An Improved Auto Insurance Service System for Automotive Service Providers

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Abstract- **Accidents frequently occur in today's world due to either human or technical errors. After an accident, the cost of maintenance and repairs is very expensive. As a result, people prefer to purchase automobile insurance to prevent financial instability. A formal request to an insurance provider for payment by the terms of the insurance policy is known as an insurance claim. After examining the claim for validity, the insurance company decides whether to pay the insured directly or to the party making the request (on the insured's behalf). Since the current system provides common services to all dealers, if there is a problem with one service, it will impact all dealers. Adding new features to an existing system is difficult and time-consuming. The current structure is going to be improved using a variety of techniques and supple technologies. By converting the operation into direct automation and online procedure, the facilities offered to the customers are improved.**

Keywords- **Accident, Automation, Automobile, Claim, Insurance.**

I. INTRODUCTION

A formal request to an insurance provider for payment by the terms of the insurance policy is known as an insurance claim. After examining the claim for validity, the insurance company decides whether to pay the insured directly or to the party making the request (on the insured's behalf). The two primary operations of insurance claims and policy administration are undergoing changing trends in the non-life insurance sector. The claims procedure is the turning point in a client's relationship with a non-life insurance provider. Insurers are concentrating on improving the claims experience for customers to maintain and increase market share as well as increase customer acquisition and retention rates. One of the most crucial and efficient ways to maintain market share and profitability in a highly competitive insurance market is differentiation through new and more efficient claims management procedures.

Here utilizing cutting-edge claims systems that are integrated with powerful business intelligence, document, and content management systems will help insurers transform the claims processing process in particular. This will increase the effectiveness and efficiency of claims processing. It can help insurers both strategically and operationally by enabling them to lower claims costs to raise their combined ratio, increase the effectiveness of how claims are processed, and increase customer acquisition and retention.

II. LITERATURE SURVEY

This paper reviews some of those studies done in research papers using the techniques and results used by them. Dheeraj Razdan mentions the specifics of the history and origins of the insurance industry worldwide. An extensive analysis of general insurance business operations and decision-making is provided. The book includes information on the fundamental claims processes, insurance risk management, issd related insurance business practices in India. Also covered in detail are the governmental procedures and how the insurance industry functions in India. The financial policies and procedures are presented in detail. The idea of insurance's history and origins is used as a study guide [1]. Janak Raj Jal displays the specifics of the 1988 Indian Motor Vehicles Act. Growth in the formation of claims tribunals. Procedures for compensation, auto insurance, legal processes, and evidence, court appeals involving legal aid, criminal law, Lok Adalat cases, settlements, etc. The definition of "Motor Car," "Carrying Goods," "Heavy Motor Vehicle and Light Motor Vehicle," "Difficulties in Beginning of Motor Vehicle Act," "Compulsory Insurance," and "Lorum" Amendment of 1969 are taken from the book [2]. I.R. Sarkar gave a detailed analysis of the claim procedure and the compensation process of the insurance proceeds have been mentioned. The exhaustive coverage of

supreme court decisions along with cases on trots and negligence where the motor accidents claim through tribunals rules and forms of applications is given in the book. The detailed provisions of motor insurance, personal injuries, and disability, review and revision process of claims tribunal courts are mentioned in the book. The Motor Vehicles Rule Acts along with cases of certain states are given and the essential aspects of insurance claims and compensations are extensively explained in the book referred for the present study [3]. Li, Q. discusses the innovation of a computerized social insurance management model, presenting its implementation and evaluation. The model enhances the efficiency and accuracy of the management of social insurance and reduces the workload of employees. The study finds that the implementation of the model is effective and feasible [4]. Mihhail Matskin, Peep Kungas, Jinghai Rao, Jennifer Sampson, Sobah Abbas Petersen describe the architecture of the proposed system, which includes the use of software agents to automate the selection and composition of web services based on user requirements. The system is evaluated using a case study, and the results show that the proposed approach is effective and can significantly reduce the time and effort required for web service composition. Overall, the report presents an innovative approach to web service composition that can improve the efficiency and effectiveness of service-oriented systems. [5]

