Faculty of Engineering & Technology

Computer Science Department

SOFTWARE ENGINEERING - COMP433

Final Project Report

Online Bakery System

Prepared By: "Elite Group" **Group No:** G3

Manager: Ahmad Bakri **ID:**1201509

Secretary: Amani Rabee **ID:**1201512

Technical Architect: Yazeed Hamdan **ID:**1201133

Programmer: Aya Dahbour **ID:** 1201738

Instructor: Dr. Adel Taweel

Section: 4

Date: Jan 2024

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Chapter 1: Project Planning and Management

1.1. Names of Editors/writers of the Report

Aya Dahbour

Amani Rabee

1.2. Business Title

Bakery shop online

1.3. Group

Group Name: Elite Group
Group Number: G3

1.4. Name of students:

Student Name: Ahmad Bakri	ID:1201509
Student Name: Amani Rabee	ID:1201512
Student Name: Yazeed Hamdan	ID:1201133
Student Name: Aya Dahbour	ID: 1201738

1.5. Role of each member:

Manager: Ahmad Bakri

Secretary: Amani Rabee

Technical Architect: Yazeed Hamdan

Programmer: Aya Dahbour

1.6. Project management strategy:

- **Meetings:** Due to the current circumstances, we intend to meet at least once a week via Zoom, with the possibility of face-to-face meetings later on.
- **Decisions:** We want all members to have a voice in decision-making. All opinions are valued in our open discussions. We make votes to select the project's best idea after our conversation. If we can't agree with the vote, the manager make the final decision.
- **Process models:** We're going with the agile model for our project. After finishing each part, we test our work to make sure everything is on track and doing their jobs properly.

1.7. Project manager report:

Initially, we divided up the work in the group equally. Every member of the group work on individual tasks, and worked together to complete group tasks. The particular contributions that each member made are described below:

Ahmad Bakri: As the manager, I took on the responsibilities of task organizer and integrated task coordinator. I led the making of the business description, and Description of chosen Design Goals, architecture diagram, Additionally, I reviewed and discuss the progress of most group tasks. In addition, I contributed to the creation of two User Requirements (UR1 & UR5) and the System Requirements that went along with them. Lastly, I made a scenario that showed the manager's steps for searching for a product on website, with its activity diagram, sequence diagram, and Use-Case Specification related to the scinario.

Amani Rabee: As the secretary, she took on the responsibility of coordinating the group's meetings. She led the work on both Actor analysis and Deployment Diagram, she also reviewed and discuss some of the work in all group tasks. She also contributed by offering the System Requirements that corresponded to two User Requirements (UR4 & UR8). She also designed the deployment diagram and a scenario that included customer purchasing and delivery. She also created activity and sequence diagrams, as well as the Use-Case Specification, for her particular scenario.

Yazeed Hamdan: he is the technical architect, he led the work on Effort/Time Estimation Calculation, use case diagram, and component diagram. He also reviewed and discuss some of the work in all group tasks. He additionally played a role in providing two User Requirements (UR3 & UR7) and their corresponding System Requirements. Additionally, he formulated the component diagram and created a scenario illustrating the process of customers signing up on the website. Furthermore, he developed the Use-Case Specification, along with activity and sequence diagrams specific to his scenario.

Aya Dahbour: she is the Programmer, she led the work on Activity diagram, System class diagram, and detailed class diagram, and she also reviewed and discuss some of the work in all group tasks. She also contributed by offering the System Requirements that corresponded to two User Requirements (UR2 & UR6). She also designed the activity diagram and a scenario that included customer feedback. She also created activity and sequence diagrams, as well as the Use-Case Specification, for her particular scenario.

We encountered no significant challenges throughout the project, but the only one problem was the war on gaza that prevent us from meeting face to face and working together.

Finally, I'm quite pleased with our project's outcome. Working with this group was fantastic because of the positive and happy environment.

1.8. Group members report:

- **Yazeed Hamdan:**

  In my opinion, I perceive that the work we did was very good and was accomplished with perfection and precision to achieve the correct software engineer concepts. The work with the team members was nice and smooth, a good work strategy has been developed, and the tasks were divided equally with regular discussions, and periodic reviews which makes the work more perfect.

  I have Contributed in writing two user requirements (UR.3 & UR.7) and their system requirements. I did all required related to the Signup process in the project, Scenario Analysis, Use Case Specification, Use-Case Activity Modelling, and Sequence Diagram. Also contributed by leading: Effort/Time Estimation Calculation, USE-CASE Diagram and Component Diagram. Also I reviewed each of these tasks: Description of chosen Design Goals and Overall architecture Diagram. Finally, I discuss Actor analysis ACTIVITY Diagram System CLASS Diagrams and Deployment Diagram.

- **Aya Dahbour:**

  Personally, I'm delighted to report that our project went quite well, with a strong emphasis on precision and respect to core software engineering principles. Our cooperation was especially amicable, as evidenced by an effective work strategy, equal job distribution, and regular talks, all of which contributed to our high level of excellence. I made significant contributions to the project's development. I was in charge of developing two critical user requirements (UR.2 and UR.6) as well as the system requirements that accompanied them. In addition, I was in charge of developing the Feedback process, doing Scenario Analysis, producing the Use Case Specification, modeling Use-Case Activities, and creating Sequence Diagrams. Furthermore, I was leading in activities relating to ACTIVITY Diagram and System CLASS Diagrams. I also reviewing: Effort/Time Estimation Calculation, Actor analysis and Deployment Diagram. Finally, I actively participated in discussion on USE-CASE Diagram, Description of chosen Design Goals and Component Diagram of the system, which all contributed to the project's overall success and cohesiveness.

- **Amani Rabee:**

  I take great pleasure in being part of this project. Collaborating with a cohesive and supportive team significantly eases the mission. In my opinion, the main reasons that make this achievable include mutual respect, punctuality, breaking down tasks into smaller chunks, actively seeking suitable solutions, and incorporating instructor feedback into consideration.
  As I mentioned, we broke down the tasks into smaller chunks to make more achievable and here are my contributions to the project:
  I did all the individual parts such as user reequipments, purchasing and delivering scenario with its details, its activity diagram, and its sequence diagram.
  In the group tasks, I contributed by leading: Actor analysis, Deployment Diagram. Reviewing: System class diagram and Component diagram. Finally, I contributed in the discuss of the rest of the group tasks.

Chapter 2: Requirement Elicitation, Analysis and Modelling

2.1. Requirement statement/Business Description:

Our business is an online bakery shop, and we aim to serve our customers by developing software that can be accessed via an internet portal or a mobile application.

The system introduces many services such as exploring and maintaining products on the menu, e.g. bread, cake, and pastries. With accessibility to deliver the order and flexibility in the payment process. Pricing ranging from 1$ to 30$.

The bakery, "Elite Bakery" is managed by a manager who has complete authority over the bakery team and production. It contains 4 bakers including a head baker, 2 employees dealing with customer support, and 2 delivery men. The system includes an easy-to-use shopping cart system. Customers may use this functionality to add or remove products, change quantities, examine individual item pricing, and check the total cart balance. Customers move to the checkout page after completing their order. They are then given the option of selecting one of many payment options.

Following order completion, the system has a feedback mechanism that allows users to submit their thoughts on the entire service.

The system provides these services to many types of customers such as public people, local markets, restaurants, and event venues. With maximum capacity of 50 per day whom can order 50-100 orders.

Manager Ahmad Bakri, Secretary Amani Rabee, Technical architect Yazeed Hamdan, and Programmer Aya Dahbour lead our sole proprietorship.

2.2. USER and SYSTEM Requirements:

1. The bakery system shall contain a user-friendly menu bar that is organized to display products categorized or sorted by price or category, according to customer preferences. Additionally, displaying a page to show all the products on sale. (Ahmad Bakri)

➢ Its **System Requirements:**

1.1 The system shall allow the customer to access the menu and see the daily products it contains.

1.2 The System shall contain a product menu with the main categories listed such as (Breads, Cakes, Cupcakes, Brownies & Bars, and Deserts)

1.3 The menu shall efficiently contain essential product information, including names, IDs, prices, images, types, available sizes, descriptions, quantities, and ingredients, as a service to help customers make decisions.

1.4 The menu should be efficiently organized by price, category, or CRM. Using a user-friendly interface to enhance and simplify consumer interaction.

1.5 The system should contain a page that displays all products on sale and with special offers.

2. The delivery service shall be expertly designed and implemented to enhance user experience and operational efficiency. (Aya Dahbour)

➢ Its **System Requirements:**

2.1 The system includes an intuitive interface, allowing users to accurately input their delivery locations, enhancing the precision of the delivery process.

2.2 The system presents a detailed summary page for each order, displaying order details, and delivery information, and providing users the option to review and modify their orders before final confirmation.

2.3 The system establishes a rule, offering complimentary delivery for orders exceeding $100.

2.4 A real-time tracking feature has been integrated, enabling users to monitor the precise location of their delivery in real-time, adding transparency and trust to the delivery process.

2.5 Post-delivery, the system prompts users to provide feedback and rate their delivery experience, aiding in service improvement and customer engagement.

3. The Customer of the online bakery shop shall be able to register and create his personal account. (Yazeed Hamdan)

➢ Its **System Requirements:**

3.1. The account shall include the customer's personal information, including Username, Full Name, phone number, Email, and Location.
3.2. The system shall ensure and enable the customer to specify a valid email address, the system shall prevent the customer from registering without a valid email address.
3.3. The system shall ensure that the customer enters a valid Phone number. The system shall prevent the customer from registering without a valid Phone number.
3.4. The system shall enable and ensure that the customer enters a unique username.
3.5. The system must ensure that the user enters a valid location.
3.6. If the user enters a credit card, the system must verify whether it is valid or not.
3.7. The system shall enable the customer to specify a password, of a minimum of 8 characters. That contains capital letters, numbers, and special characters.
3.8. The system shall enable users to reset their passwords. Reset passwords shall be sent only to the registered email address.

