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CEN302 – Software Engineering

PMS Requirements Specification

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1. Executive Summary

1.1 Project Overview

Nowadays, technology has brought a significant change in almost every aspect of our lives, and the pastry industry is no exception. With the introduction of modern technology, pastry shops are able to enhance the quality of their products and streamline their operations.

One of the primary ways the technology is revolutionizing the pastry industry is through automated baking equipment. Advanced ovens, mixers, and other baking equipment can help pastry chefs achieve consistent results while minimizing human error. Additionally, many pastry shops are implementing software programs to manage inventory, track sales, and optimize pricing. These programs provide real time data and analytics that can help owners and managers make informed decisions about their businesses.

Moreover, technology has also enabled pastry shops to connect with customers in new and innovative ways. Many pastry shops are leveraging social media platforms to showcase their products, engage with customers, and receive feedback. Online ordering systems and mobile apps are also becoming increasingly popular, allowing customers to easily place orders and track their deliveries.

Despite these advancements, some pastry shops still rely on traditional methods for record-keeping and customer management. In many cases, customer information is stored manually, making it difficult to track purchasing habits and preferences. By transitioning to digital record-keeping systems, pastry shops can streamline their operations and better understand their customers' needs.

Overall, the integration of technology in the pastry industry is creating new opportunities for businesses to improve their products, connect with customers, and optimize their operations. As technology continues to evolve, we can expect to see even more innovative solutions emerge in the world of pastry.

1.2 Purpose and Scope of this Specification

The purpose of this specification is to clearly define the requirements and expectations for a particular

project or product. It serves as a reference document that outlines the features, functionality, performance, and other critical aspects of the project or product.

The scope of this specification outlines the boundaries of the project or product and describes what is included and excluded. It provides a clear understanding of the limitations and constraints of the project or product, including any technical or resource-related constraints.

In addition to defining the requirements and scope of the project or product, this specification also serves as a communication tool between stakeholders, including the project team, clients, and other interested parties. It ensures that everyone involved in the project has a common understanding of what is expected, what the project will deliver, and what limitations or constraints exist.

Overall, this specification plays a vital role in ensuring that the project or product is delivered on time, within budget, and meets the expectations of all stakeholders. It provides a clear roadmap for the project team to follow and helps to minimize misunderstandings and confusion that can lead to project delays or failure.

2.Product/Service Description

Our pastry project is an exquisite and indulgent venture dedicated to satisfying the sweet cravings of our valued customers. We specialize in meticulously handcrafting top-tier pastries using the finest and freshest ingredients at our disposal. From traditional French croissants to innovative and one-of-a-kind creations, our pastries promise to enchant and delight your taste buds.

At our pastry shop, we prioritize the use of only the freshest and highest-quality ingredients. We take great pride in sourcing our ingredients from local suppliers, ensuring that our pastries not only deliver exceptional taste but also contribute to a sustainable and eco-friendly approach.

To enhance convenience for our cherished customers, we are currently in the process of developing a user-friendly web platform. Through this platform, you will be able to effortlessly browse our menu, place orders for our delectable pastries online, and have them conveniently delivered right to your doorstep. Additionally, our platform will enable you to request custom orders tailored to your preferences and provide valuable feedback on your overall experience with us.

The development of a web platform for your pastry shop offers a multitude of advantages. It grants increased visibility and accessibility to your customers, streamlines the ordering and payment processes, and allows you to showcase your remarkable products and services in an engaging and visually captivating manner.

When embarking on the journey of creating a web platform for your esteemed pastry project, there are several crucial factors to consider. Firstly, you must determine the type of platform that best suits your needs. This could entail developing a simple yet informative website, setting up an efficient e-commerce site for seamless online ordering, or even crafting a tailor-made platform that seamlessly integrates with your existing systems and processes.

2.1 Product Context

Finally, it's important to consider ongoing maintenance and support for your web platform. This may include

regular updates to your site's content and functionality, as well as technical support and troubleshooting as needed.

Overall, developing a web platform for your pastry project can be an excellent way to expand your reach and grow your business in today's digital landscape. By carefully considering your goals and needs, and working with experienced developers and designers, you can create a platform that is both effective and engaging for your customers

2.2 User Characteristics

The online pastry management system will cater to various users involved in pastry operations and management. The user characteristics can be categorized as follows:

Admin - Pastry Owner and Manager:

- The admin, as the pastry owner and manager, has privileged access to the system for efficiently managing overall bakery operations.
- The admin can utilize various features and functionalities across multiple modules to monitor and control business processes effectively.
- Inventory levels can be tracked by the admin, who can also manage stock and generate reports on ingredient usage and waste.
- Recording sales transactions, generating receipts, and tracking sales by product, customer, or date are tasks handled by the admin.
- The admin has the ability to create and edit recipes, store ingredient lists, and calculate ingredient costs and yields.
- Managing staff schedules, recording attendance and time off, processing payroll, and conducting performance evaluations are part of the admin's responsibilities using the system.
- Financial reports can be accessed by the admin to monitor expenses and revenues, manage budgets, and handle accounts payable and receivable.
- The admin can create and manage customer accounts, implement loyalty programs and discounts, and collect and respond to customer feedback and reviews.

Furnitor - Staff and Employee:

- Furnitor, as a staff member or employee, can use the system for recording attendance, managing schedules, and accessing work-related information.
- Furnitor will have access to relevant modules based on their specific roles and responsibilities within the bakery.

Customers:

- Interact with the system indirectly through features like loyalty programs, discounts, and feedback submission

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- Provide feedback and reviews, which can be accessed and responded to by bakery owners and managers
- It is important to note that the specific user characteristics and access privileges within the system may vary depending on the roles and permissions assigned by the bakery owners and managers.

2.3 Assumptions:

In developing the online pastry management system, certain assumptions are made based on the information provided:

1) Technological Assumptions:

- It is assumed that the target pastries have access to the necessary technological infrastructure, such as computers, internet connectivity, and compatible devices (smartphones, tablets, etc.).
- The assumption is made that the pastries have the technical proficiency to use and navigate the online pastry management system effectively, or they are willing to invest in training their staff accordingly.

2) Data Security and Privacy Assumptions:

- It is assumed that appropriate security measures will be implemented to protect sensitive data, such as customer information, financial records, and employee data.
- The assumption is made that the pastry owners and managers understand the importance of data security and privacy and will adhere to best practices in safeguarding confidential information.

3) Integration Assumptions:

- It is assumed that the online pastry management system may need to integrate with existing systems, such as accounting software or payment gateways, to streamline operations.
- The assumption is made that the necessary integration interfaces and protocols are available or can be developed to ensure smooth communication between the online pastry management system and other relevant systems.

4) User Adoption Assumptions:

- It is assumed that the users, including pastry owners, managers, staff, and customers, will embrace and adopt the online pastry management system as a tool to enhance their bakery operations.
- The assumption is made that sufficient training, support, and documentation will be provided to facilitate user understanding and acceptance of the system.

5) Customization Assumptions:

- It is assumed that the online pastry management system will offer customizable features and modules to cater to the specific needs of each bakery.
- The assumption is made that the system will be flexible enough to accommodate variations in workflows, recipes, pricing structures, and other bakery-specific requirements.

These assumptions serve as a basis for planning and development, but it is important to validate them during the implementation process and make adjustments as necessary to align with the unique circumstances of each bakery.

2.4 Constraints:

In the development and implementation of the online pastry management system, certain constraints may be present. These constraints can impact the design, functionality, and deployment of the system. Some common constraints to consider include:

1. Budgetary Constraints:

- The availability of financial resources may impose limitations on the scope of development, customization, and ongoing maintenance of the online pastry management system.
- Budget constraints may impact the selection of technologies, the level of system scalability, and the extent of features and functionalities that can be included.

2. Time Constraints:

- Project timelines and deadlines may impose restrictions on the development and deployment of the system.
- Time constraints may impact the ability to conduct comprehensive testing, implement all desired features, or accommodate changes or modifications requested during the development process.

3. Resource Constraints:

- Availability of skilled development resources, such as developers, designers, and project managers, may be limited, potentially impacting the speed and quality of system development.
- Limited hardware resources or infrastructure may impact system performance, scalability, or availability.

4. Compatibility Constraints:

- The online pastry management system may need to be compatible with existing hardware, software, or systems already in use by the bakery.
- Compatibility constraints may require additional efforts for integration, data migration, or customization to ensure seamless operations.

5. Regulatory Constraints:

- Compliance with industry-specific regulations and standards, such as data protection laws or financial regulations, may impose constraints on system design and functionality.
- Regulatory constraints may require additional security measures, data handling procedures, or

reporting capabilities to ensure compliance.

6. User Skill and Adoption Constraints:

- The proficiency level and familiarity of bakery owners, managers, and staff with technology may impose limitations on the complexity and usability of the system.
- User skill and adoption constraints may require intuitive interfaces, user-friendly documentation, and training programs to facilitate system understanding and usage.

7. Scalability Constraints:

- The system should be designed and implemented in a way that allows for future scalability and growth of the bakery.
- Scalability constraints may require consideration of factors such as increasing data volumes, expanding customer base, or adding new bakery locations.

It is important to identify and address these constraints during the planning and development phases to ensure the successful implementation and utilization of the online pastry management system within the given limitations.

2.5 Dependencies:

In the development and implementation of the online pastry management system, there may be dependencies on various factors and components. These dependencies can impact the timeline, functionality, and success of the system. Some common dependencies to consider include

1) Technology Dependencies:

- The online pastry management system may rely on specific technologies, frameworks, or programming languages for its development and functionality.
- Dependencies on technology may include compatibility with certain operating systems, databases, web servers, or other software components.

2) Data Dependencies:

- The system may depend on accurate and up-to-date data to perform its functions effectively.
- Data dependencies may include integration with external data sources, synchronization with inventory or sales data, or data input and management by bakery staff.

3) Integration Dependencies:

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- The online pastry management system may need to integrate with other existing systems or third-party applications used by the bakery.
- Integration dependencies may include payment gateways, online ordering platforms, accounting software, or customer relationship management (CRM) systems.

4) External Service Dependencies:

- The system may depend on external services or APIs (Application Programming Interfaces) to provide specific functionality or data.
- External service dependencies may include geolocation services, email delivery services, SMS gateways, or cloud storage services.

5) Resource Dependencies:

- The development and implementation of the system may require the availability of specific resources, such as hardware, software licenses, development tools, or testing environments.
- Resource dependencies may impact the progress and quality of the system development, as well as ongoing maintenance and support.

6) Stakeholder Dependencies:

- The system may have dependencies on stakeholders, such as bakery owners, managers, or staff, who need to provide input, feedback, or approvals during the development process.
- Stakeholder dependencies may influence the system's design, functionality, and usability based on their specific requirements and preferences.

7) Regulatory or Legal Dependencies:

- The system's development and implementation may be subject to regulatory or legal requirements, such as data privacy laws, consumer protection regulations, or industry-specific guidelines.
- Compliance with regulatory or legal dependencies may require additional development efforts, security measures, or documentation.

Identifying and managing these dependencies is crucial to ensure a smooth development and implementation process for the online pastry management system. Proper coordination, communication, and planning are necessary to address these dependencies and ensure that the system functions effectively and meets.

3. Requirements

3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date	Reviewed/ Approved
FR_01	The software should have different views for different user levels.	The view for admin, customer and supplier will be different.	2	16/04/2023	Era Alcani / Xhensila Hoxha
FR_02	An admin panel could include functions for managing user accounts, such as creating new accounts, editing user profiles, resetting passwords, and deleting user accounts.	These functions would allow admins to efficiently manage user accounts, ensuring smooth user interactions and proper data protection measures.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_03	Admins could have the ability to add, edit, and delete products on the website.	This could include features like adding product descriptions, images, pricing, and managing inventory.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_04	Admins could have access to order management functions, including viewing and managing orders placed by customers.	This could involve features like updating order statuses, managing shipments, and cancellations.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_05	Admins could have features for managing customer communication and support, such as managing customer inquiries, responding to customer feedback, and review.	It is important to maintain good customer relations, provide prompt support, and ensure customer satisfaction.	2	16/04/2023	Era Alcani/ Ksenia Muho

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FR_06	Admins could have the ability to configure website settings, such as managing payment gateways, shipping methods, and other general website settings.	These settings allow admins to customize the website's functionality and performance to meet the needs of the business and provide a seamless experience for customers.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_07	Admins are responsible for managing pastry shop or customer accounts on the platform.	This includes verifying their information, and managing their profiles, menu items, and other details.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_08	Admins are responsible for implementing and maintaining proper security measures to protect user data.	It is important to prevent unauthorized access, and ensure compliance with data protection regulations.	1	16/04/2023	Era Alcani/ Ksenia Muho
FR_09	Customers can browse the menu, select pastry items, customize orders, and place orders for their desired food items.	It is important that the website must be understandable from the customer view	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_10	Customers can create an account, edit their profile information and manage their order history.	This allows customers to have a convenient and personalized experience by easily managing their profile information and tracking their order history within their account on the food ordering website	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_11	Customers can securely provide payment information, such as credit card details or use other payment methods available on the platform, to complete their orders and process payments.	They can enter their payment information during the checkout process, and the website securely processes the payment using the chosen payment methods.	1	16/04/2023	Era Alcani/ Xhensila Hoxha

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FR_12	Customers can track the status of their orders, receive updates on order progress and view estimated delivery.	This can help customers stay informed about the progress of their orders, manage their expectations, and plan accordingly.	2	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_13	Customers can provide feedback on their orders, and leave reviews to help other customers make decisions.	This allows them to share their experience with other customers, help them make decisions, and provide valuable feedback to the restaurant or delivery service.	3	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_14	Customers can contact customer support for inquiries, issues, or complaints related to their orders, payments, or other aspects of the food ordering process.	This typically involves contacting the customer support team through various channels.	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_15	Suppliers can add, edit, and manage their products or menu items on the website, including descriptions, images, prices, and other relevant information.	They may also have the ability to set availability, update pricing, and manage product variations, such as size or customization options.	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_16	Suppliers may have the ability to manage their inventory levels, update stock availability, and receive information when items are out of stock.	This allows them to ensure that they can fulfill orders based on their available inventory.	1	16/04/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_17	Suppliers can view incoming orders, including order details, and customer preferences.	They may have the ability to accept or decline orders.	1	16/04/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_18	The ability for users to create accounts, register, and login to the website to access	This enables users to have a personalized experience and manage their account settings	1	16/04/2023	Era Alcani/ Xhensila Hoxha

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	personalized features such as order history, and account settings.	efficiently.			
FR_19	The user accounts have to be secured by passwords.	The security will be maintained by hashing the password before saving them in database.	1	02/05/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_20	The information entered by the user while creating an account should be first validated.	It is important that all the information entered is accurate.	1	02/05/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_21	A clear and comprehensive menu or product listings with detailed information, including images, descriptions, prices, and customization options	It enhances the user experience and helps users to understand the offerings of the website clearly.	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_22	A seamless and user-friendly ordering and checkout process that allows users to add items to their cart, provide payment information, and complete the order.	It should be intuitive, efficient, and secure, allowing users to confidently place their orders and complete the checkout process smoothly.	1	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_23	Secure and reliable payment processing capabilities that support various payment. (PayPal, Credit Card)	It instills trust in users, enhances the website's credibility for a positive user experience.	1	16/04/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_24	The ability for users to provide feedback on their orders and leave reviews to help other users make informed decisions.	These reviews help other users make informed decisions when placing their orders and also provide valuable feedback to the website admin for continuous improvement.	2	16/04/2023	Era Alcani/ Xhensila Hoxha

FR_25	The user can update the number of his products directly from the cart.	It is not necessary for the user to turn back in the shop page to update the product quantity.	2	02/05/2023	Era Alcani/ Ksenia Muho
FR_26	Search and filtering capabilities that allow users to quickly find specific menu items or products based on their preferences, dietary restrictions, or other criteria.	This enhances user convenience, saves time, and provides a better user experience on the food website.	2	16/04/2023	Era Alcani/ Xhensila Hoxha
FR_27	Related products will be displayed for a customer when he views a chosen product in the website.	After choosing a product, the customer will be able to choose similar products.	2	02/05/2023	Era Alcani/ Xhensila Hoxha, Ksenia Muho
FR_28	A new user should accept the terms and conditions before being registered.	A new user should accept the terms and conditions before being registered.	3	02/05/2023	Era Alcani/ Xhensila Hoxha
FR_29	Integration with social media platforms to enable sharing, promotions, and engagement with users.	This can include social sharing buttons, social media login options, and features that allow users to share their orders, reviews, or promotions on their social media profiles.	3	16/04/2023	Era Alcani/ Xhensila Hoxha

Table 1. Functional Requirements

3.2 Non-Functional Requirements

3.2.1 Product Requirements

3.2.1.1 User Interface Requirements

The user interface for the web applications should be compatible to any browser in order for the user to access it from Desktop or Mobile.

In addition to functions required, we are going to describe the characteristics of each interface which are supported from the sketches attached at the Appendix D.

The User interface could be grouped in 5 main interfaces:

1. Customer/ Main interface Which will contain:
 - The header bar containing the navigation bar, the logo of the website “Cake My Day”, shop, account button.
 - In the body part will be in the center of the page a quote below it will be shown some information about the pastry shop, then will be a question “Why to choose ‘Cake My Day’?” and some reasons why.
 - In categories will be shown buttons of every category of pastry which will lead to the ‘shop’ page.
 - The footer bar includes a small information about the pastry shop, links that direct to other pages and contact information like telephone number, email address and social media addresses.
2. Log in interface Which will contain:
 - The header bar containing the navigation bar, the logo of the website “Cake My Day”, shop, account button.
 - The log in form contains fields <Username> and <Password> and a button <Log In>. When that button is pressed the information is validated and the respective interface is showed to the user(admin/customer/supplier) or an error notification indicating a wrong username or password will be shown.
 - The footer bar includes a small information about the pastry shop, links that direct to other pages and contact information like telephone number, email address and social media addresses.
3. Register interface

Which will contain:

 - The header bar containing the navigation bar, the logo of the website “Cake My Day”, shop, account button.
 - The register form contains fields <Full Name>, <Email>, <Username> , <Password> and <Confirm Password>. It has also a checkbox in order to agree with the Terms & Conditions of the form.
 - The footer bar includes a small information about the pastry shop, links that direct to other pages and contact information like telephone number, email address and social media addresses.
4. Supplier interface Which will contain:
 - The header bar containing the navigation bar, the logo of the website “Cake My Day”, shop, account and basket button.
 - The body part will contain the products and their quantity and the transaction button. In the left side of the body will be shown the function that are being done.
5. Admin interface Which will contain:
 - The header bar containing the navigation bar, the logo of the website “Cake My Day”, shop, account and basket button.
 - The admin dashboard will contain product, order, categories which will contain information and will contain options as delete, edit or add which will be controlled by the admin.

3.2.1.2 Learnability

- The system should be easy to use and require minimal training for administrators, customers, and suppliers to become proficient within a few hours.
- The system should be intuitive for customers, eliminating the need for specific training.
- The documentation provided should serve as a user guide for customers and suppliers of the pastry shop.
- In case of errors, the system should display clear and detailed error messages to help users understand the issue.
- Users are responsible for their own actions while using the system.

3.2.1.3 Accessibility

- When users register on the system, they are provided with individual usernames and passwords.
- Both the admin and supplier associated with the pastry shop website have access to the system.
- Registered users have the convenience of accessing the system from anywhere and at any time.

3.2.1.4 Efficiency

- All operations will be quick and processed in real-time.
- Once users are familiar with the system, they will be able to complete each operation efficiently within minutes.

3.2.1.5 Memorability

- The system is user-friendly and intuitive, so even if users only vaguely remember how to use it, it shouldn't be a problem.
- If users return to the system after a period of not using it, they should be able to quickly re-establish their proficiency within the first hour.
- The user interfaces are designed to be easily understood by users, utilizing pictures, icons, buttons, and descriptions to enhance usability.

3.2.1.6 Errors

- The error rate is lower than the current error rate.

- Each time sensitive data is entered in the system double check procedure is applied where the user confirms the entered data.
- If an error occurs it can be edited and corrected immediately.

3.2.1.7 Satisfaction

- The system is user-friendly and it is very easy to use.

3.2.1.8 Capacity

The application will be developed to fulfill all the requirements of the pastry shop, catering to the needs of the admin, supplier, and customer simultaneously in real-time. Any changes made by one user will be immediately reflected for other users based on their clearance levels.

All users will share the same database, which may result in slight delays if multiple requests are made to the server and form queries. To optimize capacity and minimize such delays, users will be able to make changes locally on their computers before sending them to the database. This approach ensures that users can continue their work even in the presence of any delays.

The application will be hosted on a web server, and it does not require a large amount of storage space for both the application itself and the database to be used.

3.2.2 Organizational Requirements

3.2.2.1 Availability

- The application will be accessible 24/7, allowing users to access it anytime, every day.
- The application will be available to any user with a PC connected to the internet, enabling them to access their data from anywhere.
- The application will be designed to minimize downtime, as the data used by users is sensitive and time-sensitive.
- Scheduled maintenance activities will not impact the functionality of the system, and in case of any unforeseen issues, unscheduled maintenance will not result in more than 1 hour of downtime for the application.

3.2.2.2 Latency

The latency of the web application will be influenced by:

- The strength of the internet connection.
- The size of the database.

- The effectiveness of the algorithms employed for retrieving data from the database.

3.2.2.3 Monitoring

- The system will be developed with a strong emphasis on security and reliability. The user interfaces will be designed to be user-friendly and it is expected that system crashes will be minimal.
- Field validation will be implemented for various operations such as login, adding new customers or suppliers, updating personal information, changing passwords, etc. If the input does not meet the requirements, the system will display specific error messages to inform the user of the issue.
- Informative error messages will be prepared for most possible error scenarios, enabling users to understand and address the problem effectively.

3.2.2.4 Maintenance

- The system will be developed using MySQL for the database and APACHE server. Therefore, these two platforms will be used to maintain the application.
- The application will be developed in modules so it can be easily extended. New modules can be easily added to the application anytime.
- In case of system malfunction, a system restart should help. If that does not help, then maybe the server is down, so the maintenance department should be contacted.
- In case of any software update or bug correction, the users will be informed.

3.2.2.5 Operations

The system will provide various operations to the users, including:

- User login and access to personal information at any time.
- Limited access to the information entered in the system, only for those who require it.
- Adding, updating, and deleting pastry products.
- Viewing available product information.
- Ordering pastry products from the supplier and allowing customers to order from the website.
- Rating the service of the pastry shop.
- Contacting the pastry shop administrator.

The application will be available 24/7, with peak hours expected to be from 8 AM to 11 AM and 4 PM to 7 PM, though

these may vary depending on daily fluctuations in visitor requests.

Due to the sensitivity of the information entered into the system, hashed passwords will be used to ensure security.

3.2.2.6 Standards Compliance

Our newly developed application is designed to digitize the order system for our pastry shop. The website includes online payment functionality, which adheres to strict security standards to safeguard cardholder data and ensure secure payment processing. As a responsible pastry shop, we comply with all relevant food safety regulations in our jurisdiction. This includes proper handling, storage, and labeling of food products, as well as adherence to health and safety standards during food preparation and handling. We also obtain all necessary permits, licenses, and certifications required for operating a pastry shop in our country.

3.2.2.7 Portability

- The system will be web-based, ensuring consistent operation across different operating systems.
- Users only require a computer or mobile phone with an internet connection to access the system.

3.2.3 External Requirements

3.2.3.1 Security

To ensure the security of our system, we recognize that the information stored in the database is sensitive and subject to legal regulations. As per the law No.9887, dated 10.03.2008, amended with law No.48/2012, "On the Protection of Personal Data", it is required that the personal information of each user remains private and accessible only to authorized individuals. As a measure to protect this information, hashed passwords are used for secure storage in our system.

