



Project Title:
Customer Support Improvement (CSI)
مُجَيِّب

Team Members:

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Sumission	Sumission week	Delivery time	Marks
Introduction	Week 7	11/10/2025	3
Specification	Week 9	25/10/2025	5
Design	Week 11	8/11/2025	5
Implementation	Week 13	22/11/2025	5
Testing	Week 14	6/12/2025	3
Evolution	Week 14	6/12/2025	2
Complete Document Submission	Week 15		2
Presentation and Discussion	Week 15		5
			Total 30

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Project Idea and Justification:

- Many online platforms and mobile applications use automated customer support systems to respond to user inquiries. However, these systems usually provide limited, repetitive, and general responses that do not solve the user's real problem.
- The Smart Customer Support System aims to enhance the existing customer service process by introducing an intelligent chatbot that can identify the type of issue—such as payment errors, login problems, or delivery delays—and automatically connect the user to the right department or human agent.
- This improvement helps reduce waiting time, prevents frustration, and ensures that users receive accurate assistance faster. It also improves the efficiency of customer service teams by filtering and routing messages based on their category.

1. Problem Statement:

- Current customer support systems rely heavily on generic automated responses that fail to understand the user's specific issue.
- As a result, customers often waste time navigating irrelevant options or waiting for human assistance.
- This leads to frustration, low satisfaction, and decreased trust in the service.
- The proposed Smart Customer Support System solves this problem by using intelligent message classification to analyze user input and redirect it immediately to the correct support agent or department, providing faster and more relevant assistance.

3. Scope of work:

We aim to develop a smart chat system that uses artificial intelligence to understand customer problems and send them directly to the right department instead of giving repeated

Acceptance Criteria

The project will be finished when these points are done:

1. Transfer function:

- o The system should move the chat to a human worker without losing the chat messages.
- o If the bot cannot understand the customer, it should show a clear message to say sorry and tell the customer that a human worker will help.

2. AI and Performance

o Self-service rate:

The bot should solve at least 50% of the common questions without sending the customer to a human worker.

o Response speed:

The bot should send the first reply in less than 3 seconds after the customer sends a message.

3. Usability

The system should be tested and checked for ease of use by doing tests with a group of users.



Out of Scope (Exclusions)

- Multilingual support:
Any additional languages other than the main ones (Arabic and English) are excluded.
- Voice support:
Voice input is not included. Only the automated phone response system will be used

4. Project Timeline:

week	Task	Responsible Team Members	Deliverable / Milestone
Week 6	First team meeting, brainstorming ideas, finalizing the project concept.	All Team Members	Agreed-upon project idea.
Week 7	Write the Assignment 1 document (Introduction, Problem, Scope), create the detailed project timeline.	All Team Members	Submit Assignment 1: Introduction.
Week 8	Start requirements analysis, identify target users, and write use cases.	All Team Members	A list of initial requirements.
Week 9	Finalize requirements and draw the first UML diagrams.	All Team Members	Submit Assignment 2: Specification.
Week 10	Start designing the software architecture and sketching UI wireframes.	All Team Members	A first draft of the system architecture.
Week 11	Finalize UI mockups and complete the design document.	All Team Members	Submit Assignment 3: Design.
Week 12	Begin coding and building the prototype.	All Team Members	A working part of the software.
Week 13	Finish a working prototype that can be demonstrated.	All Team Members	Submit Assignment 4: Implementation.
Week 14	Test the prototype, document bugs, and make improvements	All Team Members	Submit Assignment 5: Testing & Evolution.
Week 15	Assemble the final document and prepare the final presentation.	All Team Members	Final Document Submission & Presentation.

1. Requirements analysis

Functional Requirements

- FR1. Questions Handling: Receive customer questions.
- FR2. Auto Sorting: Use AI to sort questions to the right department automatically.
- FR3. Staff Notification: Notify the staff when a new question arrives.
- FR4. Staff Notification: Alert the customer when their question is answered.
- FR5. Conversation Saving: Save conversations between customers and support staff.
- FR6. Problem Summary: Show a summary of the most common problems.
- FR7. Easy Interface: Provide an easy-to-use interface for customers and support staff.
- FR8. Satisfaction Rating: Measure customer satisfaction by letting them rate the service after the chat.
- FR9. File Upload: Allow customers to send files like images or documents to explain their problem.

