Bike Loan Project
(SRB_DreamBikeLoanProject)

INTRODUCTION

The Two-Wheeler Bike Loan Project, known as SRB_DreamBikeLoanProject, is developed to simplify and enhance the process of providing bike loans to eligible customers. This project focuses on creating a streamlined, step-by-step workflow that ensures efficient loan approval and disbursement. By integrating distinct roles and responsibilities for key personnel, the project minimises errors, enhances transparency, and improves customer experience.

The process involves several critical stages, including customer data collection, credit score evaluation, document verification, loan approval, and disbursement. Each stage is meticulously designed to ensure that the loan process is not only user-friendly but also compliant with financial standards. This approach aims to deliver seamless service to customers, making their dream of owning a bike a hassle-free reality.

PROJECT OVERVIEW

The project is designed to streamline the process of giving loans to customers who wish to purchase a bike. It follows a multi-step process that ensures each stage of the loan approval and disbursement is handled efficiently and accurately. Here's how it works:

1. **Customer Relationship Manager (CRM)**: The CRM gathers basic customer details such as name, address, identity proof, and other necessary information.
2. **Operational Executive (OE)**: The customer's information is transferred to the OE, who checks the customer's CIBIL score. Based on the score, the OE makes an initial decision to approve or reject the loan application.

3. **Approval Process**: If the OE approves the loan based on the CIBIL score, the CRM is notified of the customer's eligibility.
4. **Document Verification**: The OE then verifies all required documents submitted by the customer to ensure they meet the necessary criteria.
5. **Credit Manager**: Once the documents are verified, the Credit Manager sanctions the loan and sends an email to the customer for formal acceptance of the loan offer.
6. **Loan Disbursement**: After the customer accepts the loan, the Account Head finalises the loan disbursement and creates the financial ledger for the loan transaction.

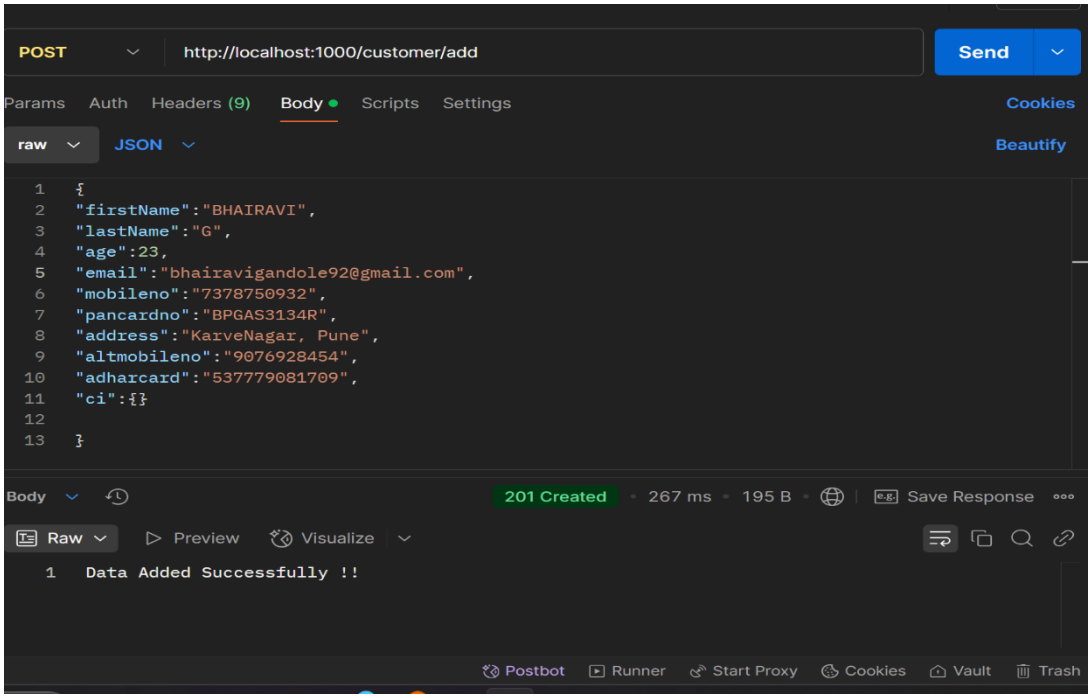
The system ensures a clear, step-by-step process where each role has defined responsibilities, reduces errors and improves the overall loan approval and disbursement process. This helps provide efficient service to customers seeking to finance their bike purchases.

Involved Officials And Their Role

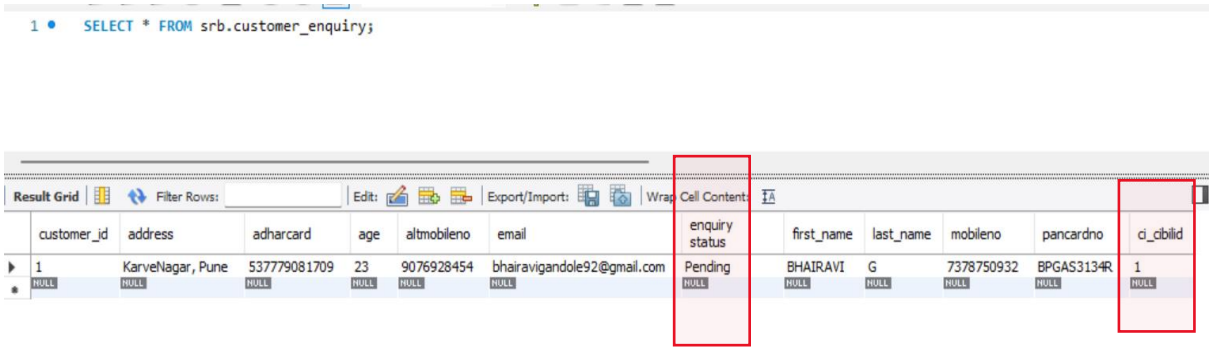
1. Customer Relationship Manager (CRM-Port:1000):

The Customer Relationship Manager (CRM) plays a crucial role in the loan process, acting as the first point of contact for customers seeking a bike loan. Their responsibilities include:

1. Collecting Customer Information: The CRM gathers personal details such as name, address, identity proof, mobile number and other necessary documents from the customer to initiate the loan application.