3.2.3.2 Protection

To safeguard the system from unauthorized access, modification, disclosure, destruction, or misuse, we will implement the following precautions:

- Encryption of sensitive information, such as passwords, using hashing methods to protect user privacy.
- Maintaining a log of user activity for accountability and tracing any potential issues.
- Placing responsibility on the admin for ensuring the authenticity of user-entered personal data, with the system not being held liable.
- Implementing data validation checks, including special character validation and other specific conditions, before inserting or updating data in the database.
- Using pop-up windows to confirm intentional actions and prevent accidental actions by users.

- Ensuring that each customer only has access to their relevant information, maintaining privacy and data segregation.

3.2.3.3 Authorization and Authentication

The Authorization and Authentication factors:

- User authentication will be based on the use of usernames and passwords.
- Authorization will be determined by the user type, allowing access only to respective information based on their role.
- Sessions will be used to track the currently logged-in user for enhanced security.
- In the event of incorrect login credentials, a notification will be displayed to the user to alert them.

3.3 Domain Requirements

The web application functions as a website for a privately owned pastry shop, with the primary goals of promoting its products and services, engaging with customers, and facilitating online transactions. The website acts as a virtual representation of the pastry shop, providing a platform to connect with potential customers, showcase its offerings, and establish its brand image. To ensure the security of sensitive information, access to the website is restricted to registered users with valid accounts on the software.

4. SOFTWARE DIAGRAMS / DIAGRAMS

4.1 Requirements Analysis

4.1.1 User Scenarios

4.1.1.1 User Scenarios List

Nr	Name	Description
US_01	User logs in	Users: Customer, Administrator, Supplier log in using email and password
US_02	User changes password	Users: Customer, Administrator, Supplier can change their password
US_03	Edit profile details	Customer can edit his profile details: Name, Address, City, Country, Zip Code and Phone Number
US_04	Create a new administrator	Administrator can create new administrators to add them in the system
US_05	Administrators' List	Administrator can view the list of all administrators already in the system
US_06	Create a new category	Administrator can create new categories to add them in the system

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US_07	Categories' List	Administrator can view the list of all categories already in the system
US_08	Update a category	Administrator can update a category by changing different fields of it
US_09	Delete a category	Administrator can delete a category from the system
US_10	Create a new product	Administrator can create new products to add them in the system
US_11	Products' List	Administrator can view the list of all products already in the system
US_12	Change product's status	Administrator can change a product's status from available to unavailable and vice versa
US_13	Delete a product	Administrator can delete a product from the system
US_14	Orders' List	Administrator can view the list of all orders made by different customers
US_15	Update an order	Administrator can update information of a specific order made by a customer
US_16	Delete an order	Administrator can delete a specific order made by a customer if needed for various reasons
US_17	View feedback	Administrator can view the feedbacks left by the customers of the website, and filter them by options
US_18	Update product's price	Supplier can update the product's price of a specific product that they supply
US_19	Update product's quantity	Supplier can update the product's quantity of a specific product that they supply
US_20	View product's details	Customer can view the respective information about any of the product they select in the "Shop" page
US_21	Add item to card	Customer can add product items from the "Shop" page in their basket/card
US_22	Delete item from card	Customer can remove product items directly from their basket/card
US_23	Update product's quantity in card.	Customer can update product's quantity directly from their basket/card
US_24	Make an order	Customer can buy products by checking out their basket, and filling out the billing and payment information
US_25	View transactions history	Customer can view the information about their current order and previous orders (if made), in their profile
US_26	Contact	Customer can contact on the website by email, phone number or by sending a message form providing their details
US_27	Leave feedback	Customer can leave feedback about the overall services and offers of the website by filling out a specific form in the website "Feedbacks" page
US_28	User logs out	Administrator, supplier and customer log out from their accounts

4.1.1.1 User Scenarios Extended

US_01 User logs in

- a) User enters his email.
- b) User enters his password.
- c) User clicks “LOG IN” button.
- d) If data is correct, user will be redirected to his home page.
- e) If data is not correct or if a field is empty, an error message will be displayed and user will repeat steps from step a.

US_02 User changes password

- a. User logs in following the steps in US_01.
- b. User clicks “Change Password” button in his respective home page settings.
- c. User enters his old password.
- d. User enters his new password.
- e. User enters his new password again to verify it.
- f. User clicks “Continue”.
- g. If old password is correct and if new password is verified, a message “Password changed successfully” will be displayed.
- h. If the old password is not correct or if the new password is not verified, a message “Password could not be changed. Try again!” will be displayed.

US_03 Edit profile details

- a. Customer logs in following the steps in US_01 and is redirected to his home page.
- b. Customer clicks his name in the navigation bar and a drop-down menu will be shown.
- c. Customer clicks “Settings” from the menu.
- d. Customer may change one of the following fields: Name, Address, City, Country, Zip Code and Phone Number.
- e. Customer clicks “Update” button.
- f. If there are no empty fields, the customer will be redirected to home page and changes have been made successfully.
- g. If there is an empty field or more, an error message will appear and customer will have to repeat steps again from d.

US_04 Create a new Administrator

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Admins” in the side-bar menu.
- c. Administrator clicks “Create Admins” button.
- d. Administrator enter Email, Admin Name and Password.
- e. Administrator clicks “Create” button.
- f. If there are no empty fields, the new admin is created successfully and he will be shown in database as well.
- g. If there is an empty field or more, an error message will appear and the administrator will have

to repeat steps again starting from d.

US_05 Administrators' List

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks "Admins" in the side-bar menu.
- c. Administrator will be able to see a table containing all the information (admin name and email) for all administrators of the system.

US_06 Create a new Category

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks "Categories" in the side-bar menu.
- c. Administrator clicks "Create Categories" button.
- d. Administrator enters Name, Icon, Description and an Image.
- e. Administrator clicks "Create" button.
- f. If there are no empty fields, the new category is created successfully and it will be shown in database as well.
- g. If there is an empty field or more, an error message will appear and the administrator will have to repeat steps again starting from d.

US_07 Categories' List

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks "Categories" in the side-bar menu.
- c. Administrator will be able to see a table containing all the information (category name and two buttons: "Update" and "Delete") for all categories of the system.

US_08 Update Category

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks "Categories" in the side-bar menu.
- c. Administrator goes to the chosen category and clicks "Update" button.
- d. Administrator can change the name, icon and description of the category.
- e. Administrator clicks "Update" button.
- f. If there are no empty fields, the category is updated and the changes will be shown in database as well.
- g. If there is an empty field or more, administrator will need to repeat steps from d.

US_09 Delete Category

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks "Categories" in the side-bar menu.
- c. Administrator goes to the chosen category and clicks "Delete" button.
- d. The category will be deleted immediately and it will disappear from the database as well.

US_10 Create a new Product

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Products” in the side-bar menu.
- c. Administrator clicks “Create Products” button.
- d. Administrator enters Title, Price, Description, selects a Category and an Expiration Date and uploads an Image.
- e. Administrator clicks “Create” button.
- f. If there are no empty fields, the new product is created successfully and it will be shown in database as well.
- g. If there is an empty field or more, an error message will appear and the administrator will have to repeat steps again starting from d.

US_11 Products’ List

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Products” in the side-bar menu.
- c. Administrator will be able to see a table containing all the information (product name, price, expiration date and two buttons: one for changing status and one “Delete”) for all products of the system.

US_12 Change Product’s Status

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Products” in the side-bar menu.
- c. Administrator goes to the chosen category and clicks the button under “Status” header.
- d. If the product was “Available”, after clicking it will be “Unavailable”.
- e. If the product was “Unavailable”, after clicking it will be “Available”.
- f. These changes will be visible in database as well.

US_13 Delete Product

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Products” in the side-bar menu.
- c. Administrator goes to the chosen product and clicks “Delete” button.
- d. The product will be deleted immediately and it will disappear from the database as well.

US_14 Orders’ List

- a. Administrator follows the steps in US_01 to log in and is redirected to his home page.
- b. Administrator clicks “Orders” in the side-bar menu.
- c. Administrator will be able to see a table containing all the information (first name, last name,
 - a. email, country, status, price, date and two buttons: “Update” and “Delete”) for all orders of the
 - b. system.

US_15 Update an order

- a. Administrator follows the steps in US_14.

- b. Administrator clicks the button “Update” for the specific order.
- c. A dropdown menu in the form filled with current status of the order is shown.
- d. Administrator makes the necessary changes.
- e. Administrator double checks if the data entered is correct.
- f. Administrator clicks the button “Update”.
- g. System validates data according to the specified requirements.
- h. If validation is passed successfully, the new data is saved in the database and is shown the
- a. “orders” sub-panel for the current order. The administrator is redirected to the “orders” page.
- i. If validation is not passed successfully, the old data continues to show in “orders” sub-panel for the current order.

US_16 Delete an order

- a. Administrator follows the steps in US_14.
- b. Administrator clicks the button “Delete” for the specific order.
- c. The order is deleted immediately and the respective change is reflected in the database and the order is no longer visible in the Orders’ list.

US_17 View feedback

- a. Administrator logs in following the steps in US_01 and directs in their home page.
- b. Administrator redirects in the “Feedbacks” sub-panel and views the list.
- c. Administrator chooses one of the given options (bad, good, very good, or other).
- d. Administrator views filtered feedback.

US_18 Update product’s price

- a. Supplier follows the steps in US_11 for “supplier”.
- b. Supplier clicks the button “Update Price” for the specific product.
- c. A form is shown with an input field.
- d. Supplier makes the necessary changes.
- e. Supplier double checks if the data entered is correct.
- f. Supplier clicks the button “Update Price”.
- g. System validates data according to the specified requirements.
- h. If validation is passed successfully, the data is saved in the database. An informative message “Price updated successfully!” will be shown and the supplier is redirected to the products page.
- i. If validation is not passed successfully, informative messages will show that there’s a problem, so the supplier can fix it and continue again from step f.

US_19 Update product’s quantity

- a. Supplier follows the steps in US_11 for “supplier”.
- b. Supplier clicks the button “Update Quantity” for the specific product.
- c. A form is shown with an input field.
- d. Supplier makes the necessary changes.
- e. Supplier double checks if the data entered is correct.

- f. Supplier clicks the button “Update Quantity”.
- g. System validates data according to the specified requirements.
- h. If validation is passed successfully, the data is saved in the database. An informative message “The quantity updated successfully!” will be shown and the supplier is redirected to the products page.
- i. If validation is not passed successfully, informative messages will show that there’s a problem, so the supplier can fix it and continue again from step f.

US_20 View product’s details

- a. Customer logs in following the steps in US_01, and directs in the website’s main page.
- b. Customer redirects in the “Shop” page.
- c. Customer chooses a specific category.
- d. Customer chooses a specific product and view its information: overview, picture and price.

US_21 Add item to card

- a. Customer follows the steps in US_20.
- b. Customer adds this product to their card by clicking “Add to card” button.
- c. An informative message is displayed “Product added to card”.
- d. Customer repeats c, d and e steps for several products in different/same category.

US_22 Delete item from card

- a. Customer follows steps in US_21.
- b. Customer views their card.
- c. Customer may remove any of the products from their card by clicking the “Delete” button.
- d. An informative message is displayed “Product deleted successfully”.

US_23 Update product’s quantity in card.

- a. Customer follows the steps in US_21.
- b. The current quantity of the specific product is shown in its text field. Customer may change this quantity by clicking the “Update” button.
- c. An informative message is displayed “Done”.

US_24 Make an order

- a. Customer follows the steps in US_21.
- b. Customer may do necessary changes in their card by following the d step in US_22 or US_23.
- c. Customer clicks the “Checkout” button.
- d. Customer redirects in the “checkout” page and fulfills their billing details and card information. Customer may choose to pay via PayPal or by their card.
- e. System validates data according to the specified requirements.
- f. If validation is passed successfully, the data is saved in the database. An informative message “You can check your order now!” will be shown and a button to redirect to the home page is shown.

- g. If validation is not passed successfully, informative messages will show where the problem is, so the customer can fix it and continue again from step d.

US_25 View transactions history

- a. Customer makes one/several orders following the steps in US_24.
- b. Customer clicks their “username” in the navigation bar.
- c. A dropdown menu is shown and the user chooses “Transactions History” from that list.
- d. The history of his orders will be shown in the respective page with the following fields of information: Name, Date, Total Price in USD, Status.

US_26 Contact

- a. Customer logs in following the steps in US_01 and directs in the website’s main page.
- b. Customer may go to any of the website’s page’s footer.
- c. Customer may contact by call, email or the customer clicks the contact link that redirects to the “Contact” page.
- d. Customer contacts by call/email in the respective “phone” or “mail” platforms. Otherwise, customer contacts by filling out the form in the “Contact” page.
- e. System validates data according to the specified requirements for the contact form.
- f. If validation is passed successfully, the data is saved in the database. The contact page refreshes.
- g. If validation is not passed successfully, informative messages in respective fields will show that there’s a problem, so the customer can fix it and continue again from step d.

US_27 Leave feedback

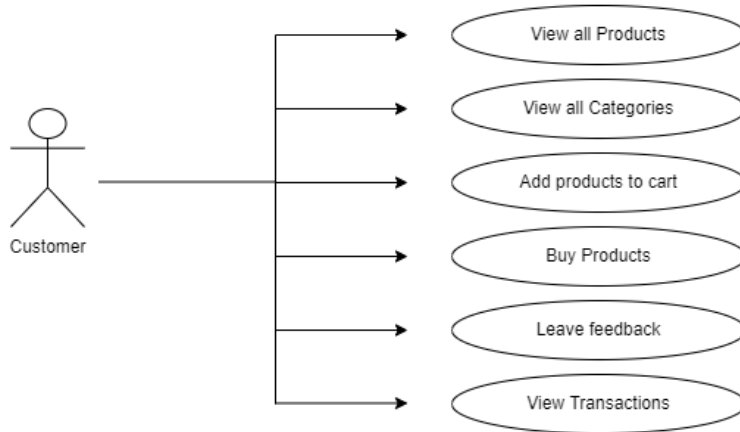
- a. Customer logs in following the steps in US_01 and directs in the website’s main page.
- b. Customer redirects to the “Feedbacks” page.
- c. Customer will complete a form with several questions about the website.
- d. Customer clicks “Leave feedback” button.
- e. Alert: Are you sure you want to leave feedback? YES/ NO.
- f. If NO, do nothing, we stay at the same page.
- g. If YES, the feedback will be saved in the database and will be shown in the admin’s “Feedbacks” sub-panel.

US_28 User logs out

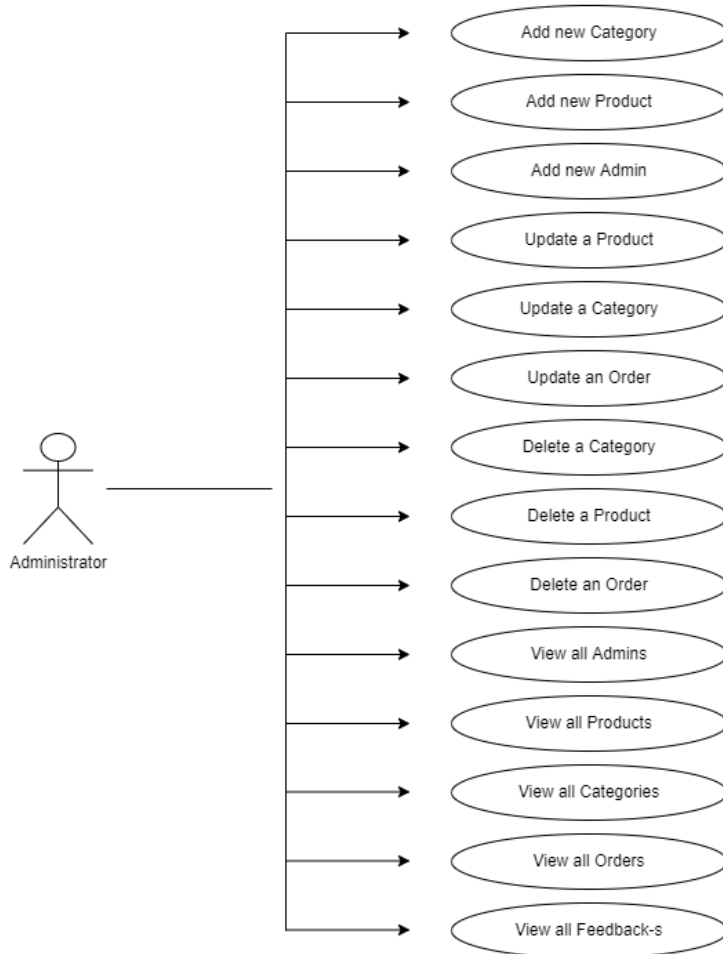
- a. User logs in following the steps in US_01, and directs in the website’s main page.
- b. User follows some of the scenarios listed above.
- c. User clicks their “username” in the navigation bar.
- d. A dropdown menu is shown and the user chooses “Log out” from that list.
- e. User will be logged out from the system and he will be redirected to the main page of the website (index page).

4.2 Behavioral Diagrams

4.2.1 Use Case Diagrams

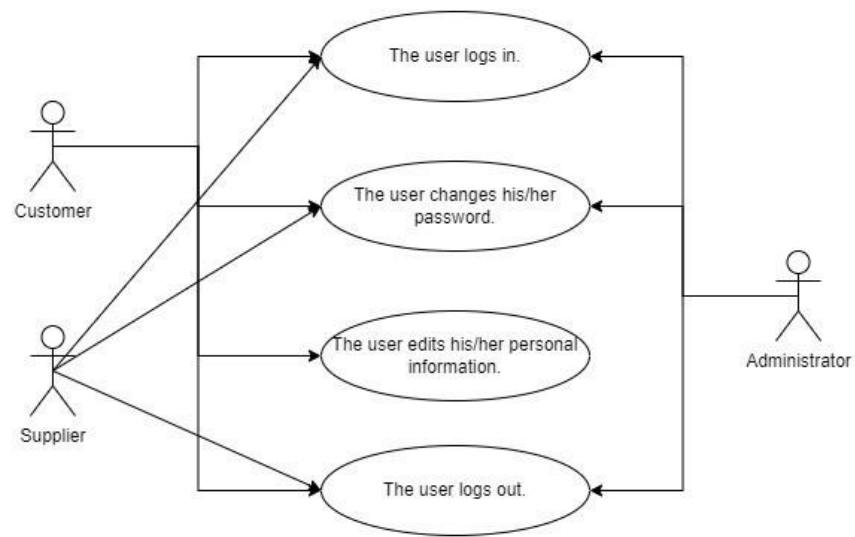


UC_01 - Customer

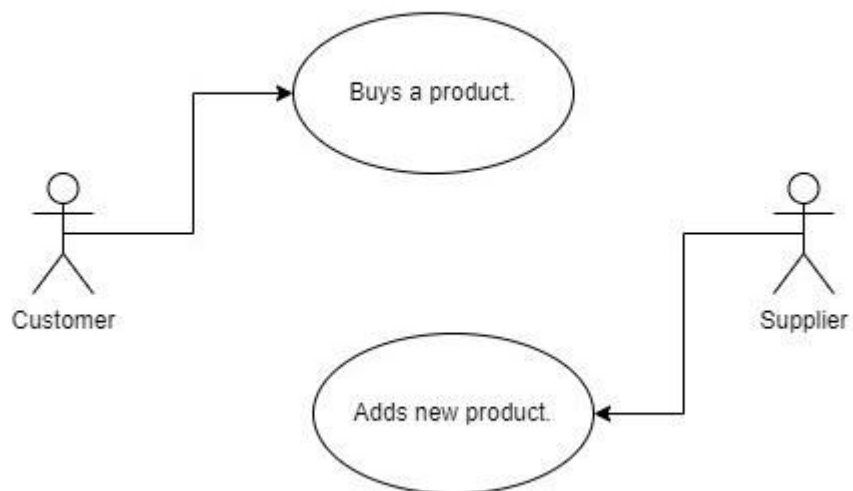


UC_02 Administrator

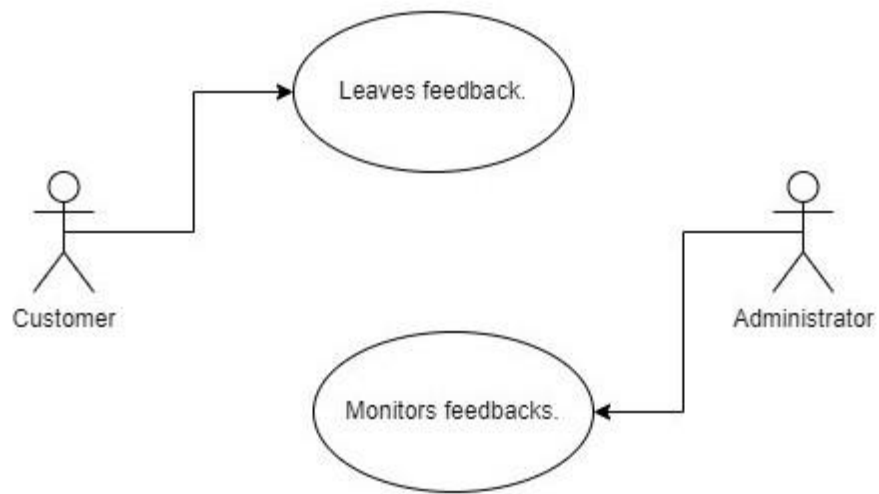
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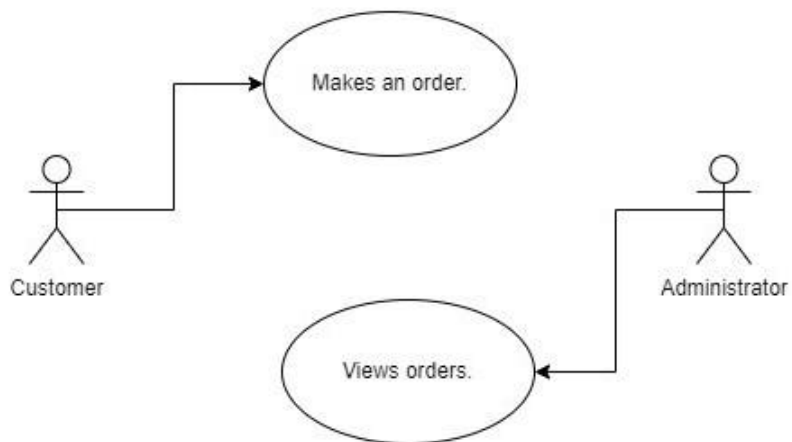
UC_03 – Basic Operations