4. The system shall be able to track the customers' information, search history, and purchase history to manage the marketing and suggestions smartly. (Amani Rabee)

➢ Its **System Requirements:**

4.1. It shall classify the customers according to their interests
4.2. It shall access the customer search and purchase history
4.3. It shall manage whom customers are targeted to make the marketing effort less and enhance success.
4.4. It shall insert the interests in the suggestion bar.

5. The bakery shall contain a feedback section to get customer reviews and opinions on its products and services. (Ahmad Bakri)

➢ Its **System Requirements**:

5.1. The system shall provide a feedback section for users to share their thoughts on the service or order by writing their opinions.

5.2. The system shall provide an interface that's user-friendly and easy to navigate, allowing customers to effortlessly share feedback, with options for ratings, comments, and potentially uploading images.

5.3. The system shall possess capabilities that enable the support team to respond to feedback and analyze trends in customer satisfaction.

5.4. In case of critical feedback, the system shall promote an easy process by sending the information to the support team for resolution, followed by evaluation for feedback, and then if necessary, apply appropriate discounts for the consumer.

5.5. The system shall be recording all feedback interactions, including responses, changes made, and answers provided, for future reference and verification.

6. The system shall feature a search functionality, enabling customers to effortlessly locate products based on various criteria. This search capability should be designed to enhance user experience by offering multiple search filters. (Aya Dahbour)

➢ Its **System Requirements:**

6.1 Users shall have the ability to search for products by selecting specific types or categories, facilitating a targeted browsing experience.

6.2 The system should allow users to search for products using their names, making it easy to find specific items quickly.

6.3 Users should be able to search for products within a specified price range, accommodating budget preferences and financial considerations.

6.4 The system shall enable users to search using the Product ID, providing a direct and precise method to locate specific products.

7 The system shall allow the user to shop online after creating his account and provide a shopping cart system. (Yazeed Hamdan)

➢ Its **System Requirements:**

7.1. The system shall allow the user to add products to his shopping cart.

7.2. The system shall allow the user to remove products from his shopping cart.

7.3. The system shall allow the user to change the quantity of products in his shopping cart.

7.4. After completing the purchase process, the system shall display a list of the final purchases in the shopping cart of the customer with the total price.

7.5. The system shall provide the payment options to the customer after completing the purchase process, either by credit card, or make the Payment to the delivery man, or to come and receive from the shop and make payment there.

8 The system shall allow the users to make financial transactions over the internet securely. (Amani Rabee)

➢ Its **System Requirements:**

8.1. The system shall provide a user interface for the user to enter their personal and financial information, such as name, address, bank account number, amount, etc.

8.2. The system shall encrypt the user's data using a secure encryption algorithm, such as AES, before sending it over the internet to the recipient or the service provider.

8.3. The system shall handle any exceptions or errors that may occur during the transaction process and notify the user accordingly.

2.3. SCENARIOs:

2.3.1 Sign up (Yazeed Hamdan)

Normal:
Ahmad visits the system and clicks "Signup". He fills in all details required like His Full name, unique username, valid email, valid phone number, address, and credit card info. then Ahmed must enter a password of no less than 8 characters, including numbers and special characters. After that, the system checks this information and sends a verification code to his phone number. Once all entries are correct and verified, Ahmad receives the verification code and fills it, after that, he can go into his personal account on the website and can benefit from the various services offered in it.

Alternative:
Khaled entered the system, he wanted to own a personal account, and when he began the registration process, he chose to have his account in the system linked to his personal Facebook account. In this case, he owned an account on the website without going through the system's separate account creation procedures.

Error:
Qasim was trying to Sign up an account, and when he was asked to enter the phone number, he refused to fill it in and refused to enter the home number. In this case, an important registration requirement was ignored, so he will not be able to create an account.

2.3.2. Search for products (Ahmad Bakri)

Initial Assumption: The system stores detailed information about many products, such as their names, ID, descriptions, prices, types, sizes, images, and present quantities in storage. A manager, has logged into the system to efficiently search for products.

Normal: The manager logs into the system using their username and password. Upon successful login, the manager navigates to the search section in the system. In the search section, the manager can perform searches depends on ID for the product. Then enter the ID's related to the product's they are looking for, then check the correctness of the ID entered, after that the system fetches the relevant information from the database. The manager can view detailed information about the product such as name, price, image, type, and available sizes, Description, Quantity, ingredients, including its availability, current quantity in storage, After finding the required information, the manager makes informed decisions regarding product management or inventory control.

Alternative: The manager logs into the system using their username and password. Upon successful login, the manager navigate to the search section in the system. And decides to use the barcode search feature. The manager select the barcode search option and scan the barcode of a product using a barcode scanner connected to the system. The system interprets the barcode, retrieves the corresponding product information from the database, and displays it to the manager. This barcode search method provides a quick and efficient way for the manager to access detailed product information without manually entering search criteria.

Error: The manager attempts to use the barcode search feature but encounters an error. The barcode for the products does not work, so the scanner fails to recognize or read the barcode properly, resulting in the system being unable to retrieve the product information.

2.3.3. Purchasing and delivering (Amani Rabee)

Normal: Aya logs in with her real information and starts checking out the menu. The system suggests items based on her personal preferences and order history. She easily adds the items she wants to her cart and reads details like descriptions, product dates, expired dates, and ingredients. When she is ready to buy, she fills in the checkout page with payment and delivery info. The system then checks the amount of money in the customer's payment method. It confirms that the customer has enough money, and the system proceeds with the transaction. If everything goes fine, the order is placed and moved to the order history section. The System notifies the driver that there is a new order, he picks up the order and brings it to the customer's address within the time slot she chose. She can track the driver's location on the system. The deliver man confirms the order. After delivery, she receives a request to share feedback on their experience.

Alternative: Aya logs in with her real information and starts checking out the menu. The system suggests items based on her personal preferences and order history. She easily adds the items she wants to her cart and reads details like descriptions, production dates, and ingredients. When ready to buy, she fills in the checkout page with payment and delivery info. However, the system finds that her credit card doesn't have enough money, so it suggests she cash on delivery. If everything is okay, the system moves the purchased items to the order history. The System notifies the driver that there is a new order, he picks up the order and delivers it within the chosen time slot. She can track the order using the driver's address connected to the system. The delivery man confirms the order. After delivery, she receives a request to share feedback on their experience.

Error: after Aya’s process in shopping, she is about to buy but the system finds out the credit card has expired. Then, the order was automatically canceled.

2.3.4. Give Feedback (Aya Dahbour)

Normal: After receiving her freshly baked pie from the bakery, Majd is immediately presented with a feedback notification on her device. She is given options: to give feedback now, be reminded later, or exit the prompt. Choosing to provide feedback, she rates the taste, presentation, and delivery service, awarding high scores in each category. Majd compliments the flakiness of the pastry and the promptness of delivery in her comment. Her feedback is quickly posted and becomes accessible to other customers, offering them genuine insights. The bakery team, inspired by her positive review, is considering adding similar recipes to their menu.

Alternative: Ahmad, upon receiving his custom birthday cake and pastries, sees a feedback notification on his device. However, busy with birthday preparations, he chooses the "Remind Me Later" option. Later, when he reopens the app, he receives a gentle reminder to provide feedback. He then praises the cake's quality, the custom design's excellence, and the delivery's punctuality.

Error: the delivery confirmation isn't registered correctly. This could prevent the feedback prompt from appearing or reflecting Ali's true experience accurately. If the system fails to recognize that the delivery has been completed, it might not trigger the feedback notification, thereby missing an opportunity to gather valuable customer insights.

2.4. Effort/Time Estimation Calculation:

(Lead:Yazeed, *Aya*: reviewing, *Amani& Ahmad*: discussion)

UR	Estimated Effort	Estimated No of Developers	Total Effort
UR.1	2 PW	2 DEV.	4 PW
UR.2	1 PW	2 DEV.	2 PW
UR.3	3 PW	3 DEV.	9 PW
UR.4	2 PW	3 DEV.	6 PW
UR.5	1 PW	2 DEV.	2 PW
UR.6	2 PW	2 DEV.	4 PW
UR.7	2 PW	3 DEV.	6 PW
UR.8	3 PW	2 DEV.	6 PW
Total Effort/Avg.	16 PW	19/8 = 2.3 DEV. on avg needed	39 PW
Schedule Time 30%.	16 * 1.3 = 20.8 (min time to complete)		39*1.3 = 50.7 w (max time to complete)
Cost		Avg salary=200$	200*50.7=10140$
Profit Margin Min=10% Max=30%		Min Cost ➔ Max Cost ➔	10140*1.10=11154$ 10140*1.30=13182$

The table provides a snapshot of the time and personnel needed to complete a series of development tasks, assuming 4 developers are involved. It includes estimates for each task, the total time to complete the project, and the associated costs, factoring in minimum and maximum profit margins. This overview is essential for a broad understanding of the project's resource allocation and financial implications.