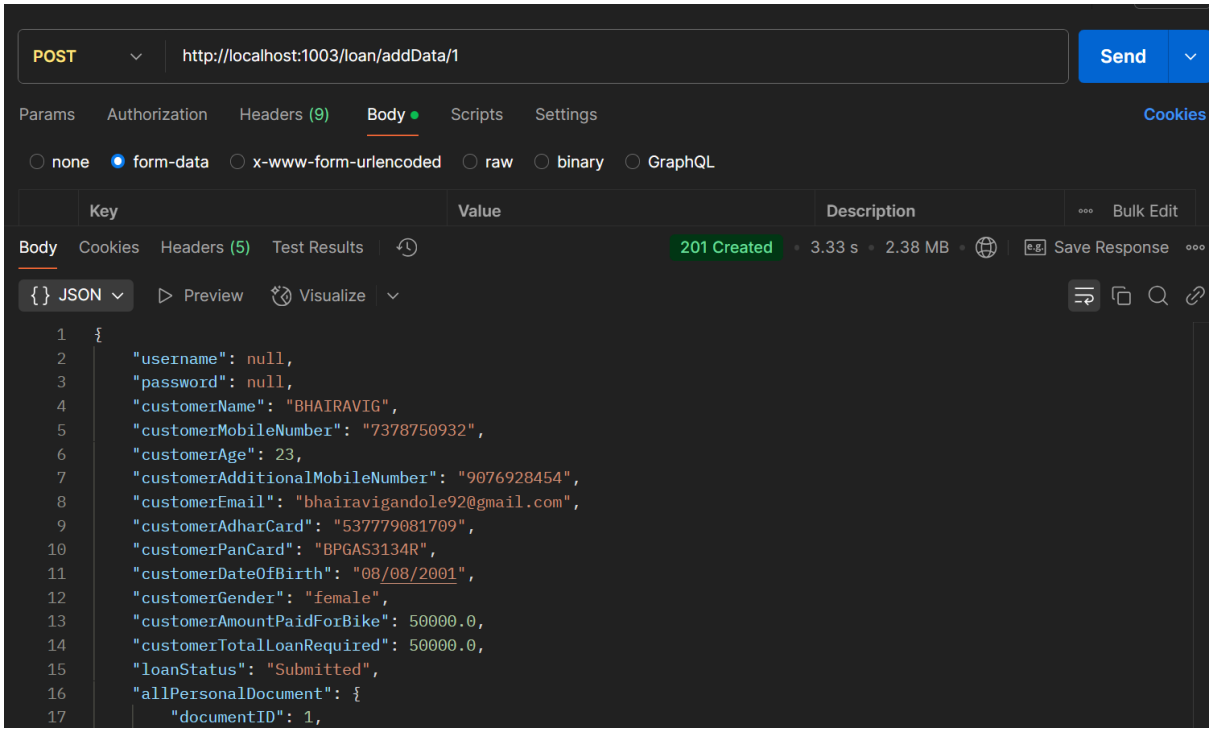
2. Creating Customer Profile: Once the details are collected, the CRM creates a profile for the customer in the system, ensuring all information is accurate and complete for further processing.

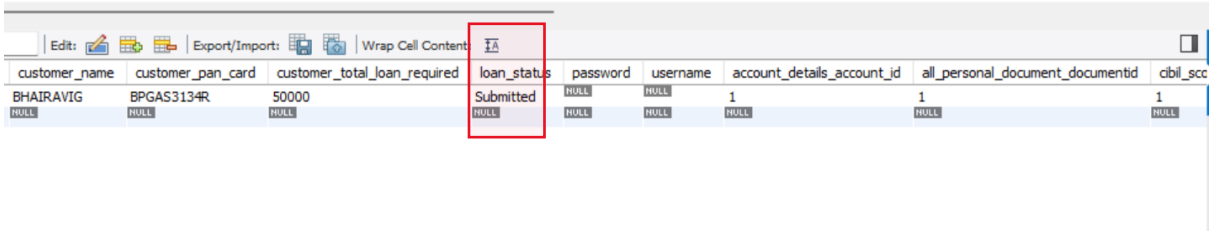


Forward the customer's information to the Operational Executive (OE), who will check the customer's CIBIL score to determine loan eligibility.

4. Loan Eligibility Communication: If the loan is approved, the CRM is notified and informs the customer that they are eligible for the loan.

5. Documentation Assistance: The CRM assists the customer in providing any additional documents required for the loan, ensuring everything is in order for the verification process.





6. Ongoing Communication: Throughout the loan process, the CRM keeps the customer updated on the loan's status, addresses any concerns, and ensures that the customer is informed about the next steps.

7. Final Loan Confirmation: After the loan is approved by the Credit Manager and the customer accepts it, the CRM ensures all necessary steps are completed for the loan disbursement.

8. Customer Feedback: Post-disbursement, the CRM may follow up with the customer to gather feedback and maintain a relationship for future assistance.

In essence, the CRM ensures that the customer is guided and supported from the initial loan application through to the disbursement, ensuring a smooth and efficient process.

2.Loan Application(port:1003):

This microservice is responsible for handling three critical functions within the **Bike Loan Project**: **CIBIL generation, customer login, and ledger generation**. It

plays a crucial role in assessing a customer's creditworthiness, managing authentication, and maintaining financial records.

1. CIBIL Generation

- The microservice fetches customer financial history and calculates the **CIBIL score** based on predefined criteria.
- It interacts with external credit agencies or uses internal algorithms to generate the score.
- The score is then made available to the **Operational Executive (OE)** for loan eligibility evaluation.
- If the CIBIL score meets the threshold, the loan process continues; otherwise, the loan is rejected.
- This microservice is now **patched into the OE microservice**, allowing it to be called automatically during loan processing.