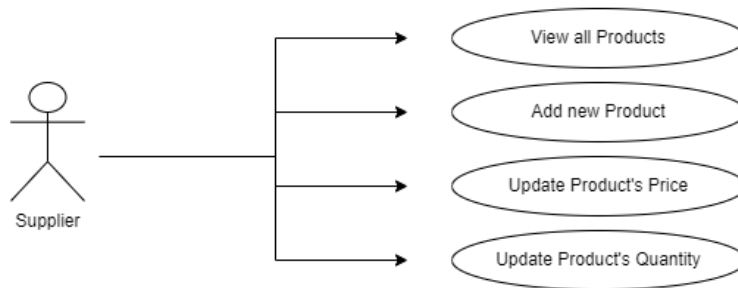
UC_04 – Buy a product



UC_05 - Feedbacks

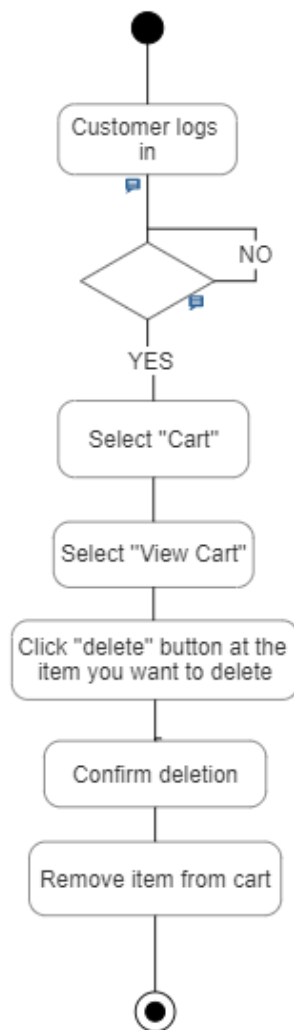


UC_06 Make an order

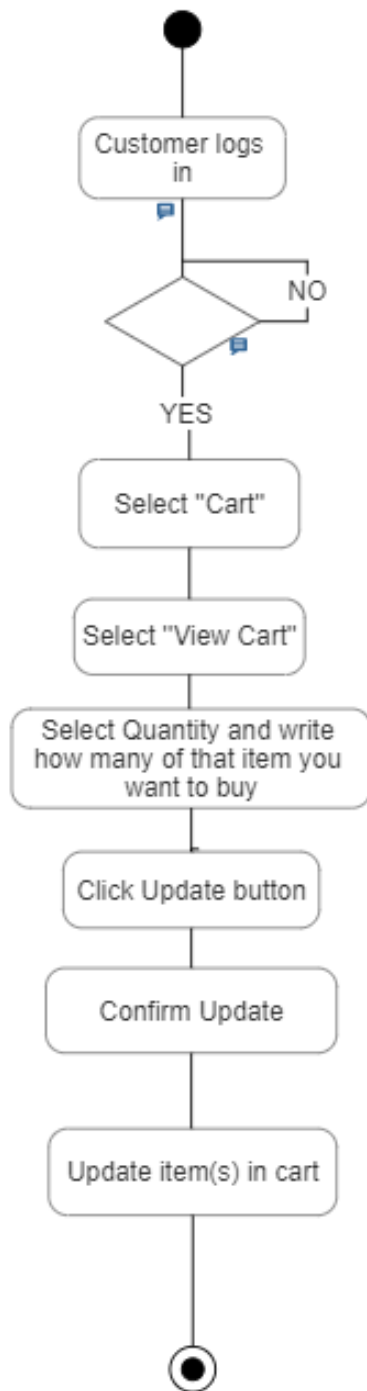


UC_07 Supplier

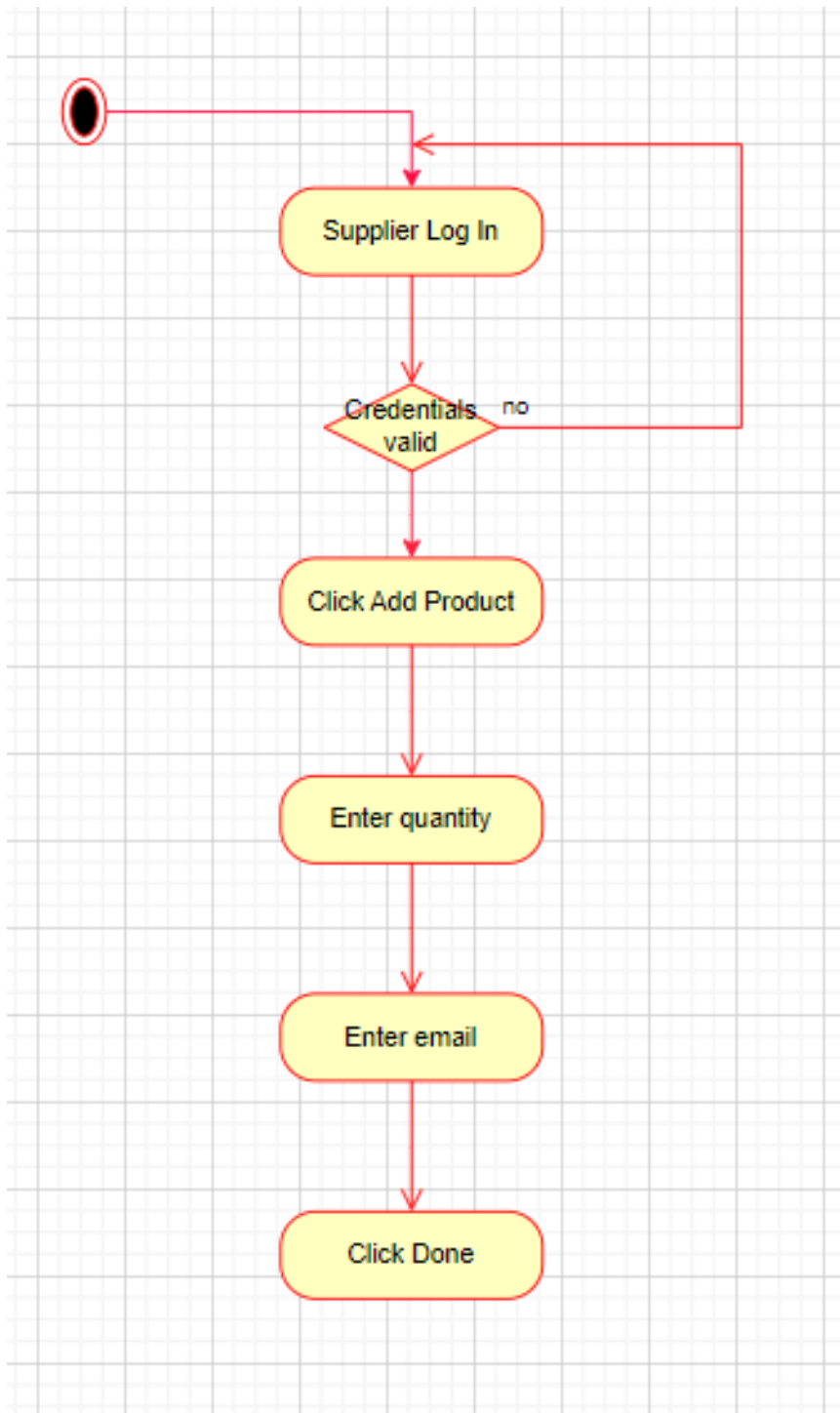
4.2.2 Activity Diagrams



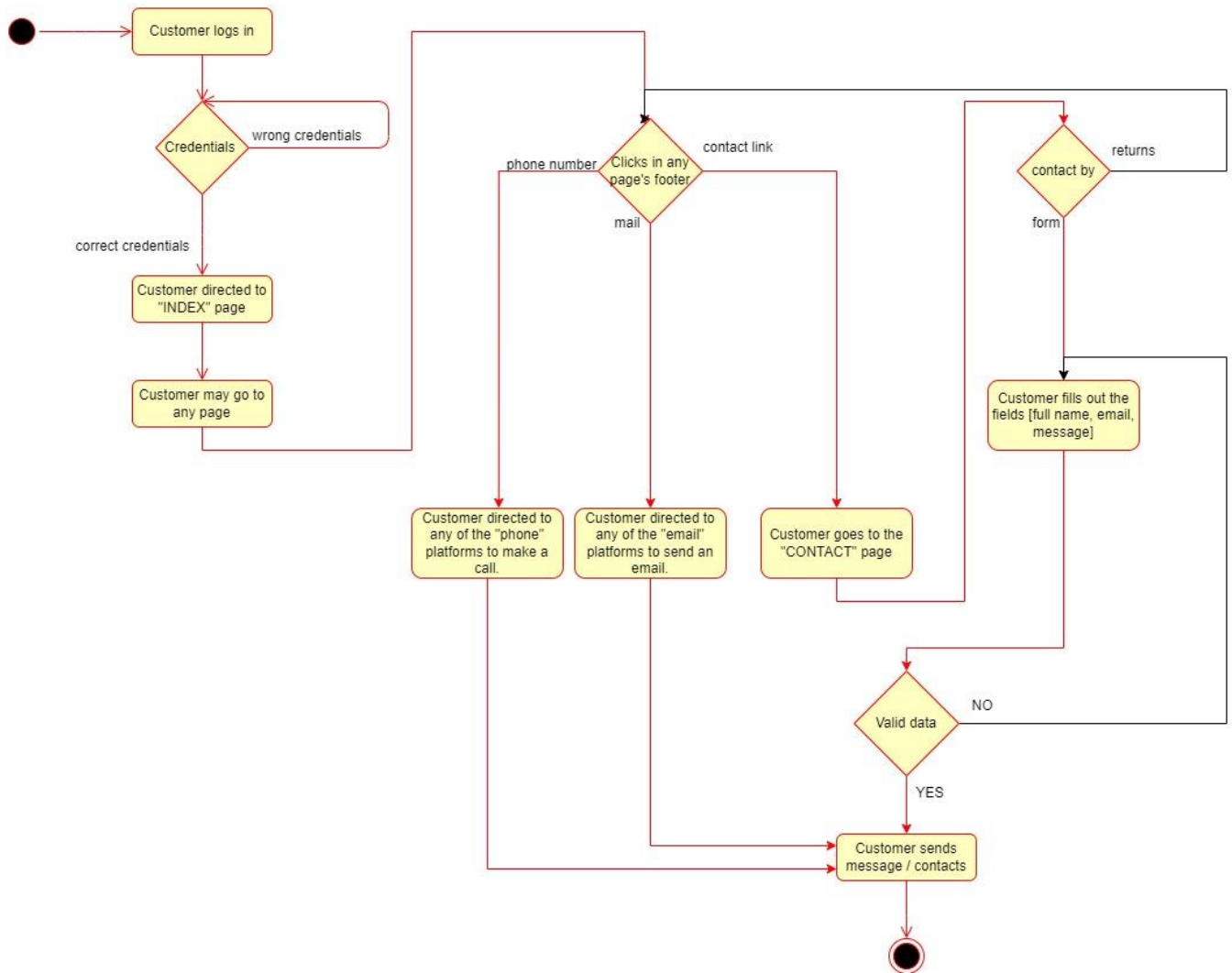
AD_01 Delete an item from cart



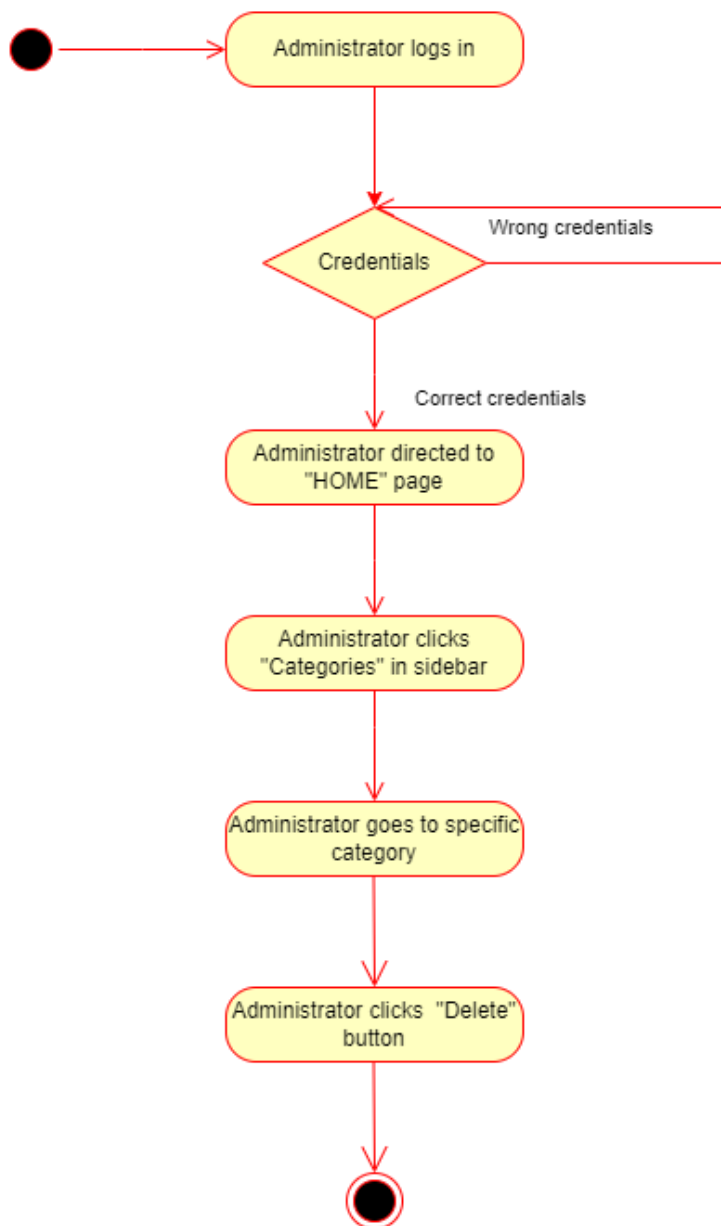
AD_02 Update quantity of product



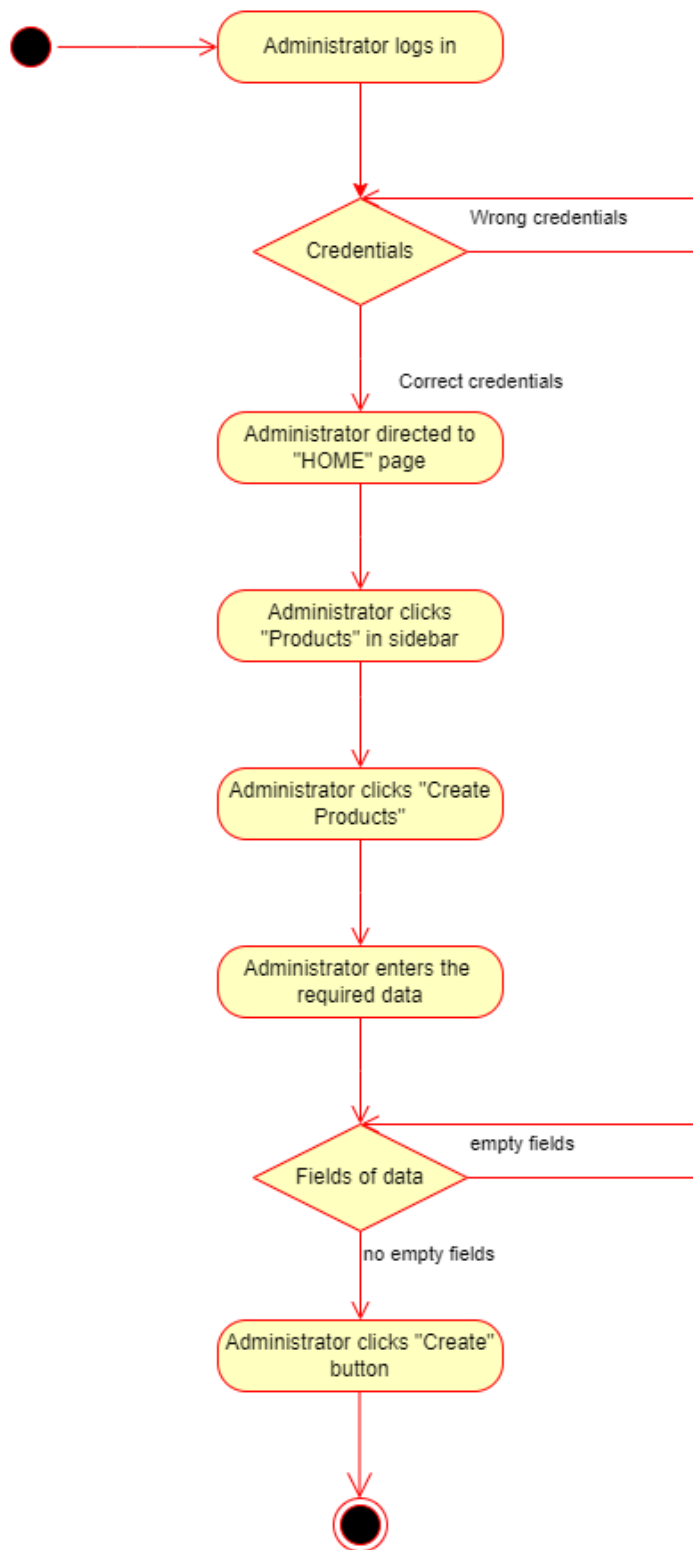
AD_03 Add new product



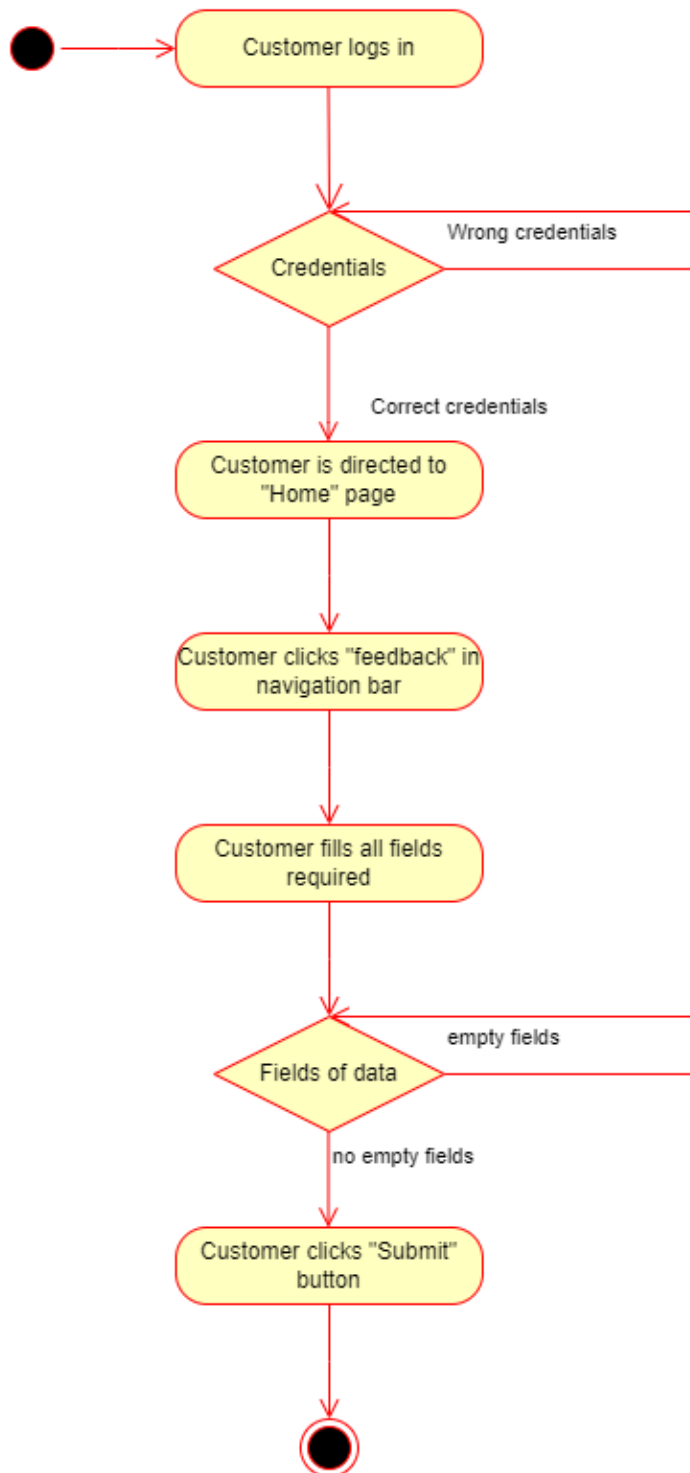
AD_04 Customer contacts



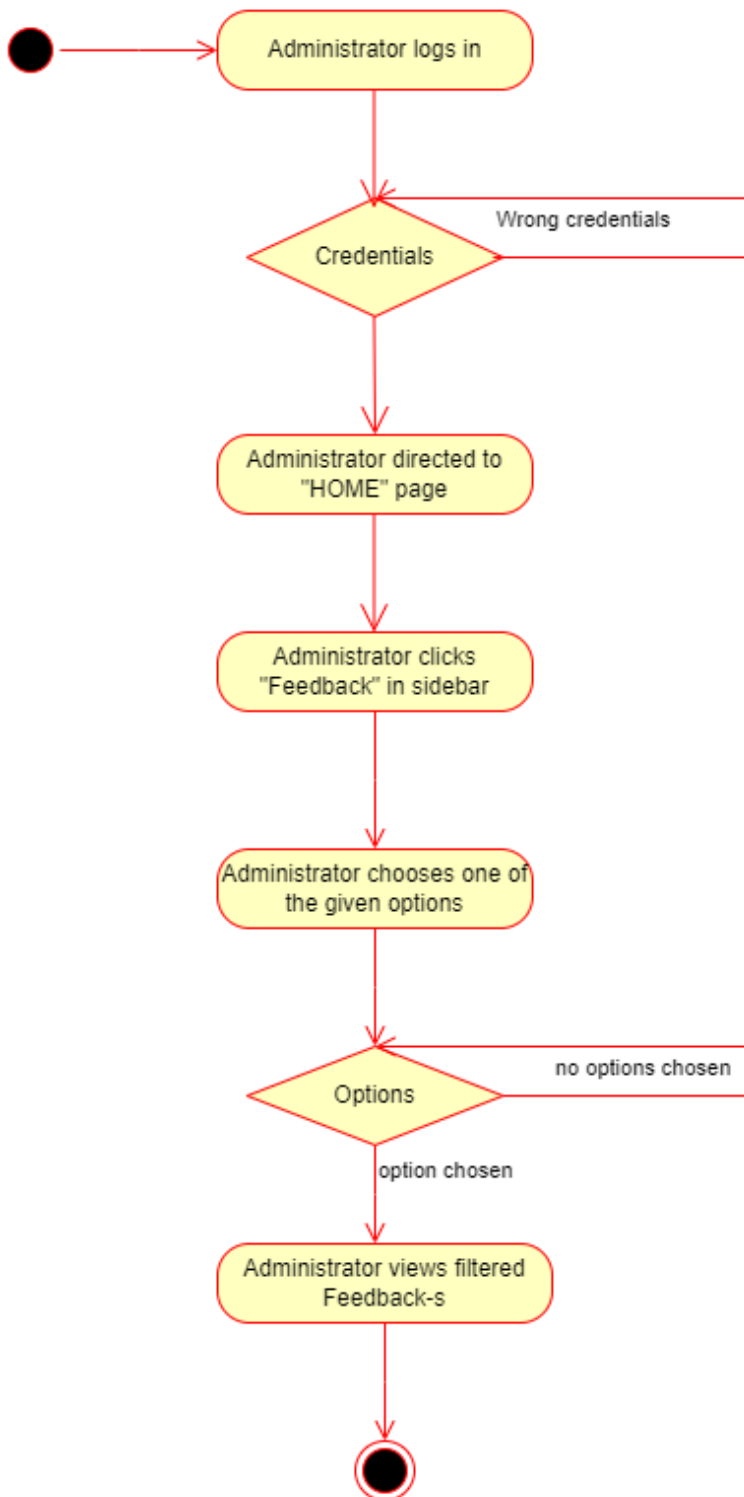
AD_05 Delete category



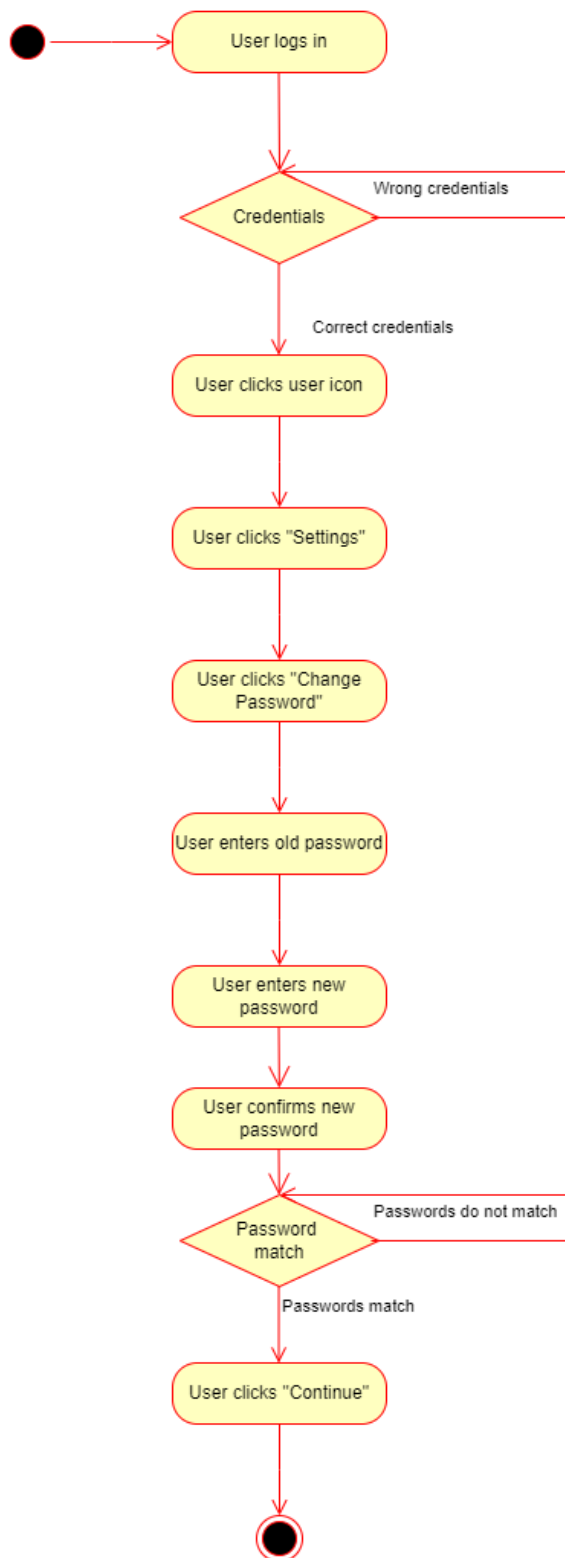
AD_06 Create product



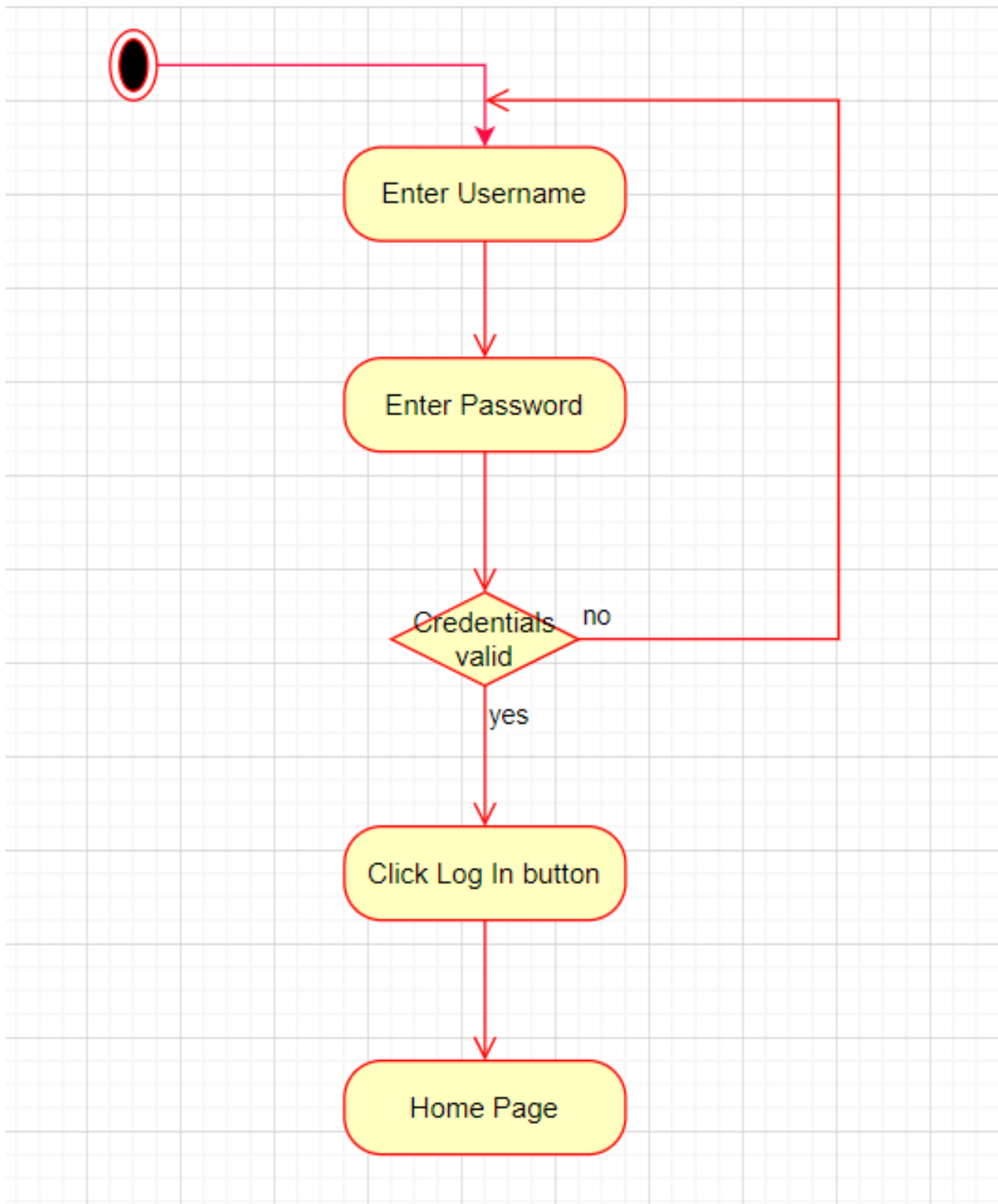
AD_07 Leave feedback



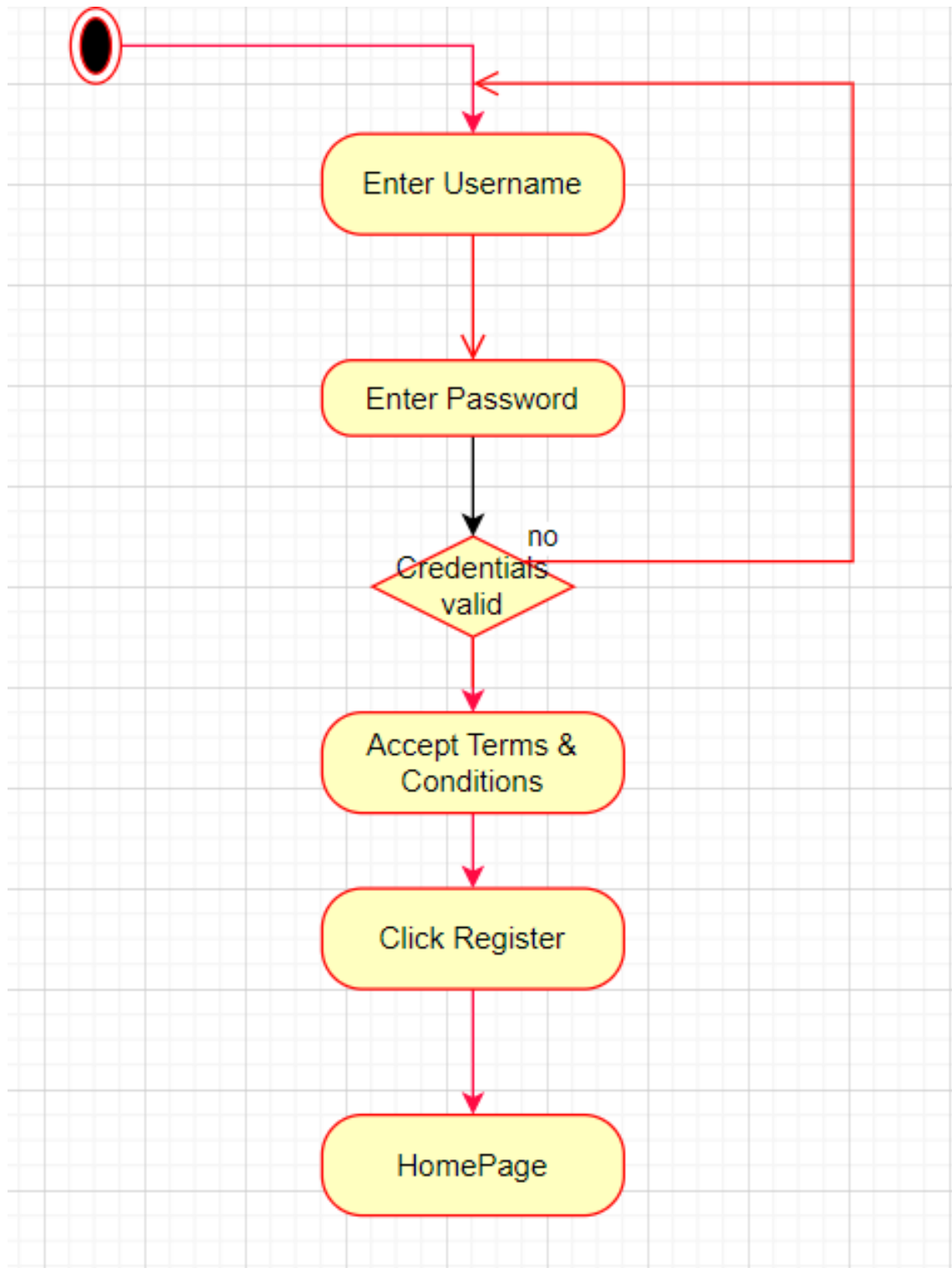
AD_08 View feedback



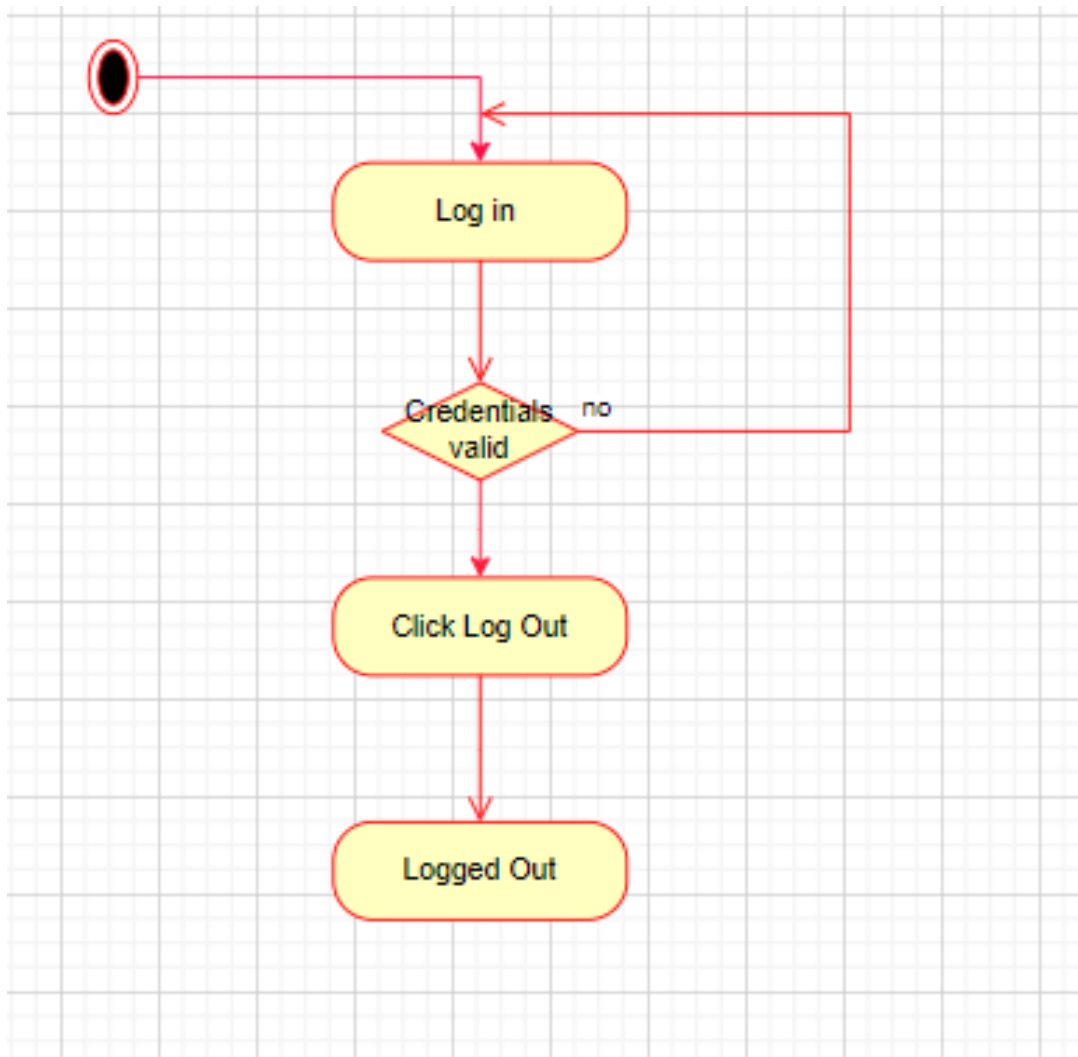