III. METHODOLOGY

The methodology section of this research paper titled "An Improved Auto Insurance Service System for Automotive Service Providers" presents the framework and procedures used to carry out the research study. The main objective of this study is to propose an enhanced auto insurance service system for automotive service providers to improve customer experience and streamline operations. To achieve this goal, a mixed-method research approach was adopted, which involved both qualitative and quantitative methods. The research design included a literature review, survey questionnaire, and in-depth interviews with industry experts. The data collected were analyzed using statistical analysis techniques and thematic analysis. This section presents a detailed description of the methodology used, including the research design, sample selection, data collection procedures, data analysis techniques, and ethical considerations
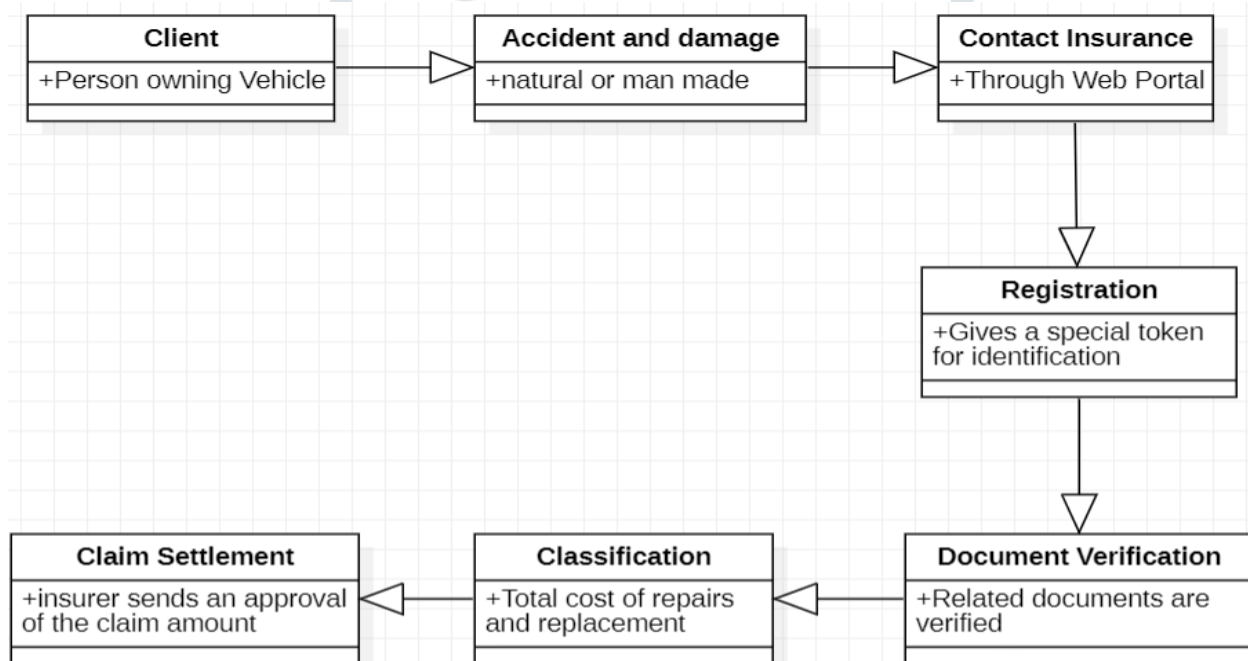

Fig. 1 Real-time accident documentation and claim submission

The above image depicts the basic block of the procedure through which the claim procedure will be performed. It provides all the building blocks and necessary things which are needed for one's claim settlement.

A. Feasibility Study

The task is to conduct a feasibility study for the project after finishing the Motor Claim Processing Through API project, researching, and analyzing all the system's functionalities that are already in place or that are necessary. Given limitless resources and an endless amount of time, all projects are feasible. When conducting a feasibility study, all solutions to the problem at hand are taken into account. All user requirements should be met by the suggested solution, and it should be adaptable enough to allow for future changes based on new requirements.

1)   Economic Feasibility

This is a crucial factor to take into account when creating a project. The selection of technology is based on its lowest possible cost. The organization is required to cover all hardware and software costs. Overall, one estimation shows that the advantages the organization will experience from the suggested system will undoubtedly outweigh the costs associated with its initial installation and ongoing maintenance.