Non-Functional Requirements

- NFR1. Performance: The system should reply to each question in less than 3 seconds.
- NFR2. Security: Keep customer information secure using encryption.
- NFR3. Usability: The interface should be simple and easy to understand.
- NFR4. Compatibility: The system should work on browsers and mobile devices.
- NFR5. Availability: The system should be available 24/7
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2. Scenarios (Use Stories)

Scenario 1: Customer Submits a Technical Support Request (Automated Classification)

Persona: "Sarah," an existing customer.

Goal: To report a technical issue preventing her from logging into the application..

Story :

- 1-Sarah opens the application and navigates to the "Help" section.
- 2-She types in the description box: "I can't log into my account. It keeps showing an 'Authentication Error' eventhough my password is correct."
- 3-She clicks "Submit."
- 4-system (behind the scenes) instantly analyzes the text, classifies it as "Technical Issue - Login Failure," and routes it to the Tier 2 Tech Support queue.
- 5-Sarah sees a message: "Your request (#101) has been received and routed to our technical support team."

Scenario 2: Customer Adds More Information to an Open Ticket.

Persona: "Sarah" (from Scenario 1).

Goal: To add a screenshot of the error message she is seeing.

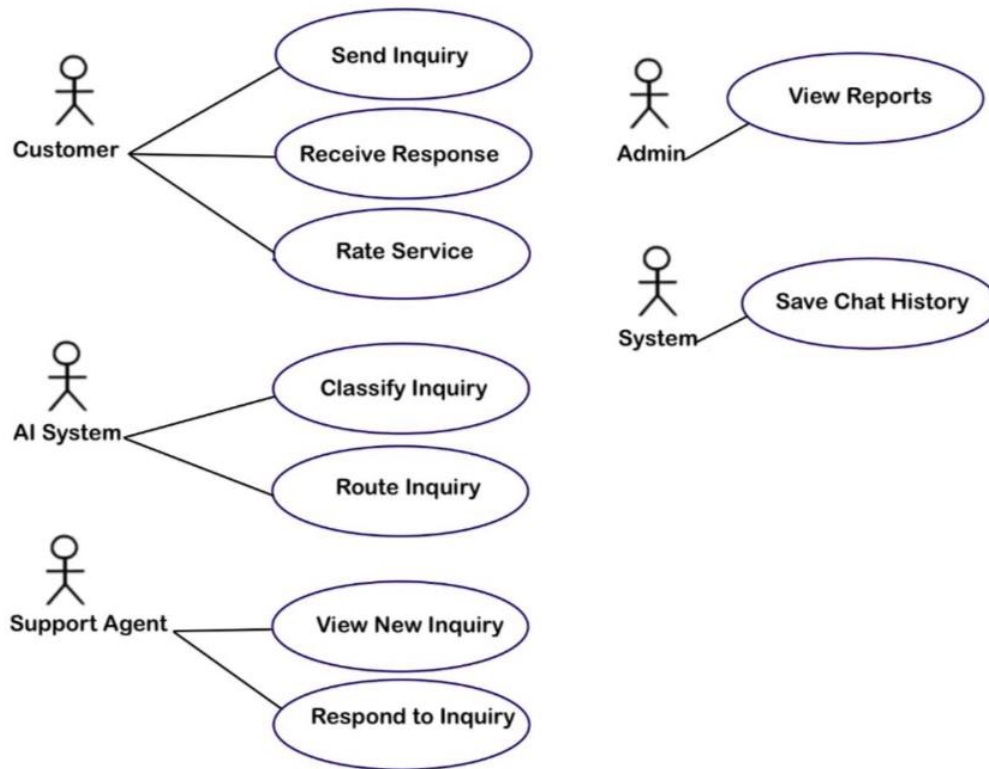
Story :

