COMP 354
Requirements for the project 354TheStars

Group 5

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Table 1: Group

Name	ID Number	Email
Morteza Ahmadi	40038235	morinob93@gmail.com
Mohd Tanvir	40014010	mohatanvir@hotmail.com
Arunraj Adlee	40059206	arunraj.adlee@hotmail.com
Dina Sadirmekova	26321755	dina.sadirmekova@gmail.com
Saima Syed	40044790	saima.syedb@gmail.com
Mehdi Skouri Saidi	40057700	mehdi879@hotmail.com
Trevor Lall	40044047	trevorlall95@gmail.com
Stefan John Bosco	40057206	johnboscostefan@gmail.com
Timothy Rodriguez	40075447	timmy_258@hotmail.com
Lyonel Zamora	27385986	yonelz516@gmail.com
Radhep Sabapathipillai	40033092	Radhep.Saba@gmail.com
Miguel Jimenez	40022302	migueleduardo298@hotmail.com

Table 2: Revision history

Version	Date	Changes
1.0	29th September 2018	completed requirements

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1 Document Purpose

The purpose of this document is to define requirements for the web application 354TheStars. This document may thus be used to orient the development of the application. It seeks to understand the requirements of the problem, formulate the necessary functions and properties needed to answer this problem and its requirements, and then test these functions against the requirements. Hence, it may be used by our users to specify the problem and its requirements, by the developers to understand what functions their system must implement, and what to test their system against. The primary audience for this document are the stakeholders of the project and the development team of the system, as well the project testers for fine-tuning their testing strategy.

2 Project description

2.1 System Context

Our system will mainly involve the user interacting with a web application interface. The user shall create an account to be able to buy or sell products, however user does not require to have an account for browsing the website. The user information will be stored in a remote database server. Users will not be able to create an account or login by using any social media platforms. It will discussed in more details in future version of this documentation.

Figure 1: System Context

2.2   Project Scope

354TheStars is planning to provide a worldwide platform, where various size of companies as well as individuals can sell or buy products. All of the available products shall be eligible for sale.

2.3   Business Goals

- **Compete with existing solutions**

  We are not the sole developers of e-commerce applications by far. As such, if we want to attract users to our platform, we must be able to compete on the same playing field as these current platforms. It is because of that reason, we must, at the very least, provide a secure, easy to use, and performant platform.

- **Reduce service fee** We are aiming to empower businesses, and in order to do so, it is necessary to provide a great service and a competitive service fee.

2.4 Product Functions

Table 3: Traceability Matrix

ReqID	Category	Requirement	Use Case	User Story
R01	Account	A registered user should be able to edit account information		US02, US03
R02	Account	A registered should be able to have up to 3 shipping addresses		US02, US03
R03	Account	A registered user should be able to view order history		US02, US03
R04	Account	A registered user should be able to recover user information		
R05	Account	A new user should be able to sign up		US02, US03
R06	Account	A new user should receive account creation confirmation email		
R07	Admin	The administrator should be able to manage user accounts		US01
R08	Admin	The administrator should be able to manage seller listings		US01
R09	Buying	A user should be able to add product to shopping cart	UC03	
R10	Buying	A user should be able to modify shopping cart	UC03	
R11	Buying	The website should calculate tax	UC03	
R12	Buying	The buyer should be able to choose shipping method	UC03	
R13	Buying	A user should be able to pay for product with PayPal	UC2, UC03	US02, US03
R14	Buying	The website should send purchase confirmation emails with receipt		US02
R15	Buying	A buyer should be able to review a product	UC04	US02, US03
R16	Listing	A user should be able to view product description		US02, US03, US04
R17	Listing	A user should be able to view product photo		US02, US03, US04
R18	Listing	A user should be able to view product rating and review (if any)		US02, US03, US04
R19	Listing	A user should be able to view product stock count		US02, US03, US04
R20	Listing	A user should be able to view product price		US02, US03, US04
R21	Interface	The website should contain a search bar		US02, US04
R22	Interface	A user should be able to sort search results by price		US02, US03, US04
R23	Interface	A user should be able to sort search results by location		US02, US03, US04
R24	Interface	A user should be able to sort search results by rating		US02, US03, US04
R25	Interface	The website should provide a quality UI for the administrator		US01
R26	Interface	A registered user should be able to log in using email or username and password		US02, US03
R27	Interface	A user should be able to contact customer support	UC01, UC02, UC03	
R28	Interface	The website should contain contact information		
R29	Interface	The website should contain a logo		
R30	Interface	Homepage should display promotions		
R31	Interface	Homepage should display products with the most positive reviews		
R32	Interface	Homepage should highlight the sellers who sell the most		
R33	Restriction	The system should limit item description characters	UC01	
R34	Restriction	The website should contain only legal products		
R35	Restriction	The website should contain only quality descriptions and photos	UC01	
R36	Restriction	Seller contact information should be hidden	UC03	
R37	Restriction	Enforce 15 days since purchase period before posting review	UC04	
R38	Restriction	Enforce the 5 photo per review rule	UC04	
R39	Restriction	Enforce the 400 character limit for review	UC04	
R40	Restriction	Ensure that all the required information is correctly filled out	UC01, UC03, UC04	
R41	Restriction	The homepage shouldn't look too cluttered and busy		
R42	Restriction	Homepage should not display more than 20 items before pagination begins		
R43	Restriction	The system should allow only registered user to make a purchase		
R44	Search	A user should be able to search by name		US02, US04
R45	Search	A user should be able to search by category		US02, US04
R46	Selling	A seller should be able to add products to sell	UC01	US03
R47	Selling	A seller should be able to edit products information	UC01	US03
R48	Selling	A seller should be able to delete products	UC01	
R49	Selling	The system should allow Bob TheRich to collect 8% of the sale price	UC02	
R50	Selling	The seller should be able to allow and disallow returns	UC02	
R51	Selling	The seller should be able to set time limit for returns	UC02	
R52	Selling	The seller should receive sale notification	UC02	
R53	Selling	The seller should be able to mark item as shipped	UC02	