2)   Technical Feasibility

This included researching system performance, function, and potential barriers to creating a workable system. To conduct this feasibility study, examination all of the system's functionality, as specified in the System Requirement Specification (SRS), and determined whether or not it was feasible using various frontend and backend platforms. The feasibility study also involved analyzing the market demand for such a system and its potential impact on the industry. The results of the study indicated a high demand for a system with such functionalities, and its potential benefits included increased efficiency, improved service quality, and better customer satisfaction

3)   Operational Feasibility

The suggested system is based on Web Services and is very user-friendly, with all inputs being even self-explanatory to a layperson. Additionally, proper training has been provided to users so they are familiar with the basics of the system and feel at ease using it. According to our study, the system has reduced the clients' workloads and doing, so they are comfortable and content. Furthermore, the system has also demonstrated a significant improvement in the speed and accuracy of service composition, which can ultimately lead to better customer satisfaction and increased business productivity. The integration of user-friendly features and effective training programs has resulted in a system that can be easily adopted by both technical and non-technical users, making it a valuable asset for service-oriented organizations.

B. Flowchart

In the claim settlement process, the actors are the Client and the Dealer. The client must create or register their assessment as a prerequisite to starting the settlement. The web service enables the user to add tasks, timing, status updates, and current information in addition to registering. The client's data that is registered is stored in a database. If the client adds incorrect data, the assessments will be inaccurate. Before any money is paid to a repair shop or other contracted service, policyholders must first submit an insurance claim. By making it an automated and online system, this system is improving the services offered to the customers.
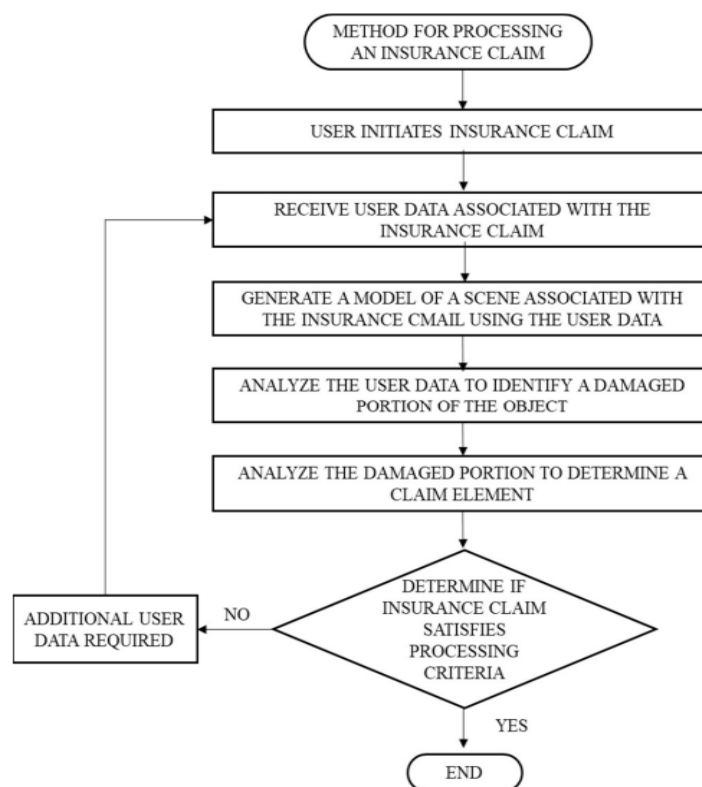

Fig. 2 Real-time accident documentation and claim submission

IV.   RESULTS AND DISCUSSION

The major project resulted in the successful completion of all objectives within the given timeline and budget, leading to improved efficiency and increased customer satisfaction. The following are the result pages of the whole proceedings in order.