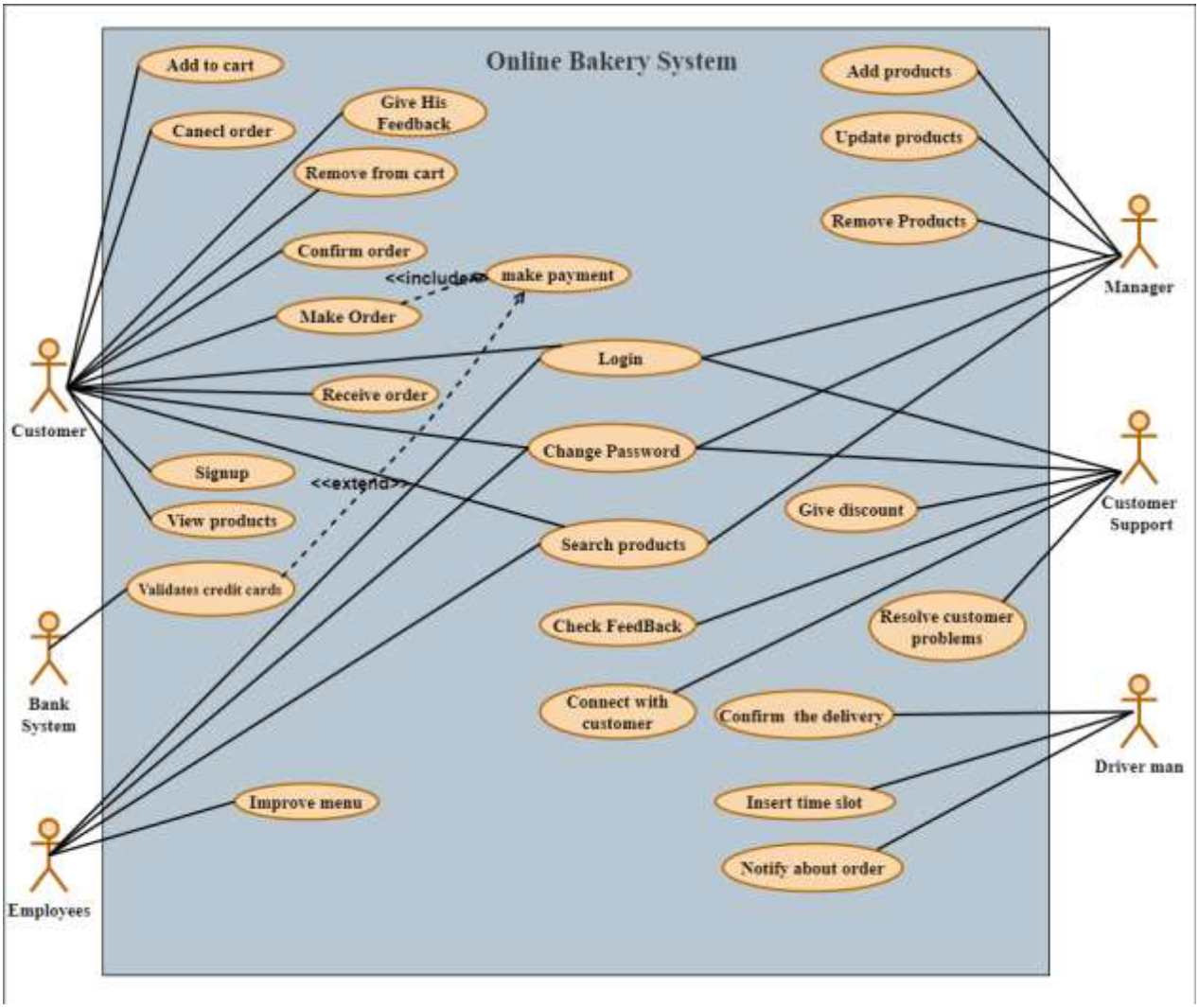
2.5. Actor analysis:

(Lead: *Amani*, *Aya*: reviewing, *Yazeed& Ahmad*: discussion)

Actor	Description
Manager	The manager is responsible for overseeing the bakery's website, with the authority to alter product information, including prices and descriptions, ensuring accurate and up-to-date online offerings.
Employees	The Bakery Employees are responsible for baking and organizing the products, ensuring quality and readiness for customer orders.
Customer	The customer is the person who is registered on the system with the ability to browse the website, order a product, and can give his/her feedback on their experience.
Driver man	The Delivery Man is the person who ensures the timely delivery of products to specific locations assigned by the customer. And confirm in the system that the order has been delivered.
Customer Support team	The bakery's Customer Support team is crucial for addressing critical feedback and resolving customer issues. They quickly respond to negative reviews, communicate with customers to solve problems, and coordinate with other departments to enhance service quality and customer satisfaction.
Bank System	This system validates credit cards, provides alternative payment options, and facilitates online transactions.

2.6. USE-CASE Diagram:

(Lead: *Yazeed, Ahmad*: reviewing, *Amani& Aya*: discussion)



2.7. Description of key USE-CASES:

2.7.1. Sign up (Yazeed Hamdan)

Bakery Online System: Signup	
Actor	**Customer**
Description	At the beginning of Signup process the customer shall fill out all the information required like His Full name, unique username, valid email, valid phone number, address, and credit card info. Then the customer shall enter strong password of no less than 8 characters. When all the information is verified, a verification code is sent to the user, and he must receive and fill it in order to be able to own the account.
Pre-Conditions	Customer hasn't been registered before
Sequence/Flow of Events	1. Customer open the website. 2. Customer selects "Signup". 3. Customer must enter his\her Full name and unique username, valid email, valid phone number, address, credit card information, the, strong password with no less 8 characters. 4. System verifies information and sends a verification code to the customer. 5. If the customer receives the code and fills it in, he/she can have an account. If the customer does not receive the code and does not fill it in, he/she will not be able to have an account. 6. If customer chooses to signup and link it to another account like Facebook, he does not have to enter the details mentioned above. 7. while signup, if the customer refuse to enter any of the information mentioned above, he cannot create an account.
Data	Full name, Username, Email, Phone Number, Address, Credit Card Information. Verification Code.
Stimulus/Trigger	Customer want to register an account on the bakery's website.
Post-Conditions/Response	Customer has a registered account and can access website features anytime.
Comments	1. The system should ensure data privacy and security, especially concerning personal and payment information. 2. provide clear instructions during the registration process.

2.7.2 Product Management (Ahmad Bakri)

Actors	Bakery Manager
Description	The bakery manager, who can search for products, has the responsibility to search, and enters product IDs to retrieve comprehensive details like name, price, and quantity. This information, they make informed decisions on product management and inventory control.
Pre-conditions	1. The search field must be empty to enter the product that the manager looking for. 2. The product is in the database.
Sequence/Flow of Events	1. The Manager move to the product search section. 2. The system displays a search field to searching for product information based on ID. 3. The manager enters the product ID and submits the search form 4. The system verifies and confirms the provided ID. 5. Relevant details about the product are retrieved from the database. 6. The bakery's system showcases the product's information,
Data	Product ID, product name, product Price, product image, product description, product type, product quantity, product ingredients, and product size.
Stimulus/Trigger	The Manager initiates user commands for searching inventory data within the database.
Post-conditions/Response	1. The inventory data in the system is updated based on the Manager search. 2. The system generates a confirmation message to the manager, indicating the successful retrieval of product details.
Comments	Regular data backups prevent loss, and frequent checks ensure accuracy and correction of any errors in the system.

2.7.3 Delivery (Amani Rabee)

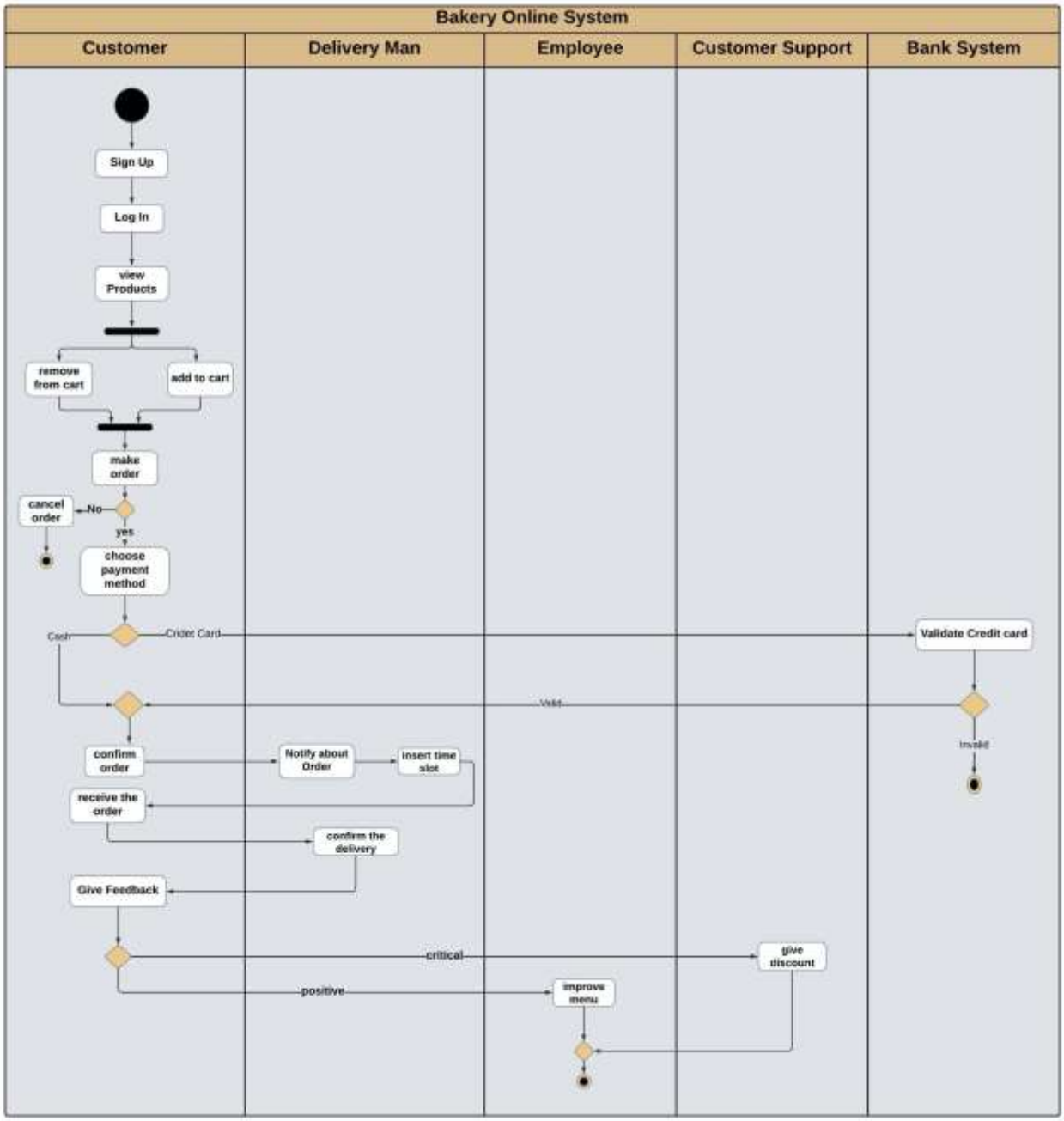
Actor	Delivery man, customer
Description	Once the customer confirms the order, the system notifies the driver man about the order to pick it up. The driver brings the items to the customer's place within the chosen time. While this is happening, the customer can check where the driver is and see how much time is left. If the customer didn't pay online, when the driver arrives, they can give them the money. The goal is to make sure the customer's order reaches them quickly, and they can keep an eye on the whole process.
Pre-condition	1- The customer has successfully placed the order. 2- The order is moved to the order history section.
Sequence/flow of events	1- The system moves the purchased items to the order history. 2- The Driver is notified that there is an upcoming delivery. 3- The system provides the driver with the order details. 4- The driver assesses the street situation to provide an estimated time slot for the delivery. 5- On the way to the customer, if any unforeseen circumstances occur causing a delay in the delivery 5.1. The driver promptly notifies the customer about the situation by updating the time slot. 6- The driver arrives at the customer's location and ensures prompt and careful handling of the items. 6.1. The driver takes the money if the customer chooses to pay on delivery 7- The driver confirms the successful delivery in the system.
Data	Customer location, customer number, the order details, the drive man details.
Stimulus/Triggers	1. The system notifies the driver that there is an order. 2. The driver update time since there is an unforeseen circumstance arises. 3. The system notifies the system about the driver's location.
Post-conditions/Response	The driver confirms the successful delivery in the system.
Comments	Since the customer has an option to cash on delivery, the driver man must check the payment situation.

