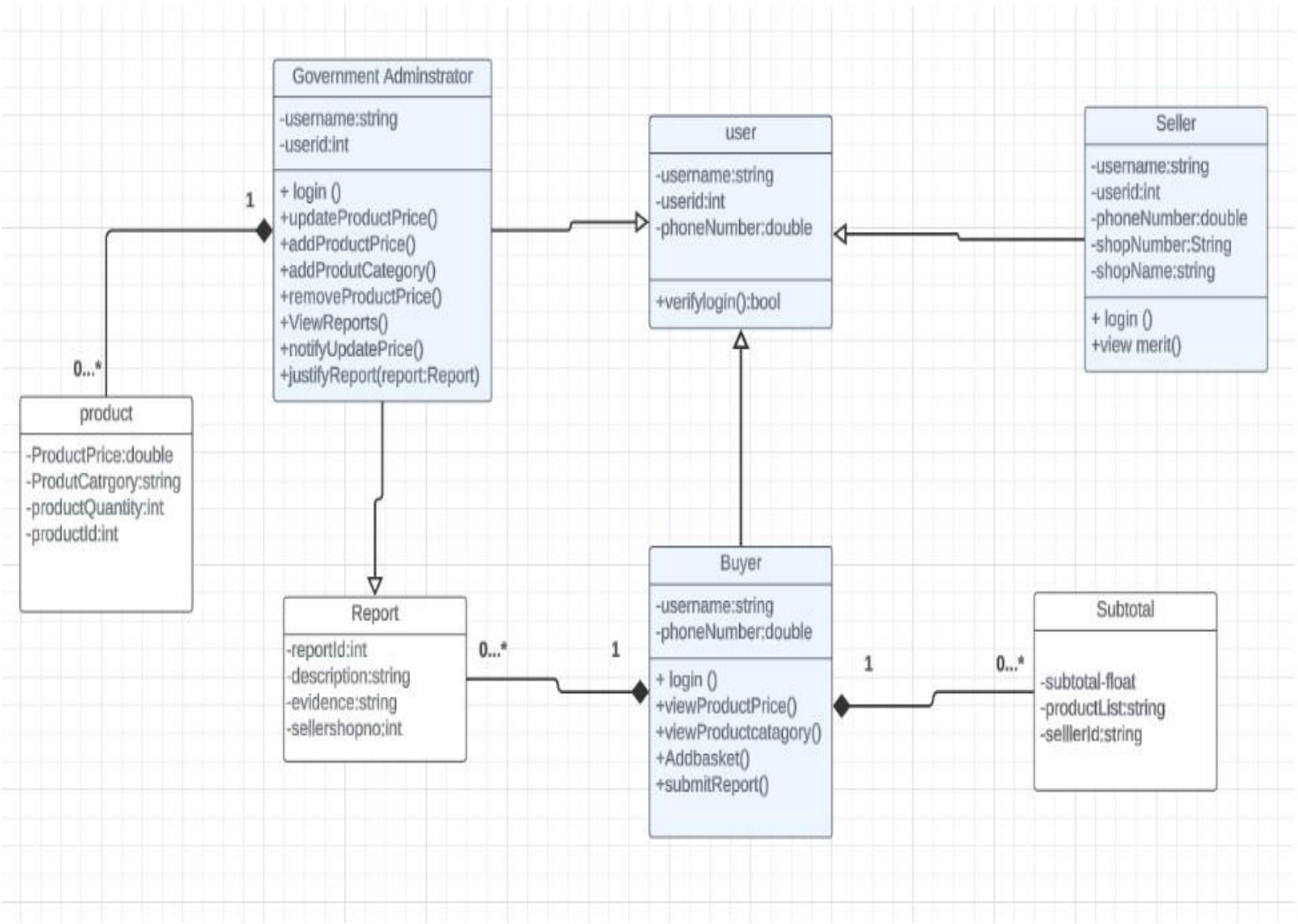
8-Report page

9- Exit page

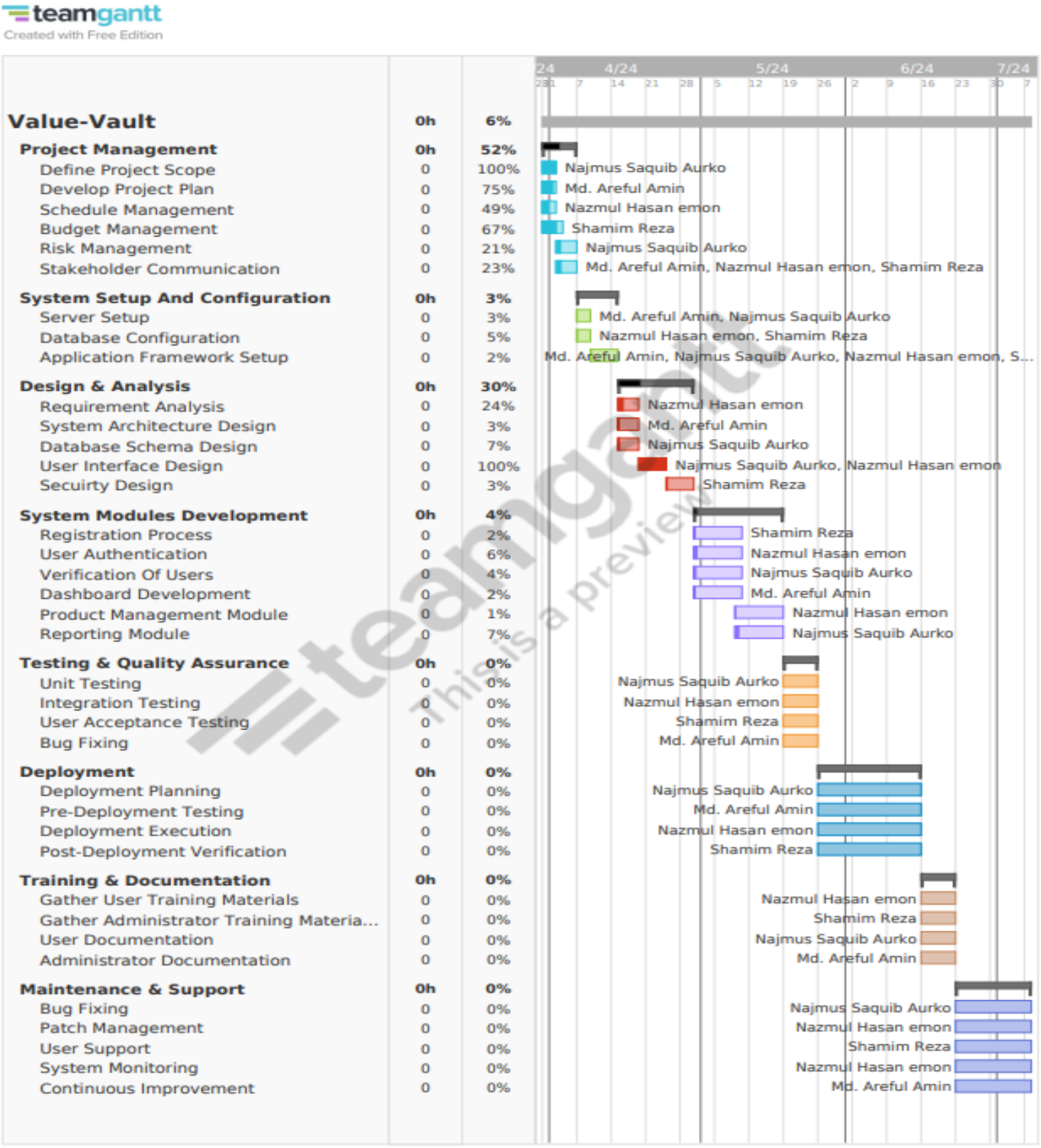
Prototype link:

https://www.figma.com/file/jWodvEPXoOlgYbvXNhZXfO/Value-Vault?type=design&node-id=0%3A1&mode=design&t=crmc8uJExrZraCuM-1

