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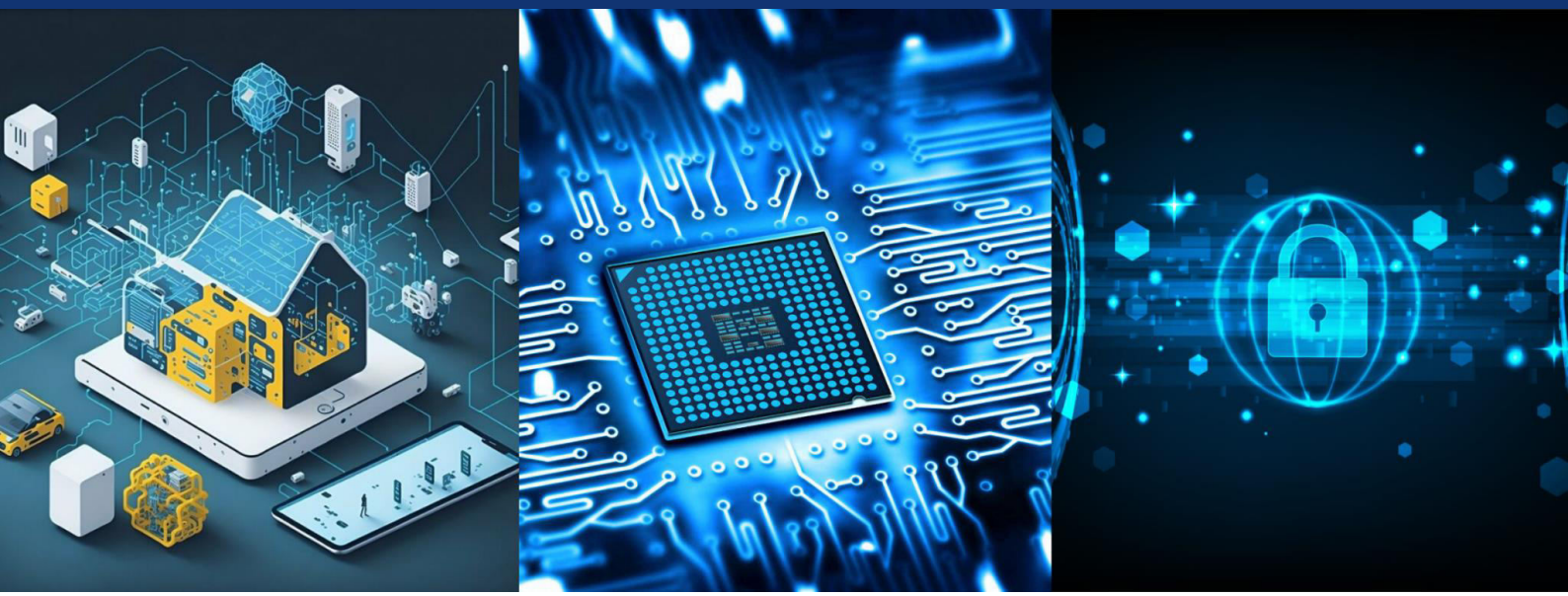

