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Advanced Community Management Systems (ACMS) for Gated Communities

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Abstract: ***"ACMS for Gated Communities" is an Android application designed for housing colonies, gated communities, and apartment complexes to streamline and automate their daily activities, creating an ideal and optimal living environment. The key advantage is that it can be customized to match the individual demands of many communities, resulting in a flexible and scalable solution. This app allows residents to quickly manage deliveries, book facilities, and contact with management. Gated communities have become a popular residential option around the world, offering homeowners with a safe and private living environment. The varying needs and expectations of residents are usually too much for traditional management techniques to handle, which calls for innovative and revolutionary solutions. ACMS for gated communities blend technology, security, and convenience to provide a comprehensive solution for managing transportation and access within these residential areas. Future advancements in artificial intelligence, Internet of Things (IoT) integration, and autonomous vehicle management are expected to further enhance the capabilities of these systems. ACMS enhances security and streamlines entry and exit processes by utilizing automated gate systems, visitor management protocols, and integrated surveillance. This abstract examines the idea of Advanced Community Management Systems (ACMS) for gated communities, which utilize modern technology and dynamic methods to improve community administration and increase resident satisfaction.***
Keywords: Housing colonies Flats, Automating day-to-day activities, Common notifications, News service, Faster and reliable.

I. INTRODUCTION

ACMS for Gated Communities is a mobile application created for 'Housing colonies', 'Gated communities', or 'Flats' to keep their colonies idle by automating their daily tasks. The primary benefit of using this application is that common notifications and news services will make it easier for all members to be aware of crucial notifications. It is faster and more reliable. This application allows the resident to register in this system. They can browse all news, notifications, and facilities and book a service they require through the application, which lowers the need to make phone calls for service requests. By incorporating data analytics and real-time monitoring. ACMS provides a proactive approach to addressing the needs and concerns of residents, ensuring a responsive and adaptive management structure.

A. Problem Statement

Due to the hectic lifestyle of today, it can be difficult to find time to walk outside and complete our task alone. Tracking services that residents have requested is difficult. Notifying each tenant individually of any notifications or past-due bills on a regular basis. The project intends to deploy intelligent and automated technologies to guarantee pedestrian safety, control vehicular flow, and enhance traffic management operations. The Advanced Community Management System (ACMS) for Gated Communities is a cutting-edge program designed to enhance the general efficacy, safety, and security of traffic flow in gated residential communities. The project intends to deploy intelligent and automated technologies to guarantee pedestrian safety, control vehicular flow, and enhance traffic management operations. Advance Community Management System (ACMS) for Gated Communities is a cutting-edge program designed to enhance the general efficacy, safety, and security of traffic flow in gated residential communities.

B. Proposed Solution

Giving the inhabitants easy access to services will be beneficial. Residents should not keep calling the caretaker or suppliers to resolve issues; instead, they should raise a service request and the caretaker will handle it. Rather than calling each person individually, the caretaker can push a notification from the caretaker module to everyone in the building or apartment if they need to notify or tell them of anything. The resident will be able to view this notification on their home page or on a different notification tab.

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II. LITERATURE SURVEY

Developing a Smart Gated Community System to Improve Management and Security A work titled "Design of a Smart Gated Community System for Enhanced Security and Management" was presented by Veena S. Kumar and colleagues at the IEEE 3rd International Conference on Recent Trends in Electronics, Information Communication Technology (2018). To enhance security and management, this study offers a revolutionary concept for an intelligent system specifically suited to gated communities. In order to successfully meet the particular needs of gated communities, the suggested design calls for the seamless integration of access control systems, surveillance cameras, and automated management solutions. The system's goal is to improve security and simplify community management procedures for the advantage of administrators and residents by merging these components.