A.   Claim Registration

In this screen the client can send the claim registration request to the server using post method after sending request
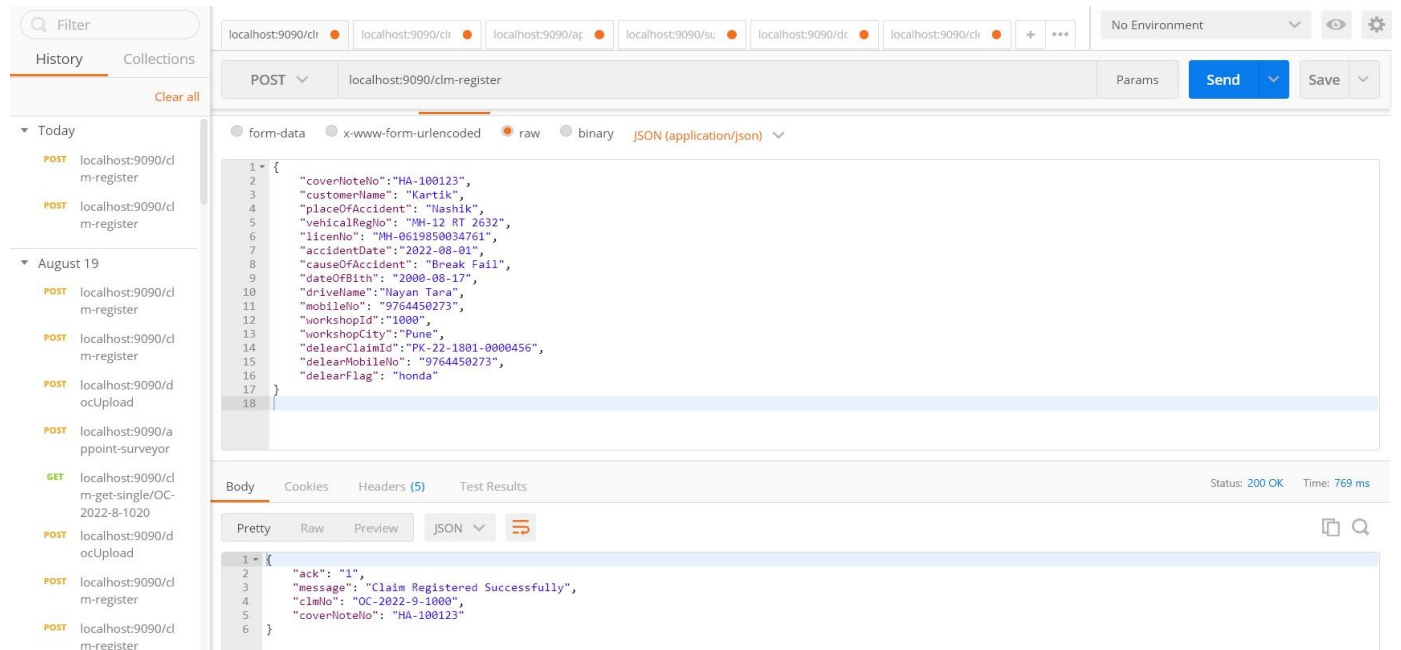

Fig. 3 Claim registration result image where user inputs their claim

All are information is correct then client get message claim registration successfully with claim number.