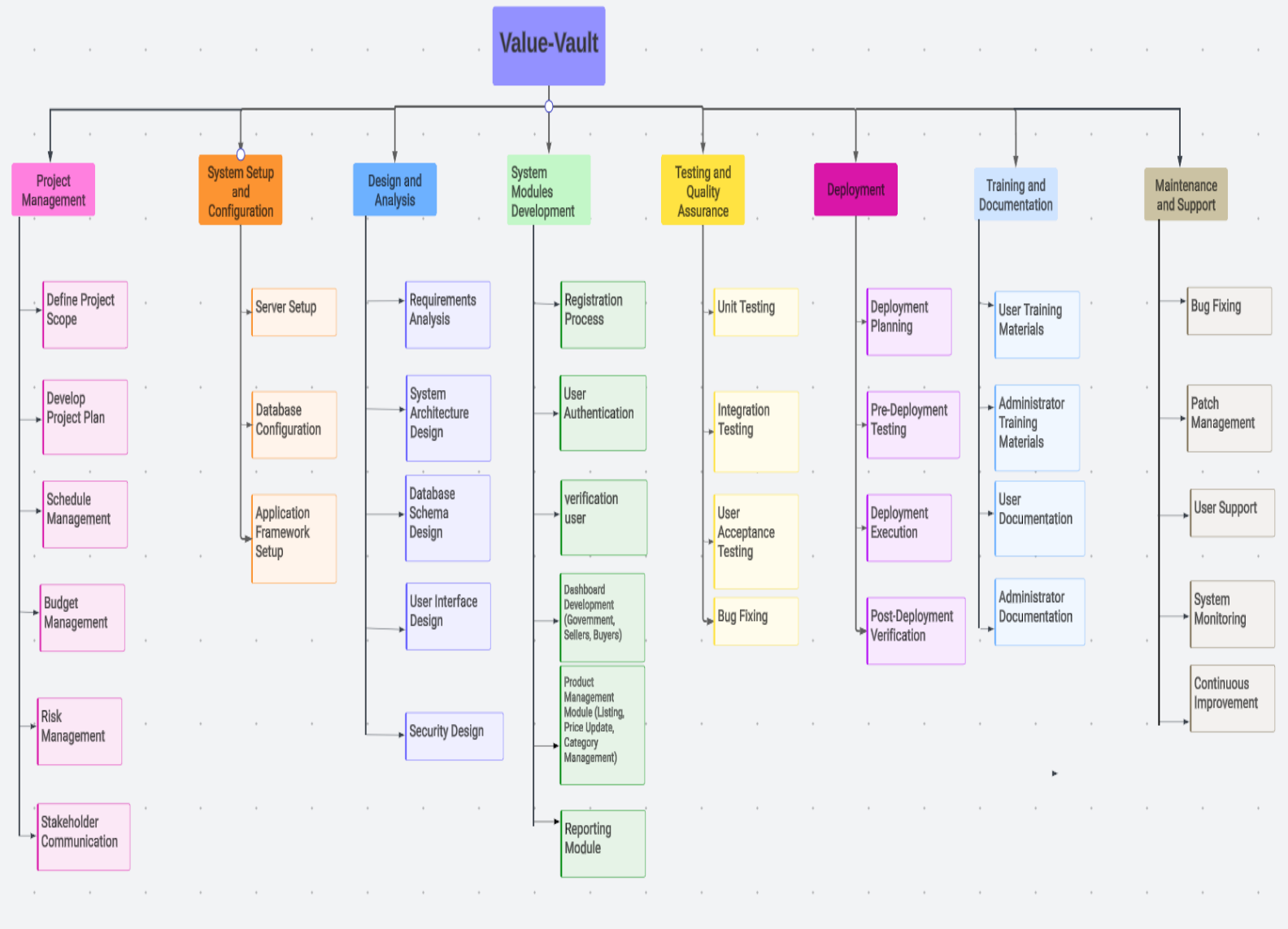
Class Diagram:



Gantt Chart:


teamgantt
Created with Free Edition
4/24
5/24
6/24
7/24
Value-Vault 0h 6%
Project Management 0h 52%
Define Project Scope 0 100% Najmus Saquib Aurko
Develop Project Plan 0 75% Md. Areful Amin
Schedule Management 0 49% Nazmul Hasan emon
Budget Management 0 67% Shamim Reza
Risk Management 0 21% Najmus Saquib Aurko
Stakeholder Communication 0 23% Md. Areful Amin, Nazmul Hasan emon, Shamim Reza
System Setup And Configuration 0h 3%
Server Setup 0 3% Md. Areful Amin, Najmus Saquib Aurko
Database Configuration 0 5% Nazmul Hasan emon, Shamim Reza
Application Framework Setup 0 2% Md. Areful Amin, Najmus Saquib Aurko, Nazmul Hasan emon, S...
Design & Analysis 0h 30%
Requirement Analysis 0 24% Nazmul Hasan emon
System Architecture Design 0 3% Md. Areful Amin
Database Schema Design 0 7% Najmus Saquib Aurko
User Interface Design 0 100% Najmus Saquib Aurko, Nazmul Hasan emon
Secuirty Design 0 3% Shamim Reza
System Modules Development 0h 4%
Registration Process 0 2% Shamim Reza
User Authentication 0 6% Nazmul Hasan emon
Verification Of Users 0 4% Najmus Saquib Aurko
Dashboard Development 0 2% Md. Areful Amin
Product Management Module 0 1% Nazmul Hasan emon
Reporting Module 0 7% Najmus Saquib Aurko
Testing & Quality Assurance 0h 0%
Unit Testing 0 0% Najmus Saquib Aurko
Integration Testing 0 0% Nazmul Hasan emon
User Acceptance Testing 0 0% Shamim Reza
Bug Fixing 0 0% Md. Areful Amin
Deployment 0h 0%
Deployment Planning 0 0% Najmus Saquib Aurko
Pre-Deployment Testing 0 0% Md. Areful Amin
Deployment Execution 0 0% Nazmul Hasan emon
Post-Deployment Verification 0 0% Shamim Reza
Training & Documentation 0h 0%
Gather User Training Materials 0 0% Nazmul Hasan emon
Gather Administrator Training Materia... 0 0% Shamim Reza
User Documentation 0 0% Najmus Saquib Aurko
Administrator Documentation 0 0% Md. Areful Amin
Maintenance & Support 0h 0%
Bug Fixing 0 0% Najmus Saquib Aurko
Patch Management 0 0% Nazmul Hasan emon
User Support 0 0% Shamim Reza
System Monitoring 0 0% Nazmul Hasan emon
Continuous Improvement 0 0% Md. Areful Amin
This is a preview

WORK BREAKDOWN STRUCTURE (WBS):



Test Case:

Test Case ID	BU_001	Test Case Description	Test Log in in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Install app
2	Account Creation
3	
4	

S #	Test Data
1	Userid = emon
2	Pass = 1234
3	
4	

Test Scenario	Verify on entering valid userid and password, the customer can login

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	GO to app	App should open	As Expected	Pass
2	Enter Usename	Credential can be entered	As Expected	Pass
3	Enter Password	Credential can be entered	As Expected	Pass
4	Click Log in	Customer is logged in	As Expected	Pass

Test Case ID	BU_002	Test Case Description	Test invalid Log in in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Install app
2	Account Creation
3	
4	

S #	Test Data
1	Userid = emonnnn
2	Pass = 12345
3	
4	

Test Scenario	Verify on entering invalid userid and password, the customer can't login