AD_09 Change Password



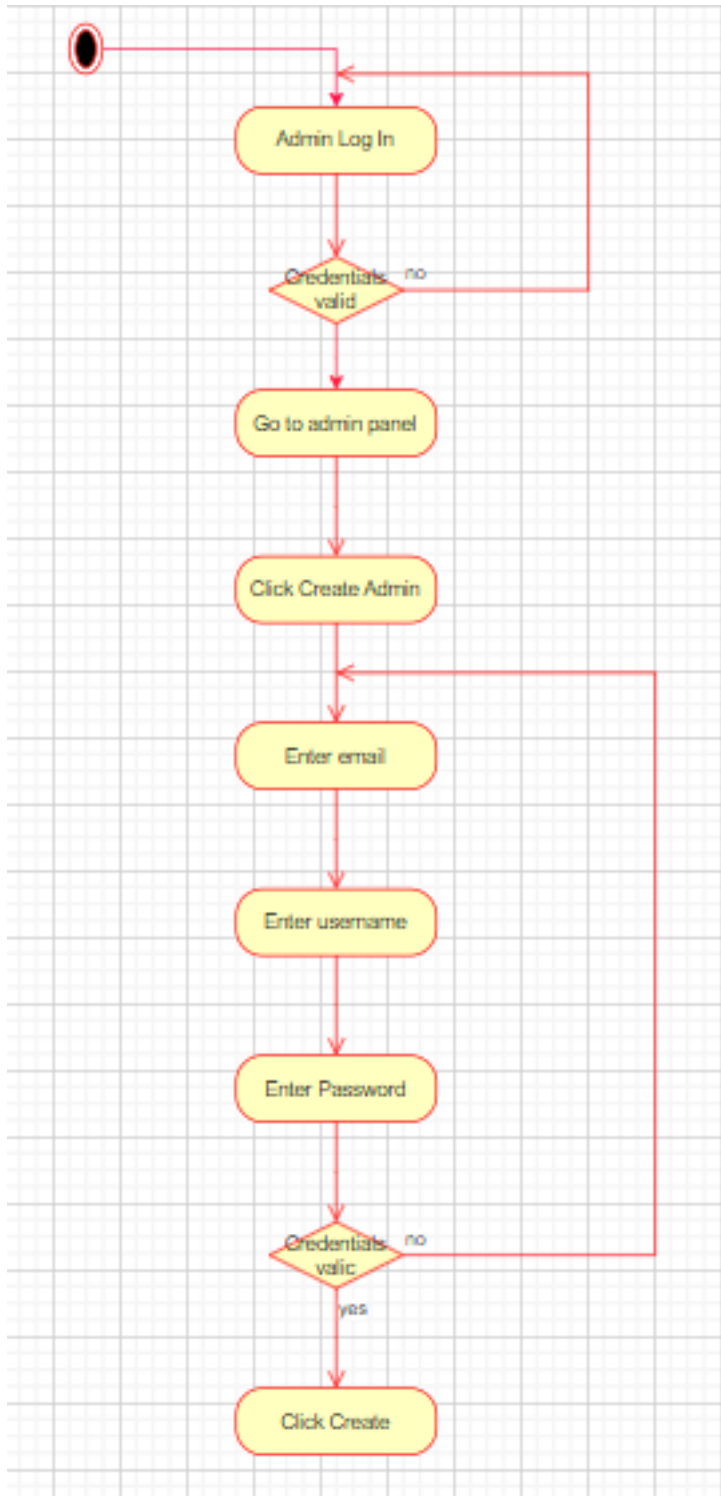
AD_10 Log in



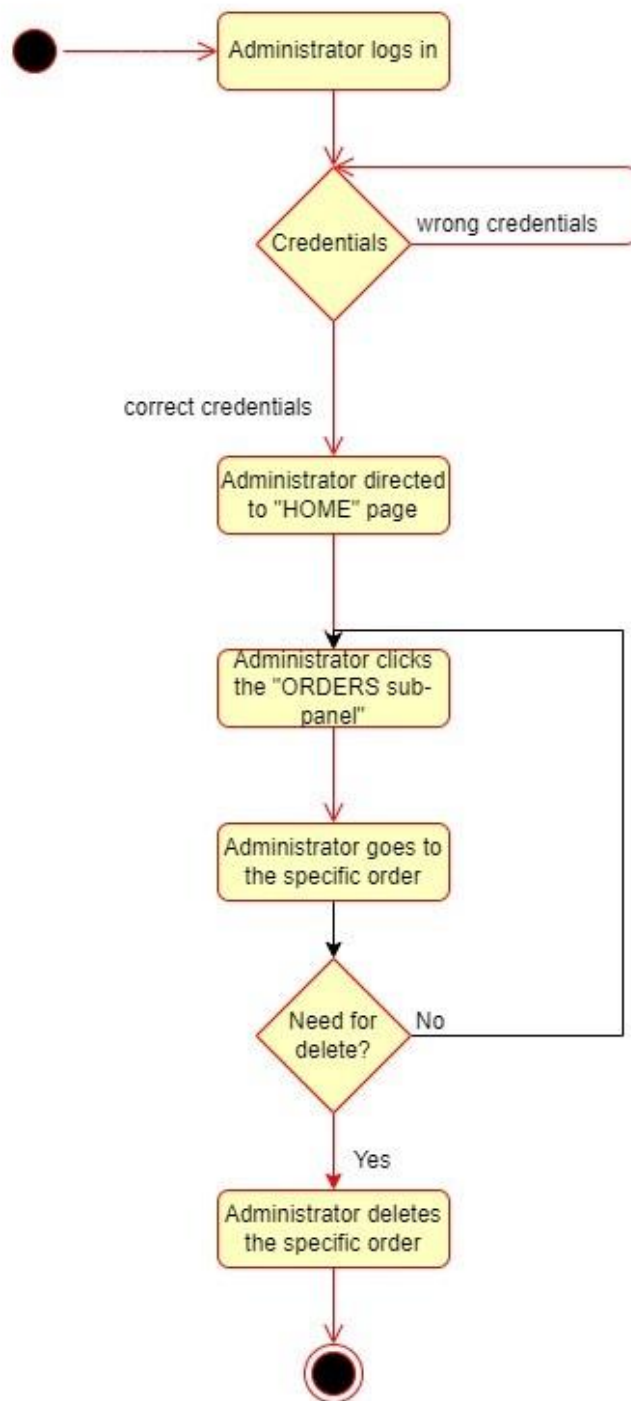
AD_11 Register



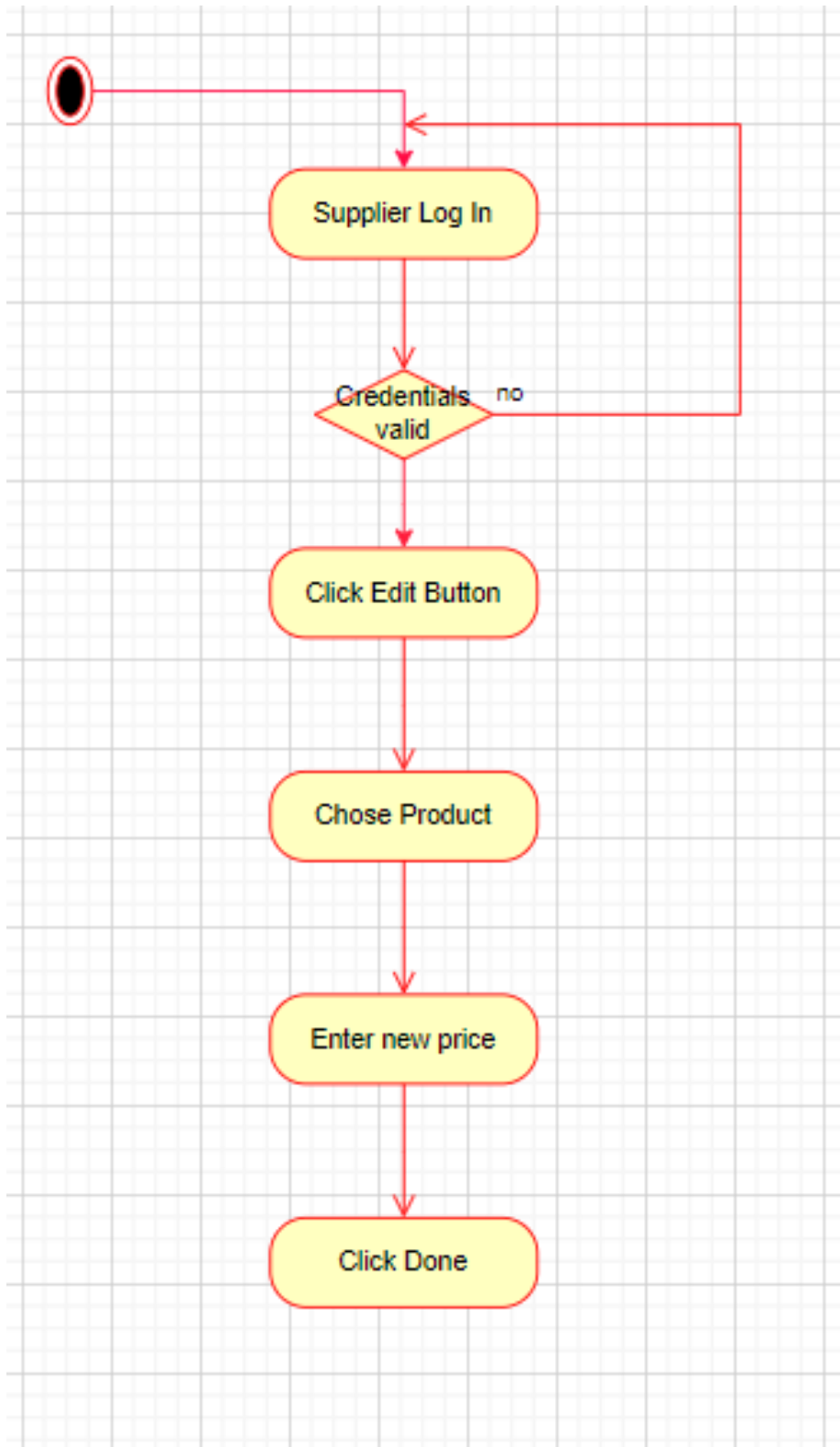
AD_12 Log Out



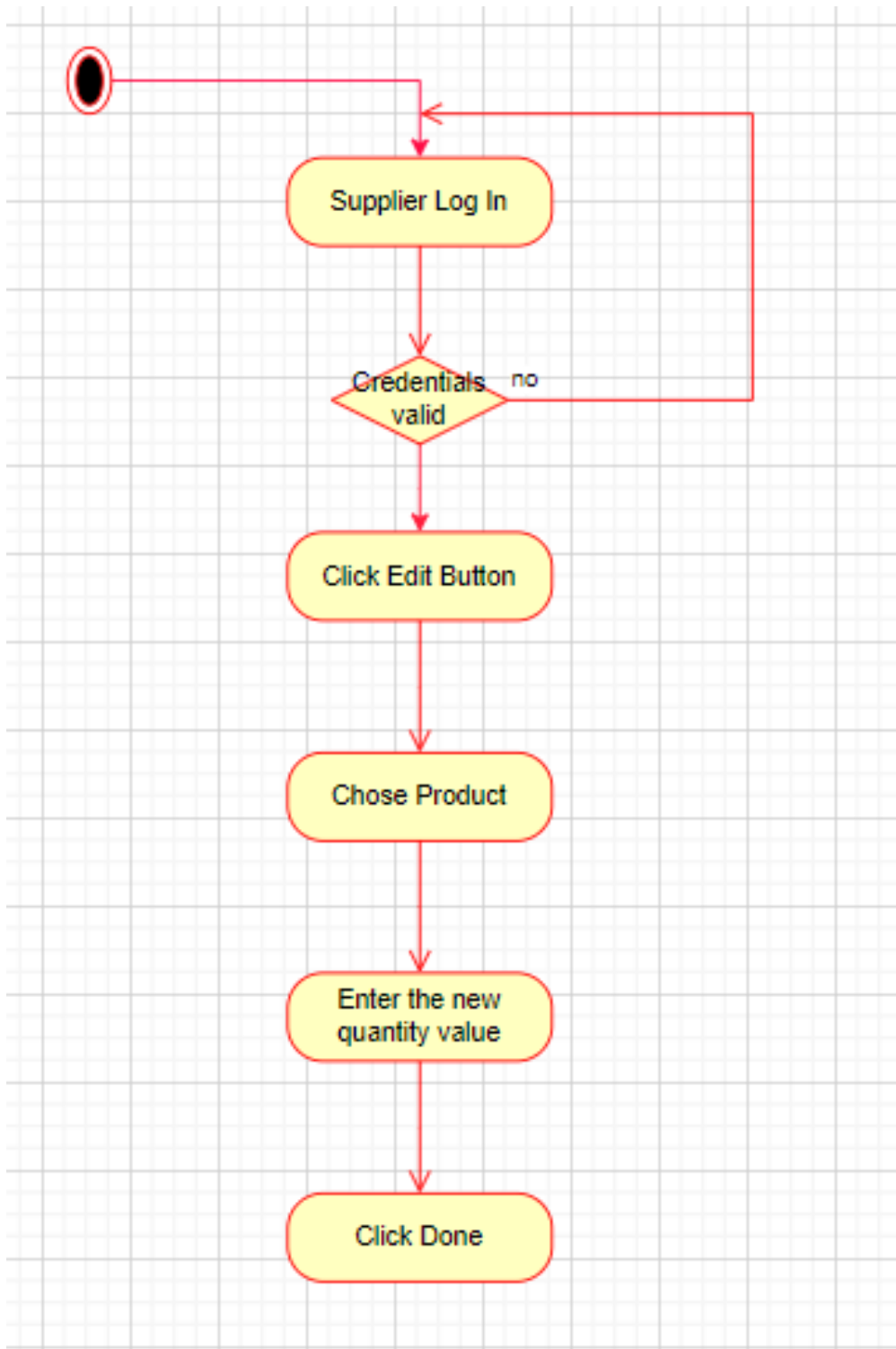
AD_13 Admin Register



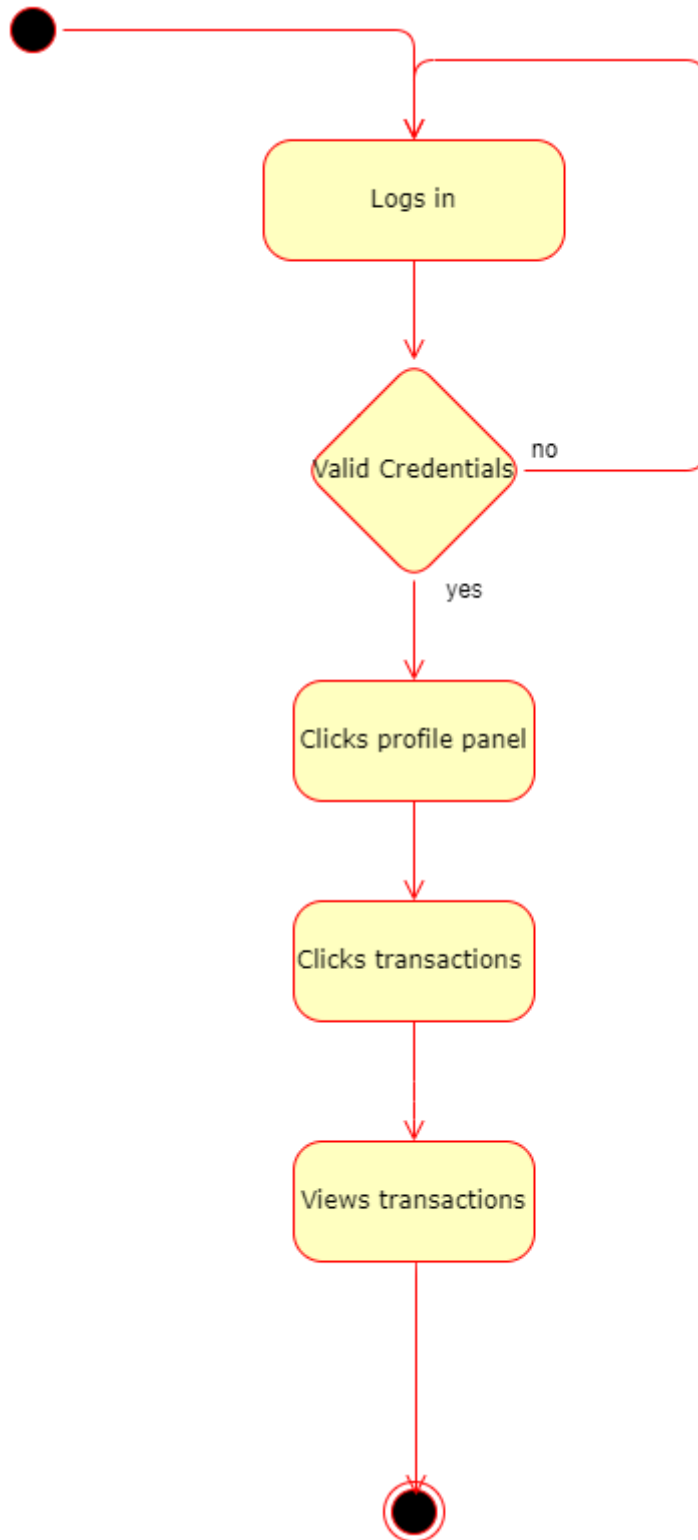
AD_14 Deletes order



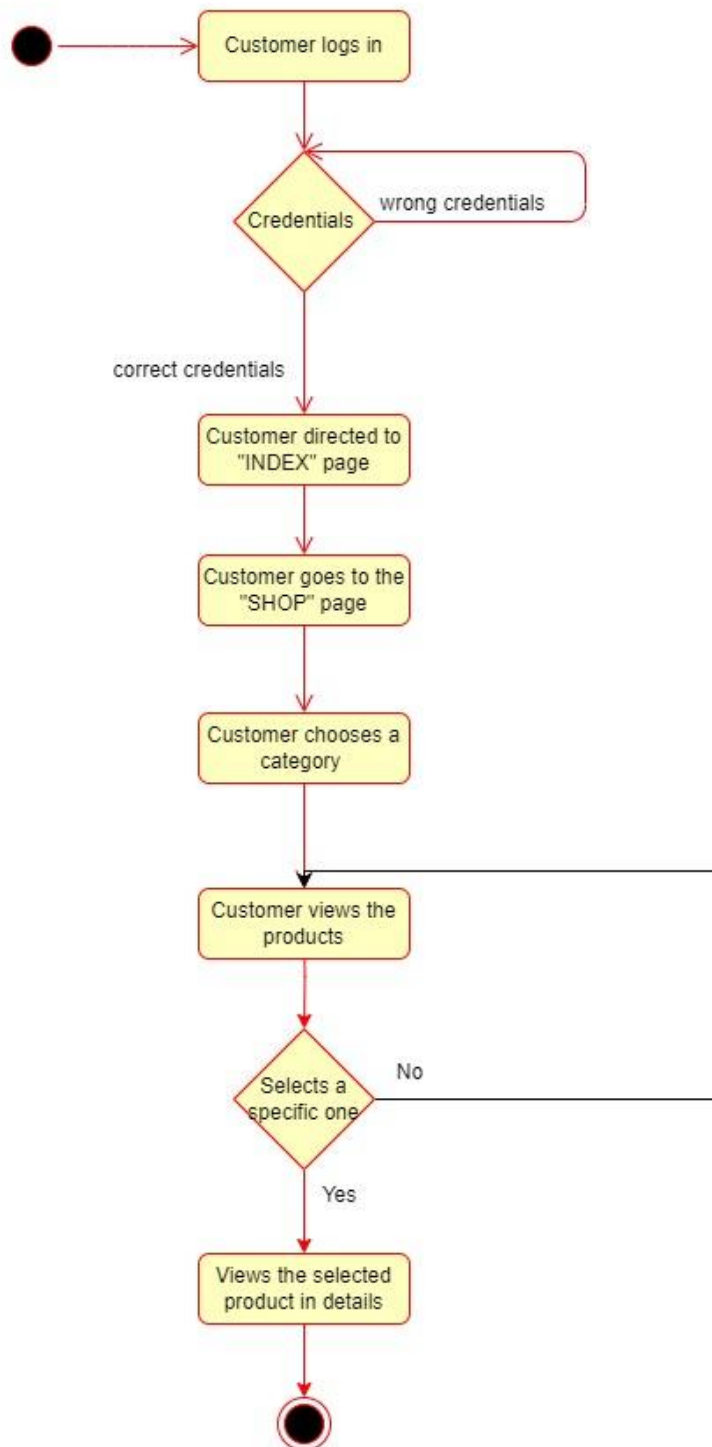
AD_15 Update price



AD_16 Update quantity

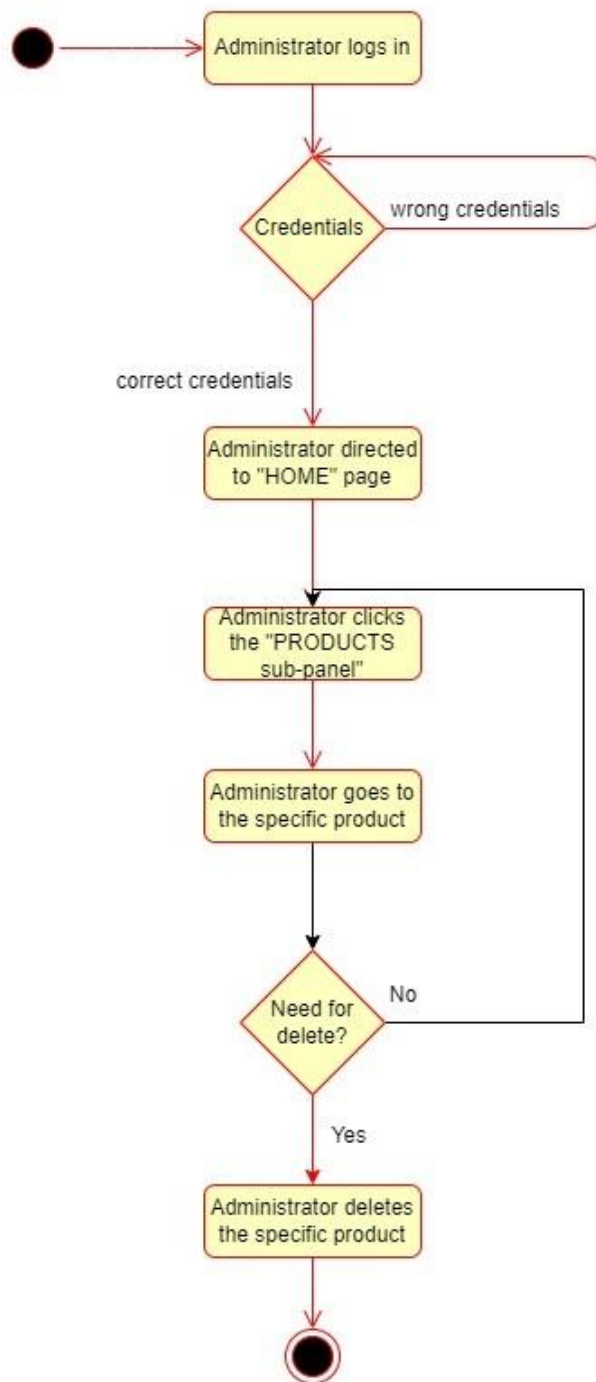


AD_17 Customer views transaction history

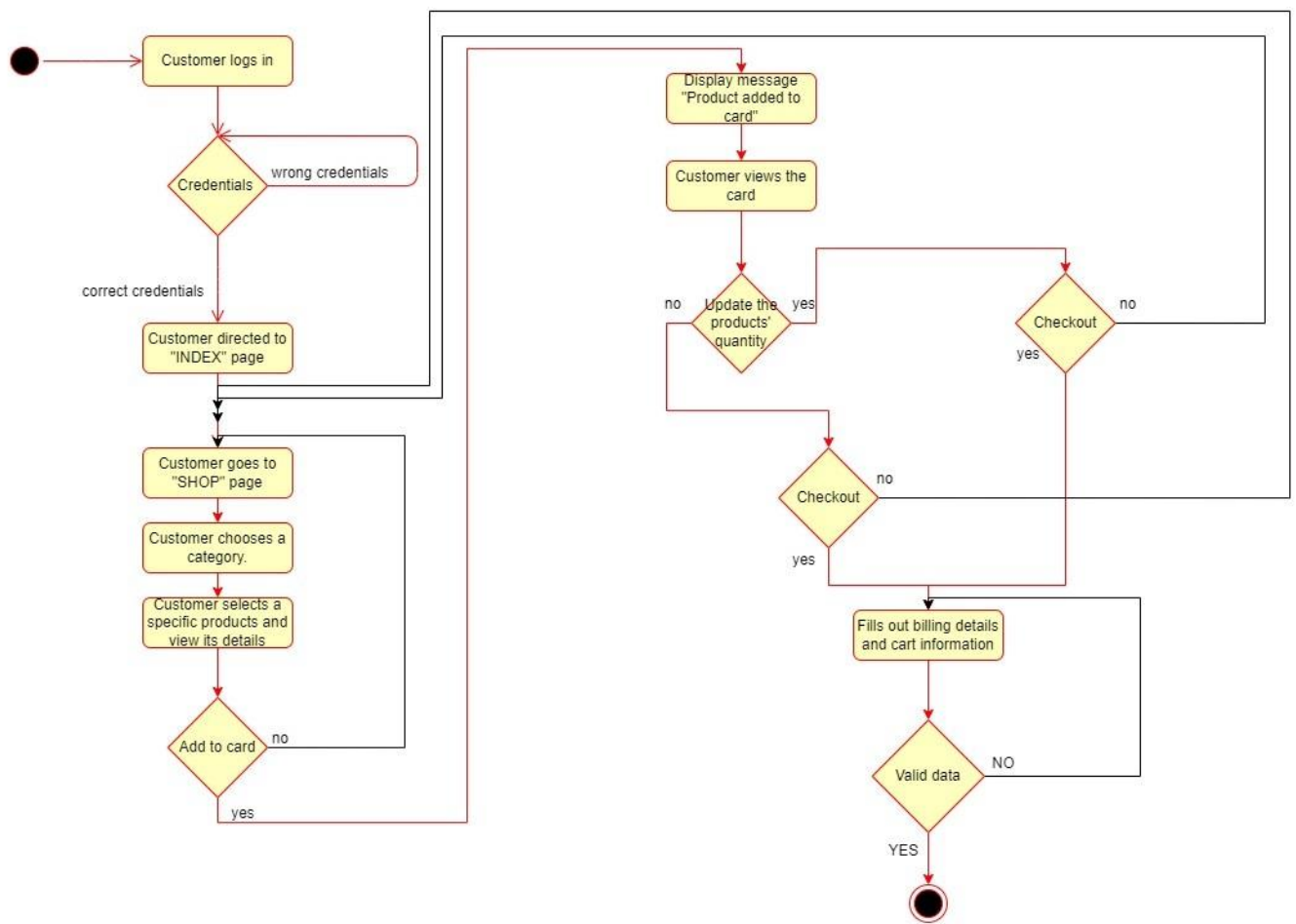


AD_18 View product's details

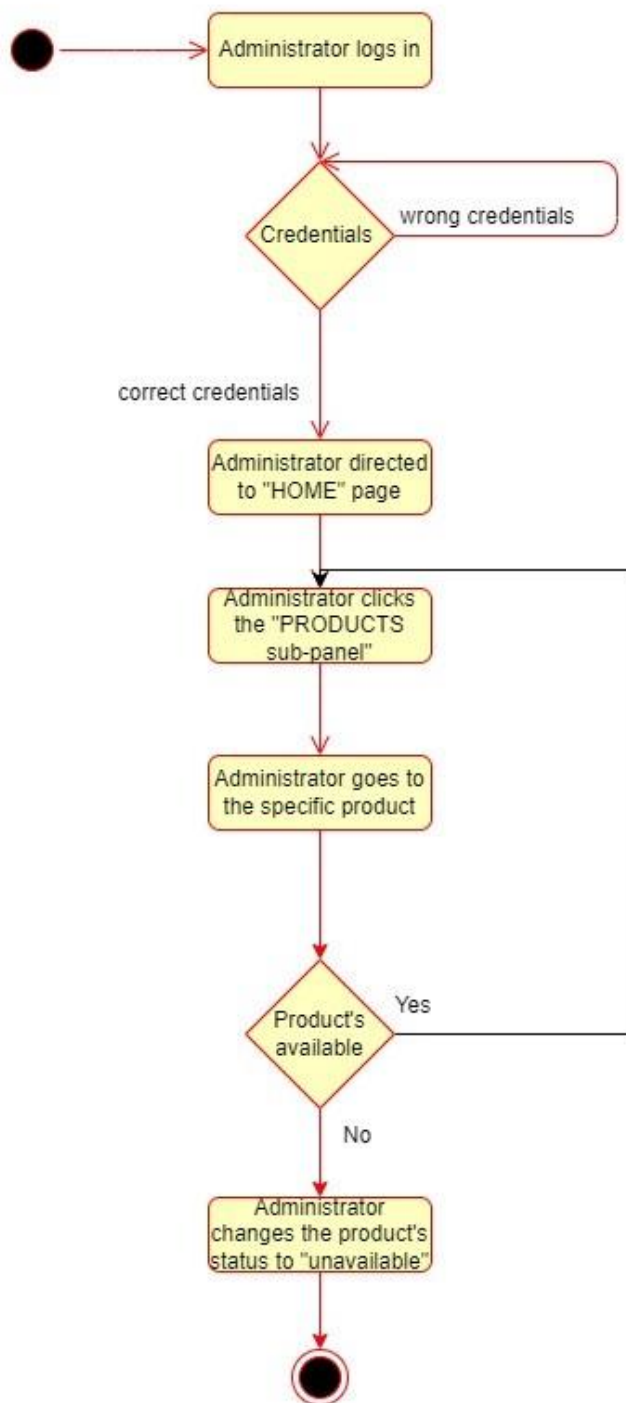
PMS Documentation



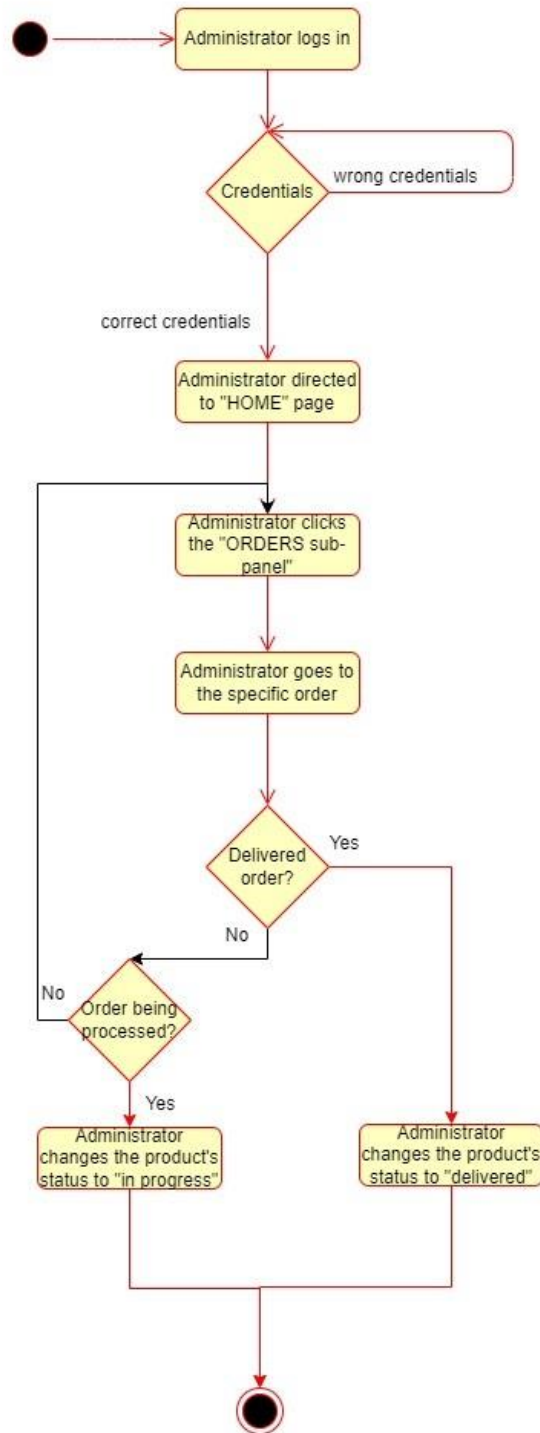
AD_19 Deletes product



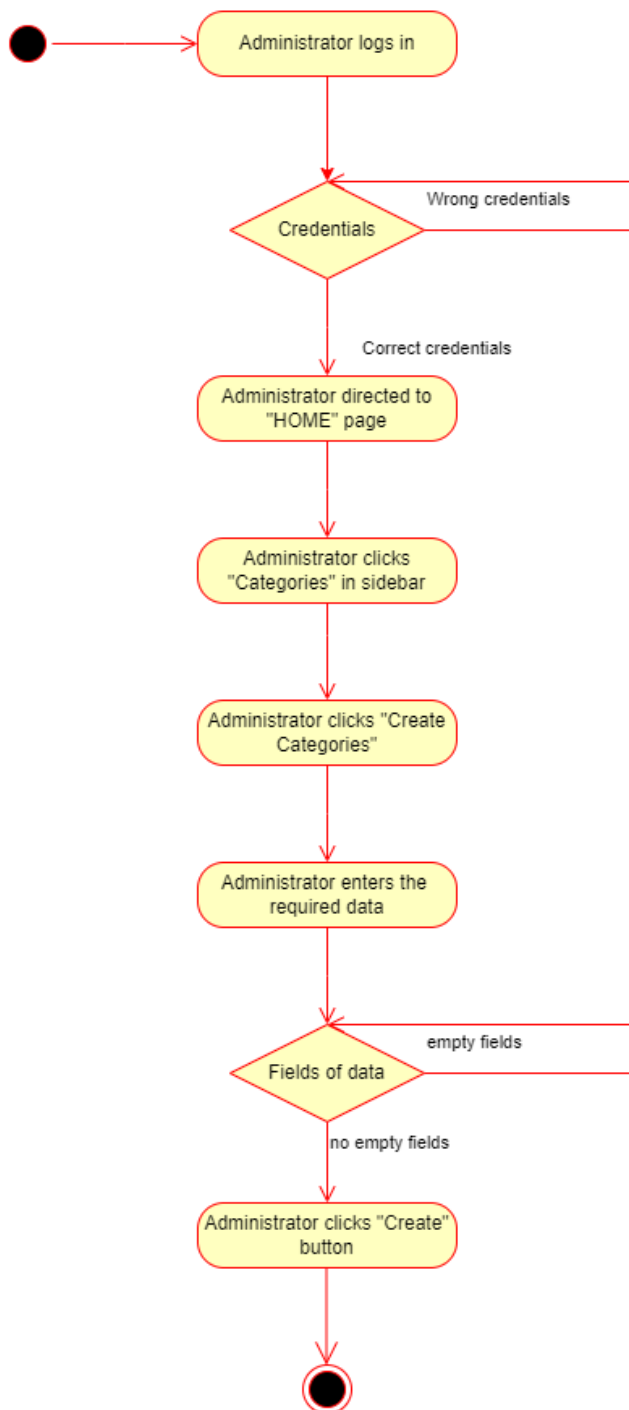
AD_20 Buy a product



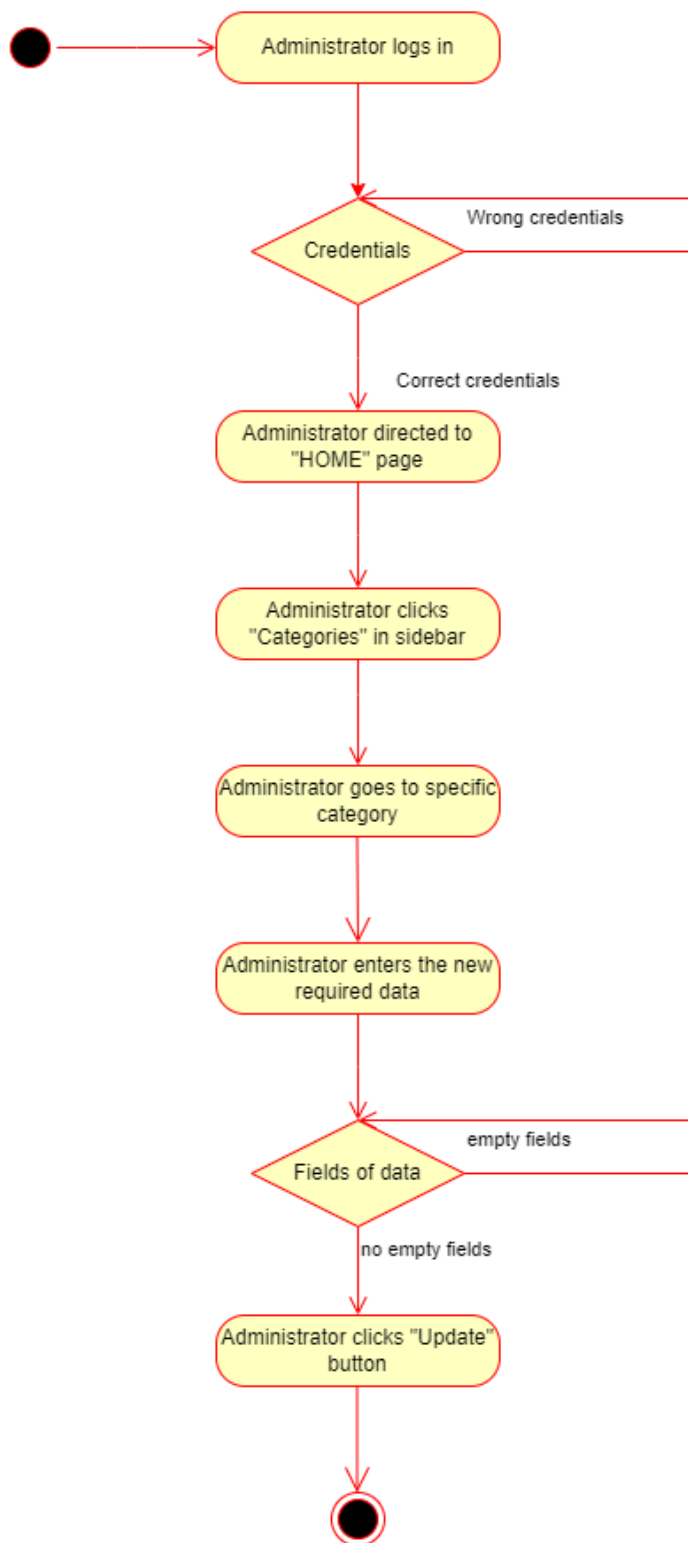
AD_21 Change product's status



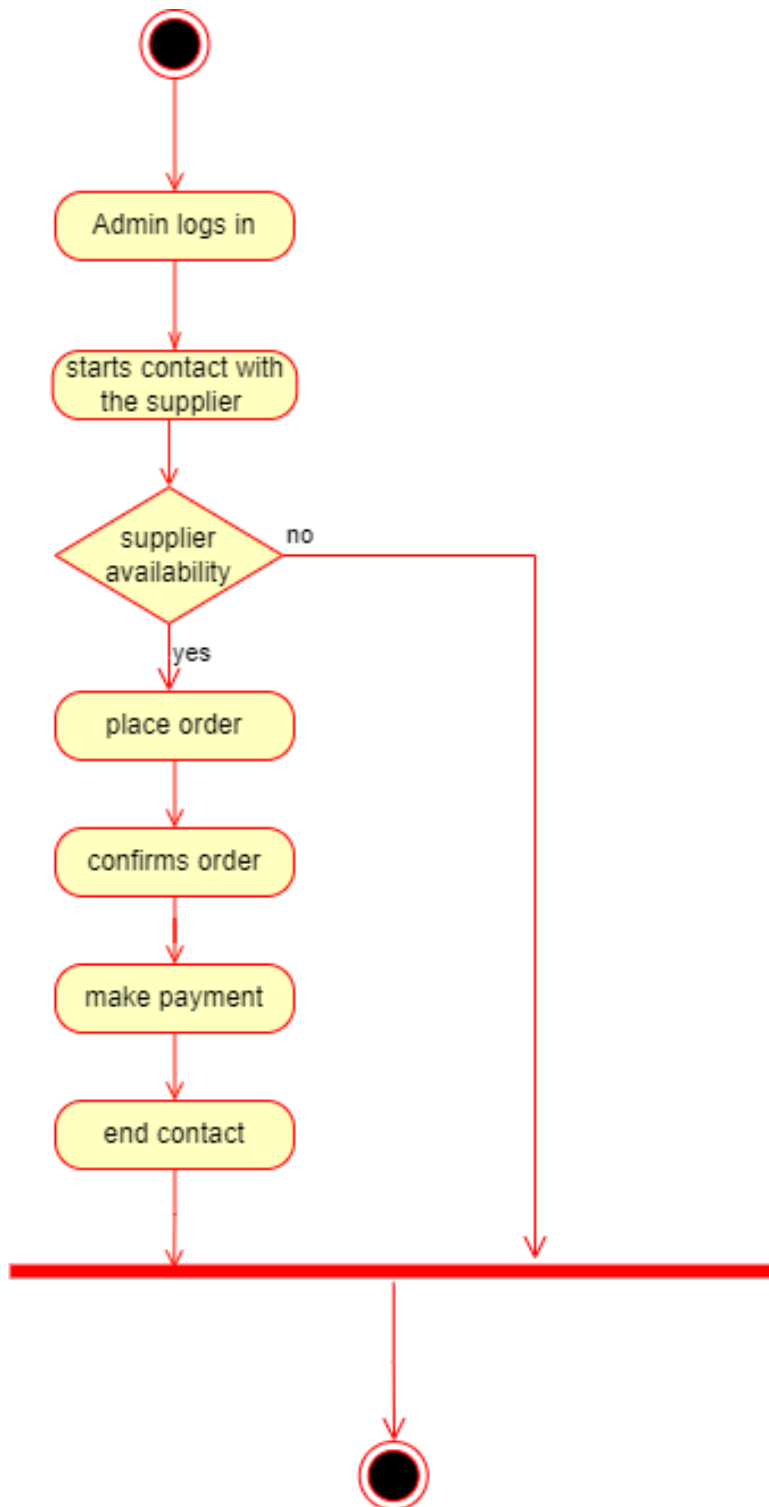