Smart Apartments: A Technology for Internet of Things-Based Automated Energy dwelling structures in a study titled "Smart Apartments," Mr. Cristiano Tapparello released. IEEE Communications' 2017 International Conference on "Controlling in Residential Buildings" In this study, we present a novel smart apartment system that makes use of the internet of things (IoT) in residential buildings to enable more intelligent energy management. The study explores how various sensors, actuators, and state-of-the-art energy management strategies can be seamlessly integrated with one another to optimize energy use in a highly efficient way. Through the utilization of these technologies, the system aims to improve sustainability and energy efficiency in residential environments, making a positive impact on the environment and economy in the long run. An Organized Review of the Literature on the Difficulties in Android App Development A study titled "A Systematic Literature Review on Challenges in Android App Development" was released by Mr. Mika V. Ma¨ntyla. In this study, we undertake a thorough literature analysis to investigate the difficulties faced as Android applications have evolved. In order to provide useful insights on how to effectively address these difficulties, our study uses a systematic technique to identify and categorize them. Through a critical analysis of current research, we enhance our understanding of the challenges encountered by developers in the Android app development domain and provide practical recommendations to address these challenges successfully.

III. METHODOLOGY

It has four main modules: Residents, Estate Manager, Vendor, and Gate Security. Authentication is used for user registration and login, and there are buttons to direct the user to a specific module and recycle view to view complaints in the form of lists after logging in, by clicking, will provide additional details about the tickets, allowing users to respond appropriately.

1) *Residents Module:* Individuals are those who register with the app, use it to track complaints, pay their bills, and receive notifications. The Service Request feature allows residents to file a ticket with the app about any problems that need to be fixed in their homes or if they require any residential services. The caretaker will be assigned those tickets and forward them to the appropriate vendor based on the resident's requirements. The vendor thereafter receives the requests that the caretaker transmitted, accepts them, and gets to work. Once the job is completed, it is returned to the residents, who can review, close, or reopen the request based on their satisfaction. The ability to track service requests informs both the caregiver and the resident of the status of their requests.
2) *Estate Manager Module:* It is necessary for the Estate Manager to register and use their personal information to log in to the program. They are able to authorize residents' and suppliers' registrations. In addition, all resident complaints will be received by the estate manager, who will then transmit them to the appropriate suppliers. The Estate Manager now has a duty to monitor the complaint tickets and make sure that the concerns that have been reported are promptly resolved. Furthermore, the Estate Manager's duties go beyond handling complaints and registration. They play a crucial role in preserving the residential community's general functionality and wellbeing. This entails supervising and controlling a number of crucial activities, including facility management, property upkeep, and security protocols.
3) *Vendor Module:* Vendors must use their company information to register or log in. The vendor will accept concerns in the form of tickets, visit the consumer to resolve the issue, and rectify it. Vendor logs in first. Following successful login, the vendor is taken to the home page where they can see a list of service requests. By selecting one, the vendor can acknowledge the request and update the ticket's status. Vendors can schedule service appointments through the system, which are then tracked in real-time. Vendors can submit invoices through the portal, and the system ensures timely processing and payment, reducing administrative overhead.
4) *Gate Security Module:* Security must use their personal information to register or log in. Residents and security guards use this to add visitors who are visiting. The visitors list goes to the guards, who check it, confirm the visitor, and send them in, which cuts down on the work of calling the residents repeatedly. Security receives the visitors list added by the user so they can let them in without any hassle. The Gated Security Module in ACMS.

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ACMS represents a significant advancement in community security management, providing a comprehensive and technologically advanced solution to ensure the safety and well-being of residents. By integrating modern technology and innovative security practices, this module fosters a secure and harmonious living environment in gated communities.

System Architecture

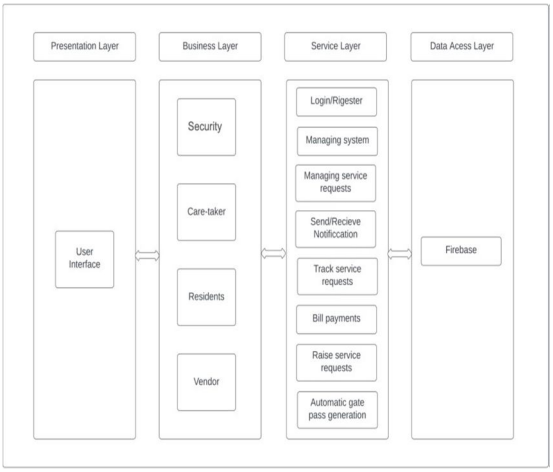

Fig. 1. Architecture Diagram

The architecture diagram Figure: 1 consists of mainly 4 layers. They are Presentation Layer, Business Layer, Service Layer, and Data Access Layer. Presentation Layer consists of User Interface. Business Layer consists of the users of the application. They are Admin/Manager, Residents, Vendors and Security. Service Layer consists of main functionalities such as Add residents, raise complaints, track SR and pay bills and Generate gate pass and etc. Data Access Layer consists of the database which stores data of the user and complaints.

