Software Requirements Specification

Product Scraping

A brand new way of online shopping

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Requirements Analysis and Modeling

1 Introduction

1.1 Purpose

This Software Requirements Specification (SRS) is intended to delineate software requirements for the price scraping application. This SRS is intended to provide guidance to the developers of the system to implement required functionality, as well as the test team to develop appropriate Verification and Validation (V&V) plans and procedures required to demonstrate to the customer that the system was built to this specification.

1.2 Scope

This price scraper will be a versatile application accessible on both mobile devices and web browsers, ensuring a broad user base. It will provide users with the capability to perform product searches and receive comprehensive price comparisons. The app will respect the privacy and security of user data, adhering to industry standards and regulations.

1.3 Overview

This product scraping app will be a versatile and powerful tool for consumers, helping them save time and money while shopping. By searching for products, users can access a wealth of information, including the lowest prices and the best products. The app will connect to various retailer databases and APIs to fetch real-time data, ensuring accuracy and comprehensiveness.

2 Overall Description

2.1 Product Perspective

The product scraping website will allow users to purchase the item(s) they want for the cheapest price possible. To do this, once a user has logged onto the website and has put in the product they would like to purchase, the product scraping website will surf through the internet and scrape verified online retail stores to find the item that the customer wants. After doing so, the website will provide the customer with the cheapest price of the product they wanted.
Once the customer is satisfied with the product presented to them, they will make their payment on the product scraping website.
Afterwards, the product scraping website will make payments to the online retail store that the customer got their product(s) from and will retain a commission.

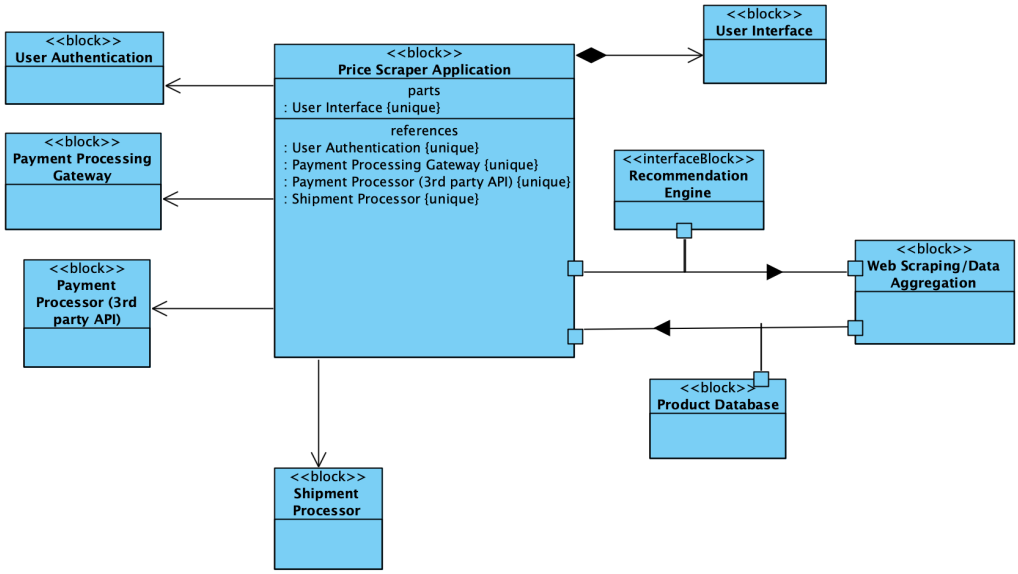

Figure 1. System Block Diagram

2.2 Product Functions

The following use case diagram depicts the users of the system, and the intended ways in which they will interact with the system.