2. Customer Login

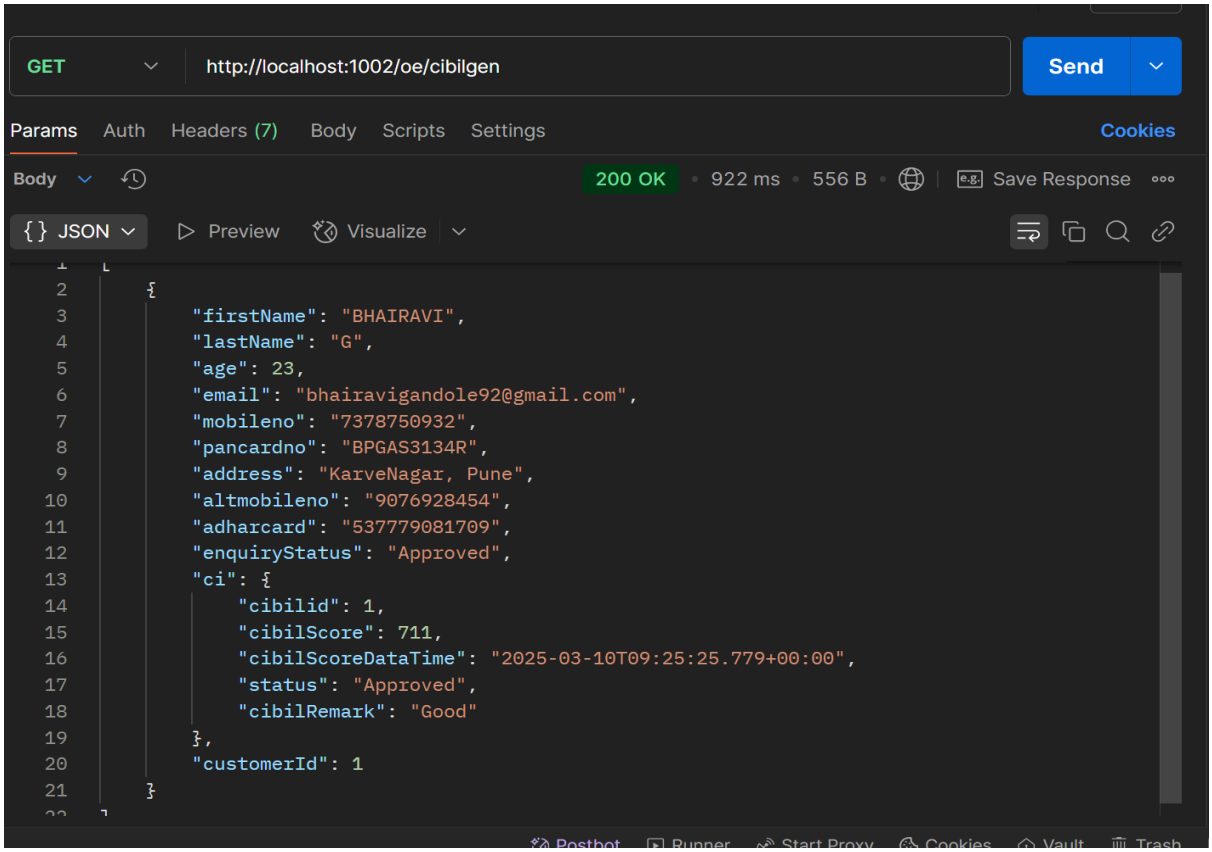
- This microservice provides **authentication and authorization** for customers.
- Customers can log in securely using their registered credentials.
- Once logged in, customers can view their loan details, CIBIL score, and ledger records.

3. Operational Executive (Port:1002):

The Operational Executive (OE) is responsible for assessing and verifying the customer's loan application after the Customer Relationship Manager (CRM) has gathered the necessary details. Here's a concise breakdown of the OE's role:

1. CIBIL Score Check: The OE checks the customer's CIBIL score to evaluate their creditworthiness. Based on the score, the OE decides whether to approve or reject the loan application.

2. Loan Approval or Rejection: If the CIBIL score meets the company's criteria, the OE approves the loan. If it's insufficient, the OE rejects the loan and informs the CRM.

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SELECT * FROM srb.cibil;
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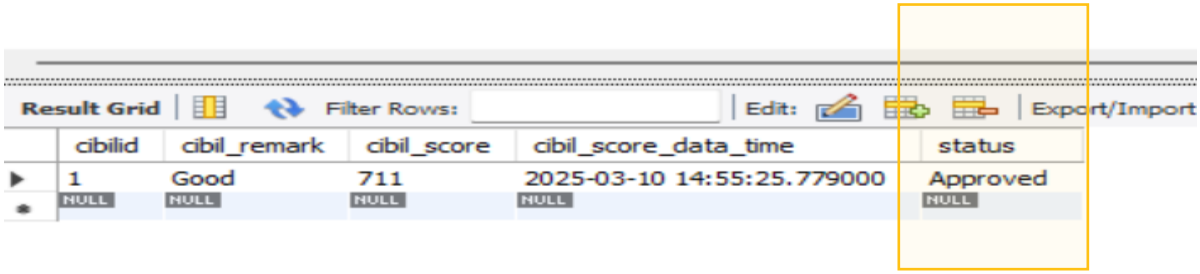
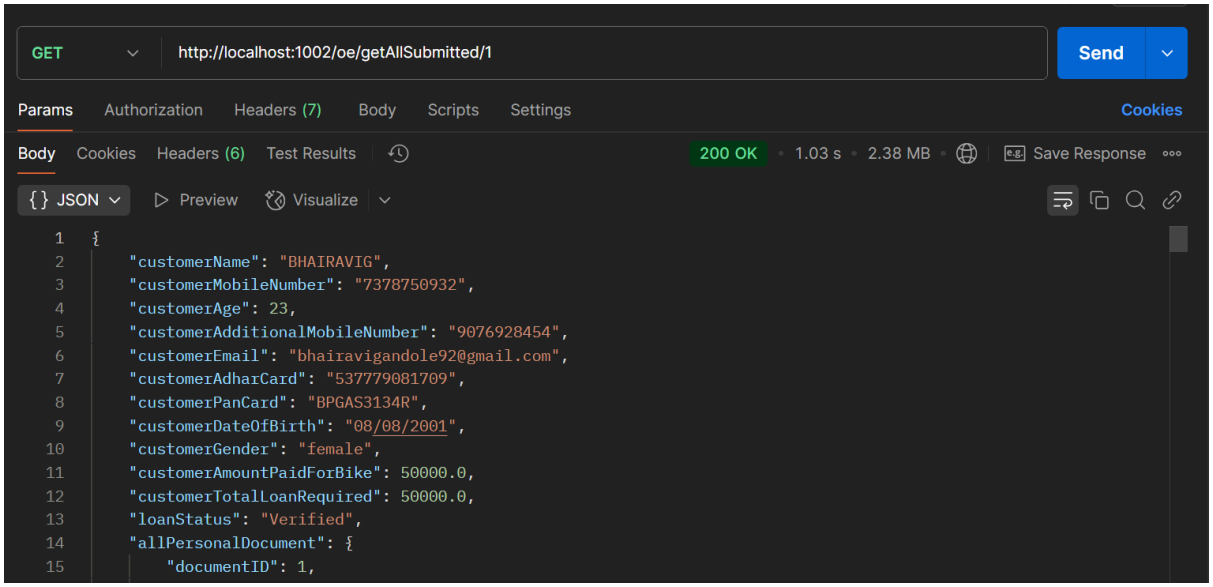
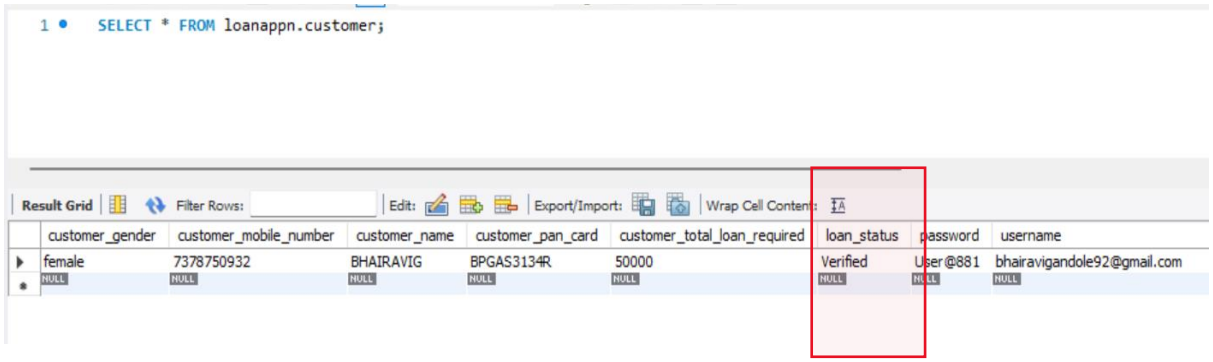


3. Document Verification: Once the loan is approved, the OE verifies the authenticity and completeness of the customer's documents to ensure they meet company standards.