IV. RESULT

Fig: 2. User home page

Figure 2 shows how residents can login in to access software that they have previously registered. After logging in, residents can access choices such as raising service requests, paying bills, receiving notifications, and adding visitors.

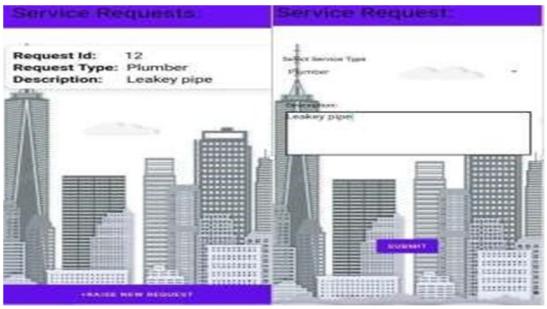

Fig. 3. Service Request tab and raising new request

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On the Service Request page, figure 3, the customer can click on the bottom button to see and select the already raised ticket with their complaint. He must fill out the requested details to raise the ticket id, which makes it unique and includes the complaint, description.

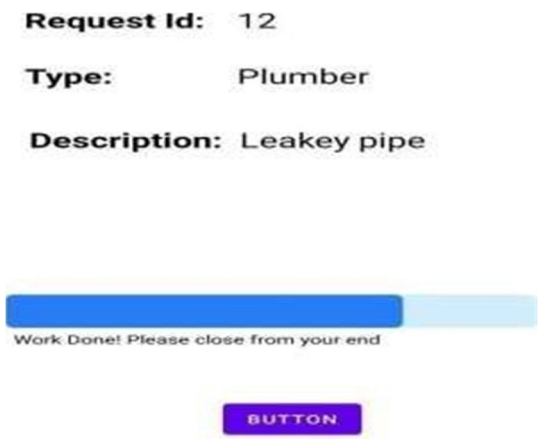

Fig 4. Service request status

On Figure 4 of this page, Raiment's can view the status of their each raised complaint, showing where it is pending. Shortly after the complaint is raised, the status of the ticket will show 25%, and after the ticket is acknowledged from the vendor, the status will be changed to 50% and 75% after the complaint is fulfilled, and finally the residents themselves can close the ticked if he is satisfied to 100%, as shown in the figure.

When residents click on the bills tab from the home page. There, they can view all of the outstanding bills that the estate manager has uploaded. By selecting a specific bill, residents can view more details about it and click the "Pay" button to make a payment via Google Pay.

Then the specific gate security application where homeowners can add a list of guests to be presented. By clicking on the visitors list, gate security can confirm the visitor, grant permission, and let them inside.

Source: Authors from California Employment Development Department and Real Estate Research Council of Southern California data.

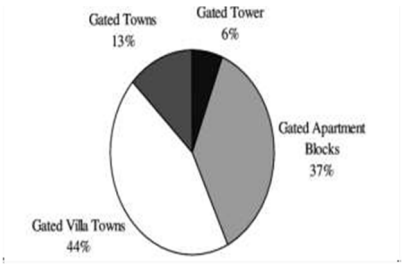

Figure 7 The shares of gated developments by their types

Developers of gated communities do not have the same opinion about their success. Th found themselves successful according to reliability, achieving targets and quality standar

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After clicking on the bills tab from the home page, residents will be redirected to the above page, where they can view all of their pending bills that Estate Manager uploaded. By clicking on that specific bill, residents can view additional information about the bill and click on the pay button, which will redirect residents to Google Pay to make the payment. The dedicated application for gate security where the list of visitors will be displayed uploaded by the residents and upon clicking on the visitors list, the gate security will verify, authorize, and allow them within.