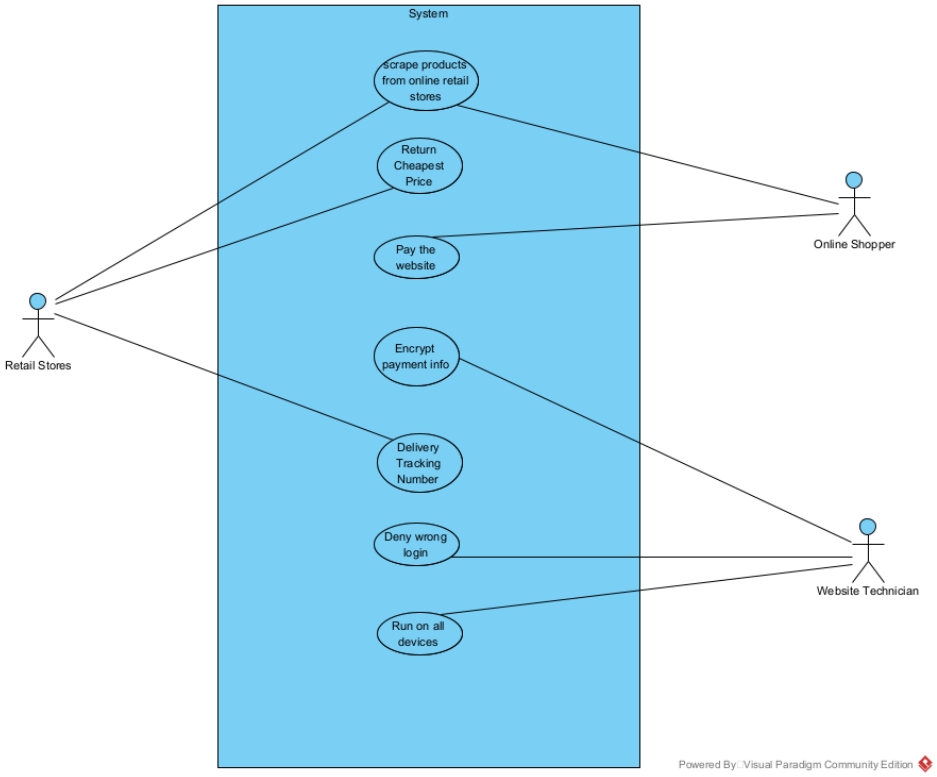

Figure 2. Use Case Diagram

2.3 Use Case Descriptions

1. Scrape products from different online retail stores
2. Return the cheapest product price
3. Customers pay through the website
4. Encrypt payment information
5. Product(s) delivered to the customer
6. Deny wrong login
7. Run on all devices
8. Have a delivery tracking number

1.

GENERAL CHARACTERISTICS	
Intent	Scrape products from multiple online stores upon request by the customer
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product(s) the customer wants exists in the retail stores
Trigger	Successful completion of Use case: scrape products from multiple online retail stores
Success Post Condition	The product scraping website is able to scrape products from online retail stores
Failed Post Condition	The product scraping website is not able to scrape products from online retail stores

Sunny day scenario:

Step	Action
Start	This scenario begins after the customer logs onto the product scraping website and has looked up the item they want to purchase
1	The website goes on to scrape multiple online retail stores for the product that the customer wants
2	The customer chooses which product they want to purchase
3	This use case ends when the customer is presented with the product(s) they want to purchase that have varying retail prices

Rainy Day Scenario

Step	Action
Start	This scenario begins when the website fails to scrape online retail stores for the product the customer wants

2.

GENERAL CHARACTERISTICS	
Intent	Return the cheapest price
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product scraping website has scraped multiple online retail stores and has provided the user with the product(s) they want to purchase but with varying prices
Trigger	Successful completion of Use case: return the cheapest price

Success Post Condition	The product scraping website is able to provide the user with the product that has the cheapest price
Failed Post Condition	The product scraping website is not able to provide the user with the product that has the cheapest prices

Sunny day scenario

Step	Action
Start	This scenario begins when the user has logged into the product scraping website and has selected which product they would like to purchase
1	The product scraping website surfs through the internet looking for the product that the user wants
2	The product scraping website presents the user with multiple products from different retail stores
3	This use case ends when the product scraping website provides the user with the cheapest price of the product they want to purchase

Rainy day scenario

Step	Action
Start	This scenario begins when the product scraping website fails to provide the user with the cheapest price of the product they would like to purchase

3.