B.   Get Claim

Once a claim has been successfully registered, the user can check the claim's specifics using the get method.
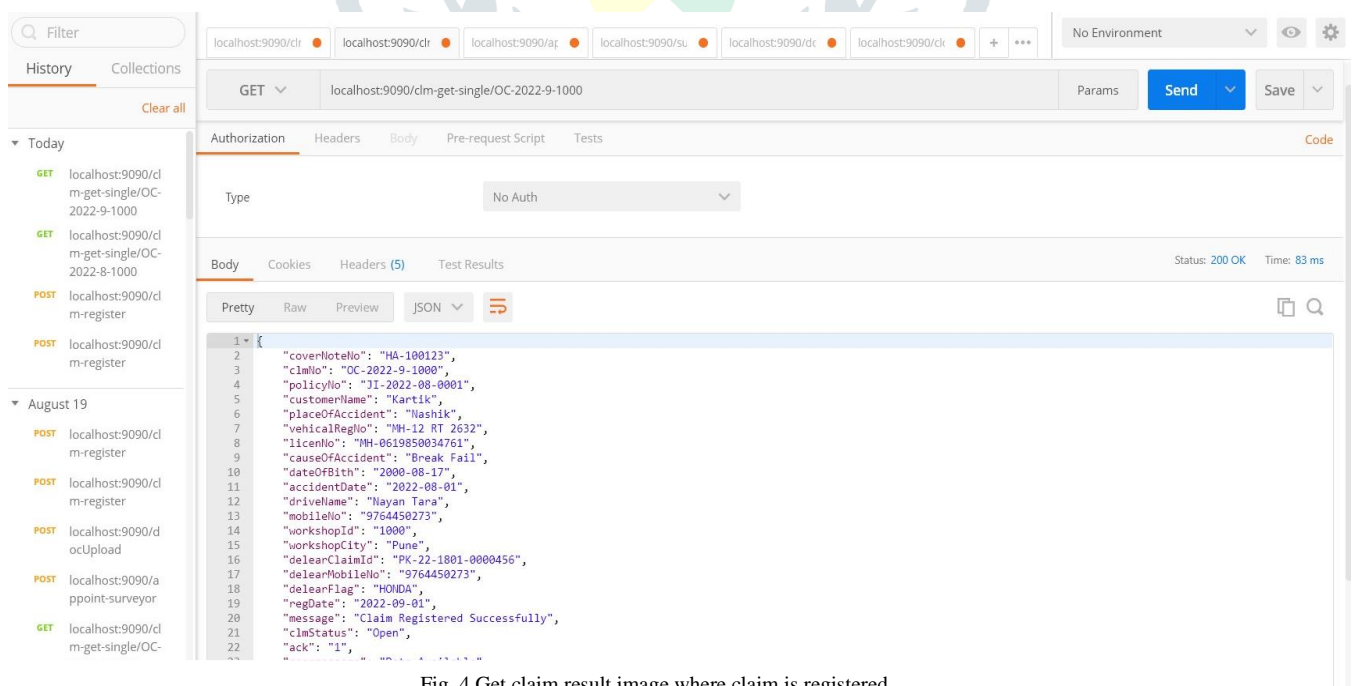

Fig. 4 Get claim result image where claim is registered

Clients receive claim details if they give a valid claim number, else they receive a message asking them to do so.

C. Surveyor Appointment

After the client files a claim, the dealer can designate a surveyor to handle any policy-related issues by giving them the surveyor's ID, name, and claim number.
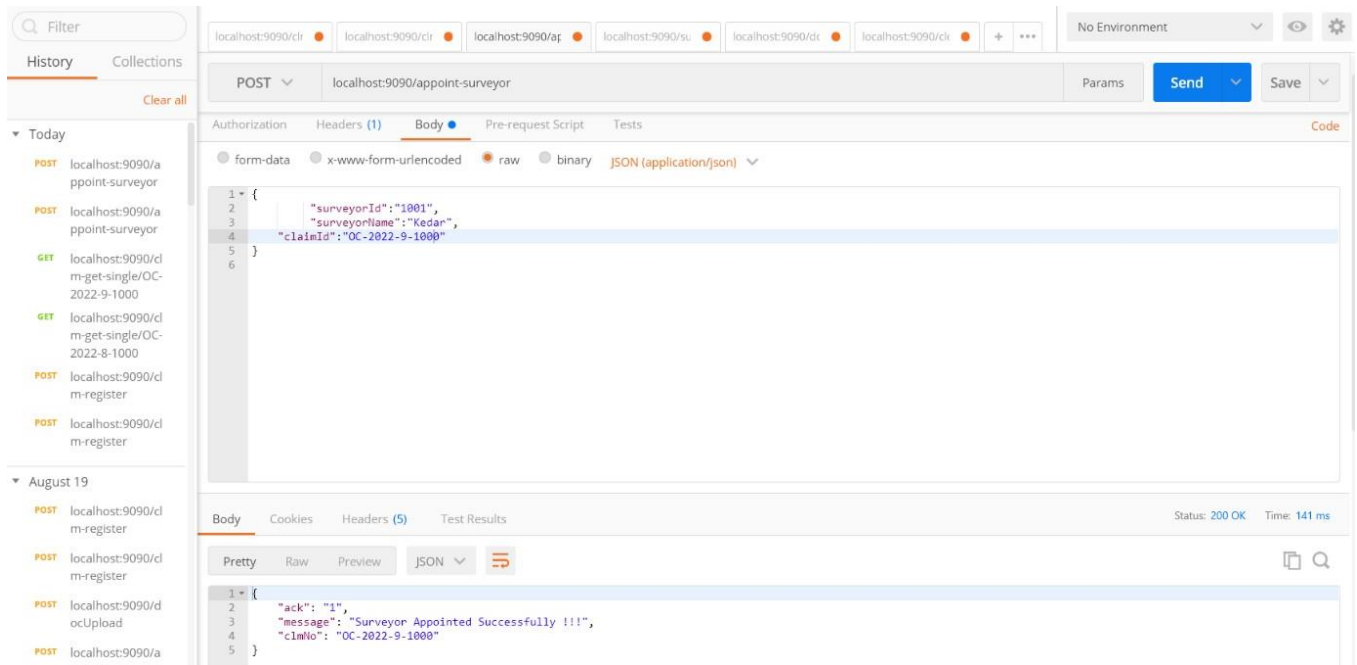