5.1.1 Give Feedback (Aya Dahbour)

Actors	Customer, Bakery Employee
Description	When customers receive their orders, they're encouraged to leave a review, with options to write immediately, later, or not at all. In situations like receiving mixed-up orders or experiencing issues due to a bakery error, they are often compensated with a discount on future purchases. Positive feedback plays a crucial role in shaping the bakery's menu, as it helps identify customer favorites and trends.
Pre-condition	1. The customer logs in to the account. 2. The order is delivered to the customer.
Sequence/flow of event	1. A customer places an order with the bakery. 2. The bakery delivers the order to the customer. 3. Following delivery, a feedback notification is automatically triggered and sent to the customer's device. 4. If the customer chooses to provide feedback immediately 4.1 The customer chooses to give feedback, he completes and submits the feedback form. 5. If the customer chooses "Remind me later" 5.1 The system reminds the customer to provide feedback when he reopens the app. 6. If the feedback is critical or indicates issues 6.1 the bakery's customer support team contacts the customer. 6.2 Give the customer a discount for the next order. 7. Positive feedback may be used by the employee for the menu. 8. Feedback becomes visible to other customers and the bakery team.
Data	Customer account details, feedback content, system logs, support tickets
Stimulus/Trigger	Customer submission of feedback
Post-condition/response	1. Feedback is recorded, categorized, and used for various responses. 2. Submitted feedback becomes visible.
Comments	The system should ensure a user-friendly interface for feedback submission, have a mechanism to alert staff of critical feedback, and provide timely responses to technical issues.

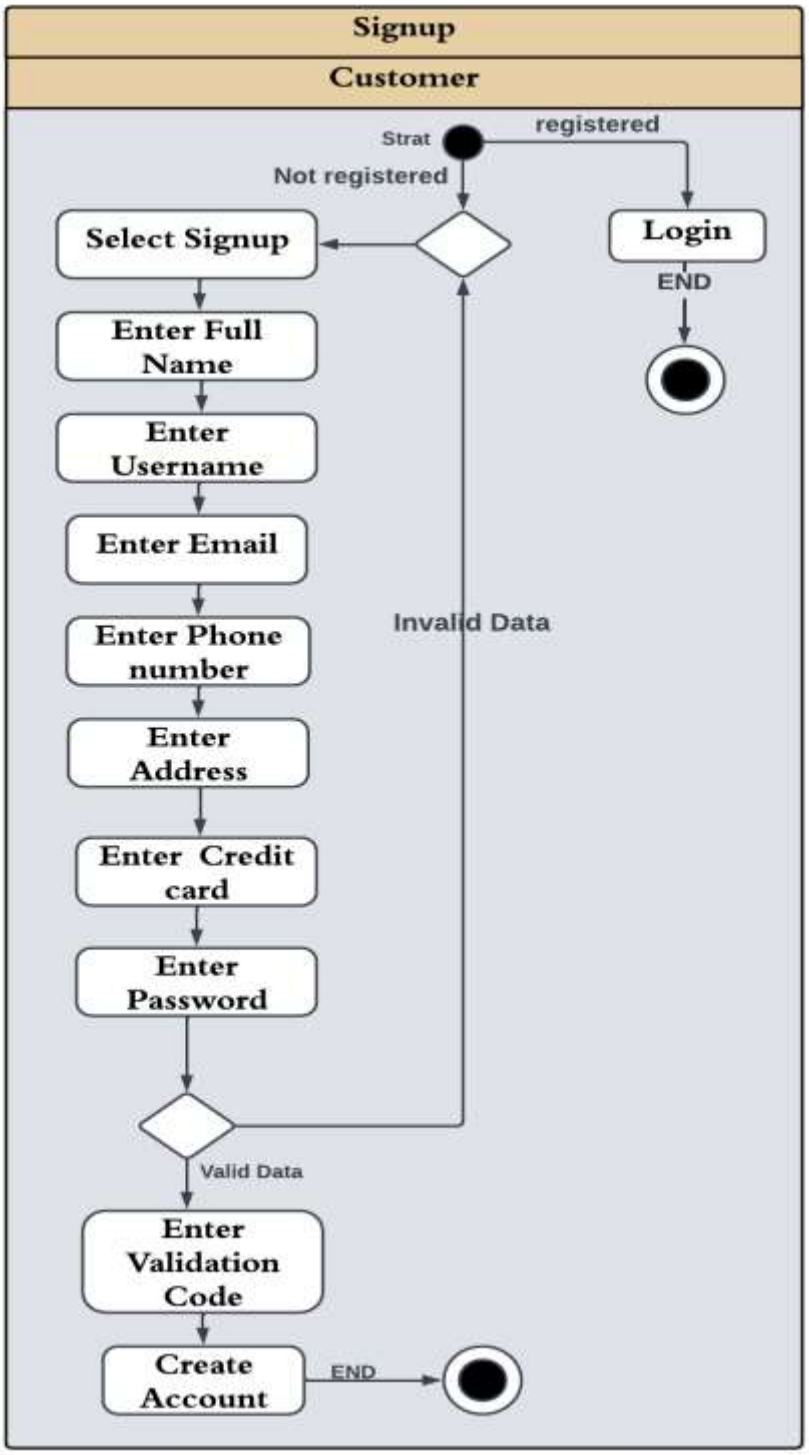
5.2 ACTIVITY Diagram:

(Lead: *Aya*, *Ahmad*: reviewing, *Yazeed& Amani*: discussion)