GENERAL CHARACTERISTICS	
Intent	Customers pay through the website
Scope	Product Scraper
Primary Actor	The product scraping website

Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product scraping website has scraped multiple online retail stores and has provided the user with the product(s) they want to purchase but of the cheapest price and the customer is now ready to pay
Trigger	Successful completion of Use case: pay through the product scraping website
Success Post Condition	The user was able to select which product they wanted to purchase and their payment went through
Failed Post Condition	The user was able to select which product they wanted to purchase but their payment method did not go through

Sunny day scenario

Start	Action
Step	This scenario begins when the customer has selected the product(s) they would like to purchase and is now ready to pay
1	The product scraping website directs the customer to the checkout section of the website
2	The customer put in their payment details
3	This scenario ends when the customer receives a notification that their payment went through and that their product(s) will be soon delivered to them

Rainy day scenario

Start	Action
Step	This scenario begins when the customer puts in their payment details but receives a notification that their payment did not go through hence their product(s) are not going to be delivered to them

4.

GENERAL CHARACTERISTICS	
Intent	Customers' payment information is safely encrypted
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product scraping website has scraped multiple online retail stores and has provided the user with the product(s) they want to purchase but of the cheapest price and the customer has entered their payment information
Trigger	Successful completion of Use case: customers' payment information is safely encrypted
Success Post Condition	The user's payment information has been properly encrypted such that malicious people online are not able to get their card details and use it maliciously
Failed Post Condition	The user's payment information has not been properly encrypted hence malicious people online can access it and use it maliciously

Sunny day scenario

Step	Action
Start	This scenario begins when the customer has entered their payment information on the website and has hit "pay now"
1	The product scraping website encrypts the payment information of the client using complex keys and bits so that nobody else can be able to get their information

2	The product scraping website is the only one that can decrypt that information in order to retrieve the payment made
3	This scenario ends when the user's information is securely encrypted in such a way that they will not get notifications of fraudulent activities happening in their accounts

Rainy day scenario

Step	Action
Start	This scenario begins when the user's information is not properly encrypted hence malicious people online access it and use it maliciously

5.

GENERAL CHARACTERISTICS	
Intent	Customers' products are delivered to them
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product scraping website has scraped multiple online retail stores and has provided the user with the product(s) they want to purchase but of the cheapest price and the customer has entered their payment information and is now waiting for their product(s) to get delivered to them
Trigger	Successful completion of Use case: customers' products are delivered to them
Success Post Condition	The user's payment details went through and their products have been delivered to them

Failed Post Condition	The user's payment information went through but their products fail to be delivered to them

Sunny day scenario

Step	Action
Start	This scenario begins when the the customer's payment information has gone through and are now waiting for their products to be delivered to them
1	The customer pays for the goods they want
2	The customer enters a delivery address
3	The customer chooses whether they want to pay an extra fee for early delivery
4	This scenario ends when the customers items are delivered to them in good condition and in a timely manner

Rainy day scenario

Step	Action
Start	This scenario begins when the customer's items fail to be delivered to them even after their payment information went through

GENERAL CHARACTERISTICS	
Intent	Deny wrong login
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website

Assumptions	The product scraping website has the details of all the users who have an account with them
Trigger	Successful completion of Use case: deny wrong login
Success Post Condition	The product scraping website denies all wrong logins to the website
Failed Post Condition	The product scraping website allows individuals with the wrong login in credentials to login

GENERAL CHARACTERISTICS	
Intent	Product scraping website is able to run on all devices
Scope	Product Scraper
Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	Each user has a verified account on the product scraping website
Trigger	Successful completion of Use case: run on all devices
Success Post Condition	The product scraping website is able to run on all devices like mobile phones, computers, ipads etc
Failed Post Condition	The product scraping website is not able to run on all devices

GENERAL CHARACTERISTICS	
Intent	Have a delivery tracking number
Scope	Product Scraper

Primary Actor	The product scraping website
Secondary Actors	The users
Preconditions	The user has an account in the product scraping website
Assumptions	The product scraping website has scraped multiple online retail stores and has provided the user with the product(s) they want to purchase but of the cheapest price and the customer has entered their payment information and is now waiting for their product(s) to get delivered to them
Trigger	Successful completion of Use case: have a delivery tracking number
Success Post Condition	The user is able to get a delivery tracking number upon completion of their order
Failed Post Condition	The user is not able to get a delivery tracking number upon completion of their order

3 Specific requirements

3.1 The system software supports the Use Cases described in Figure 2 Use Case Diagram.

3.1.1 Scrape products from different online retail stores

3.1.1.1 Introduction/Purpose of Feature

This feature enables the application to extract product data from various online retail stores. By scraping product information, including details, prices, and availability, the application ensures users have access to a comprehensive and up-to-date database of products from different sources.