2.5 Personas

Admin

The website administrator maintains the site and has access to manage all the products and users on 354TheStars. As a representative of the site, their duties include work with the programming that operates the platform, as well as making sure everything is running smoothly and according to the rules and code of conduct. This is the only role not operated or embodied by customers.

Buyer

Buyers represent one role of 354TheStars' registered users. Whether they are an individual or a business, they can search, filter and purchase items from sellers, which will be delivered to their preferred address. Moreover, they can also review the products they have acquired from the site and even provide pictures to depict their feelings and the state of the product received. Finally, buyers will be providing 354TheStars with revenue through a commision acquired from each purchase.

Guest User

Guest users are individuals or businesses that are casually visiting 354TheStars, or future buyers or sellers that have not yet registered themselves on the site. They have the same privileges as registered users (buyers and sellers) but making purchases or sales; therefore, for a guest user to complete an order or to start listing products, they must create an account.

Seller

Sellers represent the other possible role of our registered users. Whether they are an individual or a business, they can list products and provide a description, images, price and modify their available stock for sale. Lastly, sellers can also reply to reviews from buyers to better address their customers.

PayPal

PayPal is the only actor that is not embodied by a human. PayPal Holdings Inc. is an American company that operates a worldwide online payment platform. 354TheStars will be using PayPal's services to process money transactions needed for the purchase and sale of items on the site. They have no say in the activities or the decision-making process to mantain and manage 354TheStars, meaning the only relationship with the site will be of processing payments. Finally, this takes place by redirecting buyers to PayPal's website for them to input their payment and billing information to be processed.

2.6 Functional Requirements

This section will cover the functional requirements associated with the 354TheStars web application. These are the software capabilities that must be present in order for the user to carry out the services provided by the app or to execute the use cases.

- **Sell:** The system allows a registered user to add product and its details (price, description, image) to be able to sell the product.

- **Buy:** The system allows a registered user to buy a product. Also the buyer can review the purchased product after fifteen days.

- **Search:** The system allows both a registered user and guest user to browse and search through all the products.

- **Admin panel:** The admin panel allows the admin to manage, view, and edit user accounts and their information such as (username, email, address, phone number). The panel also allows the admin to manage, view and edit all the products in the website.

- **Purchase process:** The system provides a secure and safe online payment system for buyers. They can use their Paypal account to buy products from the website.

2.7   Non-Functional Requirements

Table 4: Non-Functional Requirement 1 - Interface

Action	Interface
Requirement ID:	01
Type:	Quality of Service
Description:	The website should be intuitive, easy to navigate and provide the administrator with a quality experience when accessing and viewing the account information of a user.
Reasoning:	If the website is not user-friendly and intuitive to use, the user will feel overwhelmed and have the desire to exit. It should be easy for the administrator to navigate the website, otherwise it would be a challenge to keep the organization up.
Quality attribute scenario:	Users should be able to familiarize themselves with the website within seconds of visiting it.