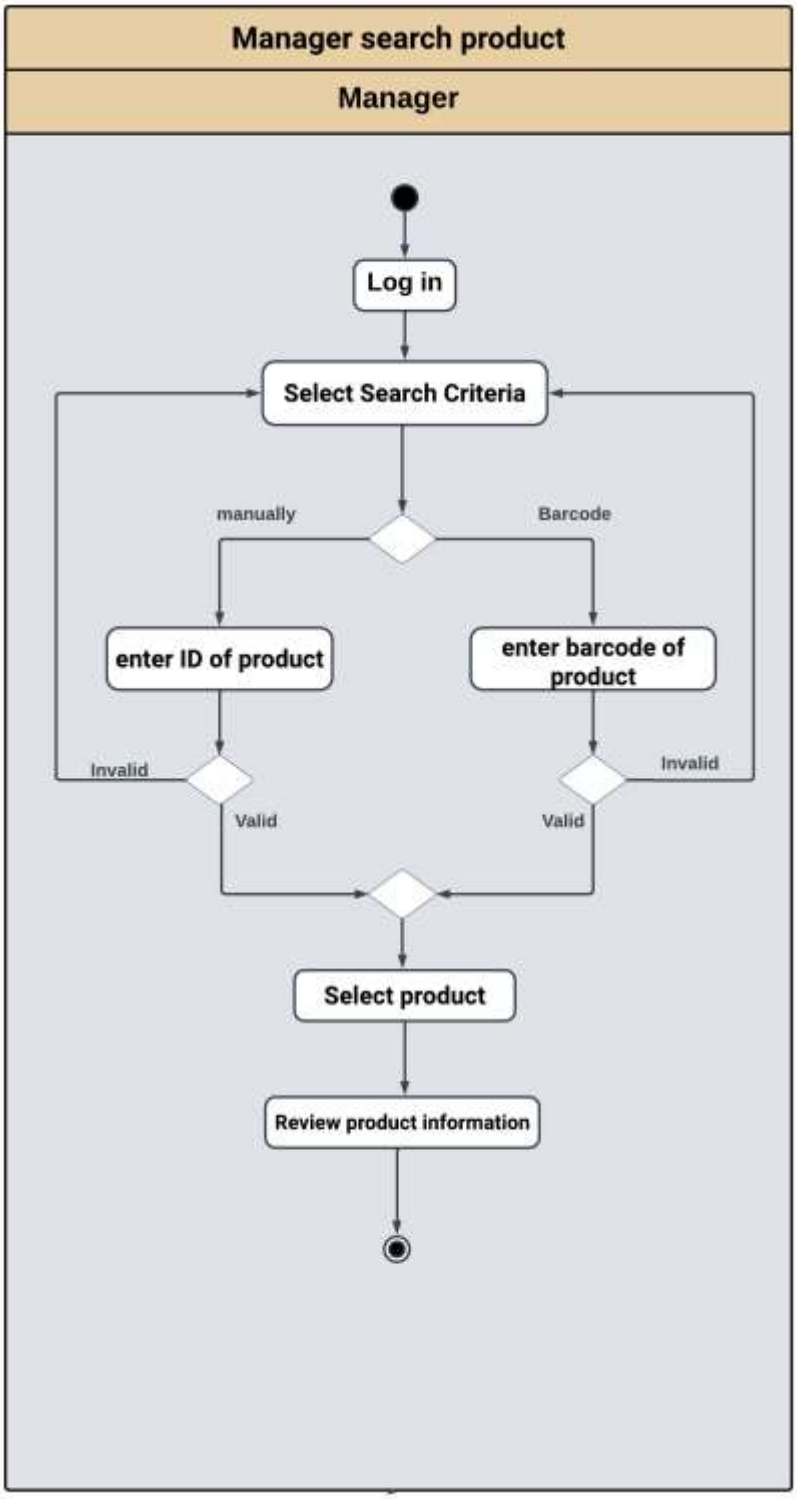


2.7 Instance Activity Diagrams:

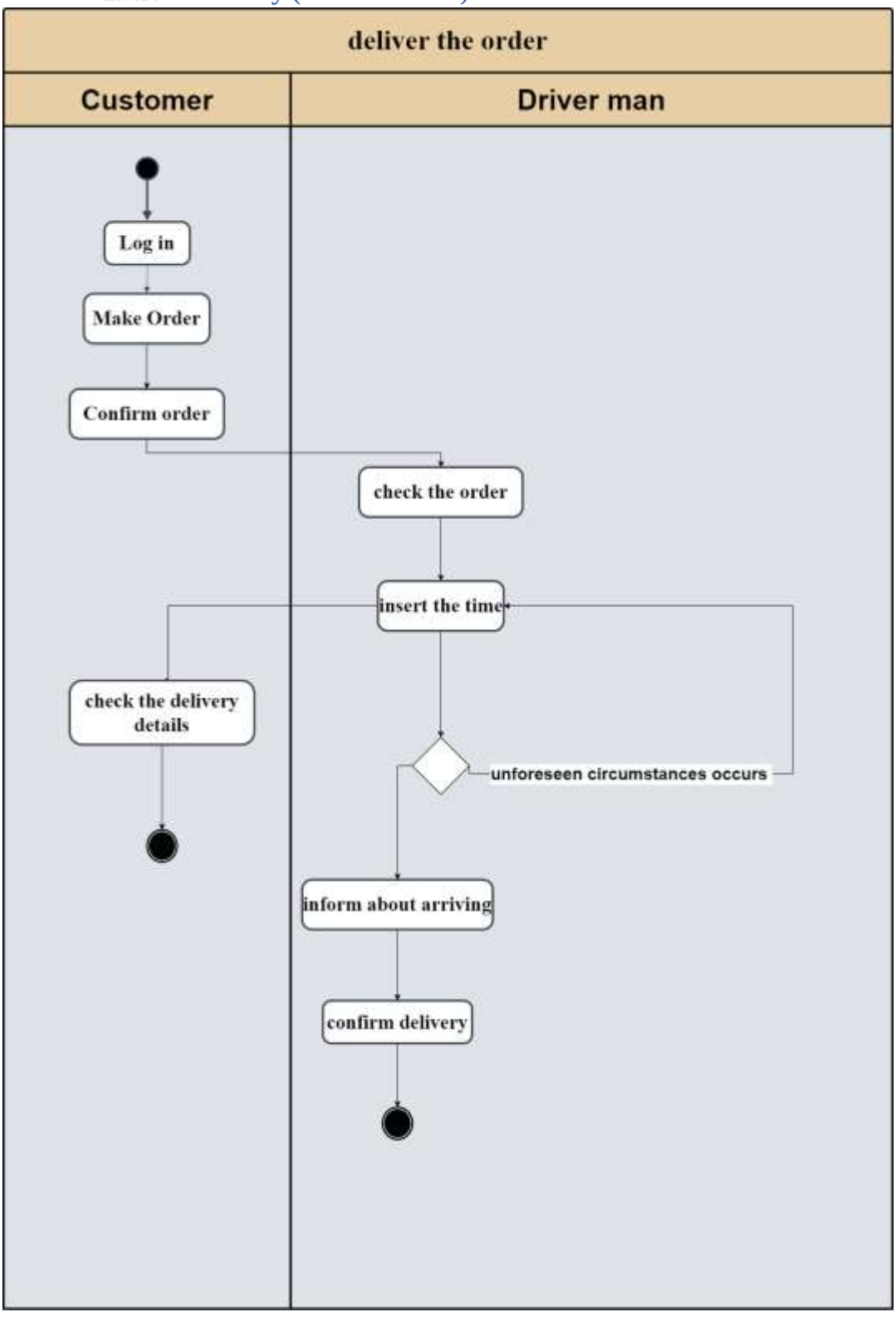
2.7.1 Sign up (Yazeed Hamdan)



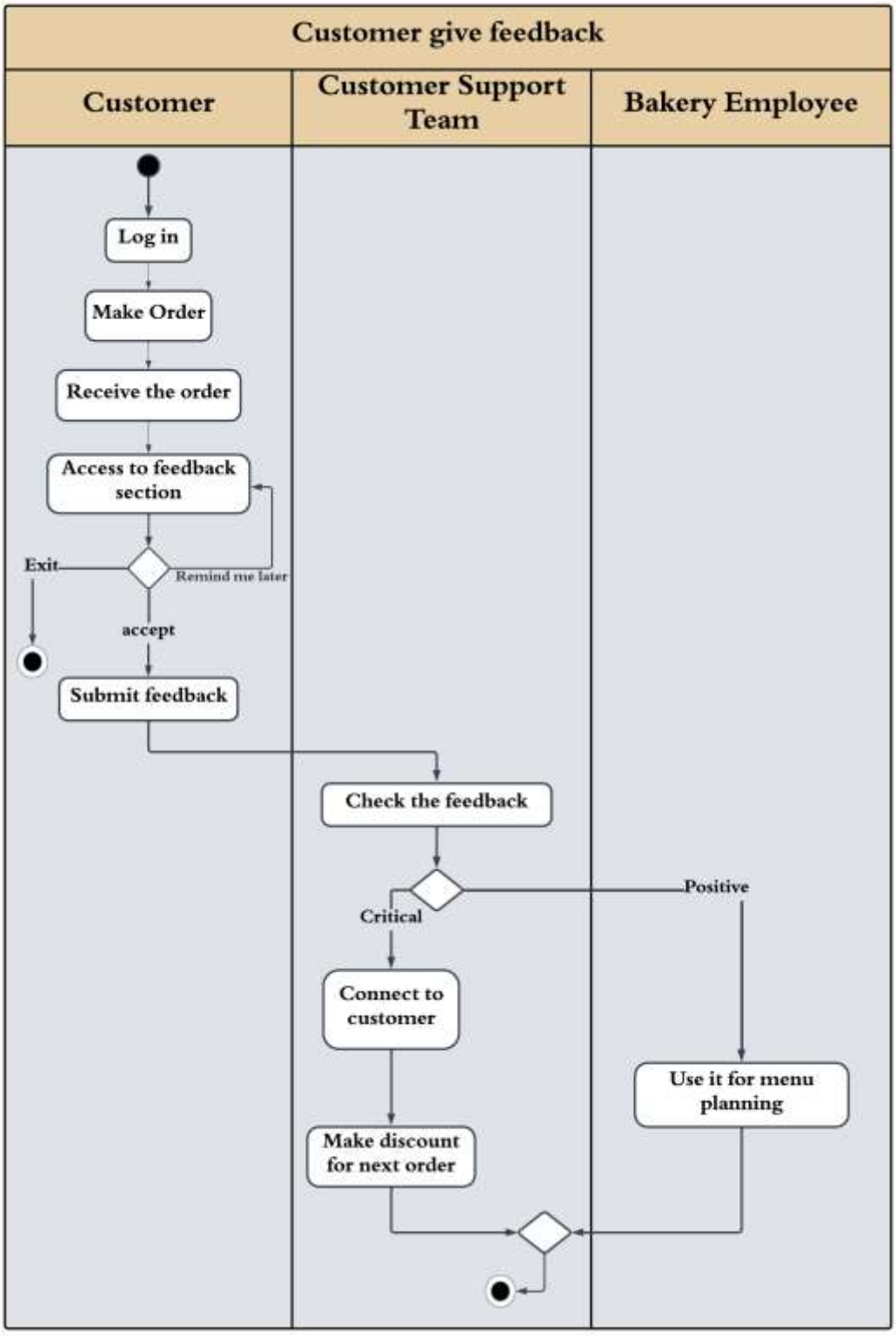
2.7.2. Product management (Ahmad Bakri)