3.1.1.2 Stimulus/Response Sequence

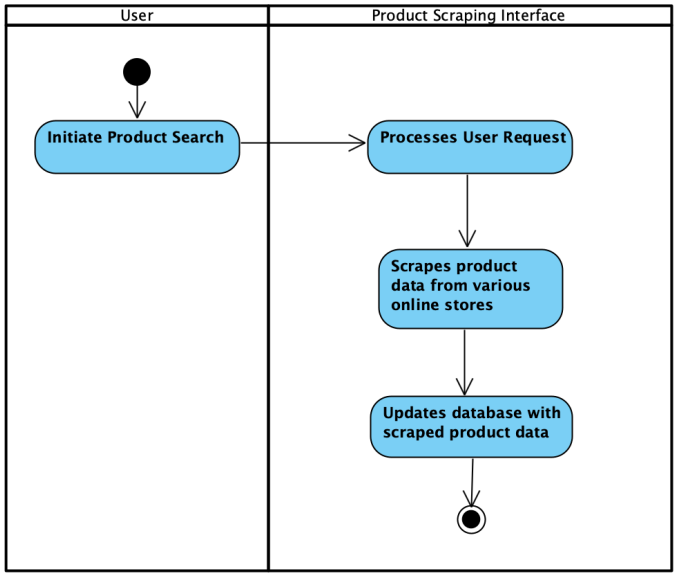

Figure 3.1.1 Scrape Products Activity Diagram

3.1.1.3 Associated Functional Requirements

3.1.1.3.1 The system **shall** utilize web scraping techniques to gather product information from a predefined list of online retail stores.

3.1.1.3.2 The system **shall** periodically refresh the product database to ensure the data remains current.

3.1.2 Return the cheapest product price

3.1.2.1 Introduction/Purpose of Feature

This feature serves to provide users with the most cost-effective product options based on their search. The system will compare prices across multiple retailers and present users with the cheapest available option.

3.1.2.2 Stimulus/Response Sequence

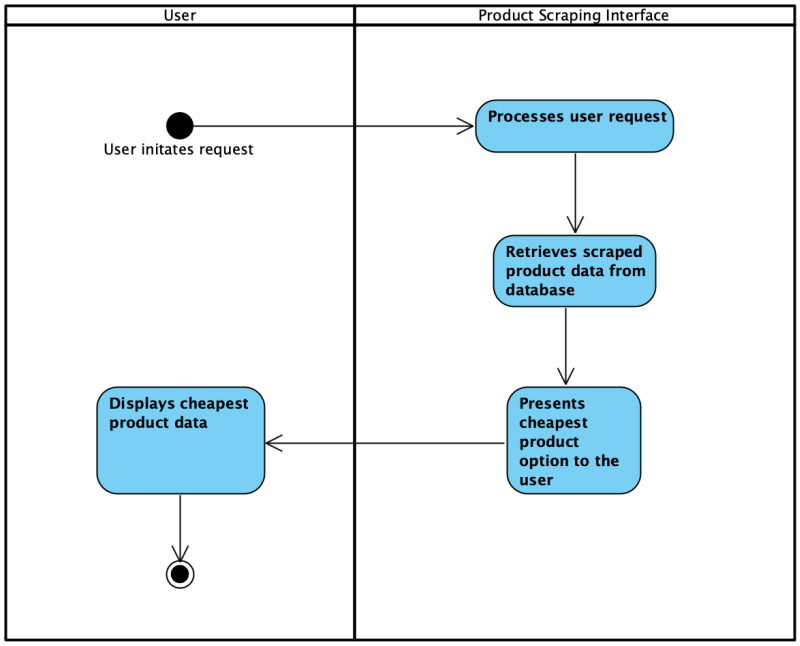

Figure 3.1.2 Return Cheapest Product Activity Diagram

3.1.2.3 Associated Functional Requirements

3.1.2.3.1 The system **shall** utilize pricing data from the database to identify the product with the lowest price.

3.1.2.3.2 The system **shall** present the cheapest product option to the user in a clear and concise manner.

3.1.3 Customers pay through the website

3.1.3.1 Introduction/Purpose of Feature

This feature allows users to make secure online payments through the application when purchasing products. It facilitates a seamless checkout process, enhancing the convenience and reliability of the application.