4. Compliance Checks: The OE ensures all customer details and documents comply with internal policies and guidelines. Any discrepancies or missing documents are flagged for resolution.





5.Handover to Credit Manager: After document verification, the OE forwards the case to the Credit Manager for final loan sanctioning.

6. Communication: Throughout the process, the OE communicates with the CRM and the customer to provide status updates on the loan application, including approval or rejection.

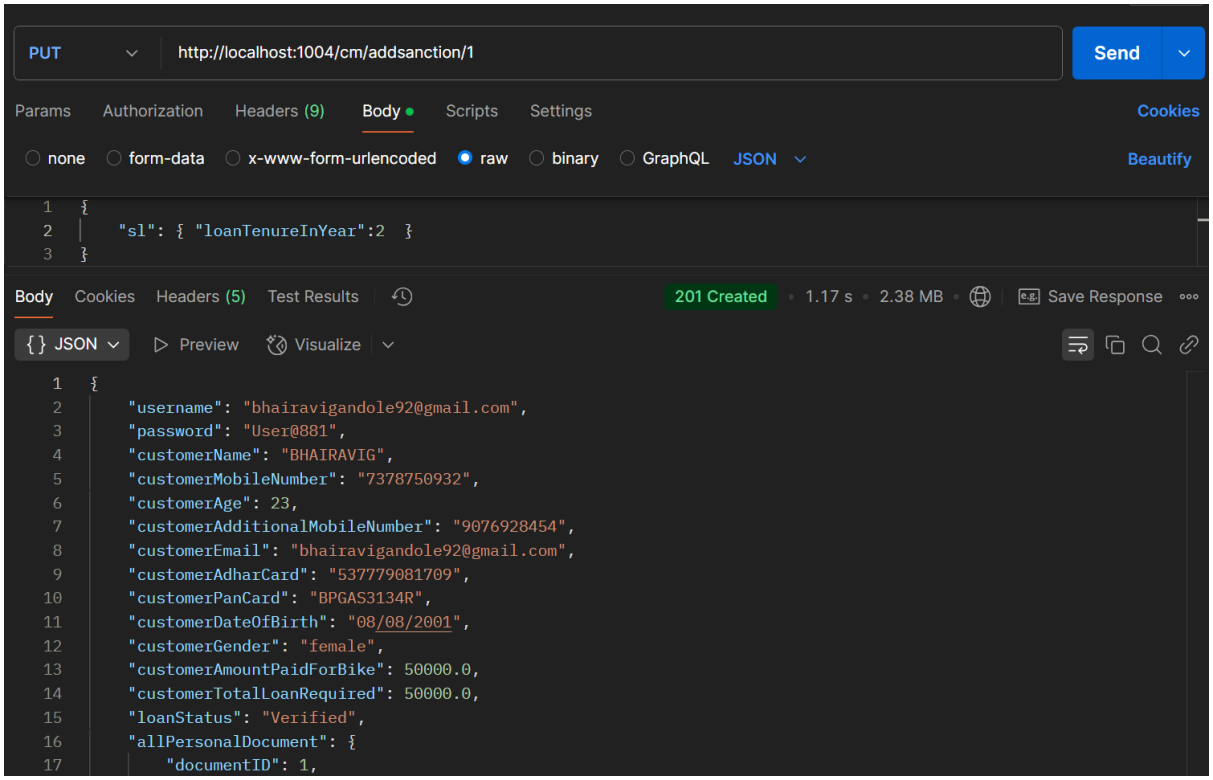
In short, the OE is responsible for checking the CIBIL score, approving or rejecting the loan, verifying documents, ensuring compliance, and passing the verified case to the Credit Manager for final approval.

4. Credit Manager (Port:1004):

The Credit Manager is responsible for the final approval and sanctioning of the loan. Here's a concise breakdown of their role:

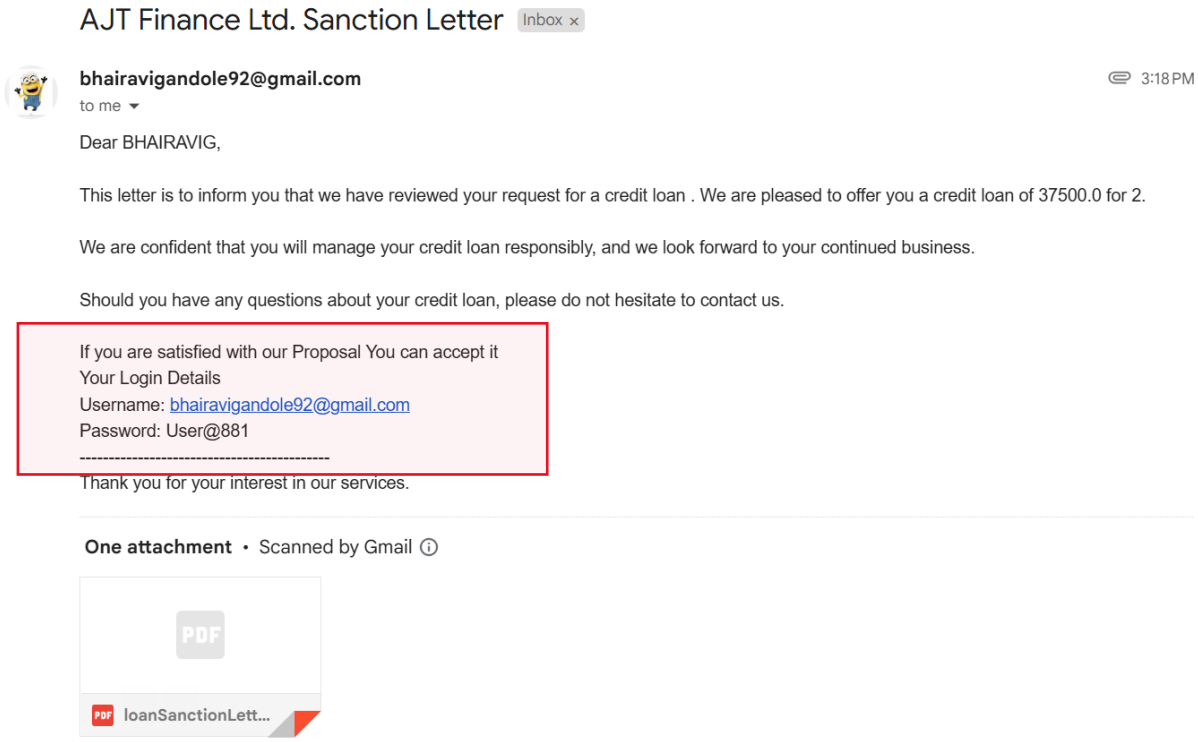
1. Review Loan Application: The Credit Manager reviews the customer's CIBIL score, documents, and the verification done by the Operational Executive (OE).

