ACE Engineering College

(An AUTONOMOUS Institution)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

III B.Tech I Semester CSE(IOT)

Project Abstract

Submitted

for

Real-Time Research Project / Social Related Project

Title of The Project

"Smart door lock system "

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ABSTRACT

The advent of the Internet of Things (IoT) has revolutionized security systems, particularly in the realm of smart home and office automation. The Smart Door Lock System with Keypad, powered by IoT technology, provides an advanced, efficient, and secure alternative to traditional lock systems. This system leverages the connectivity and flexibility of IoT to offer users a highly customizable and secure access control solution. By combining a keypad for user authentication with IoT capabilities, the system not only enhances the security of physical spaces but also introduces a high level of convenience and remote monitoring, making it ideal for both residential and commercial applications.

The Smart Door Lock System uses a keypad interface where users can input a predefined numeric code to unlock the door. This eliminates the need for traditional keys, providing an additional layer of security by preventing unauthorized key duplication or loss. The IoT integration allows for real-time updates and remote management through smartphones, tablets, or web interfaces, providing users with the ability to monitor, lock, or unlock their doors from virtually anywhere. This means homeowners or businesses can control access without being physically present, offering a convenient solution for situations such as granting access to guests or service personnel during off-hours.

The system further strengthens security by allowing for the creation of unique access codes for multiple users. These codes can be time-sensitive, providing different levels of access at specific times of day or even for particular days of the week. This feature is especially beneficial in commercial environments where staff members, contractors, or guests may require temporary or restricted access. The system also keeps a detailed log of access events, providing users with a full history of who entered or exited and when, enhancing transparency and accountability.

To ensure a high level of security, the IoT-enabled lock system incorporates encrypted communication channels to protect against cyber threats, ensuring that data transmitted between the user's device and the lock is secure. In addition, the keypad lock system includes fail-safes, such as battery backup and tamper detection, to ensure continuous operation even in the event of a power failure or attempted tampering.

Energy efficiency is another key benefit of the Smart Door Lock System. It is typically powered by low-energy or rechargeable batteries, ensuring minimal environmental impact and reducing maintenance costs. The system's low power consumption also contributes to its reliability and long-term operation, minimizing the need for frequent battery replacements or electrical wiring.

The integration of this smart lock system into the broader IoT ecosystem allows it to work in harmony with other smart devices such as cameras, alarms, and lighting

systems. For example, when the door is unlocked, it could automatically trigger the lights to turn on or activate security cameras to begin recording. This interoperability enhances the overall security infrastructure of a home or business, creating a truly smart, connected environment.

In conclusion, the Smart Door Lock System with Keypad utilizing IoT technology offers an innovative solution for modern access control. By combining convenience, security, and energy efficiency, it provides an effective and scalable option for both residential and commercial use. The system not only enhances the security of physical spaces but also integrates seamlessly with other IoT devices, providing users with greater control and peace of mind, whether they are at home or on the go.

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