3.1.3.2 Stimulus/Response Sequence

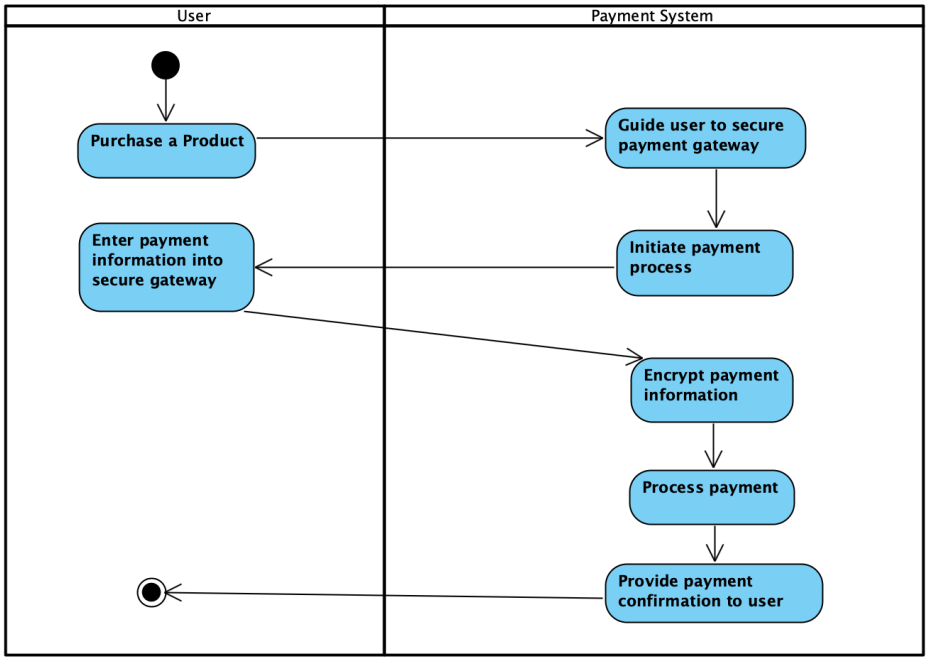

Figure 3.1.3 Customer Pays Activity Diagram

3.1.3.3 Associated Functional Requirements

3.1.3.3.1 The system **shall** provide a secure payment gateway for customers to enter payment information.

3.1.3.3.2 The system **shall** employ encryption to protect and secure customer payment information during transactions.

3.1.4 Encrypt payment information

3.1.4.1 Introduction/Purpose of Feature

This use case ensures that sensitive payment information provided by customers during the checkout process is securely encrypted. Encrypting payment data is essential to protect users from potential data breaches and to comply with data security standards.