2.Loan Sanctioning: Based on the review, they make the final decision to sanction or reject the loan after assessing the risk and also generate the customer's username and password which allows the customer to log into their account and check loan status accordingly.



3. Risk Assessment: They evaluate the overall risk, considering factors like credit history and income, to ensure the loan aligns with company policies.

4. Notification to Customer: After sanctioning, the Credit Manager sends the official loan offer to the customer via email, outlining the loan terms and conditions.

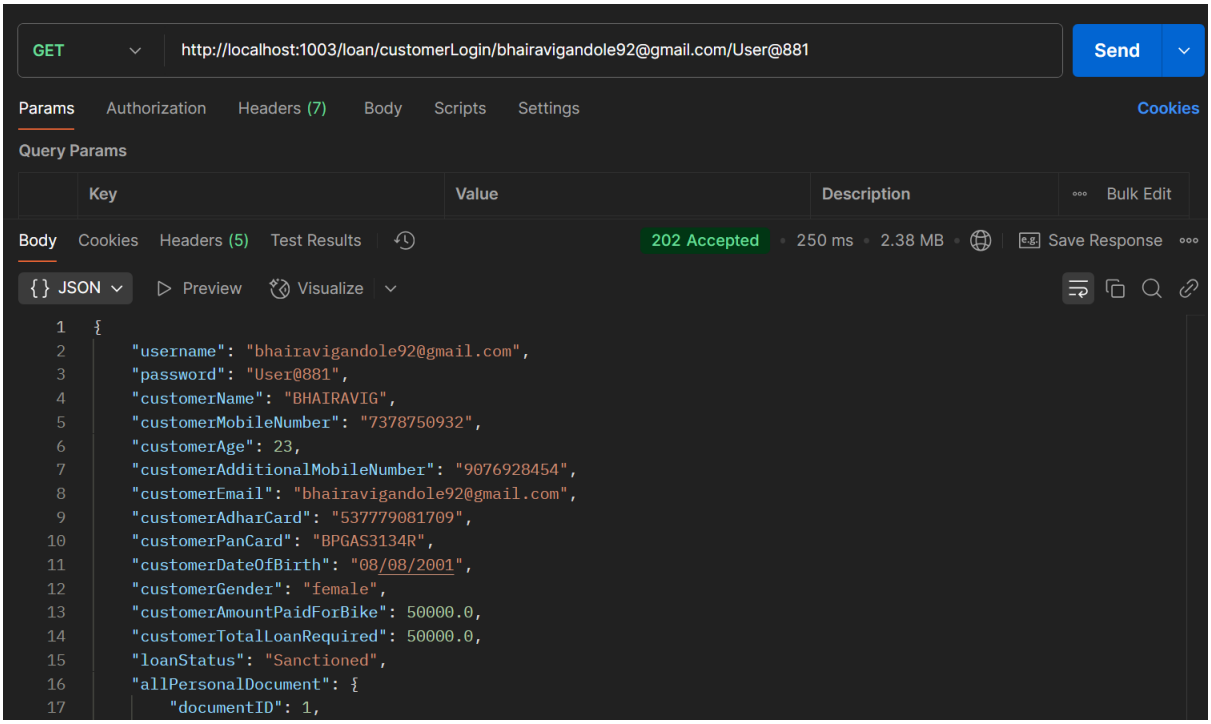


5. Collaboration: The Credit Manager informs the Account Head to proceed with loan disbursement and coordinates with other departments to ensure the process flows smoothly.

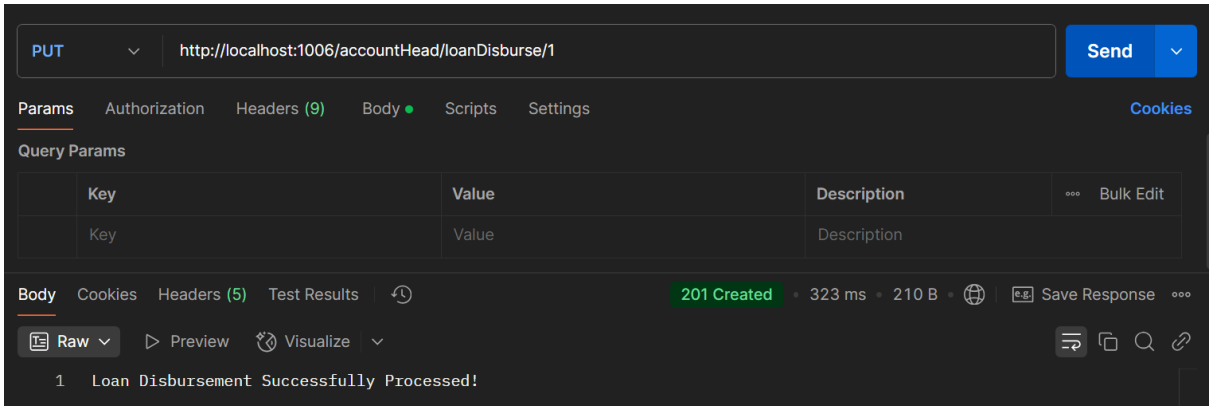
In short, the Credit Manager reviews and sanctions the loan, assesses risk, communicates with the customer, and ensures the loan is ready for disbursement.

5. Account Head (Port:1006)

The Account Head holds a critical position at the end of the loan process, ensuring that the loan is disbursed correctly and the financial records are properly maintained. After the loan offer is accepted by the customer, the Account Head's responsibilities begin, focusing on financial management, documentation, and reporting.



1. Loan Disbursement: Responsible for disbursing the approved loan amount to the customer's account.
2. Ledger Management: Creates and maintains an accurate ledger entry for the loan transaction.