- 1-Sarah opens her ticket #101 (which is still "In Progress").
- 2-She clicks the "Add Reply" or "Attach File" button.
- 3-She uploads the screenshot.
- 1-4-She writes: "This is the exact error message I am seeing."
- 2- 5-The agent "Ahmed" receives a notification that the customer has updated the ticket with new information

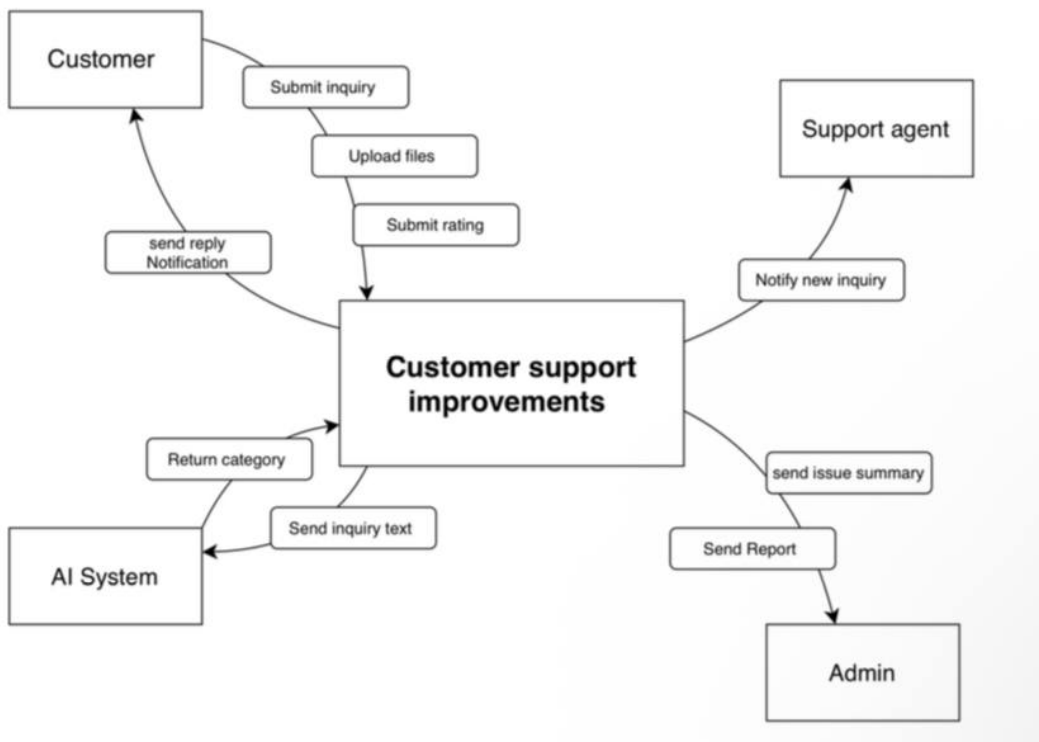
3. Risk

Risk	Desscription	Impact	Mitigation Plan
1.System misclassifies customer messages	The AI might incorrectly detect the issue type and send the user to the wrong department.	High - could cause user frustration and loss of trust in the system.	Improve the training data, test regularly, and use feedback from real users to refine classification accuracy.
2. Server downtime or system unavailability	The chatbot or support system may be temporarily unavailable due to server or network issues.	Medium - delays in user assistance and poor experience.	