Table 5: Non-Functional Requirement 2 - Security

Action	Security
Requirement ID:	02
Type:	Quality of Service
Description:	The application should provide the user with the utmost security. All transactions should be made if and only if valid credentials were provided, if not the service should be denied.
Reasoning:	A user should be able to navigate through the application without being concerned about an intruder obtaining access to the user's personal information. The trust built through the level of security provided to the users is what will lead to the success of the application. The user is trusting our service by providing sensitive information such as personal email address, payment information etc. and mishandling this data would greatly damage the business's reputation.
Quality attribute scenario:	All sensitive information should be hidden. The database storing all the personal information needs to be encrypted.

Table 6: Non-Functional Requirement 3 - Performance

Action	Performance
Requirement ID:	03
Type:	Quality of Service
Description:	The website should run in a smooth fashion. Searching for an item should be quick and efficient.
Reasoning:	If the user experiences any problem with searching or posting an item they will not be satisfied.
Quality attribute scenario:	No matter how full the database gets the performance should always remain optimal. This will provide a quality experience for the user.

Table 7: Non-Functional Requirement 4 - Reliability

Action	Reliability
Requirement ID:	04
Type:	Quality of Service
Description:	The service should be reliable and functional to the users at all time. If updates need to be made, users will be informed and given enough time to finish any transactions that need to be completed.
Reasoning:	Reliability is what will provide users access to the application at all time. If the application is riddled with issues and bugs, users will consider moving to one of the competitors. The business will not and cannot be successful if the users are not provided a fully functional service at all time.
Quality attribute scenario:	The system will be online at all times providing services all around the clock. Back up of the system data will provide a continuous run time of the application even if parts of the application were to fail.

Table 8: Non-Functional Requirement 5 - Maintainability

Action	Maintainability
Requirement ID:	05
Type:	Development Constraint
Description:	The application should be able to adapt to newer features and innovations that may occur. To maintain the current application, the testing should be divided into multiple instances, before releasing it to production.
Reasoning:	Due to the growth in technology, the application should be able to adapt to future changes. The application should also be easy to maintain and make changes to. If a complete tear up is required to apply updates, it becomes an issue. To make it cost effective and future proof, maintainability needs to be easily applied.
Quality attribute scenario:	Any changes to the application need to go through the developer server and test server before making out to production. In this manner, we make multiple verifications and avoid downtime due to new updates.

Table 9: Non-Functional Requirement 6 - Distribution

Action	Distribution
Requirement ID:	06
Type:	Architectural Constraint
Description:	The website should work well in both desktop and mobile browsers.
Reasoning:	Mobile phones are extremely common. The user should not have a problem navigating it through their phone.
Quality attribute scenario:	We are taking advantage of the portability of mobile phones, making sure users can experience the website wherever they have their mobile devices.

3   User-Stories

User-Story 1 (Admin)
As an admin:

- I should be able to create, manage and delete user accounts.

- I should have the options to view personal information of the users including:

    - Username
    - Email
    - Address
    - Phone Number

- I should be able to view and manage every single product that is posted in the website.

- The application should provide quality user experience when accessing and viewing account information of a user.

User-Story 2 (Buyer)
As a buyer:

- I should be able to sign up using:

    - Username
    - Email
    - Address
    - Phone Number
    - Password

- I should be to edit my personal information.

- I should be able to see a product's detail including:

    - Image
    - Description
    - Price
    - Reviews

- I should have the ability to search for a product by:

    - Name
    - Category

- I should be able to filter and sort the search results based on:

    - Price

- Location
- Reviews

- I should be able to pay with my PayPal account.

- I should get a confirmation email showing a successful purchase.

- I should be able to add up to three shipping addresses.

- I should be able to add a review to a product after fifteen days of purchasing the product.

- I should be able to see my orders history.

User-Story 3 (Seller)
As a seller:

- I should be able to sign up using:
  - Email
  - Username
  - Address
  - Phone number
  - Password

- I should be able to edit my personal info including:
  - Email
  - Address
  - Phone number
  - Password

- I should be able to add a product to sell.

- I should be able to edit a product's info including:
  - Price
  - Image
  - Description
  - Stock's count

- I should have the same ability as a buyer.

User-Story 4 (Guest User)
As a guest user:

- I should be able to browse through products.