AD_22 Update Order status



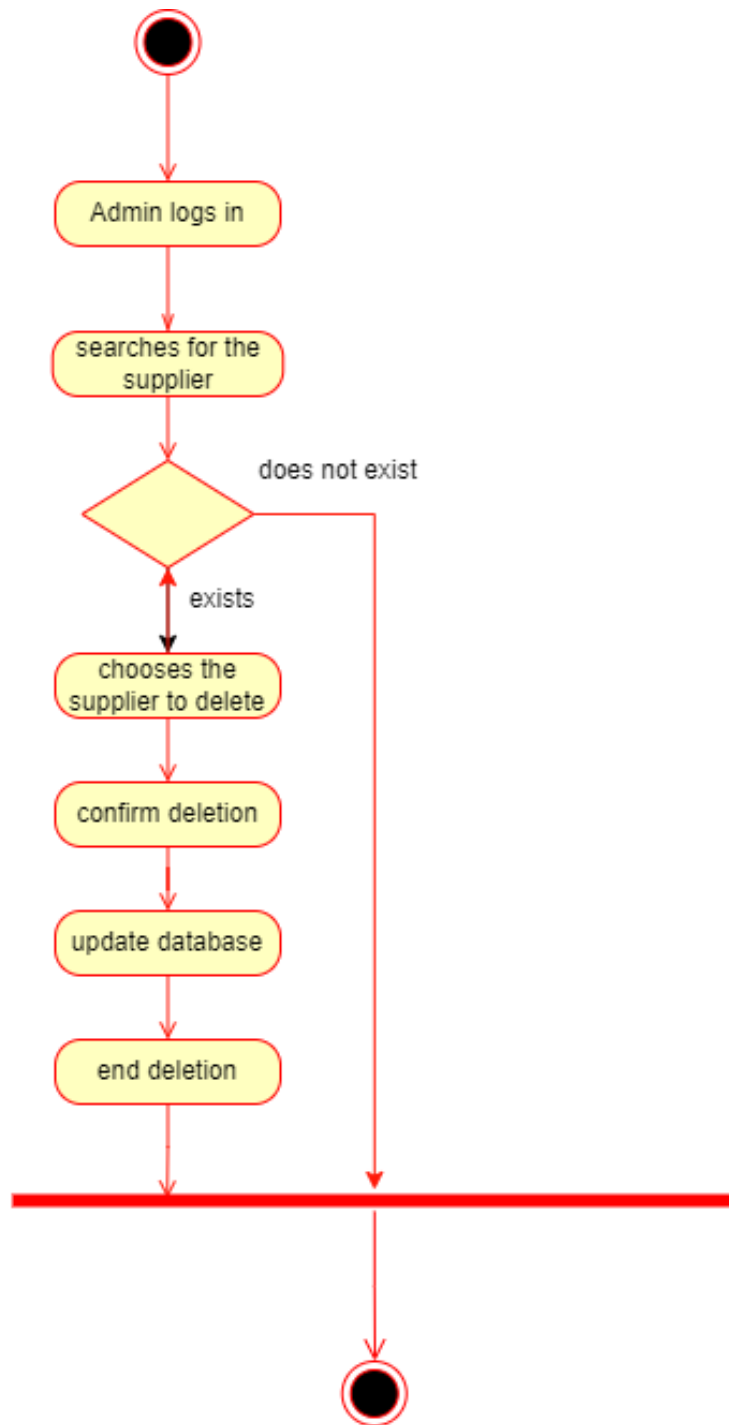
AD_23 Create category



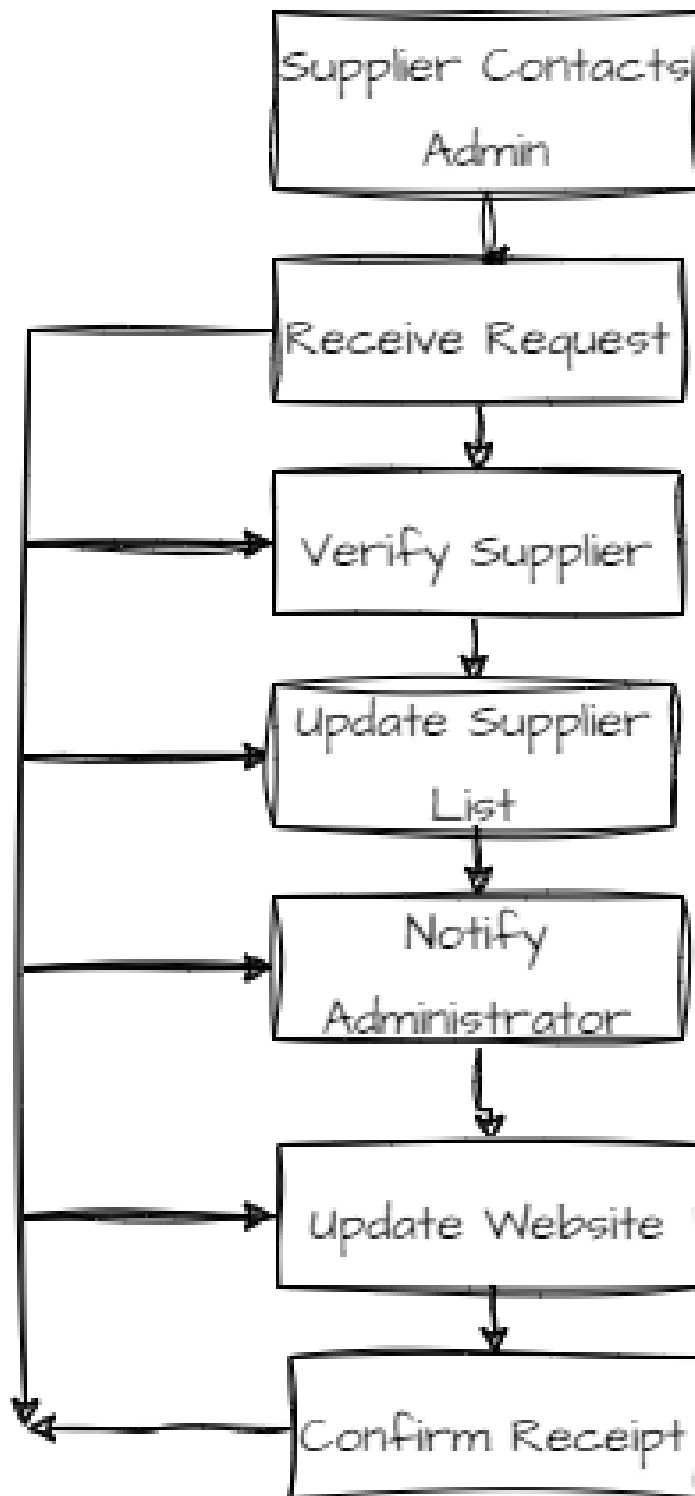
AD_24 Update category



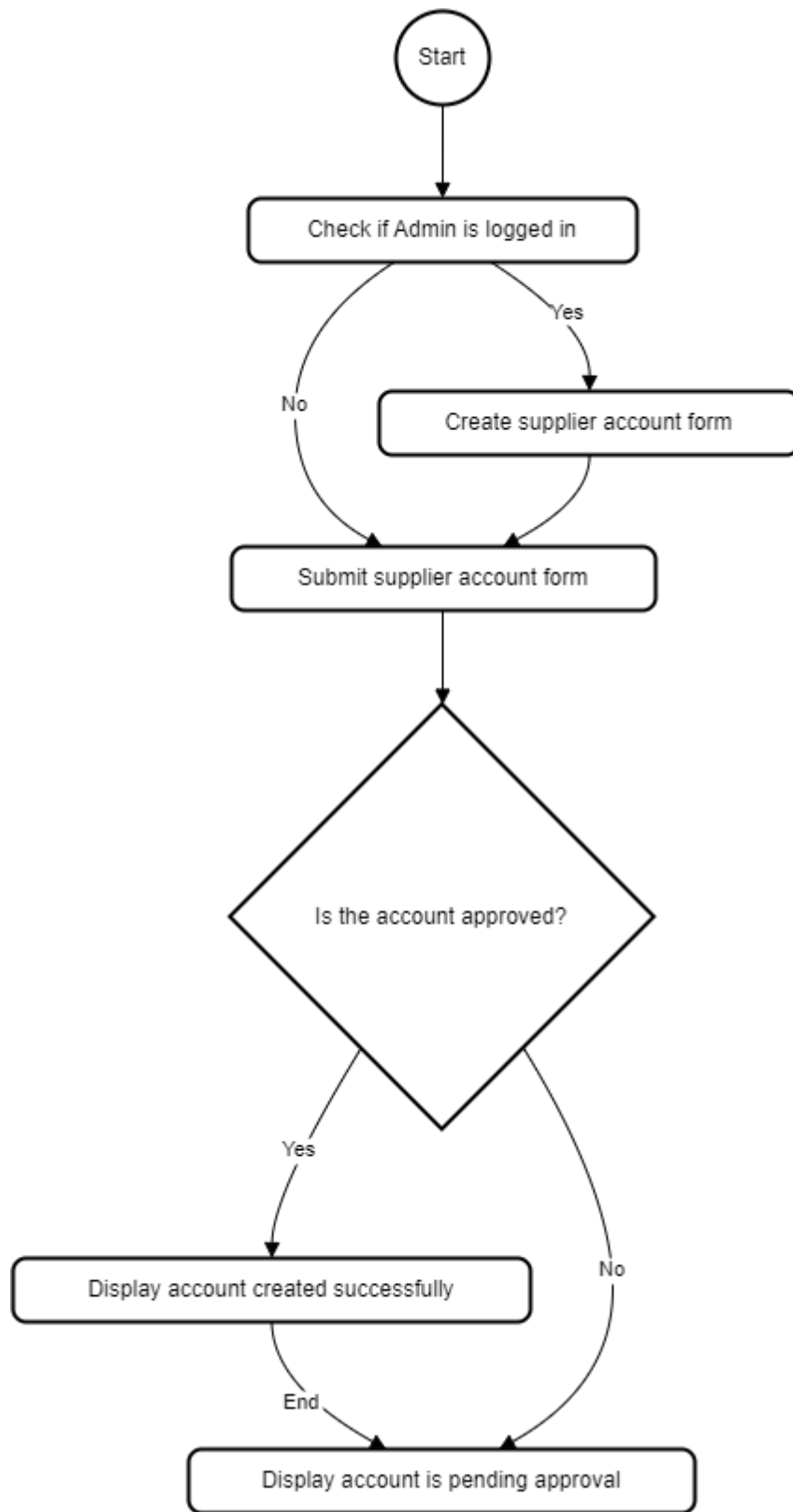
AD_25 Administrator contacts supplier



AD_26 Admin deletes a supplier account

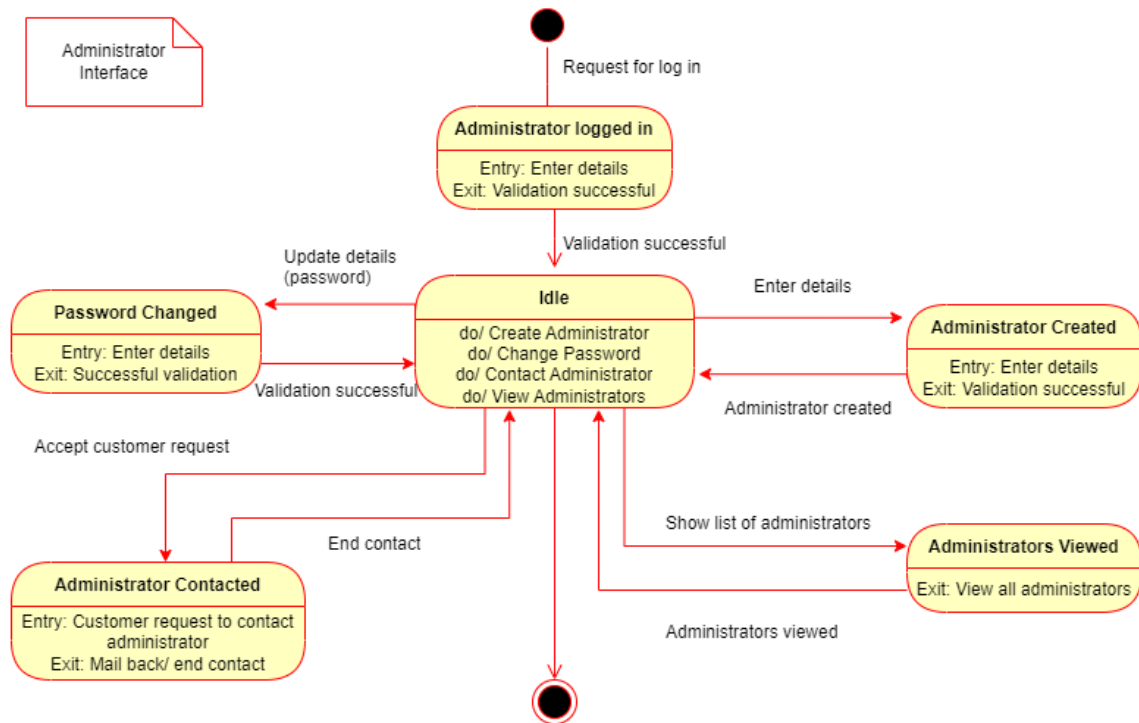


AD_27 Supplier contacts administrator



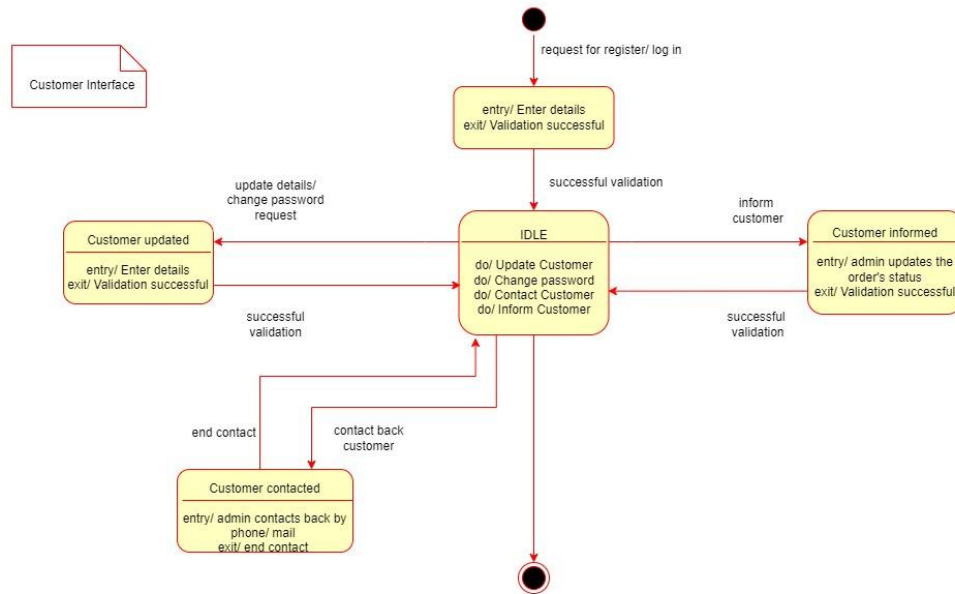
AD_28 Admin creates supplier's account

4.3.3 State Diagrams

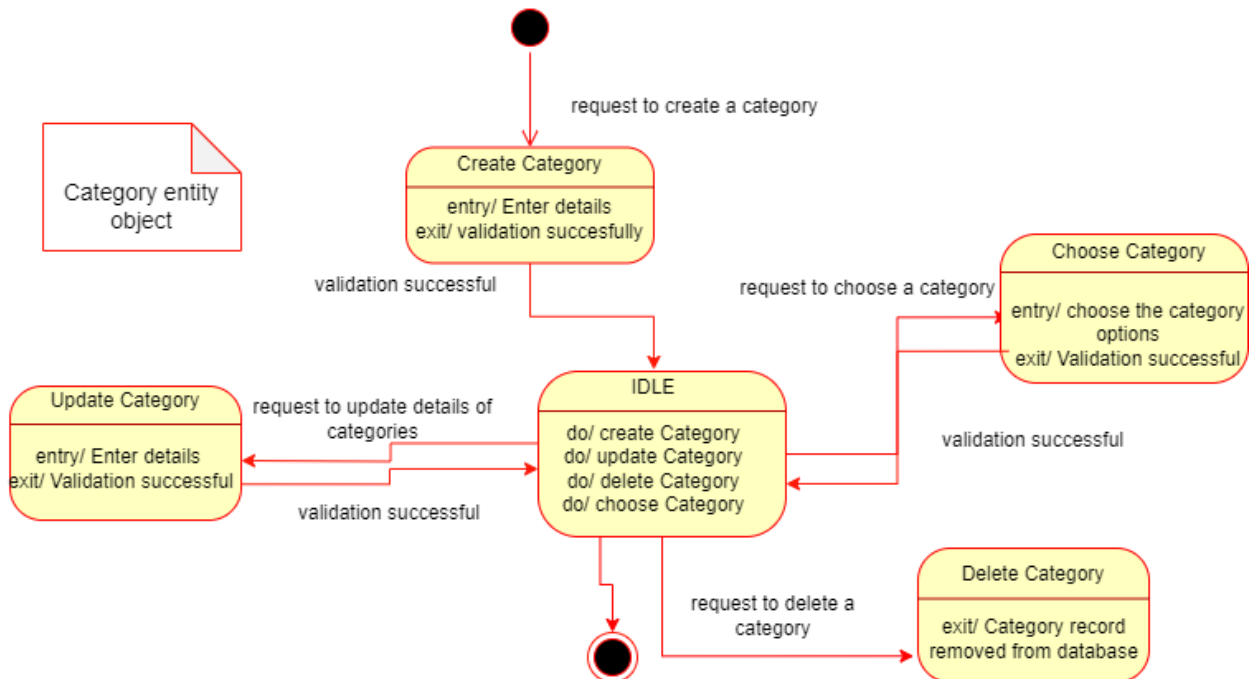


SD_01 Administrator

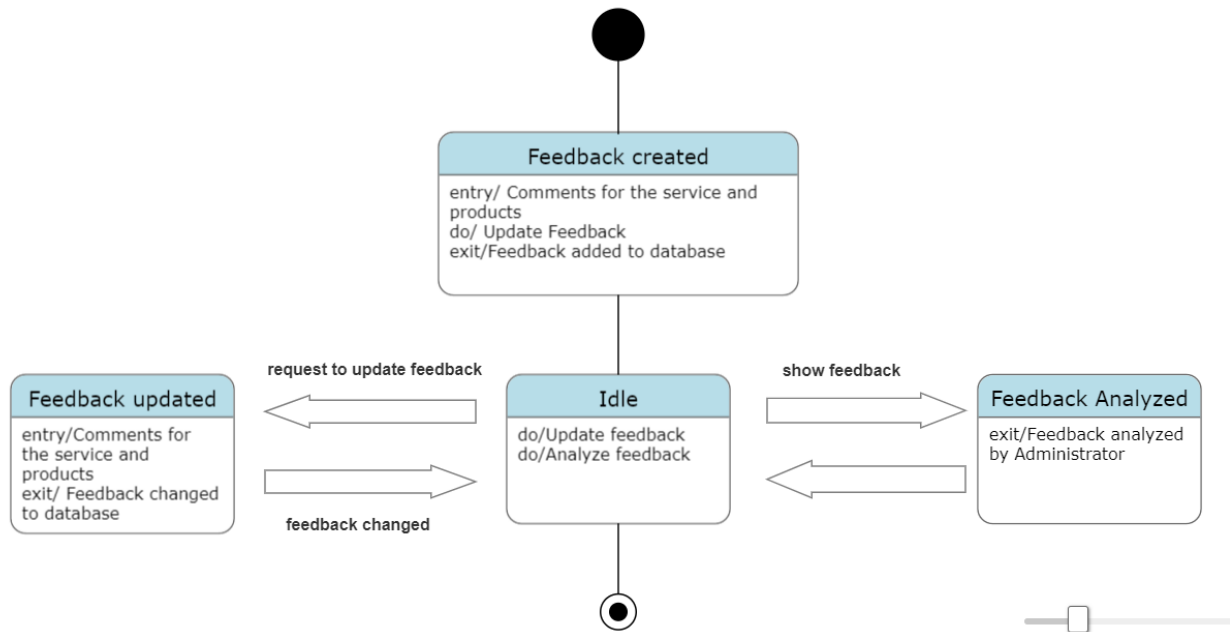
PMS Documentation



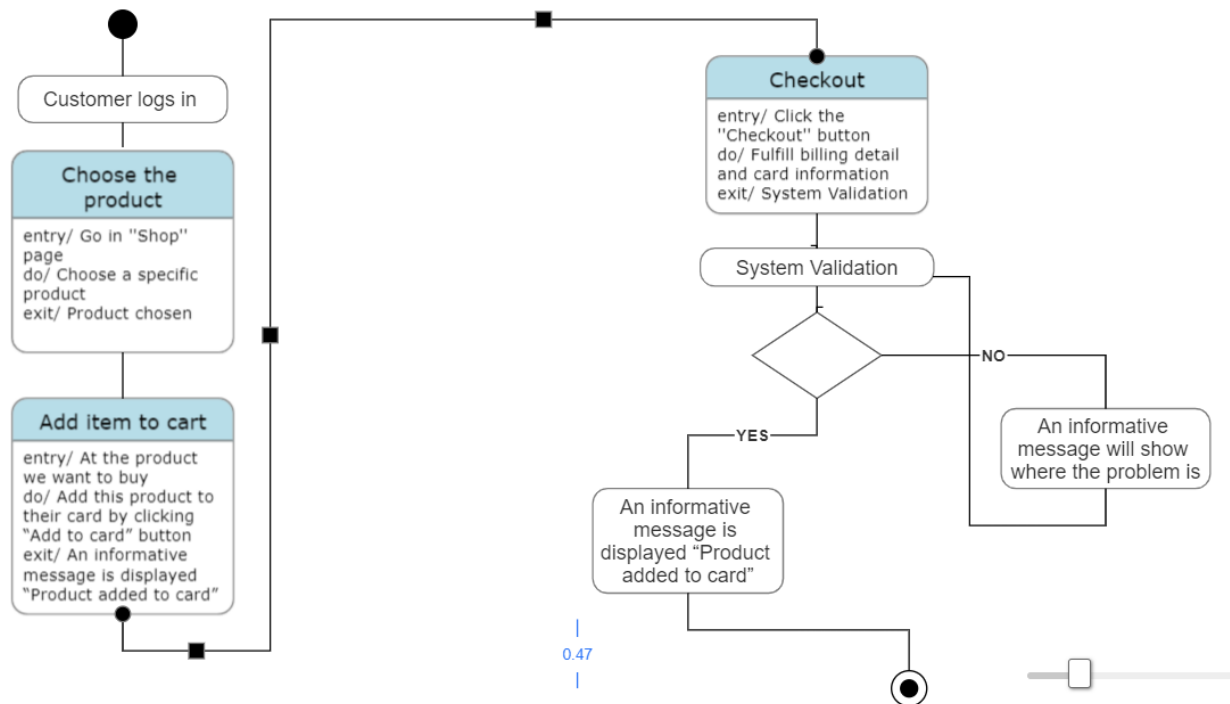
SD_02 Customer



SD_03 Category

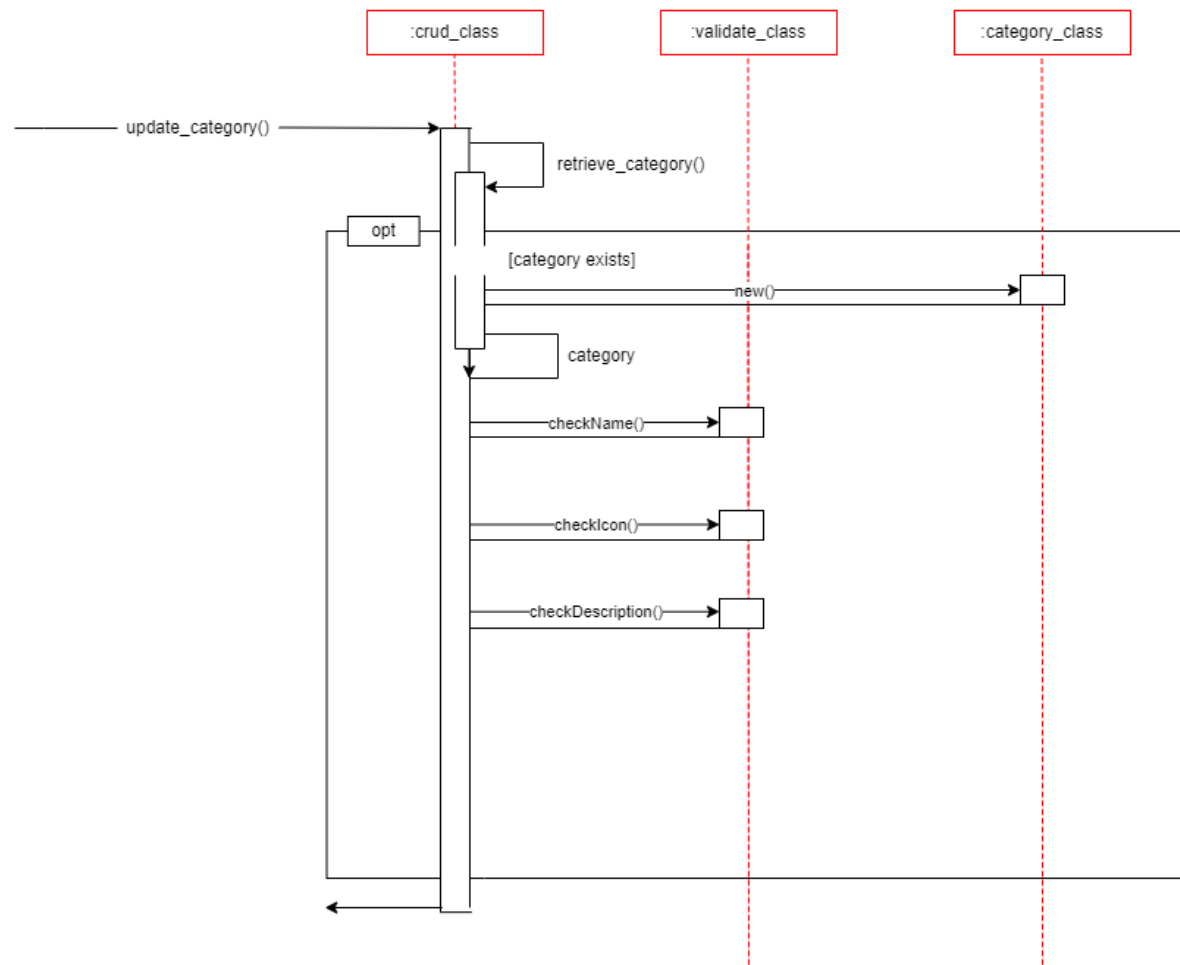


SD_04 Feedback

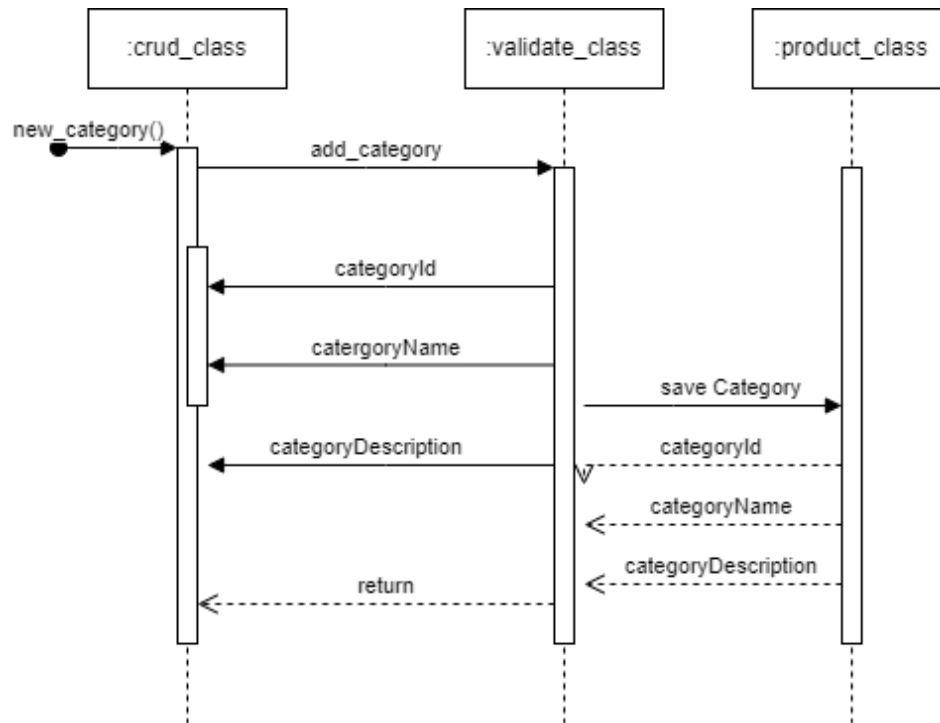


SD_04 Make an order

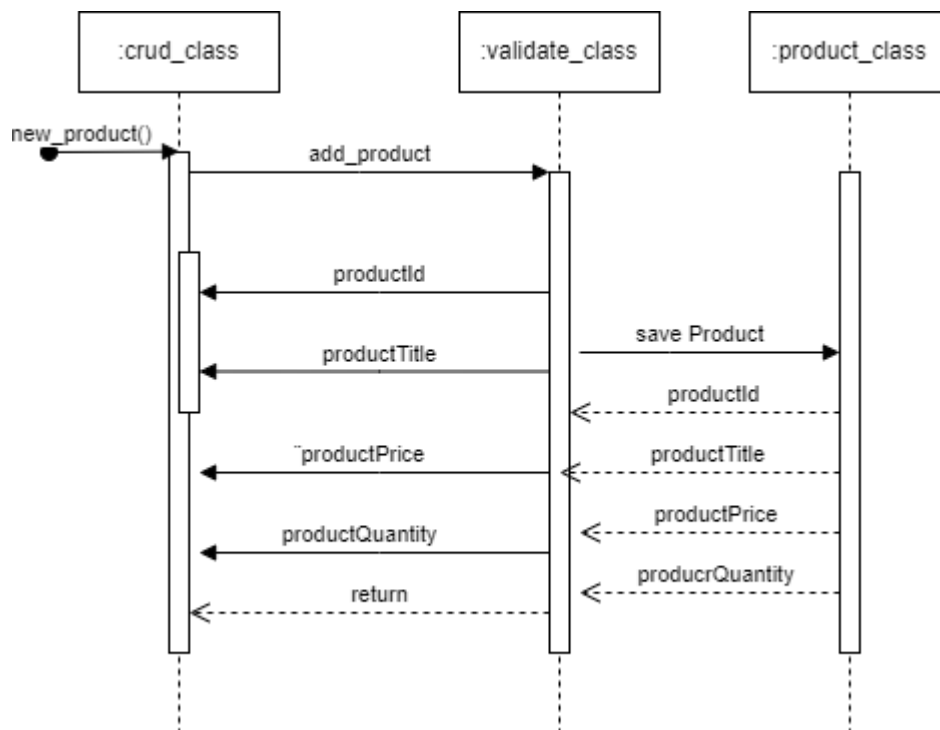