2.7.3. Delivery (Amani Rabee)



2.7.4. Feedback (Aya Dahbour)

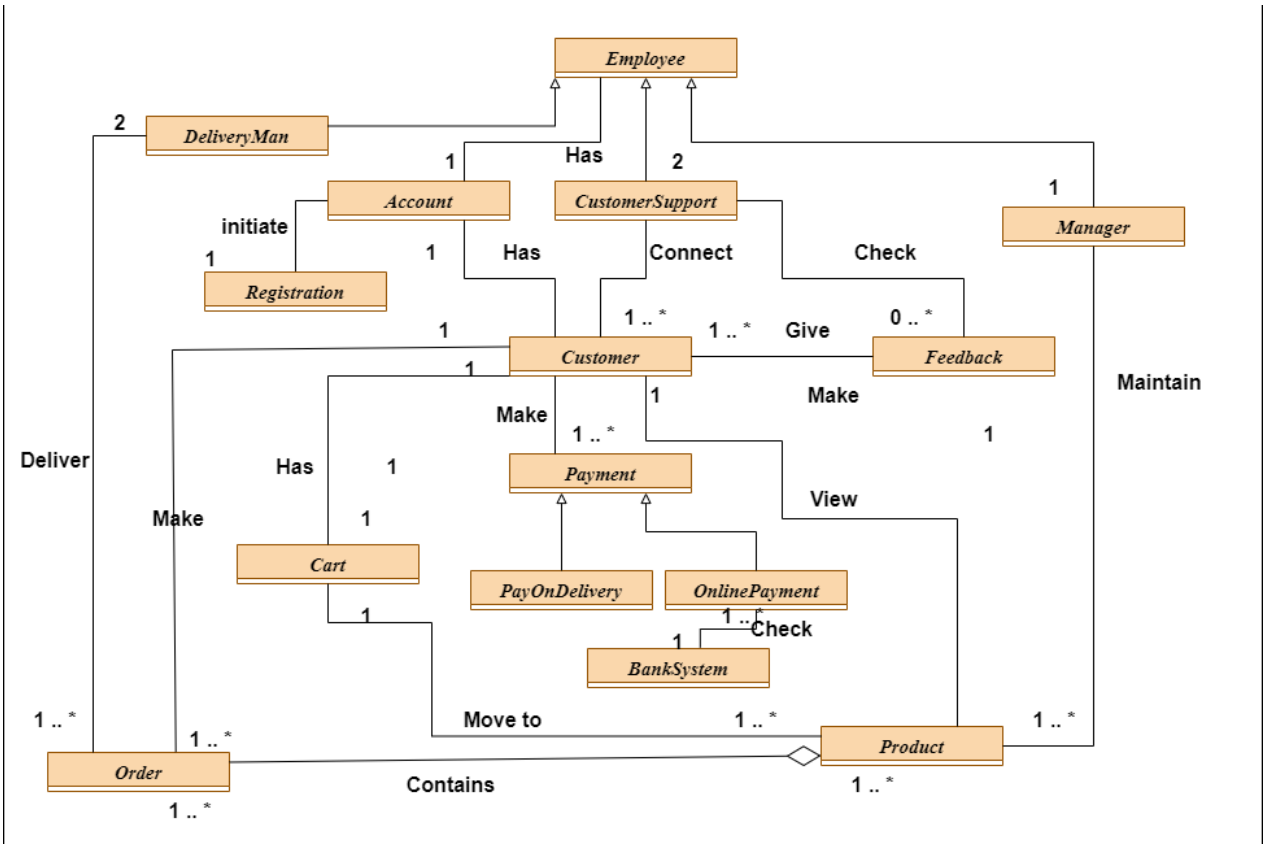


Chapter 3: System Analysis and Modelling

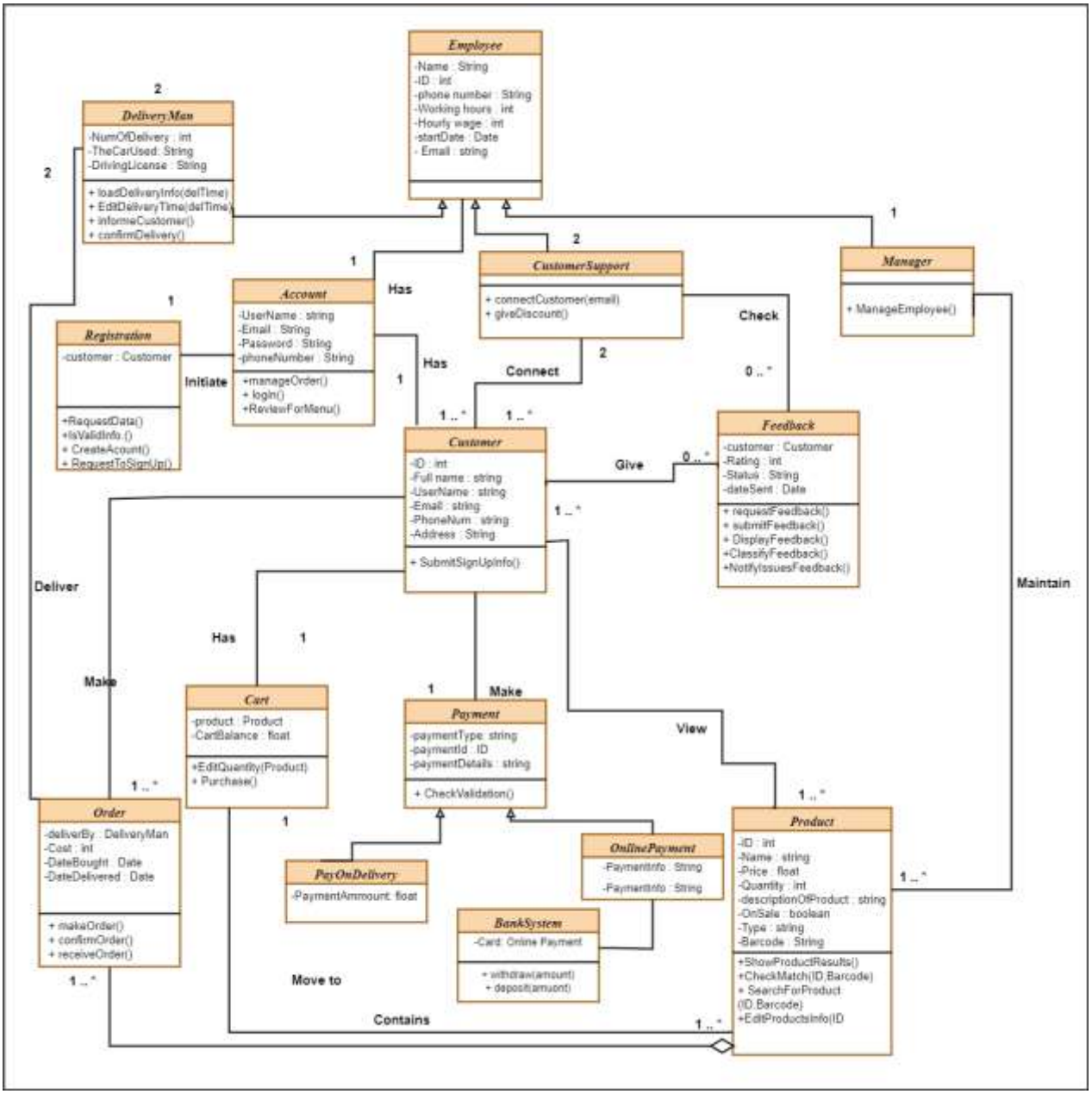
3.1. System CLASS Diagrams:

(Lead: *Aya* , *Amani*: reviewing, *Yazeed& Ahmad*: discussion)