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	GO to app	App should open	As Expected	Pass
2	Enter Usename	Credential can be entered	As Expected	Pass
3	Enter Password	Credential can be entered	As Expected	Pass
4	Click Log in	Customer can't log in	As Expected	Pass

Test Case ID	BU_003	Test Case Description	Test Log out in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Account logged in
2	
3	
4	

S #	Test Data
1	
2	
3	
4	

Test Scenario	Verify the customer can logout succcessfully

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Click log out button	User should be able to logout anytime from homepage	As Expected	Pass

Test Case ID	BU_004	Test Case Description	Registration in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Install App
2	Valid Phone number
3	
4	

S #	Test Data
1	Phone:012220344
2	OTP Code:145678
3	Name: Aurko
4	

Test Scenario	Verify the registration succcessfully

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	go to app	User should be able to register account through giving valid info	As Expected	Pass
2	Click Register			
3	Enter Valid Phone Number			
4	Enter Verification Code			
5	Fill in basic information			
6	Click Submit			

Test Case ID	BU_005	Test Case Description	Search Product by category in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Logged in
2	
3	
4	

S #	Test Data
1	See the available category
2	
3	
4	

Test Scenario	Verify the Search by category Feature

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	go to app	User should be able to search	As Expected	Pass
2	Log in			
3	Click Search			
4	Search the product			

Test Case ID	BU_006	Test Case Description	Put product in cart in value vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Logged in
2	
3	
4	

S #	Test Data
1	Choose Product
2	
3	
4	

Test Scenario	Putting Product In the cart

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	go to app	User should be able to put the product in the cart	As Expected	Pass
2	Log in			
3	Choose Product			
4	Add to Cart			

Test Case ID	BU_007	Test Case Description	Sub total feature in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Logged in
2	
3	
4	

S #	Test Data
1	Choose Product
2	
3	
4	

Test Scenario	Verify the Sub total feature

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	go to app	User should be able to see the sub total	As Expected	Pass
2	Log in			
3	Choose Product			
4	Put product on cart			
5	Click on Sub Total			

Test Case ID	BU_008	Test Case Description	Reporting in Value-Vault		
Created By	Nazmul	Reviewed By	Aurko	Version	2.1

QA Tester's Log	Review comments from Aurko incorporate in version 2.1

Tester's Name	Nazmul	Date Tested	21-April-2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Logged in
2	Purchase Product
3	
4	

S #	Test Data
1	Invoice
2	Seller ID
3	
4	

Test Scenario	Report Feature verification

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	go to app	User should be able to Report if seller asks for increased price	As Expected	Pass
2	Log in			
3	Choose Product			
4	Put product on cart			
5	Click on Sub Total			
6	Click on Report			

Project Risk, Impact, Risk level

Date of last review
28-4-24

ID	Description of Risk	Impact	Risk Reponse	Risk Level	Risk owner	Notes
1	Delay in updating product prices	Disruption in price transparency	Implement automated price update mechanism	High	Govt Administrator	Automating Price Update
2	System security breach	Compromise of user data	Enhance system security measures	High	IT Department	Regular Security update
3	Lack of seller compliance with pricing regulations	Consumer exploitation	Implement strict seller verification procedures	Low	Govt Administrator	Continuous Monitoring
4	Insufficient buyer engagement	Low user adoption	Launch targeted marketing campaigns	Medium	Marketing Team	Understanding User Needs
5	Inadequate reporting of price discrepancies	Continuation of unfair pricing practices	Educate users on reporting procedures	Medium	Govt Administrator	Easy to Report
6	Dependency on reliable internet connectivity	Limited access to the app	Develop offline functionality for essential features	Medium	IT Department	Offline Functionalities
7	Resistance from market syndicates	Disruption of project operations	Collaborate with law enforcement agencies	High	Govt Administrator	Building Strong Partnerships