3.1.4.2 Stimulus/Response Sequence

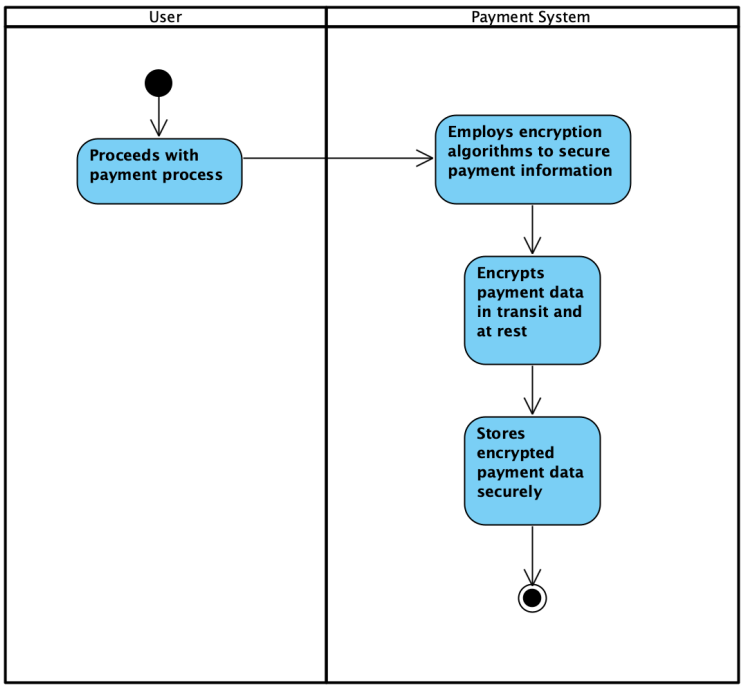

Figure 3.1.4 Encrypt Payment Activity Diagram

3.1.4.3 Associated Functional Requirements

3.1.4.3.1 The system **shall** utilize industry-standard encryption algorithms to protect sensitive payment information.

3.1.4.3.2 Payment data **shall** be encrypted in transit and at rest to prevent unauthorized access or data breaches.

3.1.4.3.3 The system **shall** only store encrypted payment data, with access restricted to authorized personnel for transaction processing.

3.1.5 Product(s) delivered to the customer

3.1.5.1 Introduction/Purpose of Feature

This feature involves the efficient delivery of the purchased product(s) to the customer. The application coordinates the logistics to ensure a smooth and timely delivery process, enhancing the overall user experience.

3.1.5.2 Stimulus/Response Sequence

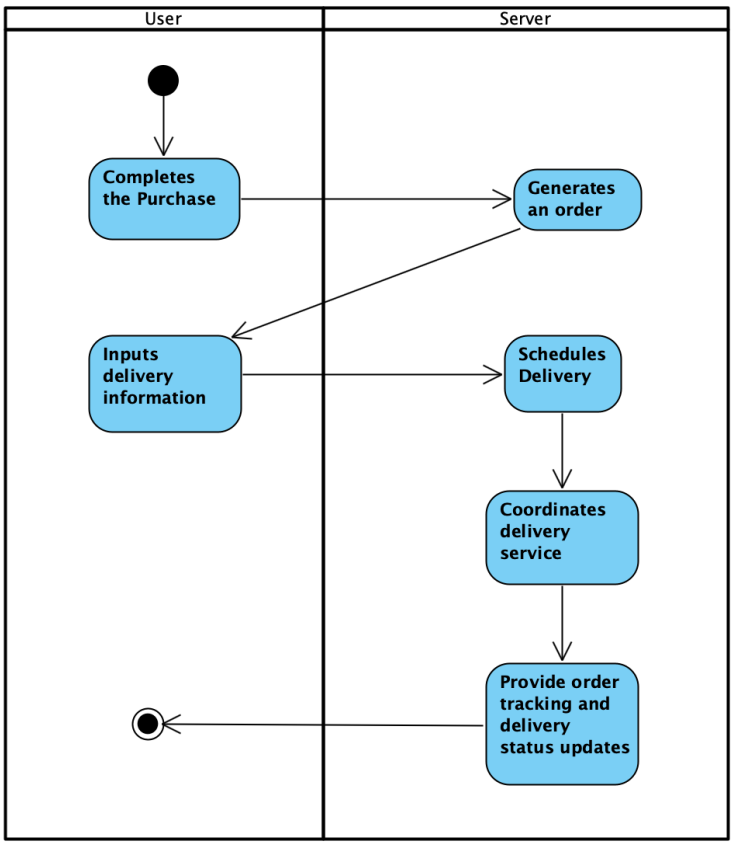

Figure 3.1.5 Delivery Activity Diagram

3.1.5.3 Associated Functional Requirements

3.1.5.3.1 The system **shall** provide order tracking and delivery status updates to customers.

3.1.5.3.2 The system **shall** coordinate with delivery services to ensure the timely delivery of purchased products.

3.1.6 Deny wrong login

3.1.7 Run on all devices

3.1.8 Have a delivery tracking number