3.1.1. Analysis class model

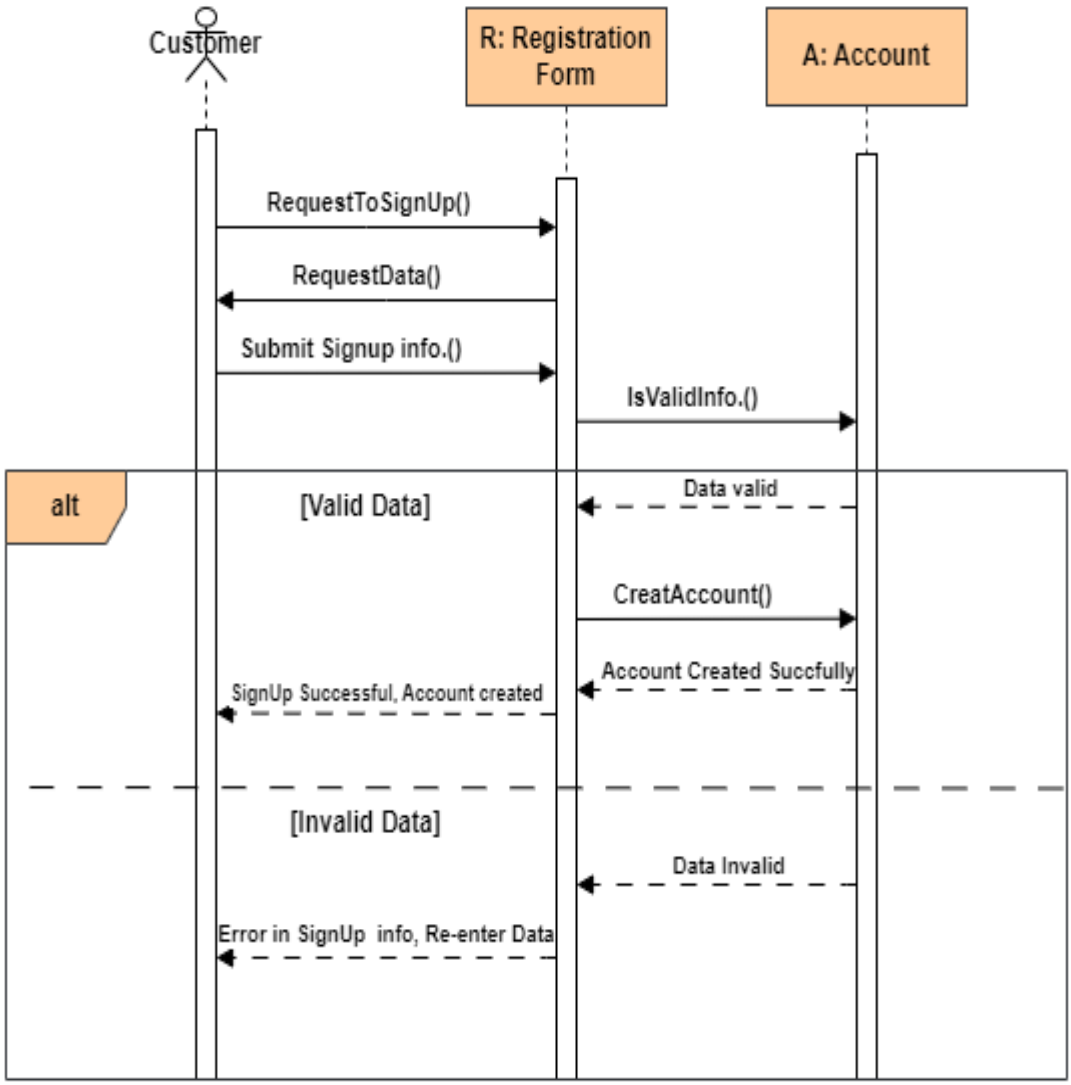


3.1.2. Detailed class model

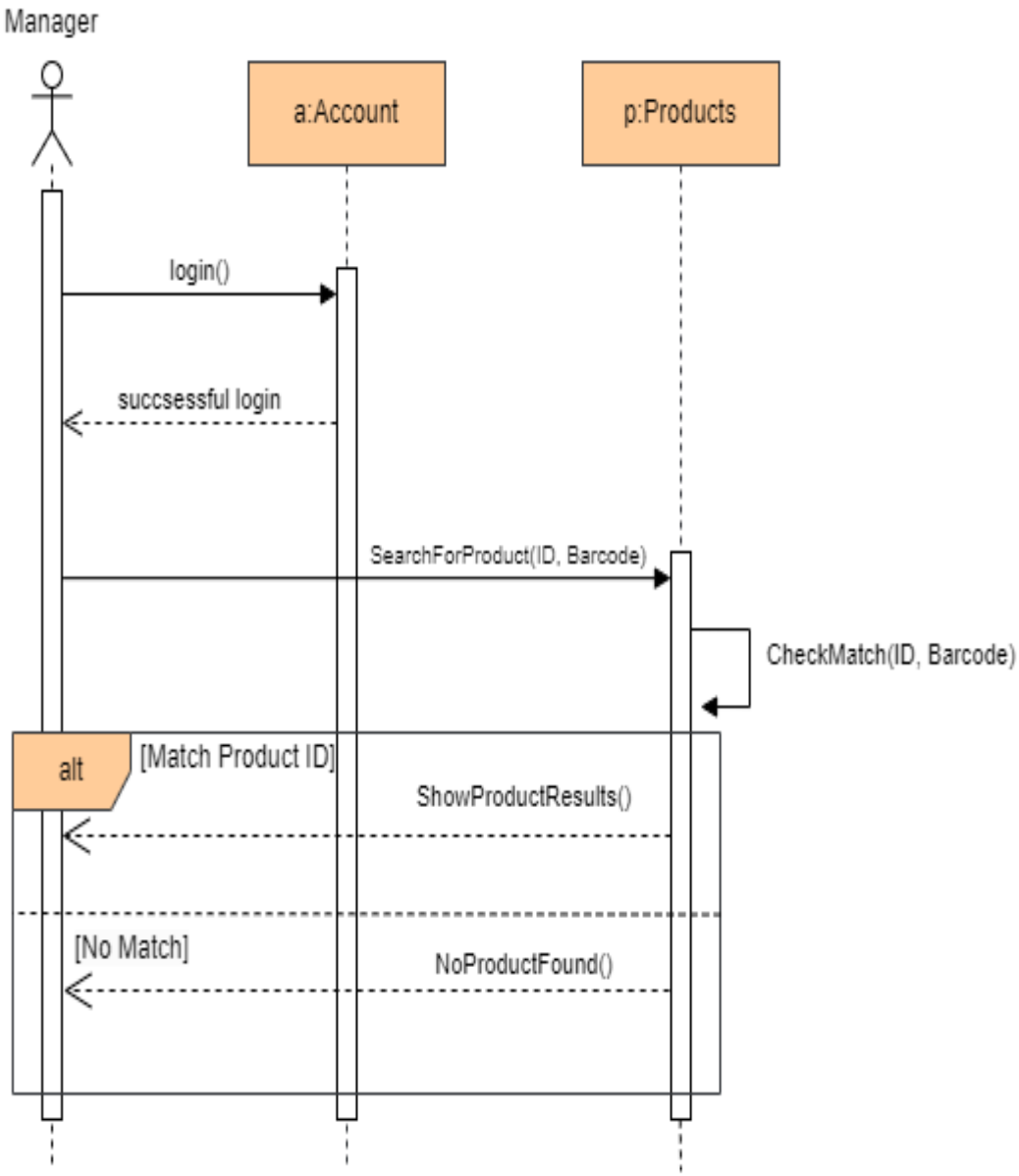


3.2. SEQUENCE Diagrams:

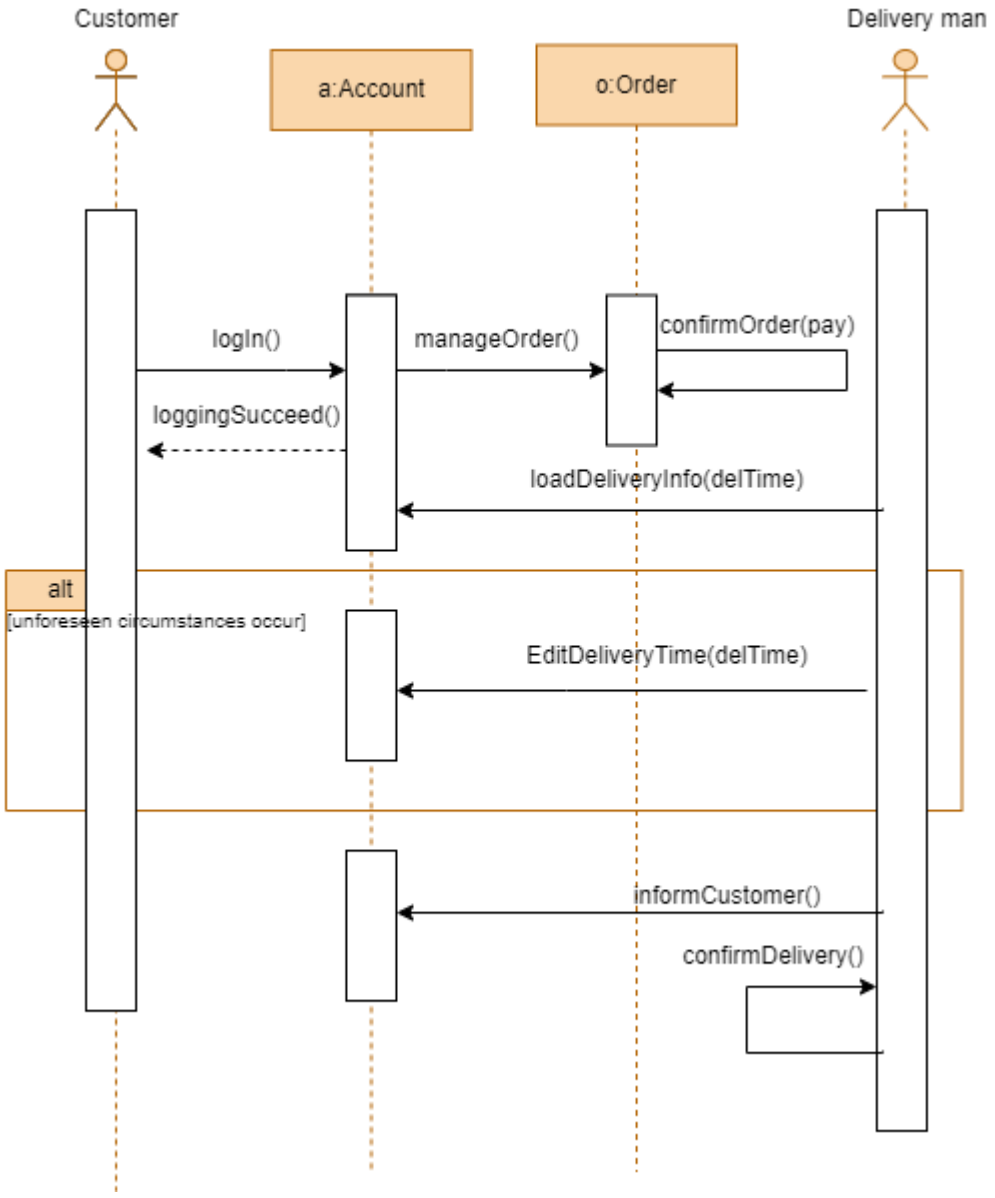
3.2.1. Sign up (Yazeed Hamdan)



