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Android Mobile Based Security Lock for Bike Ignition

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Abstract: ***Bikes being taken from parking lots is a frequent occurrence. Or occasionally we accidentally forget to take the bike's keys off. It is really challenging to get the bike back in these situations. This initiative is intended to accomplish this goal. The primary idea behind this project is to use an Android mobile to enter a password to secure a bike. When the password is incorrectly entered, this project activates a buzzer. An essential link in a security chain is a bike access control. Only anyone with the proper authorization are able to access the bike using the access control system of the microcontroller-based bike locker.***
Keywords: DC motor, buzzer, LCD, relay, Bluetooth module, microcontroller.

I. INTRODUCTION

Android-powered mobile for a security lock On bikes and two-wheelers, bike ignition is used in place of standard locks. The classic two-wheeler locks require the user to enter a key into the ignition lock before the vehicle will start. However, using duplicate keys, robbers can take the bike. To get over this issue, we created an android-based bike locking solution. After the ignition lock, this project offers an extra security measure[1]. In this project, the user must first insert a key before sending a password using an Android app from his or her mobile device. Everyone involved places a high focus on bike security. There are many automobile or bike security systems available today that absolutely guarantee your security. A priority is security.

Bikes being taken from parking lots is a frequent occurrence. Or occasionally we accidentally forget to take the bike's keys off. It is really challenging to get the bike back in these situations. This initiative is intended to accomplish this goal. The primary idea behind this project is to use an Android mobile to enter a password to secure a bike. When the password is incorrectly entered, this project activates a buzzer. An essential link in a security chain is a bike access control. Only anyone with the proper authorization are able to access the bike using the access control system of the microcontroller-based bike locker.[2]

Everyone seeks to maximise their sense of security. The most important one for every owner is bike security. There are various security systems available for it. Bikes being taken from parking lots is a frequent occurrence[3]. Or occasionally we accidentally forget to take the bike's keys off. It is really challenging to get the bike back in these situations. This initiative is intended to accomplish this goal. The primary idea behind this project is to use an Android mobile to enter a password to secure a bike. When the password is incorrectly entered, this project activates a buzzer. An essential link in a security chain is a bike access control. The access control mechanism for the microcontroller-based bike locker permits

II. BLOCK DIAGRAM

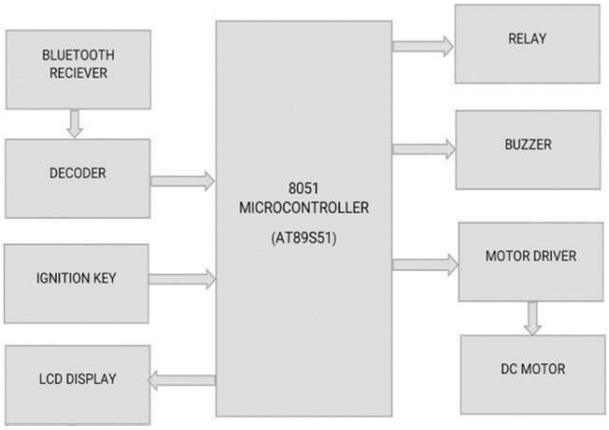

Fig.1Block Diagram of System

Block diagram description:

1) *Microcontroller:* Our project's CPU (central processing unit) is represented by this device. We'll employ a microcontroller from the 8051 family. The microcontroller 8051 is the project's most crucial component. The controller is in charge of detecting each character, which has 16 characters.It is used to show the password that was entered and its current state. It can be used to display all of the readings that have been stored in the EEPROM as well as the different settings. You can utilise an LCD or a 7-segment LED display. The 162 line LCD is the one utilised here. Another option is a 164 line LCD. The Liquid Crystal Display, or LCD as it is more popularly known, is an Alphanumeric Display, which means that it can show special symbols in addition to letters, numbers, and alphabets.[5]
2) *Bluetooth receiver:* With this module, you can send and receive serial data wirelessly. It enables transparent two-way data transfer and serves as a drop-in substitute for wired serial connections. It can be used to simply establish a connection between an MCU or other embedded project and a PC for data transfer in place of a serial port. This board contains LED indicators and runs on 5V.

Features:

a) UART interface, serial communication protocol, and 5V power operation.
b) Ten-meter range.
c) Product Specifications for Status LED.
d) Operating temperature range: -20 C to +55 C • Baud rate: 9600 bits per second • Power supply: +5 VDC 50m.
e) Dimensions: 26.9 mm x 13 mm x 2.2 mm.
f) An accessible Bluetooth SPP (Serial Port Protocol) module, the HC-05 is made for setting up transparent.
g) Wireless serial connections. The 6-pin Module is HC-05. The module has 6 pins, although most modules onlyhave 4 of those identified on the rear.filled with pogo sticks. Given that KEY is used to flash the device and STATE only tells whether the device is awake or asleep, KEY & STATE appear to be unnecessary. That only leaves GND, VCC, TXD, and RXD. We mustuse the Serial (Tx and Rx) pins on the board to link the module to the microcontroller.

