1. Functional requirements:

Functional requirements - Unregistered user:
1. The system must allow unregistered users to browse products (a simplified view of each product will be available for the user).
2. The system must allow unregistered users to display the information of a selected product. This information must include the type, name, description, images, price, other attributes defined by each type and reviews.
3. The system must allow an unregistered user to become a customer by registering his/her full name, address, phone number, email address and password.
4. The system must allow an unregistered user to login as a registered user.

Functional requirements - Customer:
1. The system must allow a customer to change his/her account information including their password.
2. The system must allow a customer to browse products (a simplified view of each product will be available for the user).
3. The system must allow a customer to find products (by name) (a simplified view of each product will be available for the user).
4. The system must allow a customer to display the information of a selected product. This information must include the type, name, description, images, price, other attributes defined by each type and reviews.
5. The system must allow a customer to add products to a cart while he/she is viewing a product.
6. The system must allow a customer to see the content of the cart.
7. The system must allow a customer to update his/her cart (to modify product quantity or to delete a product)
8. The system must allow a customer to start the checkout process.
9. The system must ask for a customer to insert an address and the billing method during the checkout process.
10. The system must allow a customer to cancel an in progress checkout process.
11. The system must allow a registered user to display the result of the checkout process.
12. The system must update the quantity of product in stock after each successful checkout process and clear the cart.
13. The system must allow a customer to see the progress of his/her order.
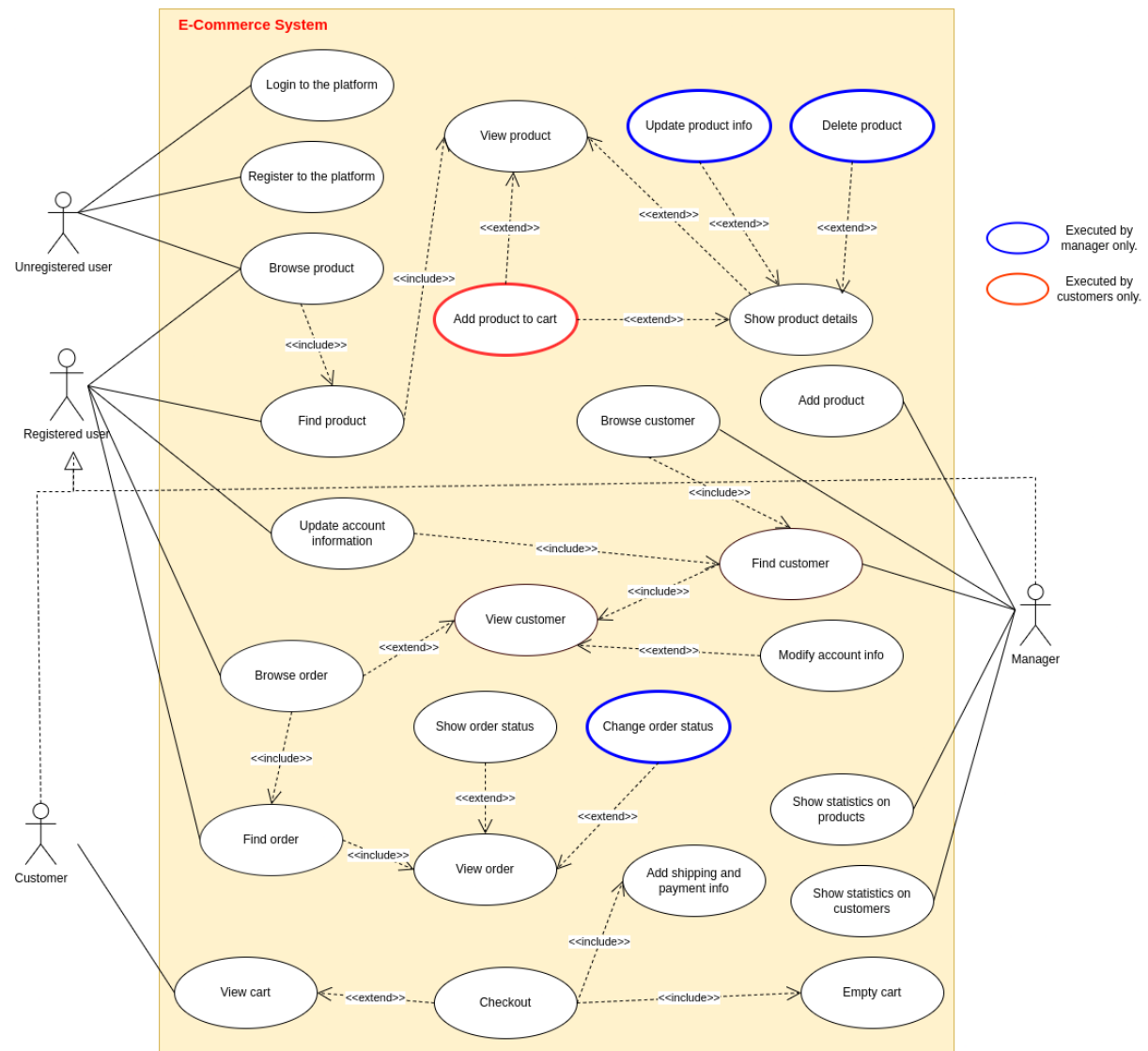14. The system must allow a customer to see all his/her orders.

Functional requirements - Company manager:

1. The system must allow a manager of a company to change his/her account information including his/her password.
2. The system must allow a manager of a company to browse all available products.
3. The system must allow a manager to display the information of a selected product. This information must include the type, name, description, images, price, other attributes defined by each type and reviews.
4. The system must allow a manager of a company to add new products by specifying the type, name, description, images, price and other attributes defined by each type.
5. The system must allow a manager of a company to update product information.
6. The system must allow a manager of a company to remove products.
7. The system must allow a manager to browse customers.
8. The system must allow a manager to browse orders of a selected customer (a simplified view of each order will be available for the user).
9. The system must allow a manager to find orders (by number, creation date range) (a simplified view of each order will be available for the user, this includes: customer name, products, quantities and shipping address).
10. The system must allow a manager of a company to change the status of an order (Paid->In Preparation->Shipped->Delivered).
11. The system must offer a manager of a company analytics about products namely:
    a. To show the most sold products by category (in a time interval)
    b. To show the less sold products by category (in a time interval)
12. The system must offer a manager of a company analytics about customers namely:
    a. To show the most active users (in terms of number of delivered orders in a time interval)
    b. To show users prone to spend more than others (i.e. rank of the users in terms of money spent in a time interval).

Non-functional requirements:

1. The system must be a responsive website application.
2. The system must encrypt users' passwords.
3. The system must communicate with any user by using a secure communication channel (HTTPS).
4. The system will ensure a throughput of at least 50 orders per second.
5. The system will be available 24 * 7.
6. The system must be developed by using an OOP language (i.e.: Java, Python, etc.)
7. The system will be deployed under a serverless computing system.
8. The system will be in compliance with the microservices architecture.

2. Use case diagram

E-Commerce System

Unregistered user
Registered user
Customer
Manager

Login to the platform
Register to the platform
Browse product
Find product
View product
Update product info
Delete product
Add product to cart
Show product details
Add product
Browse customer
Update account information
Find customer
View customer
Modify account info
Browse order
Show order status
Change order status
Find order
View order
Add shipping and payment info
Show statistics on products
Show statistics on customers
View cart
Checkout
Empty cart

<<include>>
<<extend>>

Executed by manager only.
Executed by customers only.

3. UML Analysis Class (simplified)