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1 •  SELECT * FROM loanappn.customer;
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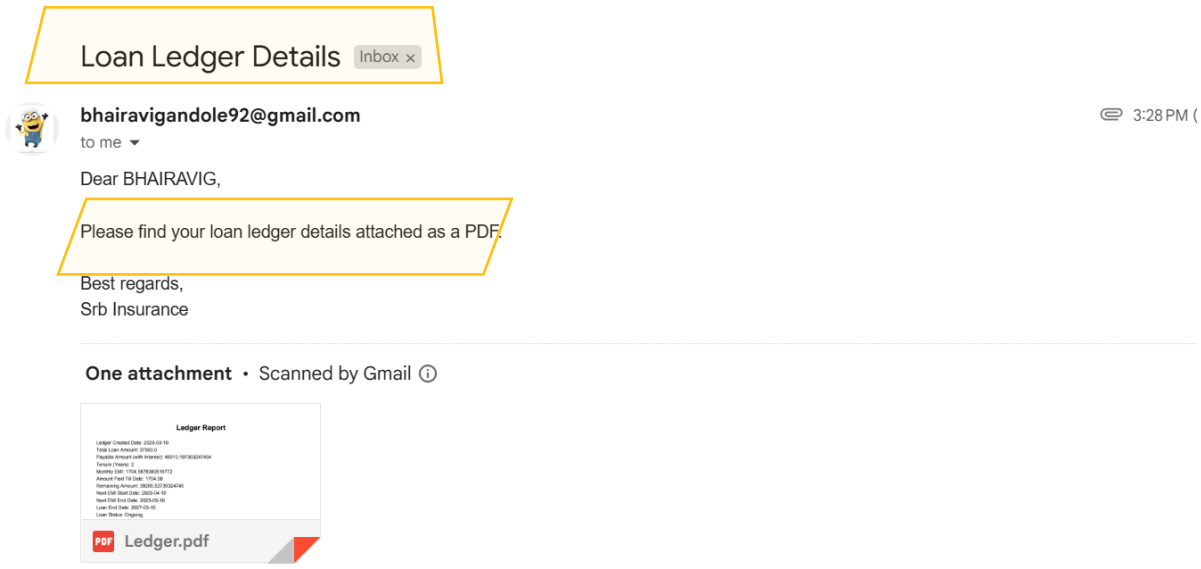
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

customer_gender	customer_mobile_number	customer_name	customer_pan_card	customer_total_loan_required	loan_status
female	7378750932	BHAIRAVIG	BPGAS3134R	50000	Disbursted
NULL	NULL	NULL	NULL	NULL	NULL

3. Financial Documentation: Ensures all financial documents related to the loan are correctly maintained.
4. Compliance & Reporting: Ensures the loan disbursement complies with company policies and financial regulations.
5. Coordination: Works with the **Credit Manager** and **Operational Executive** to ensure smooth loan processing.
6. Customer Communication: May assist in communicating disbursement details to the customer via email.



7. Financial Integrity: Ensures accurate recording and monitoring of loan transactions to maintain the company's financial integrity.

6. Eureka Server (port 9090)

Eureka Server, a core component of Spring Cloud Netflix, acts as a service registry in a microservices architecture. Its primary role is **to help microservices discover each other dynamically** without needing hardcoded URLs.

1. Service Registration:
    - Each microservice (like CRM, OE, CM, AH, etc**.) registers itself with the Eureka Server.**
    - This ensures that services can be dynamically located rather than relying on fixed IPs or hostnames.
2. Service Discovery:
    - When one microservice (e.g., CRM) needs to communicate with another (e.g., OE), it queries Eureka to get the instance details.
    - This allows for load balancing and failover, as Eureka provides a list of available instances.
3. Fault Tolerance & Resilience:
    - If a microservice goes down, Eureka automatically removes it from the registry after a timeout.
    - Other microservices are informed and stop sending requests to the failed instance.
4. Load Balancing Support (with Ribbon):
    - Eureka works with **Spring Cloud Load Balancer** (or Ribbon) to distribute requests among multiple instances of a service.
5. API Gateway Integration:
    - The API Gateway (Spring Cloud Gateway) uses Eureka to route **requests to the appropriate microservices dynamically.**

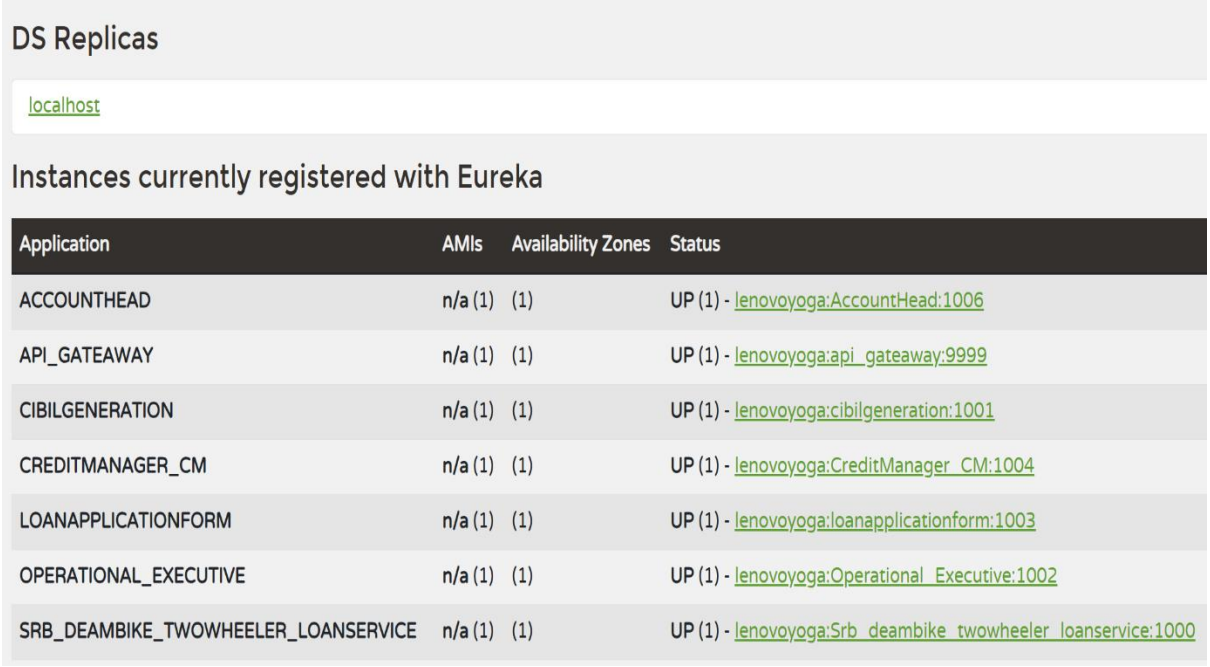
How Eureka Works in Bike Loan Project:

- Step 1: Microservices (CRM, OE, CM, etc.) register with Eureka.

- Step 2: When CRM needs to communicate with OE, it asks Eureka for available OE instances.
- Step 3: Eureka provides the best available OE instance dynamically.
- Step 4: If an OE instance fails, Eureka removes it, ensuring traffic goes only to active instances.

Conclusion:

Eureka Server eliminates the need for hardcoded service URLs, improves fault tolerance, and simplifies service discovery in your microservices-based bike loan project.



7. API Gateway (port)

API Gateway is a crucial component in a **microservices architecture** that acts as a **single entry point** for all client requests. It helps manage, secure, and route requests efficiently to the appropriate microservices.