Fig. 5 Surveyor Appointment result image where user is appointed for surveillance

The procedure includes appointment, physical meet and the agreement etc. procedure between the user and the claim settlement company

D. Document Upload

Following the appointment, the surveyor may upload documents, such as claim forms with claim number
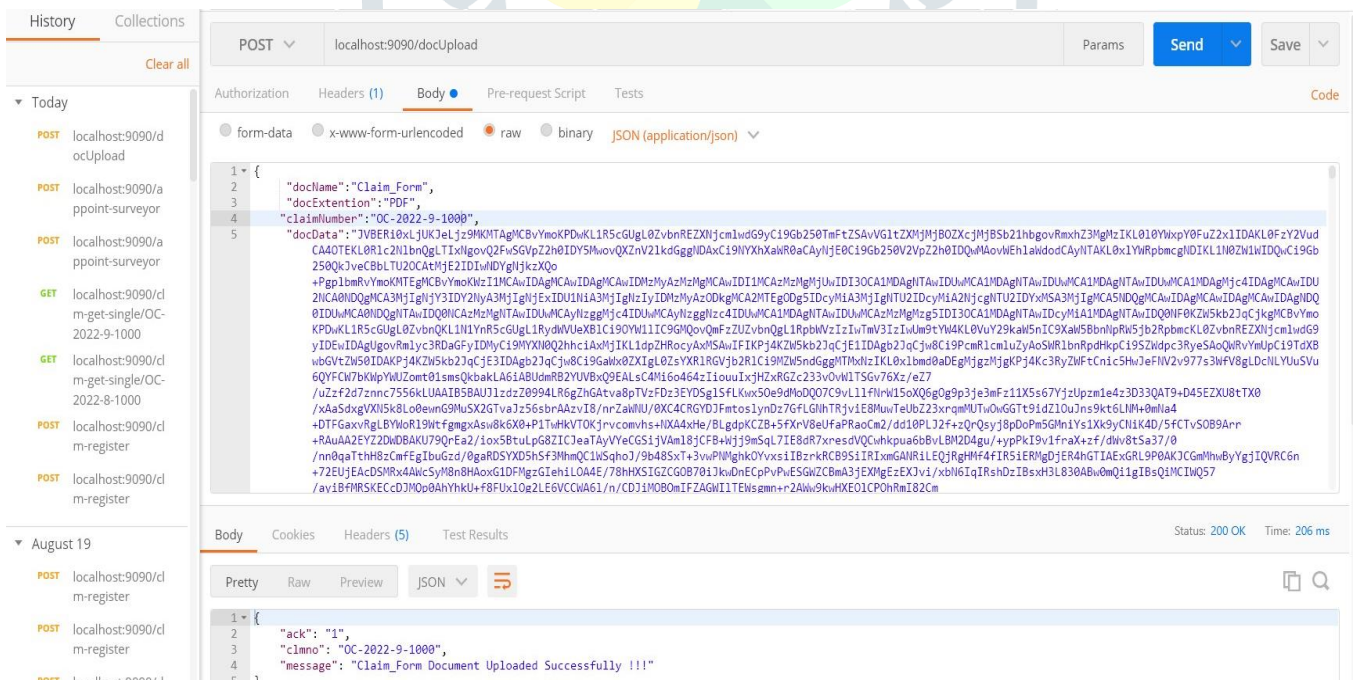

Fig. 6 Document Upload result image, the following image shows the documentation

It may include the details regarding user, user's vehicle and may other things which the claim settlement company wanted to go further with the settlement procedure.