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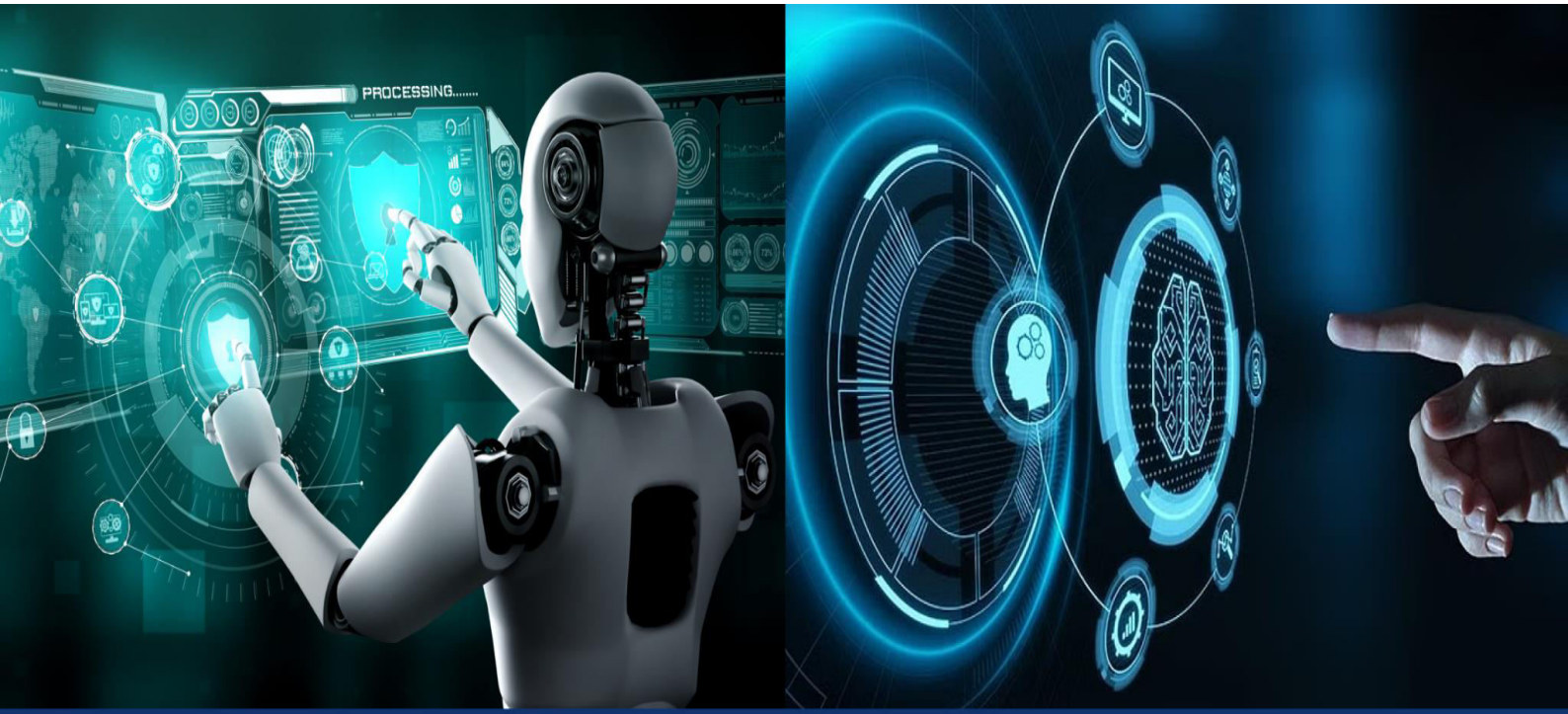

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Smart Visitor Management System for Residential Complexes: Enhancing Security and Communication

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ABSTRACT: A Visitor Management System, or VMS, is a smart way for buildings to keep track of who comes and goes. This is super important for residential areas where people want to feel safe and have things run smoothly. This study looks into using a simple, online VMS that makes it easy for visitors and property owners to register, get approved, and keep track of visits. There are three main types of users in this system: Admin, Security, and Owners. Each has special roles and features. The admin is in charge of looking over information from owners who sign up online. They check the details, approve registrations, and create login info. The passwords are made safer with a special method, so they are protected. When users log in, they do it through a secure process that uses their email and phone numbers. The admin dashboard is the central hub where the admin can see requests, see who's been approved, and check on how many visitors and owners are registered. Now, the security staff has their own set of tasks. They handle visitor info and keep an eye on who enters and exits the building. They use digital logs for all visitor activity, making things more efficient. Overall, using this kind of technology just makes sense. It simplifies the whole process. Owners and guests can quickly find out what's happening. This clarity is a big win for both sides. Plus, it saves a ton of paper. Less paper waste is better for our planet.

KEYWORDS: Visitor Management System (VMS), Real Estate Security, Role-Based Access Control, Digital Visitor Tracking, Authentication and Authorization, Web-Based System

I. INTRODUCTION

A digital Visitor Management System, or VMS for short. It simplifies guest checking in and enhances security. There are three main roles: Admins, Security, and Owners. Each of these groups plays a crucial role in making everything run smoothly. First off, the Admin. The administrators manage and control all user login authentication. users. Staff access enables every member of the system to work without technical difficulties. issues. New property owners require immediate addition by the administrative staff. adds them immediately. The staff at visitor access control handles requests submitted by visitors. The system allows administrators to make entry decisions for visitors and users. It's not merely a matter of The security staff performs dual functions which include authorization of entry to users while guaranteeing secure premises. It's The management of user information requires substantial responsibility because neglect could lead to control loss. Each component of the whole system functions automatically through Security team activities from its central location.