1. Centralized Routing & Load Balancing

- Direct incoming requests to the correct microservice (e.g., CRM, OE, CM, AH).
- Works with **Eureka Server** for **dynamic service discovery** (avoiding hardcoded URLs).

- Supports **load balancing** by distributing requests among multiple instances of a microservice.

2. Security & Authentication

- Implements **JWT (JSON Web Token)** or **OAuth2** for authentication.
- Restricts unauthorized access and ensures only valid requests reach microservices.

3. Request Aggregation

- Combines multiple API calls into a single response.
- Example: Instead of calling CRM, OE, and CM separately, API Gateway can aggregate data and return a unified response to the client.

5. Logging & Monitoring

- Tracks request logs for debugging and analytics.

6. Fault Tolerance with Circuit Breaker

- Works with **Resilience4J (Circuit Breaker)** to handle failures gracefully.
- If a microservice is down, API Gateway can return a **default fallback response** instead of failing completely.

How API Gateway Works in Your Bike Loan Project

1. Client (Web/Mobile App) sends a request → API Gateway receives it.
2. API Gateway consults Eureka Server to find the appropriate microservice.
3. Routes requests to the target microservice (e.g., CRM, OE, CM, AH).
4. Applies security, load balancing, and circuit breaker mechanisms if needed.
5. Returns the response to the client after processing.

Loan Disbursement Workflow in Your Project

1. Loan Sanctioning by Credit Manager (CM)

- The **Credit Manager (CM)** reviews the documents and sanctions the loan.
- An email is sent to the customer for **loan acceptance**.

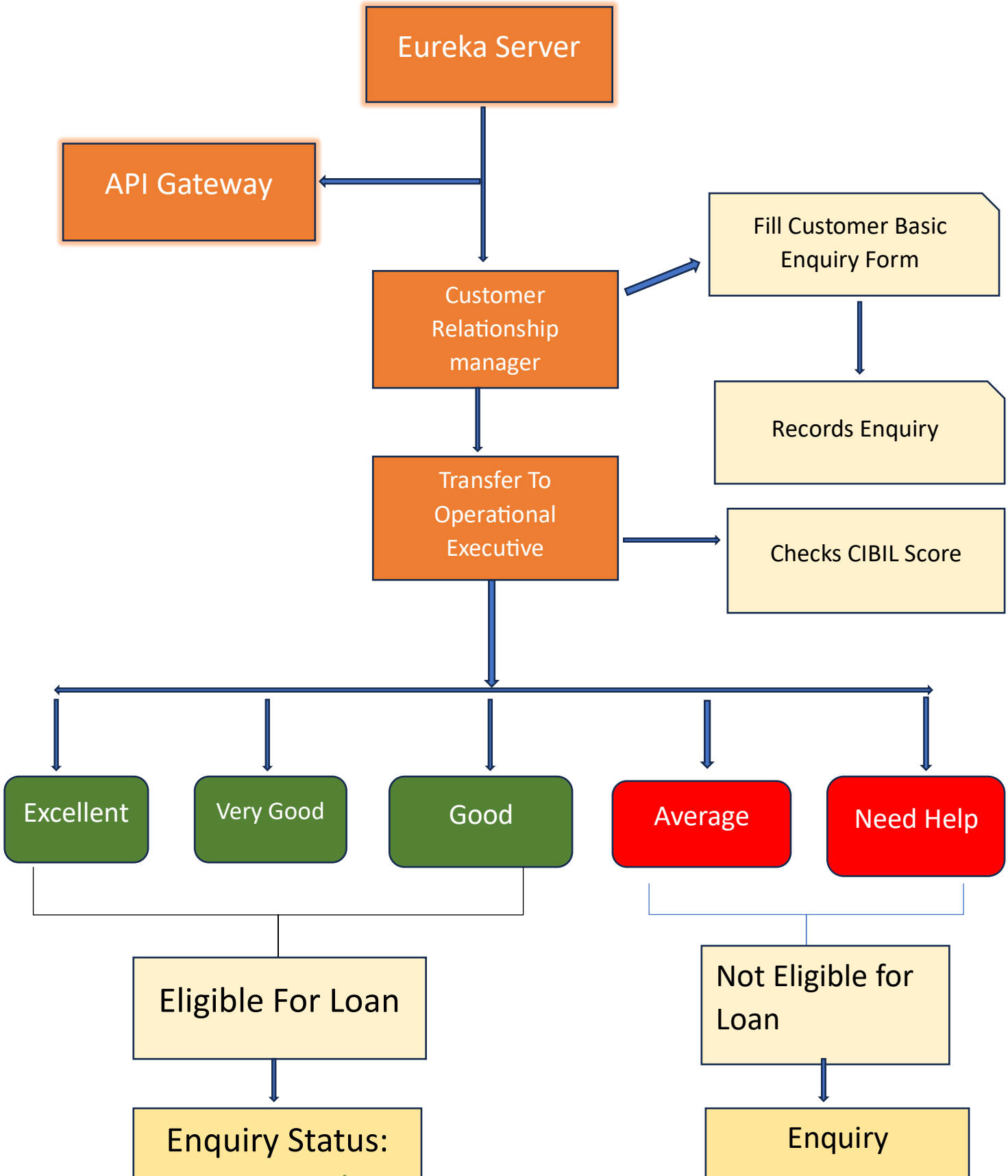
2. Customer Acceptance
    - The customer **accepts** the sanctioned loan.
    - This triggers the **Account Head (AH)** to proceed with disbursement.
3. Loan Disbursement by Account Head (AH)
    - The **Account Head (AH)** processes the **final disbursement**.
    - The loan amount is transferred to the customer's account or the dealer's account (if required).
    - A **ledger** entry is generated to track payments, interest, and EMI schedules.
4. Ledger Generation & EMI Tracking
    - The **CIBIL, Login, and Ledger microservice** creates a **ledger record** with:
        - Principal amount
        - Interest rate
        - EMI schedule
        - Payment history
        - Outstanding balance
    - The customer can log in to view their **loan details and repayment status**.