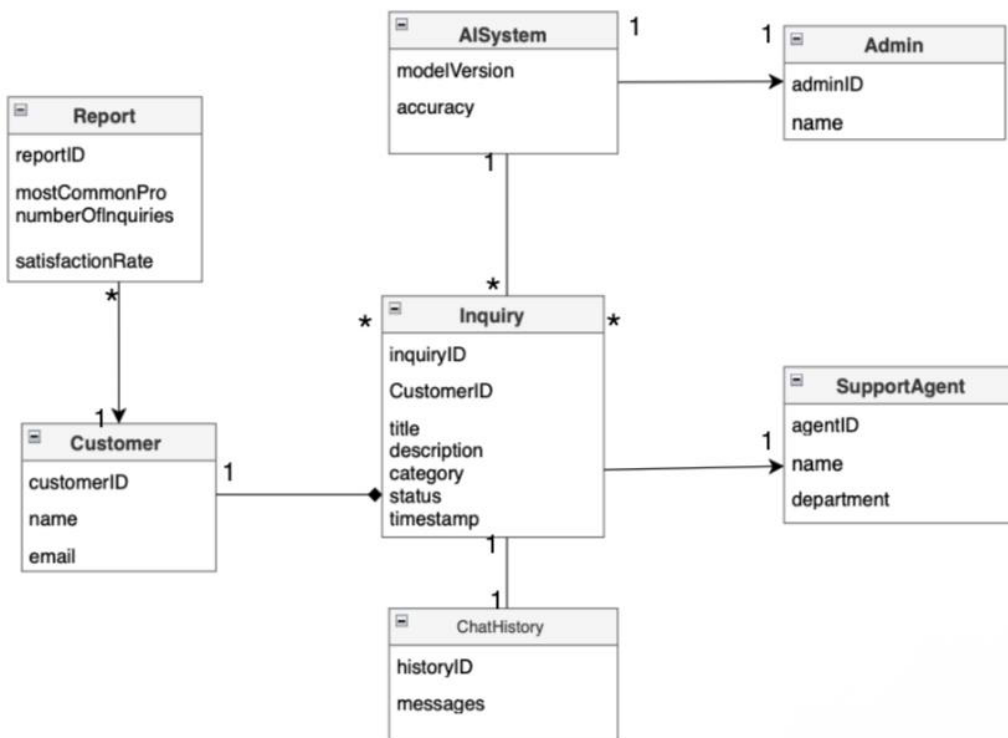
1. Use case diagram



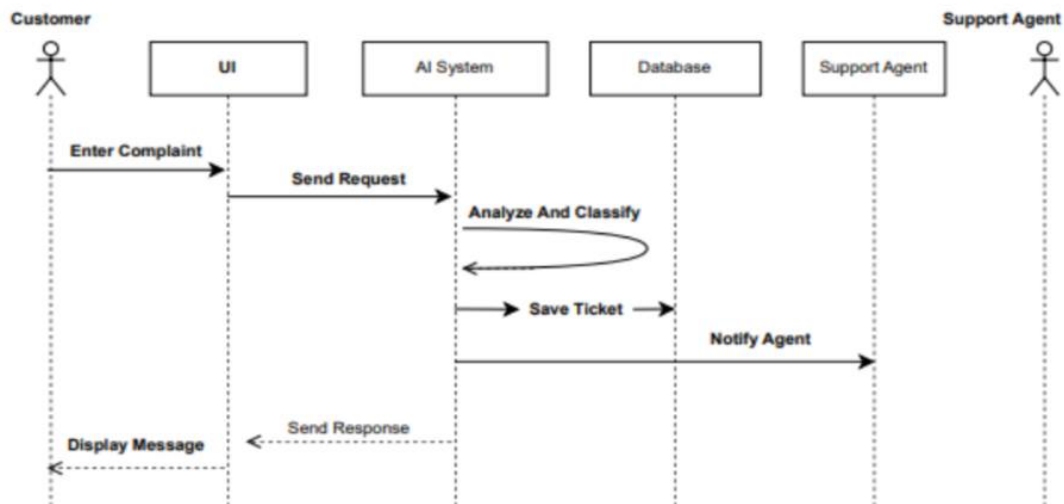
2. Context diagram



3. Class diagram

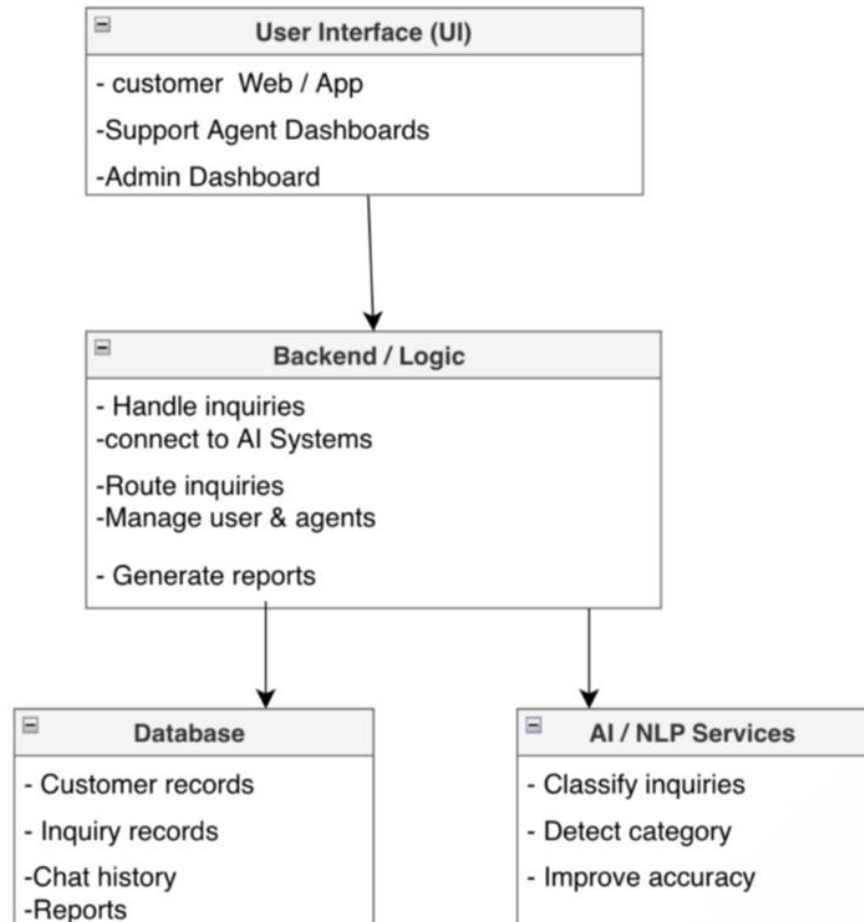


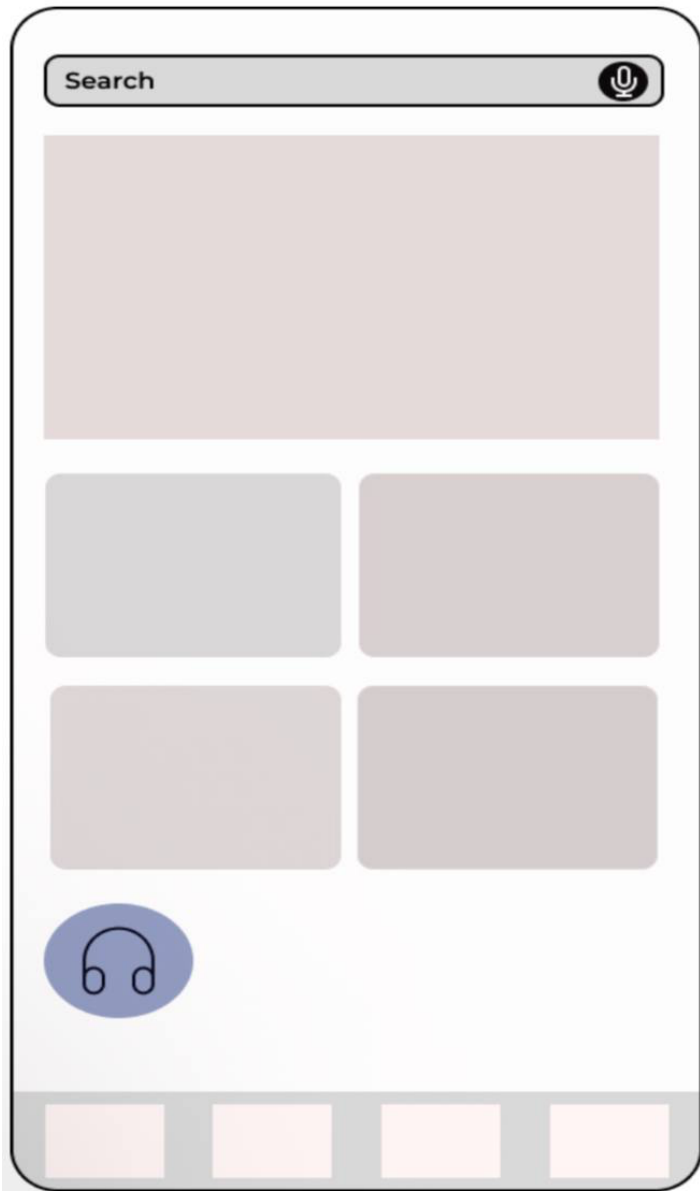
4. Sequence diagram

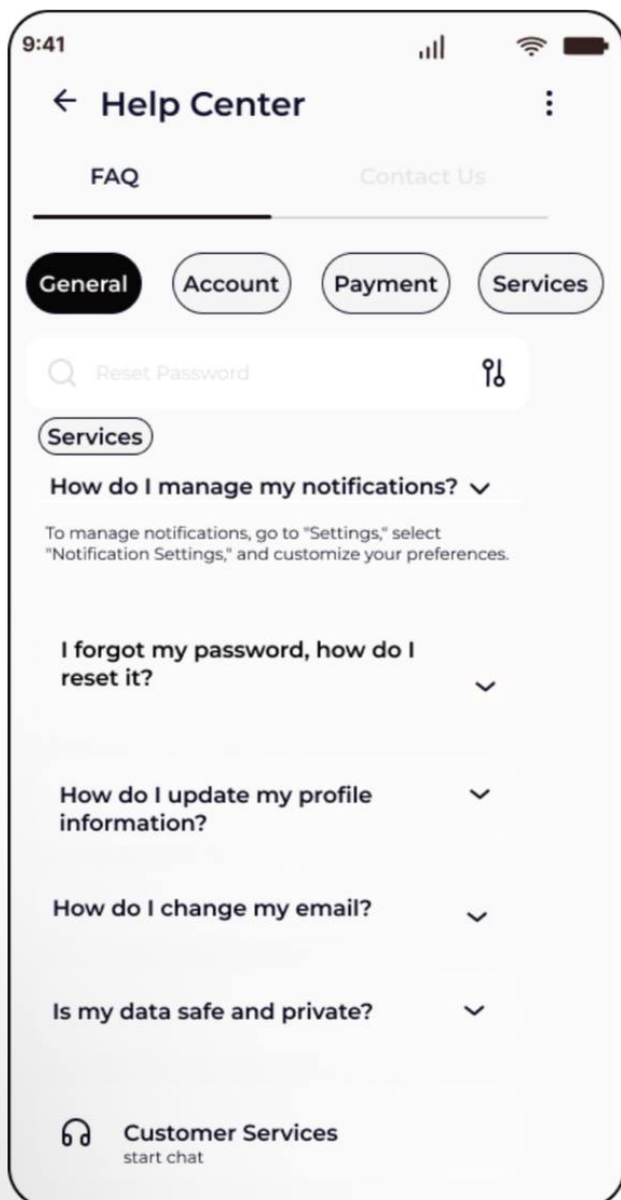


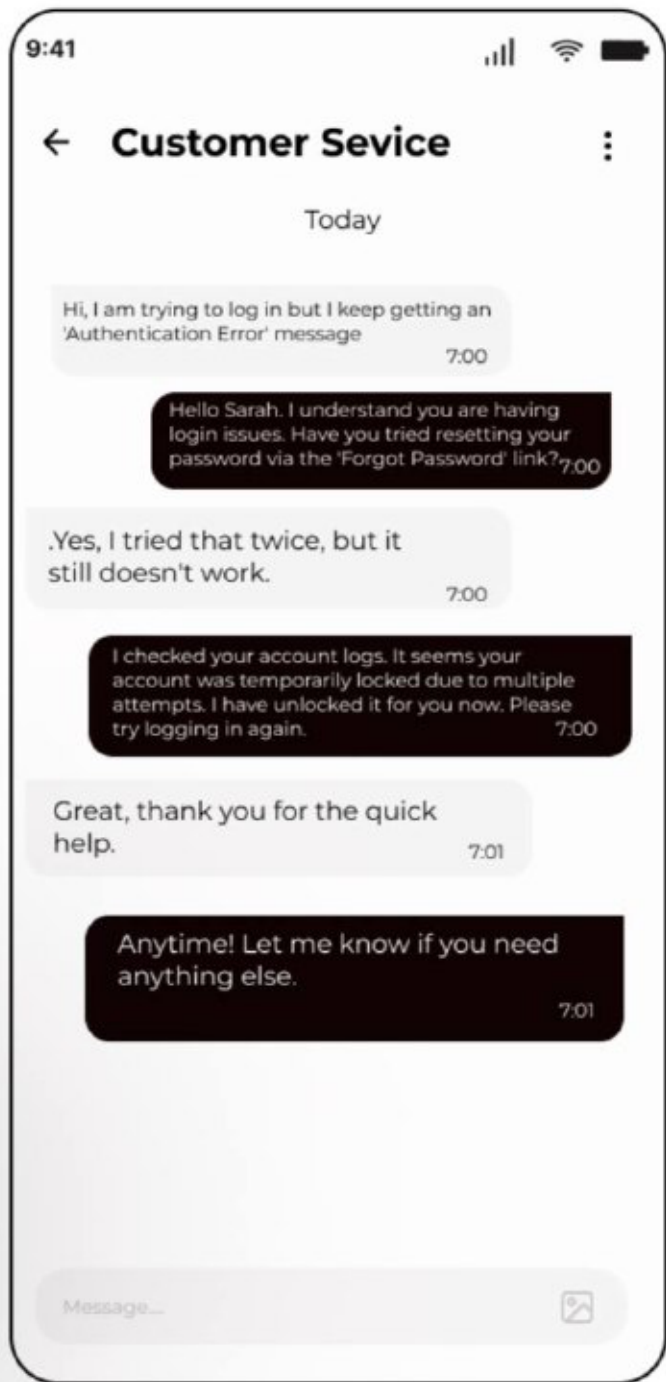
5. System Architecture: Layered Architecture

I chose the Layered Architecture because it separates the system into clear layers. This