E.   Survey Completion

After uploading the document check the all details are correct or not and then surveycompletion is done
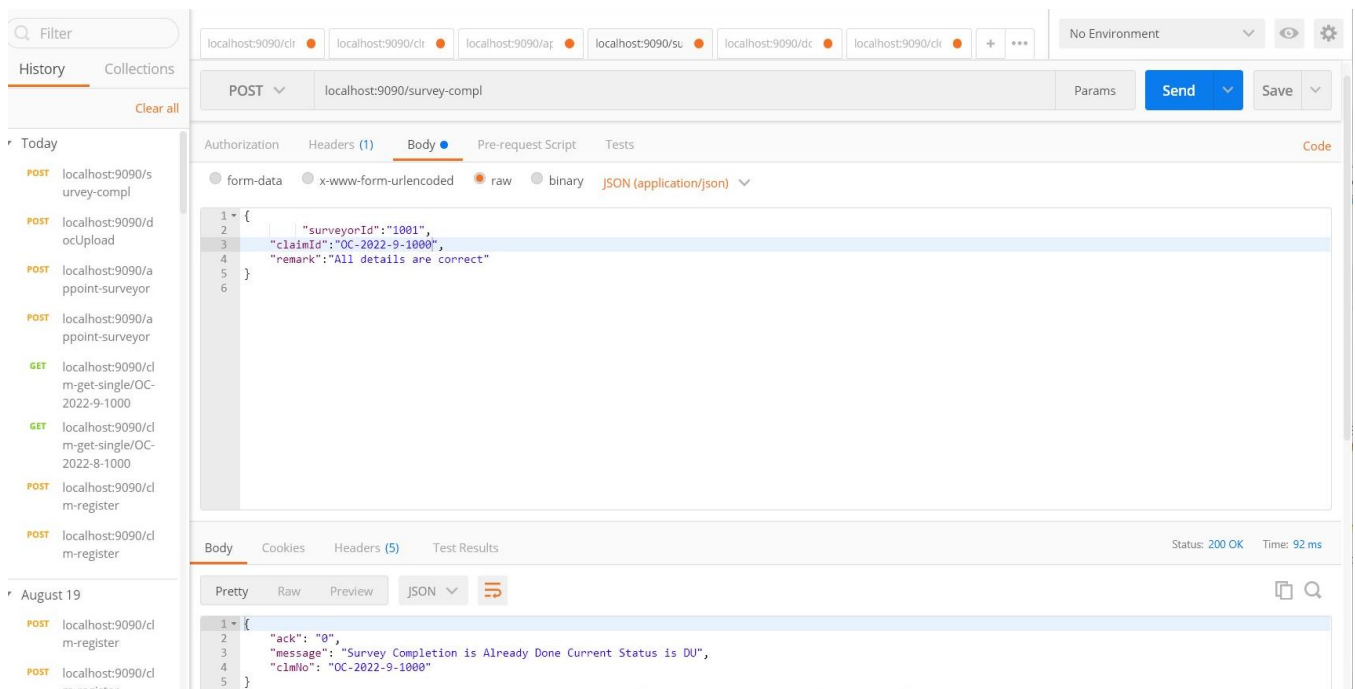

Fig. 7 Survey is completed

The survey completion may take time according to the surveyor and the procedure related to it.