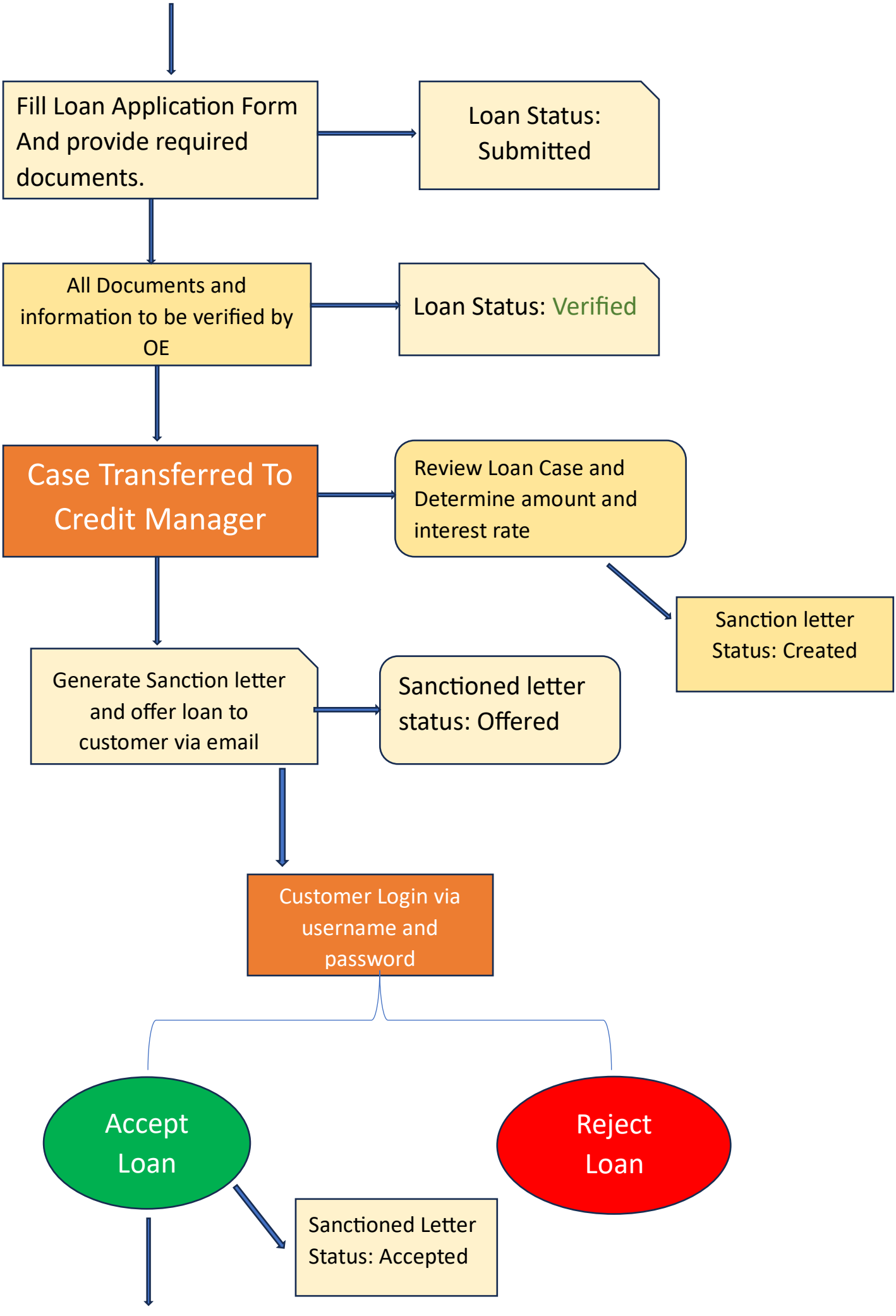
This process ensures that loans are **systematically approved, accepted, and disbursed** while maintaining financial records.

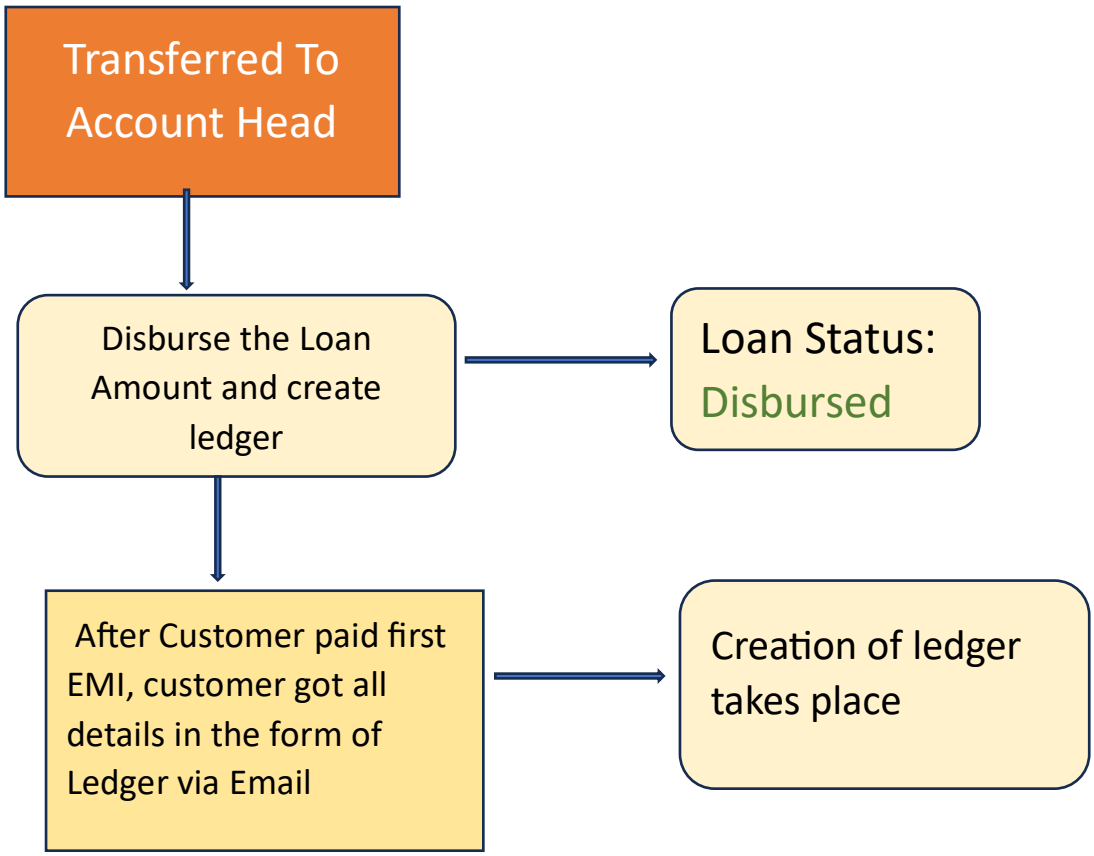
Conclusion

API Gateway **simplifies communication between clients and microservices**, improves security, handles failures, and optimizes performance. It is essential for managing a scalable and resilient microservices-based **Bike Loan System**.

Flowchart for Bank Bike Loan Process:




Fill Loan Application Form And provide required documents.
Loan Status: Submitted
All Documents and information to be verified by OE
Loan Status: Verified
Case Transferred To Credit Manager
Review Loan Case and Determine amount and interest rate
Sanction letter Status: Created
Generate Sanction letter and offer loan to customer via email
Sanctioned letter status: Offered
Customer Login via username and password
Accept Loan
Reject Loan
Sanctioned Letter Status: Accepted


Transferred To Account Head
Disburse the Loan Amount and create ledger
Loan Status: Disbursed
After Customer paid first EMI, customer got all details in the form of Ledger via Email
Creation of ledger takes place