4.4.4 Sequence Diagrams



SED_01 Update category

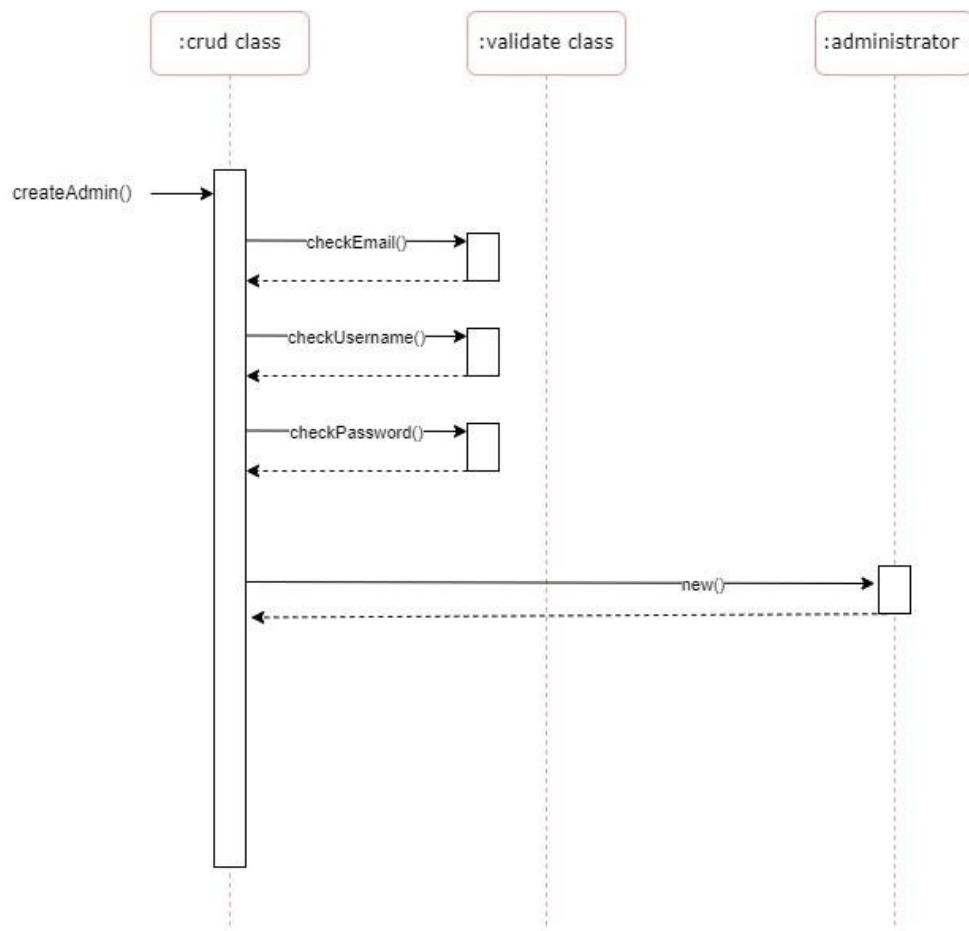


SED_02 Create a new category

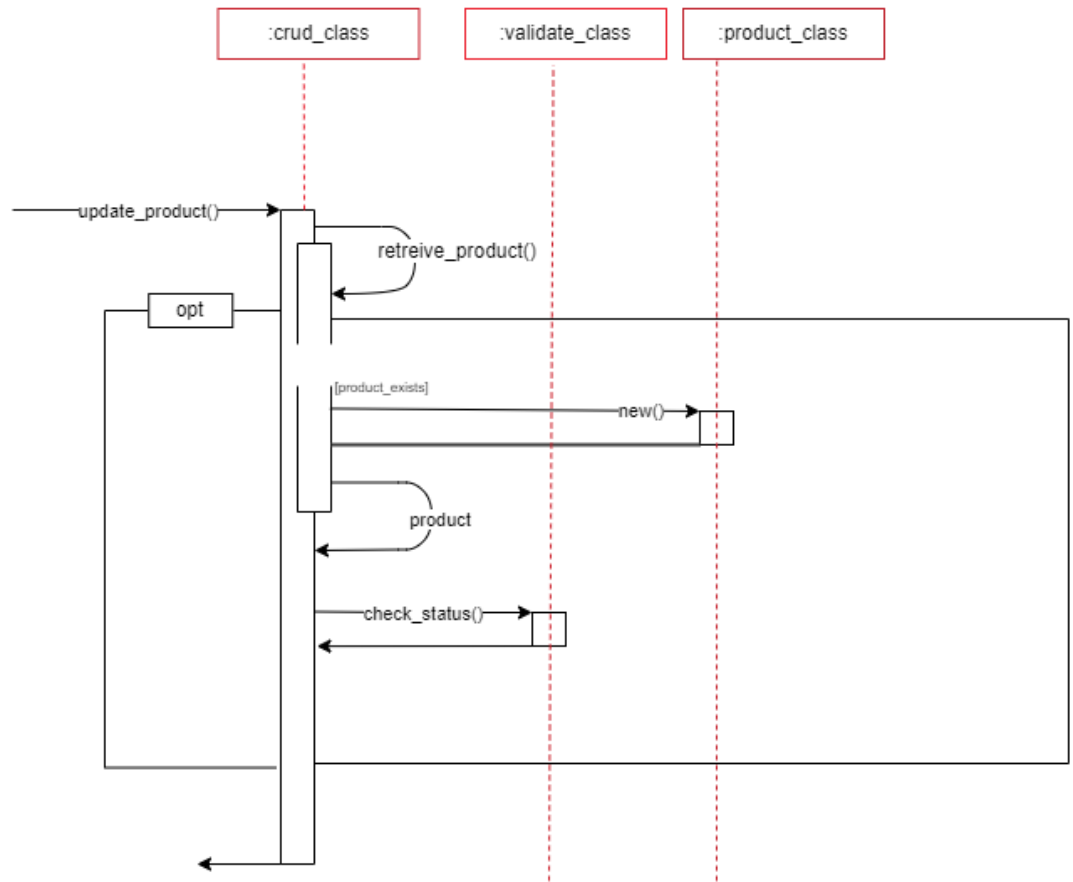


SED_03 Create a new product

create an administrator account

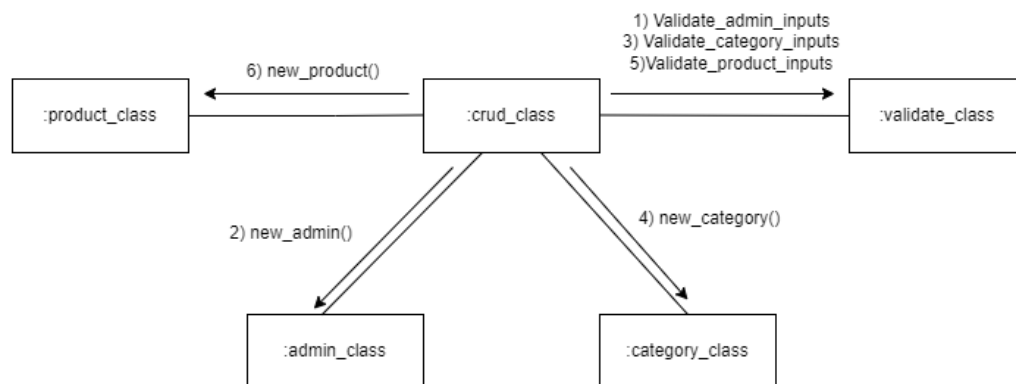


SED_04 Create a new admin Account

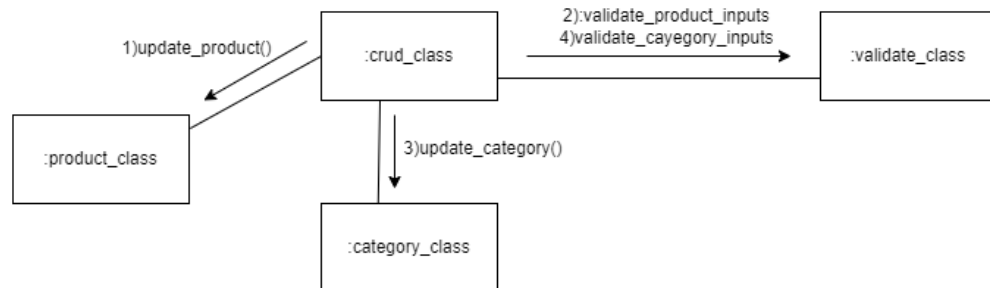


SED_05 Update product

4.4.5 Collaboration Diagrams

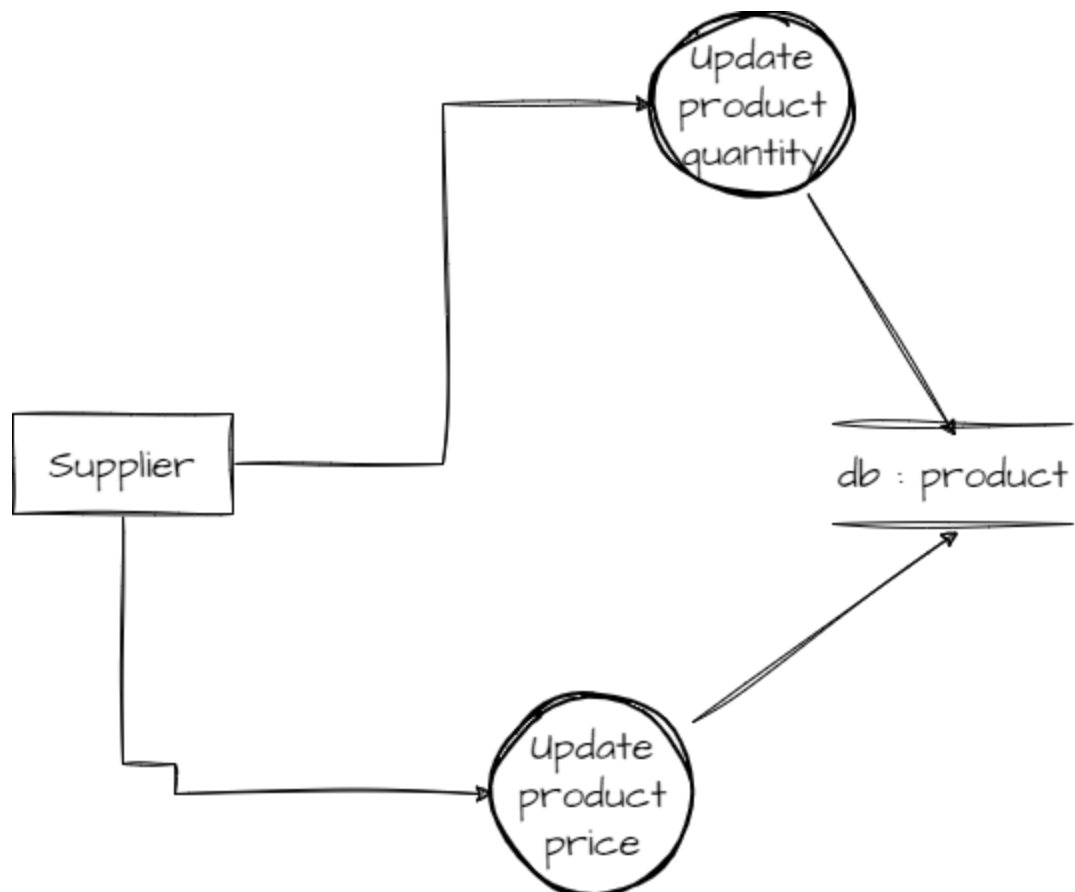


CD_01 Create admin, category, product

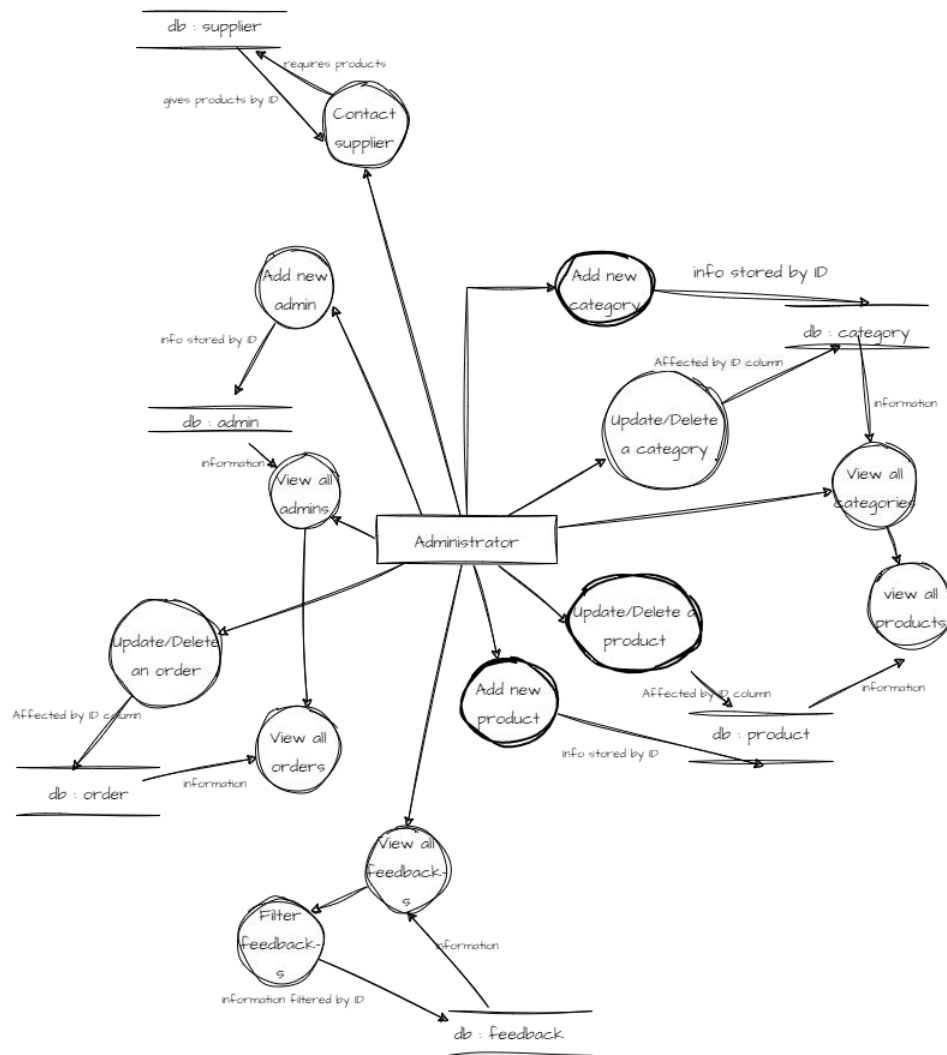


CD_02 Update product, category

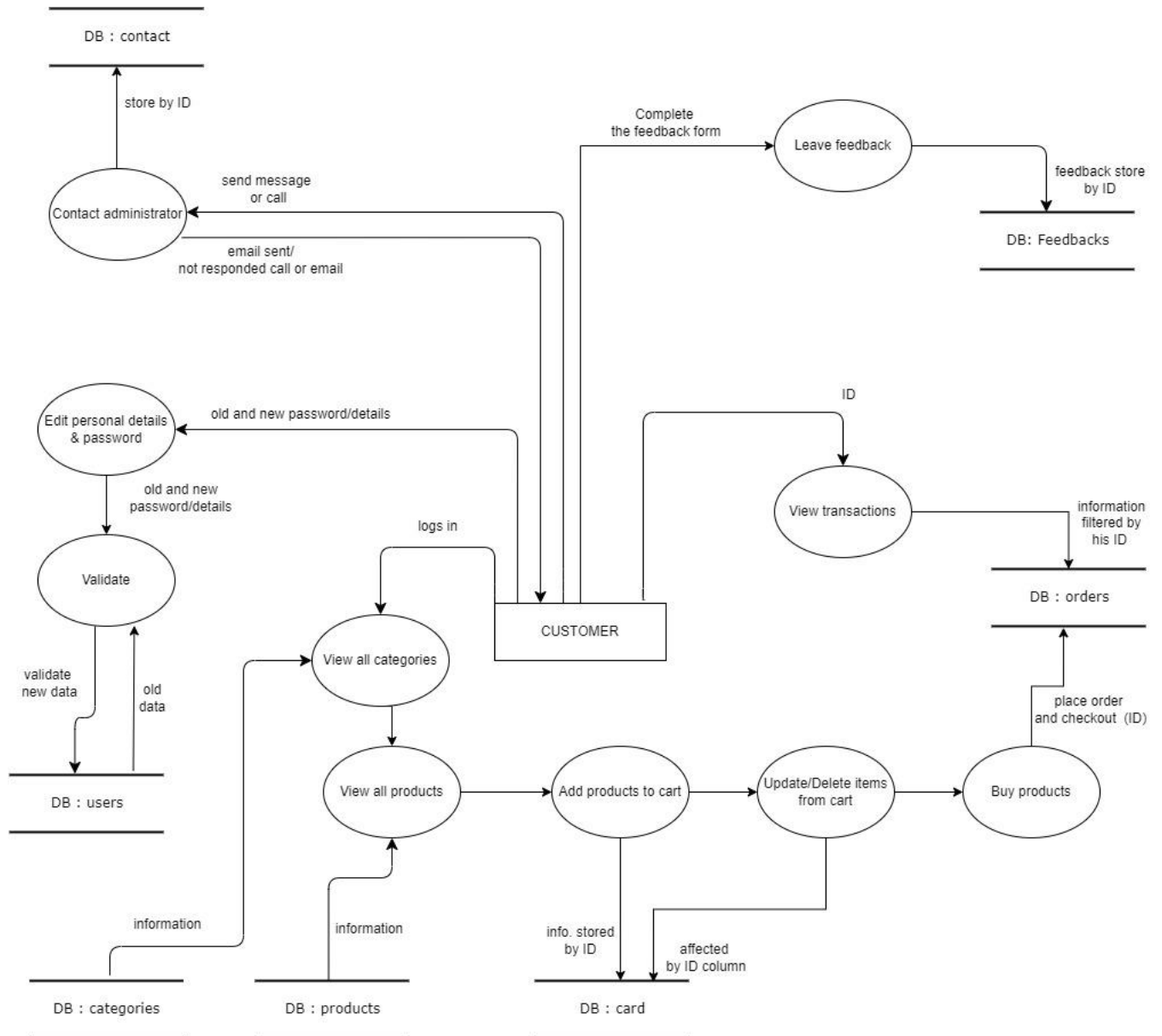
4.3 Data Flow Diagrams



DF_01 Supplier



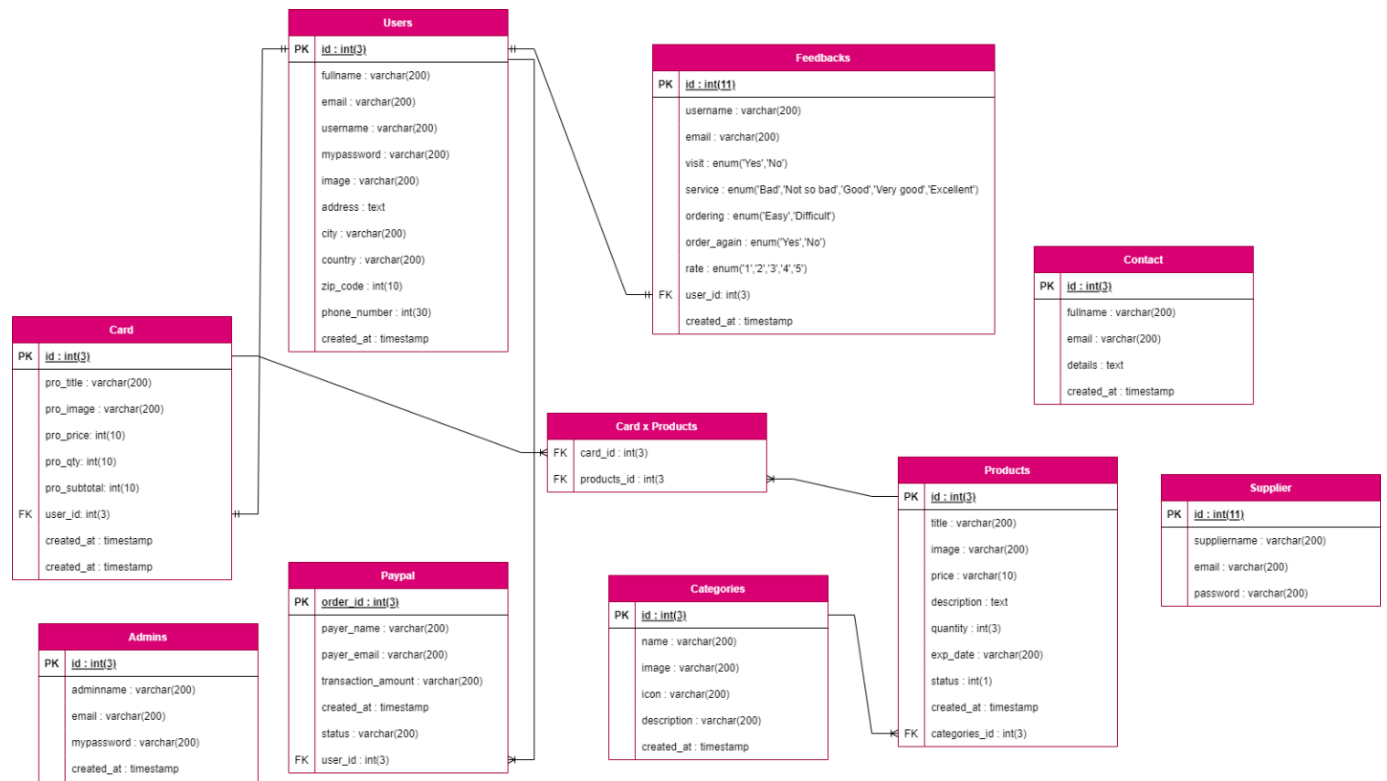
DF_02 Administrator



DF_03 Customer

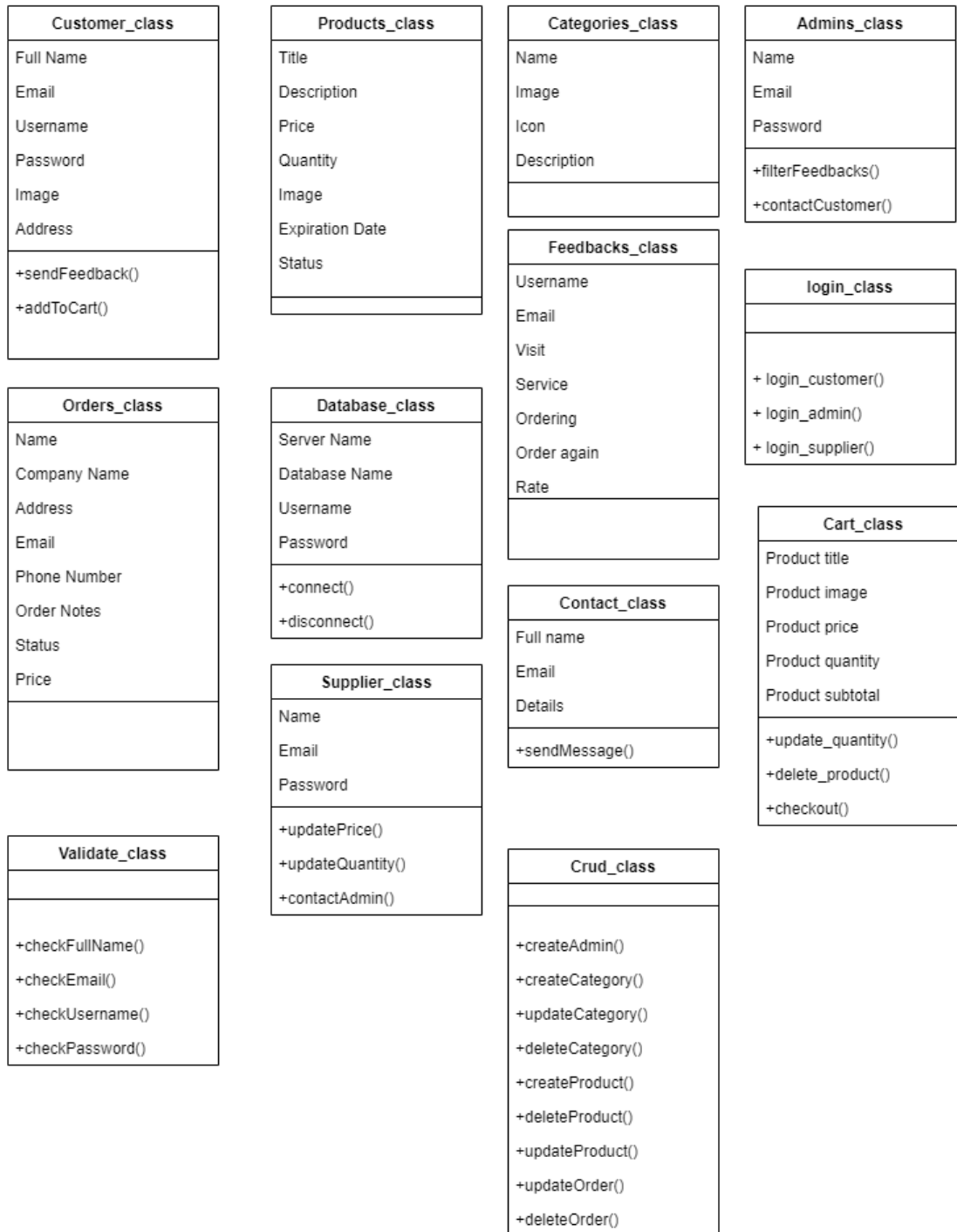
4.4 Entity Relation

4.4.1 Database Schema Design

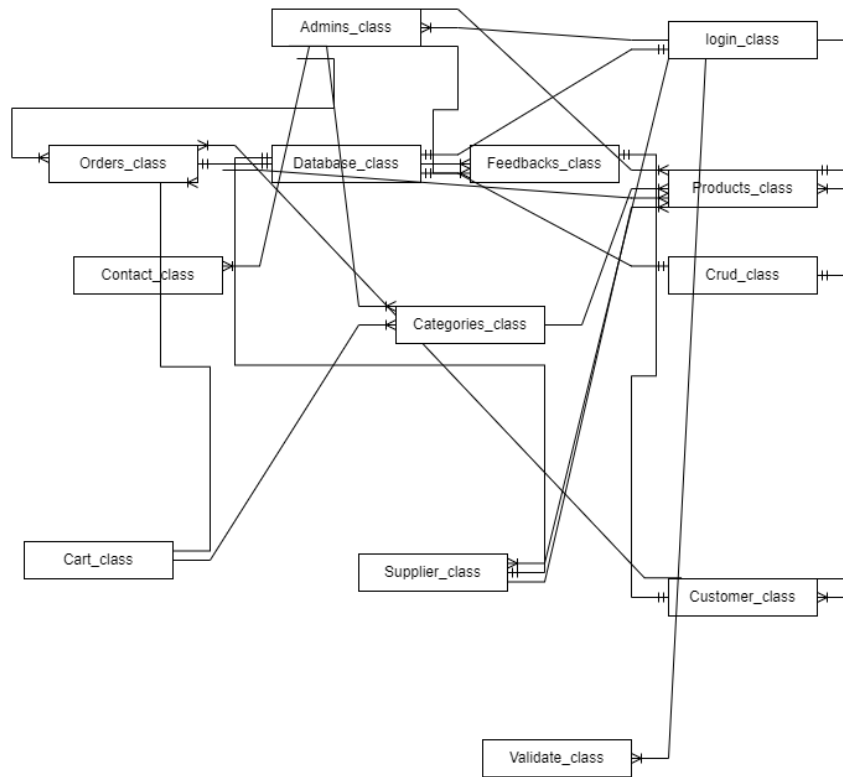


4.5 Structural Diagrams