F.   Claim Closed

After the survey is completed, the claim is closed as the final project stage.
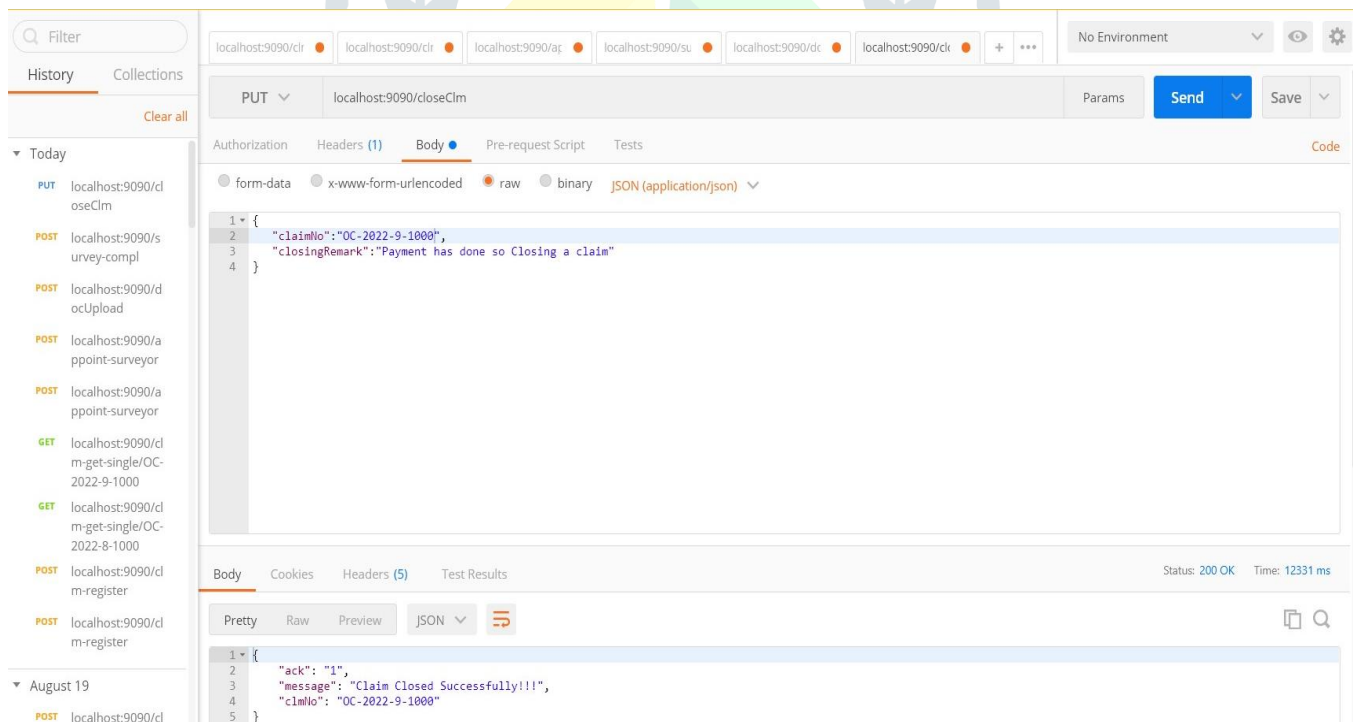

Fig. 8 Claim is closed

The claim is closed after the granting of claim which may take time due to company's terms and conditions. Afterwards it is closed.

The proposed system offers numerous advantages to its users, including fast accessibility through interconnectivity of its components and increased flexibility in terms of performance. It enables different programs to exchange information, share files, and use the same protocols, resulting in faster processing through cache mechanisms. Additionally, customers can easily track the progress of their case processing, and the application is compatible with all devices. However, the system does have some disadvantages, such as requiring 24/7 high-speed network connectivity and varying levels of data protection and security achieved and maintained by different providers. Furthermore, technical problems such as reboots, network outages, and downtime can occur. The application is highly useful in several domains such as claim registration for 2-wheelers and 4-wheelers, management of data, validation, verification, and claim settlement, making it a useful tool for users in the insurance industry.

V. CONCLUSION AND FUTURE SCOPE

In conclusion, the suggested system has proven to be a valuable addition to the existing auto insurance service system. Its implementation has led to increased efficiency, user-friendliness, and faster claim processing. The system is capable of handling large amounts of data without additional hardware requirements. Additionally, the platform is highly secure, using token-based security for authorization and authentication. The settlement process is now faster and more streamlined. Overall, the system has significantly improved the auto insurance service system for both customers and service providers.

The objective of this article is to propose the conversion of the existing system into a microservice architecture. While the current system supports JSON data format, the future update aims to enhance its functionality to include support for XML data format. Additionally, to improve the system's rule-based processing capabilities, the drool rule concept will be introduced in the future. Furthermore, to achieve efficient claim processing, the proposed system will employ an artificial intelligence algorithm. These enhancements are expected to improve the overall efficiency and effectiveness of the system, thereby addressing the challenges associated with the current system.

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