They are the backbone of the entire system. The Security team monitors Visitor signing and maintains Access control as its core responsibilities. monitor who enters and exits. Terminal operators must complete visit attendance log entries as their final step for facility entry and exit records. who has been on the grounds. This keeps everyone in check and ensures accountability is maintained. If something does go. Once the system detects incorrect entry selections the security team verifies all site personnel through instantaneous checks. Lastly, let's discuss the property, Owners. They have their role to play too. An owner of property retains complete autonomy to determine which visitors gain entry property. Property entrance requires explicit approval from the Owners for any prospective visitor seeking entry. Property owners maintain full control over who can access their properties through their entry and denial decisions.

This provides overall, a Visitor Management System makes life easier for everyone involved. It's secure and fast, and it keeps everyone informed about what's happening. Managing visitors becomes a breeze. It cuts down on the stress of old methods and helps everyone do their jobs efficiently. Think of it as a modern way to keep your property safe while

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managing visitors easily. Moving from paper logs to a digital system makes everything more precise. You can view things in real-time, prevent unauthorized access, and minimize human errors. And it's also kinder to the environment. Less paper equals less waste. Less paper results in less trash.

II. PROBLEM STATEMENT

Keeping track of visitors with paper logs in real estate is tough. It takes a lot of time and often leads to mistakes. Plus, it's not very safe. It's hard to know who comes in and out. Property owners spend a lot of time trying to give the thumbs up or thumbs down to visitors. Sometimes, this leads to people getting in who shouldn't be there. It can all get pretty confusing. The system that requires digital VMS technology demonstrates the real need for this solution. Management System, or VMS for short. A digital Visitor Management System today gives all visitors better access and safer experiences. It would help admins manage

The VMS system helps security staff monitor activities better than manual methods. closely. The system connects to security features that simultaneously review and grant or reject entry to visitors. They'll have better security, The system reduces the chance of mistakes to create a pleasant visit experience. everyone involved. A well-managed manual log system benefits all operations in a workplace. logs anymore. The system offers complete security protection to everyone in the community and performs all tasks rapidly and effectively.
can feel more secure. It's a win-win for everyone!

III. SCOPE

The Visitor Management System (VMS) for Real Estate makes managing visitors easy by automating registration, approval, and monitoring. This boosts security, speeds up processes, and makes things more accessible. It's designed for three main types of users: Admins, Security staff, and Owners, with each having their own set of features.
1. Admin Panel:
-Owner Registration & Approval: Admins check and approve who wants to register. Once approved, they get a secure login.
- Manage Users: Admins can add, update, or remove owners and security staff in the system.
-Visitor Tracking: Admins can look at all visitor records and track past visits.
-Dashboard Overview: This gives you a quick look at how many owners, visitors, and security staff there are right now.
-Password Management: Admins can change or reset passwords anytime they need to.

2. Security Panel:
-Visitor Registration: Security staff log the visitor's name, contact info, visit date, and when they leave.
-Tracking person: It instantly displays who arrives and departs.
-Accept to Enter: Visitors may only enter if the owner of the house allows it.
-Dashboard: It shows every day and weekly trends in visitors to track more comfortably.

3. Owner Panel:
-Visitor Request Management: Visitor requests are forwarded by Security to owners, who can instantly approve or reject.
-Secure Login: Owners log in using their phone number and email, with passwords stored safely.
-Enhanced Control: Owners decide who gets access to their property.
-Role-based Login: Users just select their role (Admin, Security, or Owner) to log in.
-Phone and Email Login: This offers additional protection against unauthorized access.

4. Advantages of the System:
- No More Paper Logs: Digital records eliminate errors, save time, and increase productivity.
- Real time Monitoring: Get live reports of visitor activity.
- Scalability: The system can support access controls and be deployed across several buildings.

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IV. PROPOSED SYSTEM

Real Estate Visitor Management System (VMS) helps keep track of security staff, owners, and guests in a safe and easy way. It replaces old logbooks with a digital system. This system allows for better visitor tracking and faster approvals while keeping things secure.

Key Features:

1. User Roles

-Admin: Controls visitor entries, installs the system, and authorizes user registrations.
-Security: Monitors visitors information and determines who is allowed in.
-Owner: Approves or rejects visitor requests.

2. Registration and Login

-Owners register through websites. The admin verifies their information and gives the green light.
-Once approved, the owners receive safe login details.
-We also use phone numbers and emails for login verification to provide an additional layer of protection.
-The passwords are securely stored by encryption.