- I should be able to search for a product by using:

  - Name
  - Category

- I should be able to filter and sort the search results based on:

  - Price
  - Location
  - Reviews

- I should be able to see a product's detail including:

  - Image
  - Description
  - Price
  - Reviews

4 Glossary of Domain Concepts

Table 10: Glossary of Domain Concepts

Expression	Definition
Admin	The person who manages the website as well as users and products.
User Account	A data object containing user information including username, email, address(es), phone number.
Registered User	The person who has successfully made a user account.
Guest User	The person who is not a registered user, however has the ability to browse the website.
Product	A legal object that is posted by a seller.
Seller	The person who is a registered user and is able to add legal products to sell on the website.
Buyer	The person who is a registered user and is able to purchase products on the website.
Purchase	A type of transaction where the buyer use to buy a product on the website.
Shipping Address	An address that the product will be shipped to after a buyer has successfully purchased a product.
PayPal	PayPal Holdings Inc. is an American company that operates a worldwide online payment platform.
Database	A local or online container which holds data in an organised, efficient manner.
Server	A computer that is accessible on a network, on which a database and/or system may be hosted. The bank institutions' databases will be hosted on here.

5 Use Cases

5.1 Selling

The use case diagram below represents the Selling functionality of the Online Shopping Website. A detailed description of each use case follows.
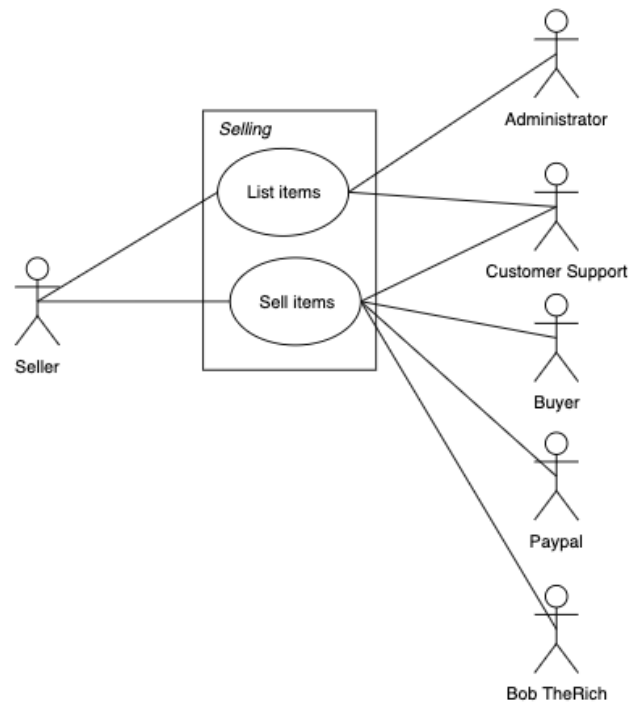
Figure 2: Use Case Diagram 1: Online Shopping Website - Selling

Table 11: Use Case 1 - List items

Action	List items
Case ID	UC01
Actors	**Seller, Administrator, Customer Support**
Summary	Seller completes all the information necessary to list an item and has the option to edit or delete it. The Administrator can manage all the listings information. In case of any issues, the Customer Support can be contacted.
Pre-Conditions	The user is registered as a legitimate seller.
Data	Product photo, product description, price, stock count.
Stimulus	Seller pressed on Add Listing/Edit Listing/Delete Listing Button
Response	1. Add Listing/Edit Listing/Delete Listing dialogue appears. 2. Seller fills out all the information. 3. Listing added/edited/deleted successfully.
Exceptions	1. The required information is not filled out. 2. The description is over the character limit (100 characters).
Priority	High
Open Issues	1. Should the Seller be able to preview the listing? 2. What happens if the item is illegal? 3. How do we check the quality of the image? 4. How do we check if the seller is legitimate?