makes the development and maintenance easier, and it fits our customer support project very well









Stage 4

1. Prototype

<https://www.figma.com/proto/R0aVUHPwU5NEo4Szt6DUWF/Help---support-UI-Design--Community-?node-id=0-1&t= SX15iFL4NBSgHdrP-1>

- video

https://drive.google.com/file/d/1tV0AWm7qfn_mTpOPF5Hp3wLJXVLdQQHV/view?usp=drivesdk

2. Test unit:

- Positive Case:

The system responded quickly when the user sent a complete inquiry, showing the support message immediately.

- Negative Case:

When the user submitted an incomplete inquiry, the system refused it and showed a warning message.

3. fixes/improvements:

In the future, we plan to support uploading images and files in the chat to make communication with support clearer. We also plan to activate the service rating feature after the chat ends to measure customer satisfaction and identify areas for improvement.

References:

- Technical Overview:
- <https://dida.do/use-cases/classification-of-customer-requests>
- The impact of Intelligence Support Systems on Customer Service Outcomes:
- https://www.researchgate.net/publication/390873579_Impact_of_AI-Driven_Chatbot_Interactions_on_Customer_Loyalty_and_Retention
- Common challenges in chatbot Implementation:
- <https://www.proprofschat.com/blog/chatbot-implementation-challenges/>
- The diagrams were created using [Draw.io](#)
- the UI wireframes were designed using Figma.