3. Admin Panel

-User Approval: Admin is able to view and approve the owners' requests. Upon approval, users receive their login details.
-User Management: Admin can create or delete users.
-Dashboard: Provides an instant overview of how many guests, owners, and security personnel are present.
-Navigation: Admin can readily manage users and passwords.
-Password: Admin can securely reset user passwords.

4. Security Panel

-Visitor Registration: Security enters visitor information such as name and contact details.
-Real-Time Tracking: Security checks people entering and exiting with electronic records.
-Entry Approval: Visitors can enter only after the owner has approved.
-Dashboard Insights: Display of visitor statistics of the week, daily visitors, and total visitors.

5. Owner Panel

-Visitor Requests: Requests are sent by security to owners.
-Access Control: Owners determine whether visitors can enter.
-Profile Management: Owners may update their information and passwords securely.

6.Technologies Used:

It employs advanced web technologies to provide efficiency and security. A rapid overview:
-Frontend: HTML, CSS, and JavaScript to have a user-centric interface. Bootstrap to make it mobile responsive.
-Backend: PHP execute server operations.
-Data Storage: MySQL manage data structure and safety.

V. DESIGN INTRODUCTION

The Real Estate Visitor Management System, or VMS, is to enhance security and ease the process of visitor check-ins for homes and businesses. Every user, whether an Admin, Security, or Owner, has custom access and features. This arrangement keeps everything managed in handling visitors.

System Architecture: The VMS has three main levels

1. Presentation Layer (Frontend) – This is the user interface. It's built with HTML, CSS, JavaScript, and Bootstrap. It gives Admins, Security officers, and Owners a nice and interactive dashboard.
2. Application Layer (Backend) – This part uses PHP. It handles requests, keeps track of users, and makes sure the rules are followed.
3. Database Layer – MySQL or PostgreSQL stores and securely holds user details, visitor history, security authorizations, and approvals.

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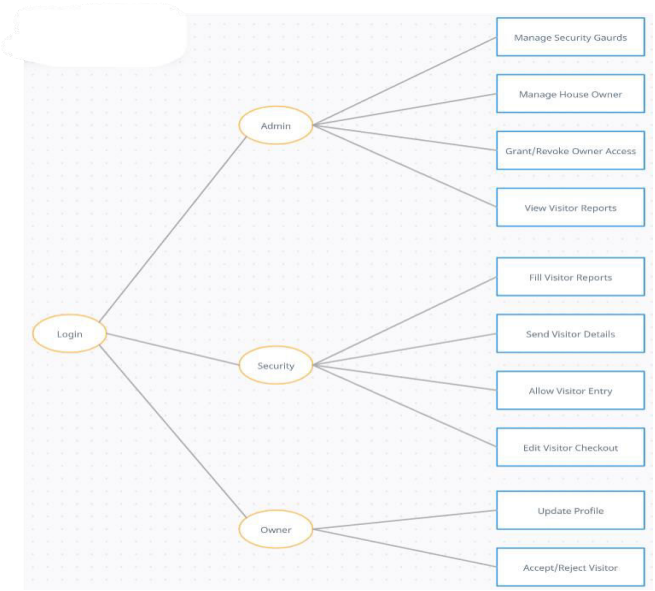
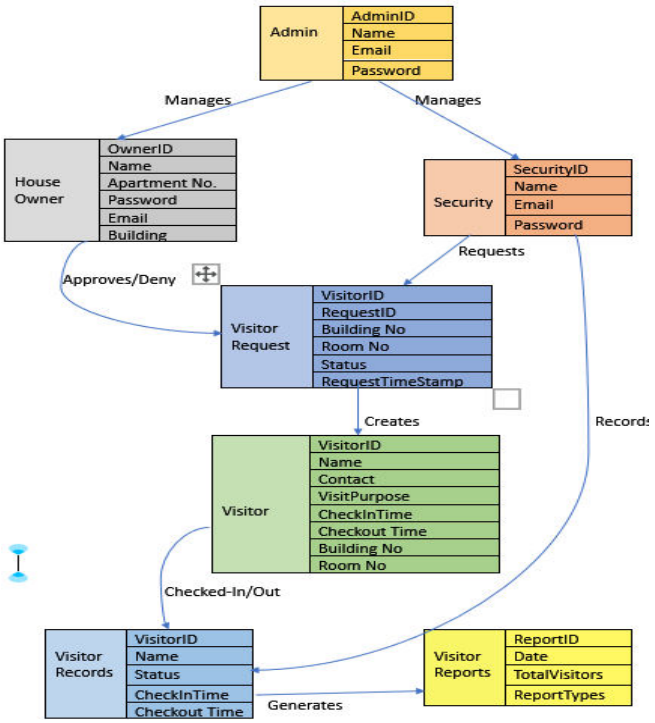
1. Diagram of the Use Case