Table 12: Use Case 2 - Sell items

Action	Sell items
Case ID	UC02
Actors	**Seller, Buyer, Paypal, Bob TheRich, Customer Support**
Summary	Seller accepts payment for the item from Buyer and pays Bob TheRich the 8% of the sale fee. The Seller can allow or disallow returns and set the time limit for returns. The Seller and Bob TheRich can access the sales history. In case of any issues, the Customer Support can be contacted.
Pre-Conditions	Seller, Buyer, and Bob TheRich must have a valid Paypal account.
Data	Paypal account information, sales data, returns option, time limit for returns, 8% fee, shipped items
Stimulus	Buyer paid for item(s)
Response	1. Paypal transfers money from the Buyer account to the Seller Account and sends a confirmation. 2. Seller receives a sale notification by email. 3. The sale appears in the Seller's sales history. 4. Bob TheRich invoices the Seller for 8% of the sale. 5. Seller pays Bob TheRich through Paypal. 6. Seller marks item as shipped.
Exceptions	1. Confirmation from Paypal not received.
Priority	High
Open Issues	1. Should refunds be allowed? If yes, how should they be handled? 2. What happens if the sale appears in the sales history but not in the shipped items history after a predetermined amount of time?

5.2   Buying

The use case diagram below represents the Buying functionality of the Online Shopping Website. A detailed description of each use case follows.
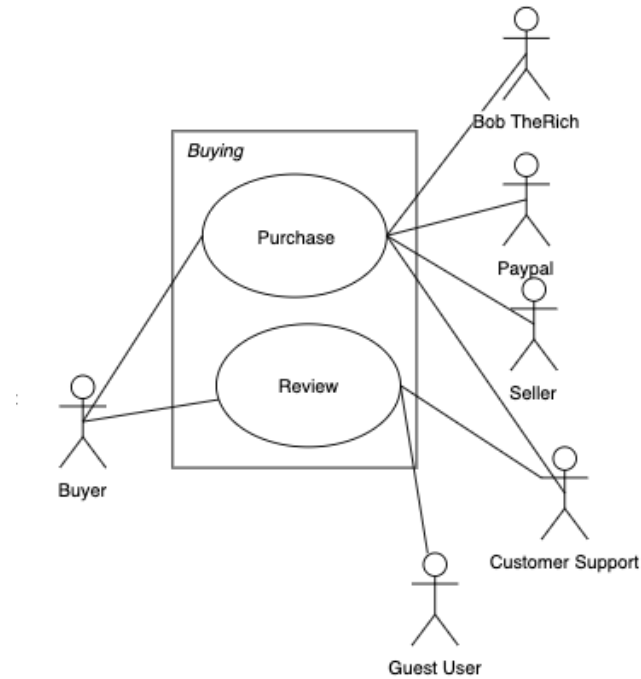

Figure 3: Use Case Diagram 2: Online Shopping Website - Buying

Table 13: Use Case 3 - Purchase

Action	Purchase
Case ID	UC03
Actors	**Buyer, Seller, Paypal, Bob TheRich, Customer Support**
Summary	The Buyer views the shopping cart, has the option to modify it, and pays for it. In case of any issues, the Customer Support can be contacted.
Pre-Conditions	1. Buyer is a registered user. 2. Buyer has a valid Paypal account. 3. Seller contact is hidden.
Data	Purchase photo, purchase description, purchase quantity, purchase price per item, total purchase price, taxes, shipping fee, shipping address, Paypal account, receipt (Seller information, Buyer information, purchase date, purchase details, purchase price, taxes)
Stimulus	Buyer presses the Checkout Button.
Response	1. Buyer views the shopping cart information and can modify it. 2. Buyer chooses the shipping option (standard or express). 3. Buyer chooses the shipping address. 4. Buyer pays the Seller for the purchase through Paypal. 5. Buyer views the confirmation screen. 6. Buyer receives a confirmation and receipt by email. 7. Order added to the purchase history.
Exceptions	1. Any of the required information is missing or incorrect 2. Buyer exceeded the time limit to complete purchase 3. Buyer abandons the cart 4. Buyer did not receive a confirmation screen
Priority	High
Open Issues	1. What happens if the Buyer is not allowed to purchase the product legally?

Table 14: Use Case 4 - Review

Action	Review
Case ID	UC04
Actors	**Buyer, Guest User, Customer Support**
Summary	Buyer leaves a review for a product previously purchased. In case of any issues, the Customer Support can be contacted.
Pre-Conditions	15 days must have passed since the Buyer's purchase of the product being reviewed.
Data	Review text, review photo, days since purchase, Buyer's username, rating (out of 5 stars)
Stimulus	Buyer clicks on the Add Review button
Response	1. Buyer rates the product 2. Buyer adds review text 3. Buyer adds review photos (optional) 4. Buyer posts the review 5. Review appears on the product page for any Guest User to view
Exceptions	1. 15 days haven't passed since the purchase 2. Buyer posted more than 5 photos per review 3. Review over the character limit (400 characters) 4. Any of the required information is missing
Priority	Medium
Open Issues	1. Should the Buyer be able to preview the review? 2. How do we handle offensive reviews?