4.5.1 Class Diagram



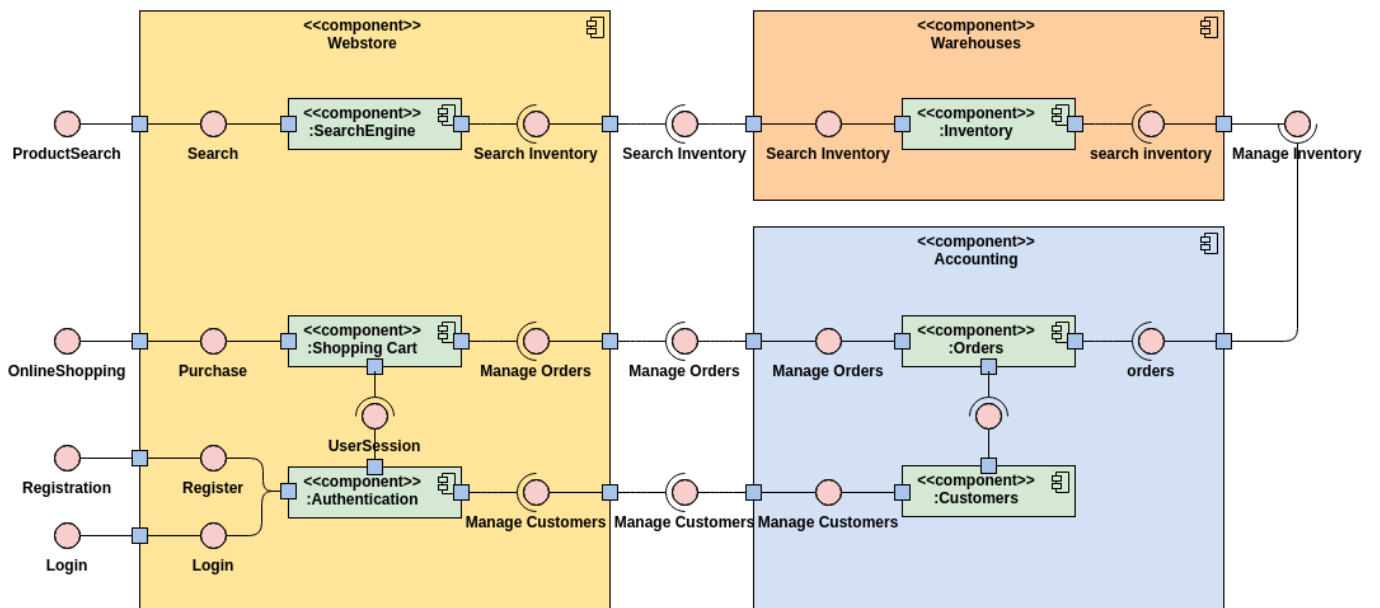
CD_01 – Attributes and methods list for each class



CD_02 – Relation between classes

4.5.2 Object Diagram

4.5.3 Component Diagram



Component Diagram

4.5.4 Deployment Diagram

5 Implementation Technology

Our pastry shop website has been implemented using a combination of technologies that work together seamlessly to deliver an outstanding user experience. In the front-end, we have utilized HTML and CSS Bootstrap to create a visually appealing and responsive website that is optimized for all devices. Bootstrap allowed us to create a modern and intuitive design that is easy to navigate and user-friendly.

In the back-end, we have used PHP, a popular server-side scripting language, to build dynamic web pages and handle server-side processing. We have also utilized MySQL, a powerful and scalable relational database management system, to store and manage our website's data. PHP and MySQL work together seamlessly to provide efficient data processing and management, allowing us to provide our customers with fast and reliable access to our products and services.

To ensure optimal website performance and security, we have employed various best practices such as caching, compression, and SSL encryption.

Overall, our pastry shop website has been implemented using a powerful and reliable technology stack that provides exceptional performance, security, and scalability. By utilizing HTML and CSS Bootstrap in the front-end and PHP linked to MySQL in the back-end, we have created a website that is both visually appealing and highly functional, delivering a superior user experience to our customers.

6. Project Planning

7. Appendix