5.1 Use Case Diagram

2. Entity-Relationship Diagram (ER)
Interaction between various database entities is represented in the ER Diagram.
Relationships & Entities



5.2 ER Diagram

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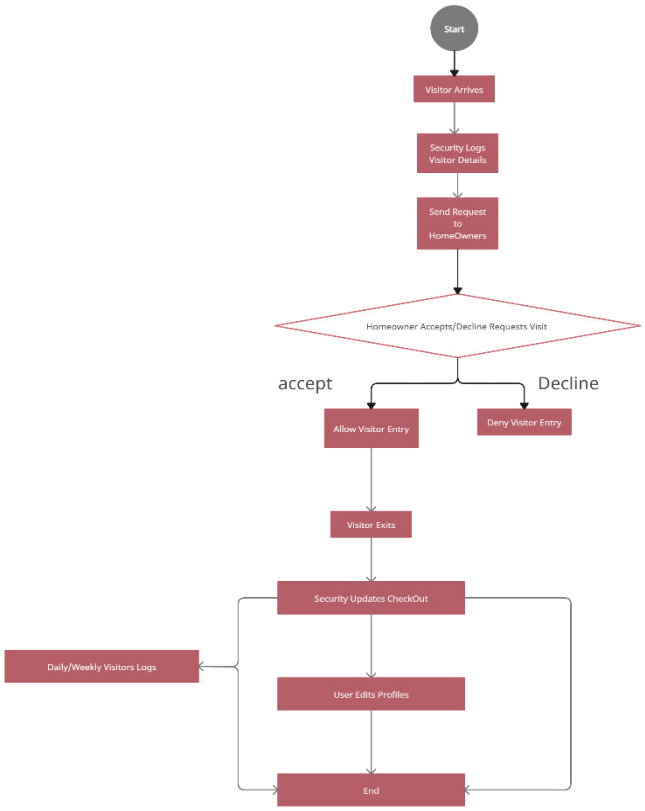
3. Activities Diagram
The flow of activities of the system is shown in the activity diagram.
Situation:



5.3 Activities Diagram

VI. IMPLEMENTATION

Visitor Management System is created to improve security and track visitors in real estate properties. The system has three significant user roles: Admin, Security, and Owner with predefined functionality.
1. Registration & Login
Owner Registration: The owners register through a form that captures information like name, email, mobile number, address, gender, building number, and room number. The form asks basic information such as their name, email, phone number, address, gender, building number, and room number.

The registration request is forwarded to the Admin Interface for approval.
Admin Approval & Password Generation: The admin checks the owner's information and, having approved it, creates a password for them. The password is encrypted for security. After approval, the owner can log in.

Login System: Three radio buttons are provided in the login form to select the user role (Owner, Security, or Admin).
Supports mobile number and email login.
Password of Owner and Security role is hashed for security reasons.

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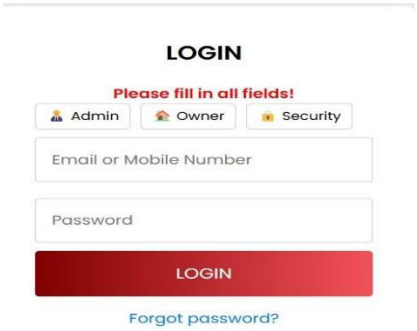
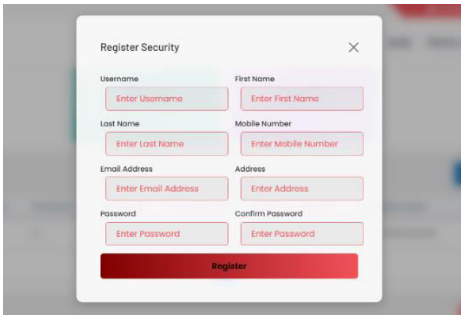