5.3 Login

The use case diagram below represents the login functionality of the Online Shopping Website. A detailed description of each use case follows.
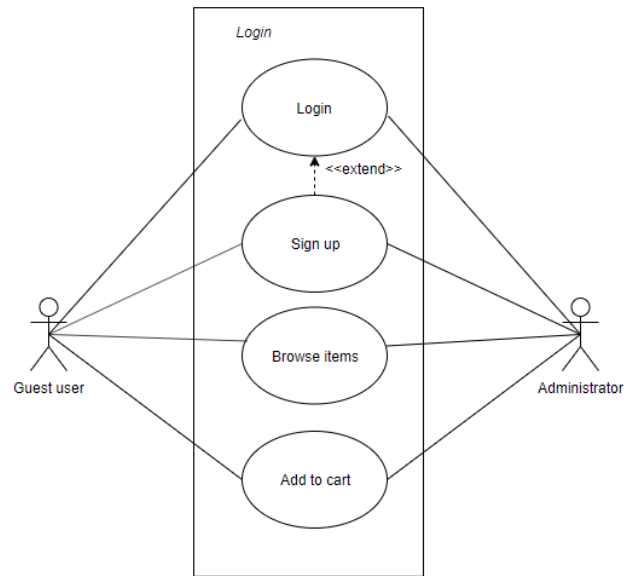

Figure 4: Use Case Diagram 3: Online Shopping Website - Login

Table 15: Use Case 5 - Login

Action	Login
Case ID	UC05
Actors	**Guest user , Administrator**
Summary	Any guest user can sign in to their account. Same goes for the administrator.
Pre-Conditions	1. Must have an existing account
Data	Username and password
Stimulus	Guest user presses the login button.
Response	1. User will have the option to sell products. 2. User will have the option to buy products. 3. User can browse and put items in his cart. 4. Administrator will have access to private information. 5. Administrator will be able to manege the website.
Exceptions	1. Username and/or password incorrect.
Priority	High
Open Issues	1. What if the guest user forgets his/her password or username? 2. Is there a limit of attempt for safety reason ?

Table 16: Use Case 6 - Signup

Action	Signup
Case ID	UC06
Actors	**Guest user, Administrator**
Summary	The administrator and the guest user should be able to create an account at any time.
Pre-Conditions	User has an email address.
Data	username,password,address,email,phone number
Stimulus	Guest user presses the sign up button
Response	1. user will have to fill out a formula. 2. user will enter his/her personal information. 3. user will have access to more features.
Exceptions	1. User doesn't enter correct information. 2. Username taken/password weak.
Priority	High
Open Issues	1. What if the user already have an account and creates another one? 2. How are we verifying that no two user have the same username? 3. For security reasons,how are we handling weak passwords?

Table 17: Use Case 7 - Browse item

Action	Browse item
Case ID	UC07
Actors	**Guest user, Administrator**
Summary	Both user can browse the items through the website and/or search for a specific item.
Pre-Conditions	None , anyone can browse.
Data	item name, item description,item price
Stimulus	User write on the search bar
Response	1. the page will load all the items related. 2. The page will display the pictures and prices of each item.
Exceptions	1. item not found (does not exist)
Priority	High
Open Issues	1. How are we handling spelling errors (ex;show suggestions) ?

Table 18: Use Case 8 - Add to cart

Action	Add to cart
Case ID	UC08
Actors	**Guest user, Administrator**
Summary	Whenever a user sees something that they like, they can put that item in their cart to eventually buy.
Pre-Conditions	Must be a registered user.
Data	item picture, price of item, name of the seller,total price of all items chosen,quantity of each item chosen.
Stimulus	User click a button to add an item to his/her cart.
Response	1. The item will appear in the user's cart. 2. The user will be able to go look at the cart. 3. The user will be able to remove an item or continue adding.
Exceptions	1. Item is out of stock.
Priority	High
Open Issues	1. What happens to the cart if it contains items and the user exit the website?

6 Reference

- User information: As our user and use-cases was based on feedback provided by our developers, our references lie mainly within our own team.

- Craig Larman - Applying UML and Patterns

- Greg Butler's course COMP 354 content

- MIT Curricular Information System Software Requirements Document

- Carnegie Mellon Business Goals

- Use-Case: Oracle