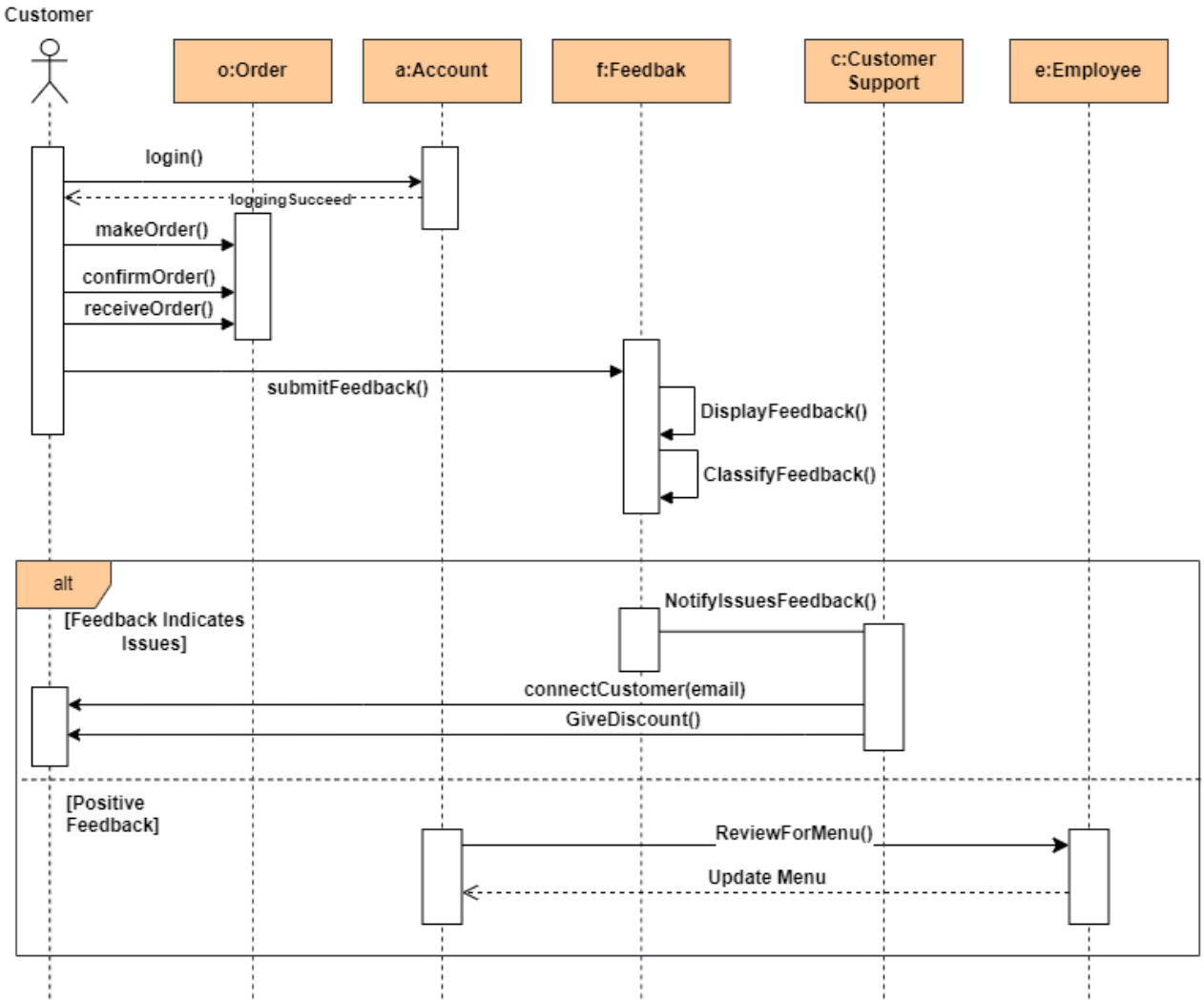
3.2.2. Product management (Ahmad Bakri)



3.2.3. Delivery (Amani Rabee)



3.2.4. Feedback (Aya Dahbour)



Chapter 4: System Design and Modelling

4.1. Description of chosen Design Goals:

(Lead: *Ahmad, Yazeed*: reviewing, *Aya& Amani*: discussion)

- **Specific Goal:**

- ***High Security:***

Our system must ensure high security, so that if the system is exposed to a specific problem or hack, we must ensure that system data and users personal information are not accessed.

To achieve high security, the Database and security servers in the infrastructure layers were separated into two servers, this design guarantees the security and the safety because if an external problem occurs that affects one server, the other server will not be affected and will continue to serve.

- **General Goals:**

- ***High Cohesion***

High Cohesion is represented by the grouping of related functionalities within the same layer or component. For example, in the Web Server, we see entities like Manager, Customer, Employee, Product, and Feedback, which are likely related to the operational functionalities of a business application. These are logically grouped together within the Web Server, indicating that they share a common context and likely interact with each other to complete tasks. Also, all classes and functions that related and depend on each other will be exist in one component.

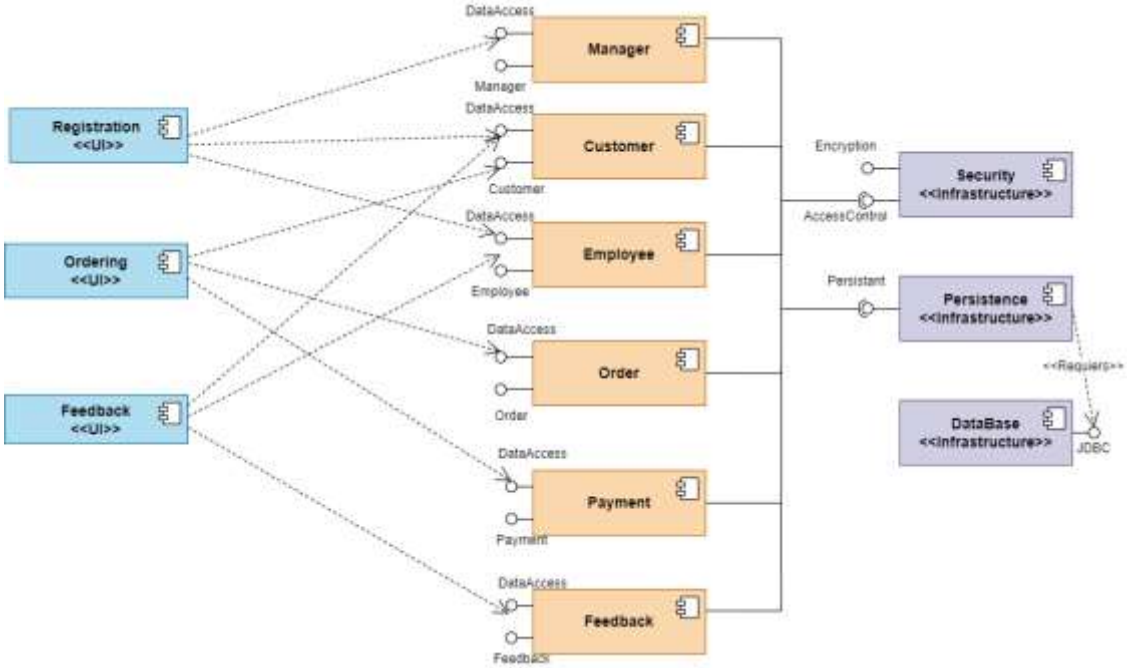
This shows High Cohesion as each component is focused on a specific set of responsibilities, leading to a modular and well-organized system.

- ***Low Coupling***

Low Coupling is demonstrated by the way the components interact across the diagrams, to achieve low coupling, a three-layer architecture was used (web browser, web server, database), to reduce amount of traffic and commutation between layers, for each layer all components and classes that need to communicate to each other's will be exist together in the same layer.

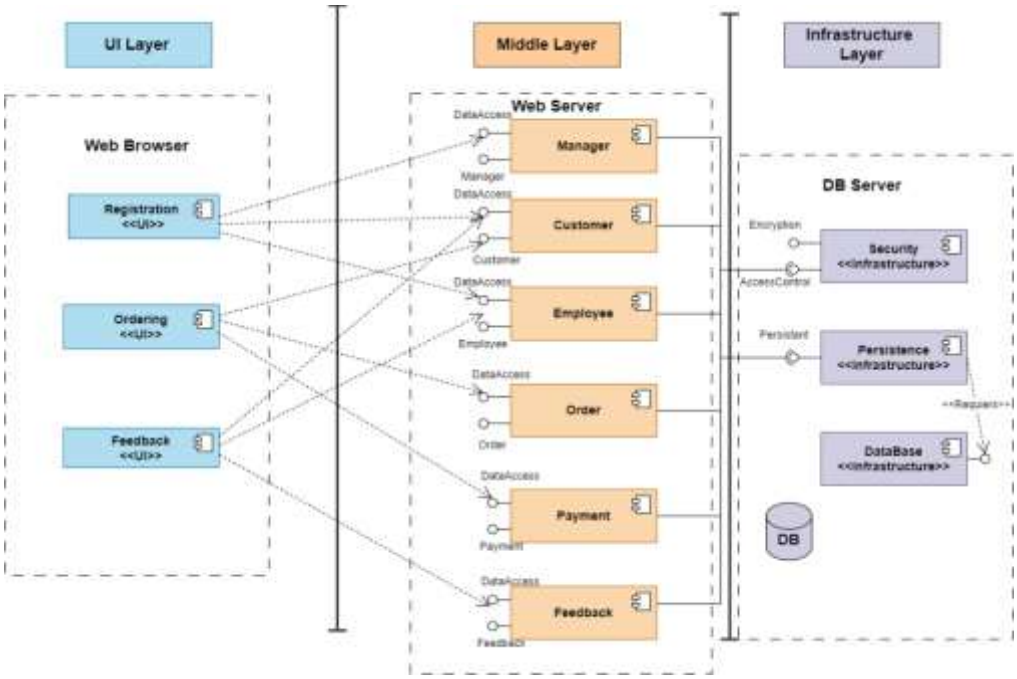
4.2. Component Diagram of the system components:

(Lead:Yazeed , *Amani*: reviewing, Aya& *Ahmad*: discussion)



4.3. Overall architecture Diagram:

(Lead: *Ahmad*, *Yazeed*: reviewing, *Amani& Aya*: discussion)



Architecture involves deciding on the different parts of the system, including both the physical (hardware) and the software. It also includes figuring out how these parts connect and work together. We decided to use layered architectural design, because it guarantees low cupping between the layers, because it makes the dependent between the layers low, and the communication between the lasers is limited and defined. This design guarantees
High cohesion also, because all components related to each other are in the same layer.
This type guarantees the user high security, because it allows each layer to be in a different place. If one of the layers is exposed to a problem, the rest will not be affected.

4.1. Deployment Diagram:

(Lead: *Amani*, *Aya*: reviewing, *Yazeed& Ahmad*: discussion)