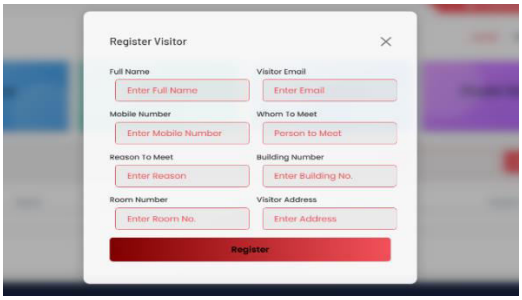
6.1.1 Login

2. Admin Panel
-Dashboard Features: Total visitor, owner, and security staff count are displayed. Displays pending user requests and approved users in a tabular way.
-User Approval & Management: Admin can reject or approve new owner registrations. Approved owners are defined in the Accepted Users table. Security personnel and owners can be deleted or edited by Admin.
-Password Management: Admin can reset or change passwords for security and owners.



6.2.1 Add security

3. Security Panel
-Visitor Entry Management: Security guards fill out a form to register guests. They collect details like name, email, phone number, visit date, exit date, and reason for the visit. The owner of the specific room number receives the guest request.
-Procedure for Approving Visitors: Security guards permit the guest in the event that the owner agrees. The guest is not permitted in if the owner declines.
-Dashboard: Shows weekly visitors, total visitors, and today's visitors.



6.3.1 Add Visitor

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4. Owner Panel
-Receiving Requests from Visitors: Security employees request visits from the owners. The request could be approved or rejected by the owners.
-Granting access: If accepted, security is notified to grant access and the visitor's details are added to the system. If declined, the visitor is not granted access.
-Navigation: Home, Profile, Logout.

How It Works:
1. The owner signs up.
2. The admin makes a password.
3. The owner logs in.
4. Security checks in the visitor.
5. The owner says yes or no to entry.
6. Security lets them in if approved.
The admin manages visitor info and can reset passwords. They also look after users. Security keeps track of visitors' arrivals and departures.
With this system, owners can easily say yes or no for guests. It makes security better and managing properties easier.

VII. CONCLUSION AND FUTURE WORK

The Real Estate Visitor Management System VMS was designed as a modern, secure, and efficient solution to speed up the visitor identification, approval, and registration process. Apart from improving building security by ensuring a smooth interaction between owners, security personnel, and visitors, the technology avoids manual record-keeping. The role-based access, hashed passwords, real-time monitoring, and centralised dashboard of the system ensure that only authorised visitors are able to enter the building. The integration of automated visitor requests, acceptance procedures, and security tracking offers security and convenience to all users. Also, there can be incorporated future additions to the scalable VMS, including AI-based authentication, IoT security, mobile apps, cloud storage, and predictive analysis. The user experience will be improved, visitor management will be streamlined, and safety protocols will be further enhanced. By and large, this Visitor Management System presents a computerised method of real estate security, improving visitor tracking's credibility, security, and transparency. Apart from giving future advances in real estate security and access control, the system's inclusion of new technologies makes sure that real estate owners, security personnel, and visitors enjoy an intelligent, automated, and well-controlled admission process.

The future of the Visitor Management System (VMS) in real estate looks promising. The use of new tech like AI, IoT, cloud services, and biometrics could really change how we manage visitors. As security becomes more automated and digital, we could see features like predictive analytics, mobile apps, quick check-ins, and live security monitoring. All these improvements aim to create a smoother and safer experience for visitors, property owners, and security staff. Looking ahead, the Visitor Management System in real estate seems to have a bright future. Many new technologies are coming into play. Think about AI and the Internet of Things (IoT). They're changing everything we do, including how we handle visitors. As everything becomes more high-tech, we might see features like smart predictions for visitor traffic or even apps that let you check in really quickly.

1. Adding Smart Security and IoT: Digital passes will work with smart locks for easy entry.
   The system will link to motion sensors and live cameras to keep an eye out.
2. Mobile App Development: The app could work in different languages. This way, it can reach more users. AI voice assistants will make it easier to use without hands. It also helps those who need extra help.
3. Predictive Analytics and Reporting: AI will keep an eye on visitor trends and habits. This information will make security management better.
4. Emergency Alerts and Evacuation: There will be automatic alerts for emergencies or if someone enters without permission. The system can work with local police for quick action.
5. Easy Third-Party Connections: Links to government databases will help verify who's visiting. API tools help the system work with older real estate management software.
6. Language and Voice Support: Using multiple languages will make the system easier for everyone. Voice assistants will help users without needing to touch anything.

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7. Analytics for Reports: AI will generate reports that show visitor trends. These insights will help improve real estate security.

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