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**Date of Submission:** 16.05.2025  
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**1. Problem Statement**

In revolutionizing customer support chatbot we choose banking sector for creating automated chatbot. because Traditional banking customer support is often slow and lacks 24/7 availability. Users face difficulties in getting quick responses to basic queries like account balance, loan information, or card blocking.

Problem Type: Rule-Based Query Handling (Chatbot logic)  
Importance:

* Enables round-the-clock banking support
* Reduces load on human agents
* Improves customer satisfaction and digital engagement

**2. Project Objectives**

* Develop a web-based chatbot specifically for banking queries.
* Use rule-based logic to respond to frequent questions like:
  + Account balance check
  + Card blocking
  + Loan information
  + Branch details
* Design a clean, interactive UI for customers.
* Ensure responses are clear, reliable, and context-aware within predefined logic.

**3. Flowchart of the Project Workflow**

**User Input → Chat Interface (HTML/CSS/JS) → Rule Matching Logic (JavaScript) → Bot Response Output**

User Input

Chat Interface (HTML/CSS/JS)

Rule Matching Logic (JavaScript)

**→** Response Output

**4. Data Description**

As the current chatbot is **rule-based**, it doesn't use a large dataset or machine learning. Instead:

* **Data Source**: Manually curated question-answer pairs for banking use cases
* **Data Type**: Text (queries and responses)
* **Dataset Format**: JSON-like object or JS-based mapping of user phrases to replies
* **Nature**: Static, small-scale, manually written

**5. Data Preprocessing**

* Since this is a static rule-based system, no complex preprocessing was needed.
* Input queries are trimmed and converted to lowercase for matching.
* Keywords are matched using if-else conditions or simple string checks in JavaScript.

**6. Exploratory Data Analysis (EDA)**

EDA was not applicable as no structured dataset was used for training. However:

* Frequently asked questions were identified from real-world banking scenarios.
* Based on that, chatbot responses were mapped manually.

**7. Feature Engineering**

Although this project currently uses a rule-based approach without complex features, some basic engineering logic was applied to enhance the chatbot’s accuracy and flexibility:

* **Text Normalization**:
  + Converted user inputs to lowercase to avoid case-sensitivity issues.
  + Trimmed extra spaces to ensure clean matching.
* **Keyword Mapping**:
  + Identified key phrases like "block card", "loan", "balance", etc., and mapped them to predefined responses.
* **Synonym Handling** (Basic):
  + Recognized variations of questions (e.g., “What is my balance?”, “Check balance”, “Account balance”) using string matching or multiple keyword checks.

**Response Templates**:

* + Structured bot responses in a user-friendly format using HTML containers (for better readability).

**8. Model Building**

This chatbot does **not use any machine learning model** currently. It works using:

* **Rule-Based Logic**: if/else statements and keyword matching in JavaScript
* **Future Scope**: Plan to implement intent classification using NLP models (Logistic Regression, LSTM)

**9. Visualization of Results & Model Insights**

Since the chatbot uses predefined responses:

* No model metrics or graphs are applicable
* User testing showed that most common queries are answered correctly
* Chat UI provides visual feedback and enhances interaction

**10. Tools and Technologies Used**

| **Tool/Technology** | **Purpose** |
| --- | --- |
| **HTML/CSS** | User interface design |
| **JavaScript** | Chatbot logic and interactions |
| **Netlify** | Project hosting |
| **VS Code** | Code development environment |
| **GitHub** | Version control and source code |
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**11. Team Members and Contributions**

| **Team Member** | **Contributions** |
| --- | --- |
| Soundariya S. | Frontend design, Netlify setup |
| Naveena. S | Script writing for banking use cases |
| Gomathi. M | Documentation and QA testing |
| Vijayalakshmi .M | GitHub setup and demo link deployment |
| Keerthana. S | Chatbot logic writing |