V. CONCLUSION

The software puts services right at the residents' fingertips. Because the app has the ability to track service requests, it lessens the stress associated with residents calling repeatedly to follow up on the problem. The application facilitates notifications to the entire building or apartment, and it allows the estate manager to monitor and respond to all resident-initiated service requests. Residents will be able to view this notification on a separate notification tab or on their home page.

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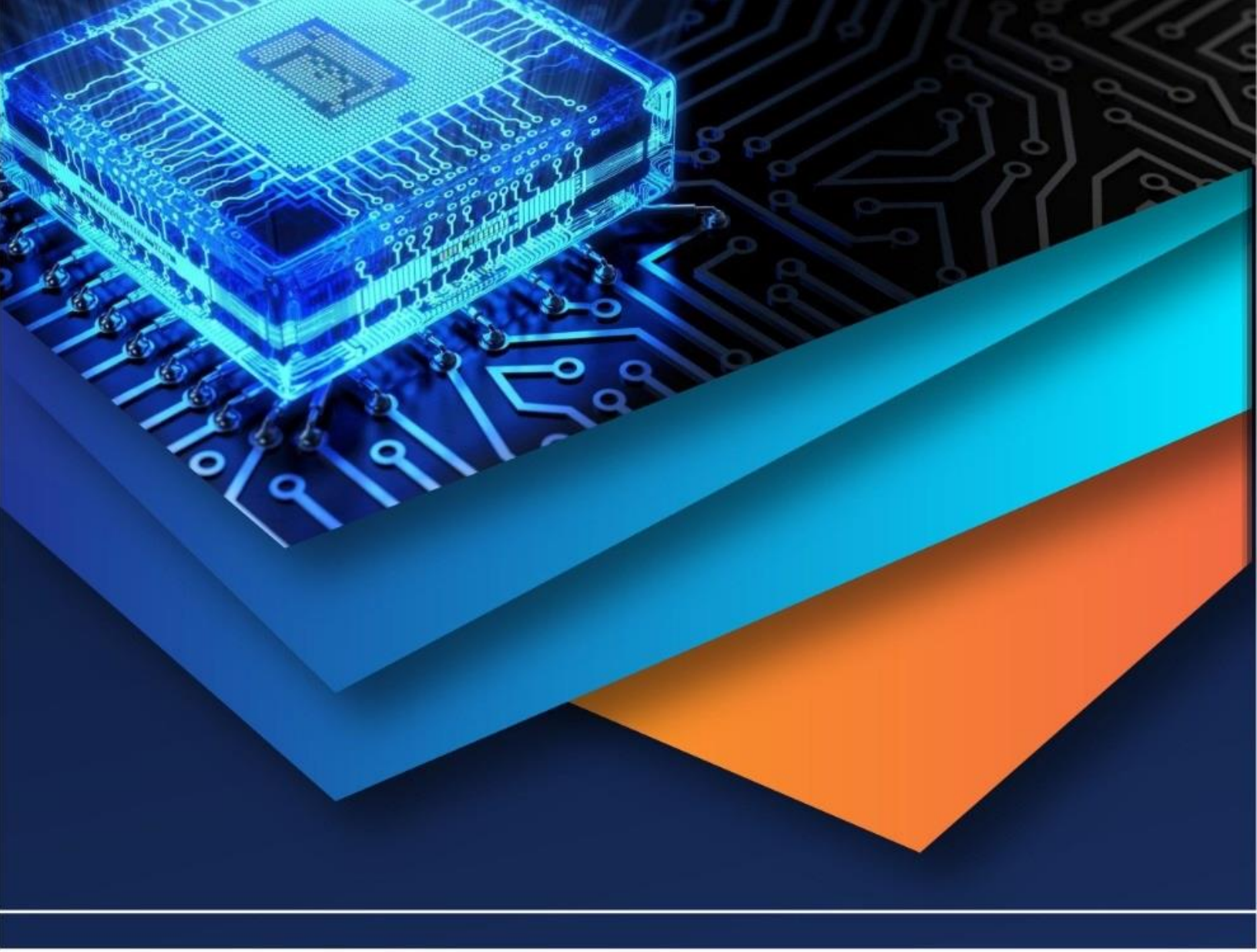

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