3) *Buzzer:* The microcontroller activates the buzzer when any parameter exceeds its threshold. In our project, we employed a piezoelectric buzzer. It serves as an alert indicator. The buzzer is driven by a transistor. When the sensor value exceeds the desired value, the buzzer will sound.
4) *Motor Driver:* This IC converts 5 volts to 12 volts, which is needed to power the DC motor that opens the gate. The L293D is a quadruple half H-bridge bidirectional motor driver IC with 1) more blood that can drive current of up to 600mA. The amount of blood that is oxygenated reduces when the heart slows down. The pulse rate is calculated using a voltage range of 4.5 to 36 volts and the interval between the increase and decline of oxygenated blood. Small DC-Geared motors, bipolar DC motors, and other devices can be driven using it.
5) *DC motor:* A DC motor is a brushless electric motor that has a large number of steps that can be used to break up a whole rotation. Without a feedback mechanism, the motor's position can be regulated with precision. A step motor rotates at distinct step angles as opposed to a brushless DC motor, which rotates continuously when a constant DC voltage is provided to it. DC motors operate on the electromagnetic theory. The electromagnetic stators are encircled by a soft iron or magnetic rotor shaft. Depending on the type of stepper, the rotor and stator have poles with teeth or without.
6) *EEPROM:* We must use a device to store the parameter values. Since EEPROM is a non-volatile memory and can retain data even after being turned off, we have chosen it for this application. Depending on the required memory amount, we can utilise the AT24C02, AT24C04, AT24C08, or AT24C16.[6]
7) *RELAY:* The 230 volt AC supply is managed by a relay, which functions as a switch. If no one is present in the room, this relay will be turned off. The electrical appliances like fans, tubes, etc. can be turned off with this relay.
8) *Power supply:* The power supply supplies the circuit with 5V and 12V power. Four stages of the power supply are transformers. Voltage regulator, filter, and rectifier. In this circuit, a stepdown transformer that converts 230V AC into 15V at the secondary winding is used. By using four diodes, a bridge rectifier will rectify this 15 VAC, turning the AC wave into a fully rectified wave. Following the application of the filter, a capacitor turns the fully rectified wave into a DC wave. When the final regulator is applied, it completely eliminates ripple and produces pure DC. (1) Transformer: To create a 5V supply, we used a stepdown transformer. Since we utilised a transformer with a 12V/500mA rating, its output willPower supply: The power supply supplies the circuit with 5V and 12V power. Four stages of the power supply are transformers. Voltage regulator, filter, and rectifier. In this circuit, a stepdown transformer that converts 230V AC into 15V at the secondary winding is used. By using four diodes, a bridge rectifier will rectify this 15 VAC, turning the AC wave into a fully rectified wave.

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III. CIRCUIT DIAGRAM

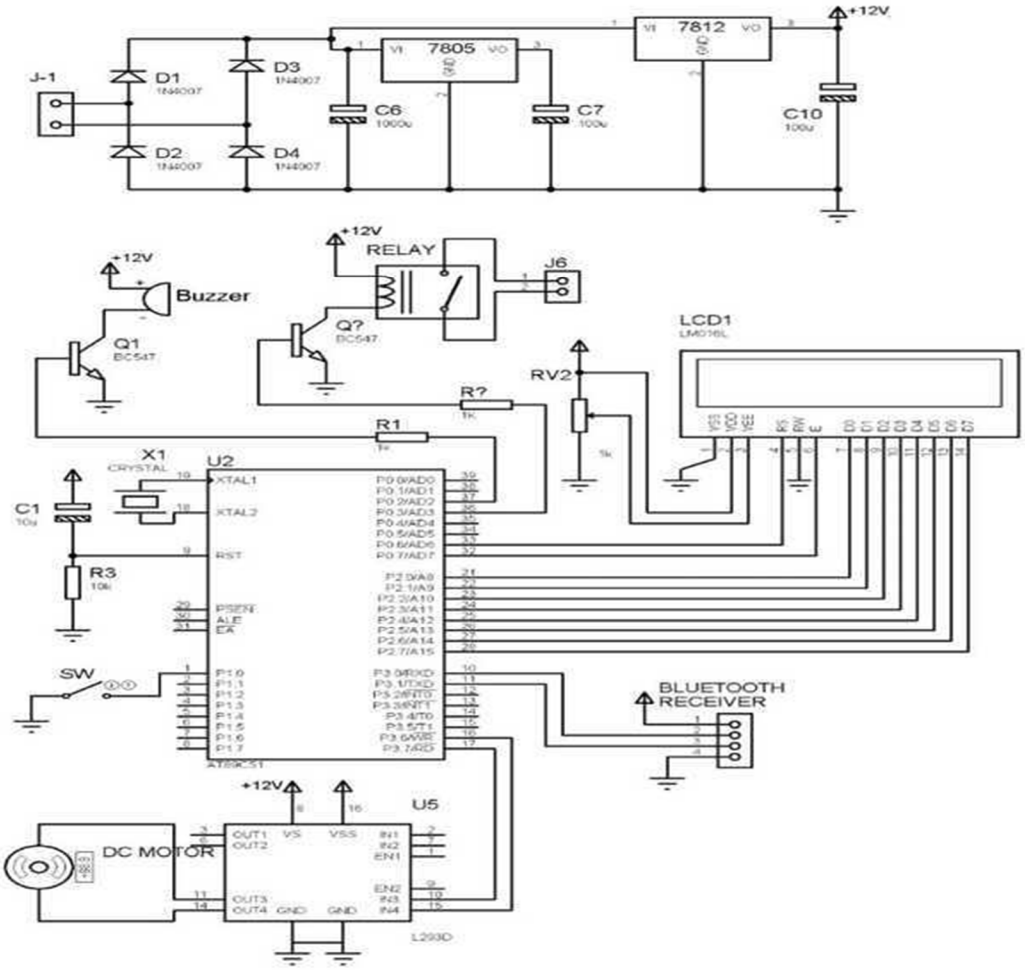


Fig.2Circuit Diagram of System

Working Principle:

- The user must initially Bluetooth couple his phone with the project's Bluetooth receiver.
- The user must then use an Android mobile device to input a password. Using, the circuit receives thispassword The DC motor rotates if the password is accurate.
- When an erroneous password is entered, a buzzer sounds.
- The user can view a variety of informational messages and instructions on the LCD display.
- To communicate commands to the project, wireless communication is used. In this project, Bluetoothtechnology is utilised.[4]

IV. FLOWCHART

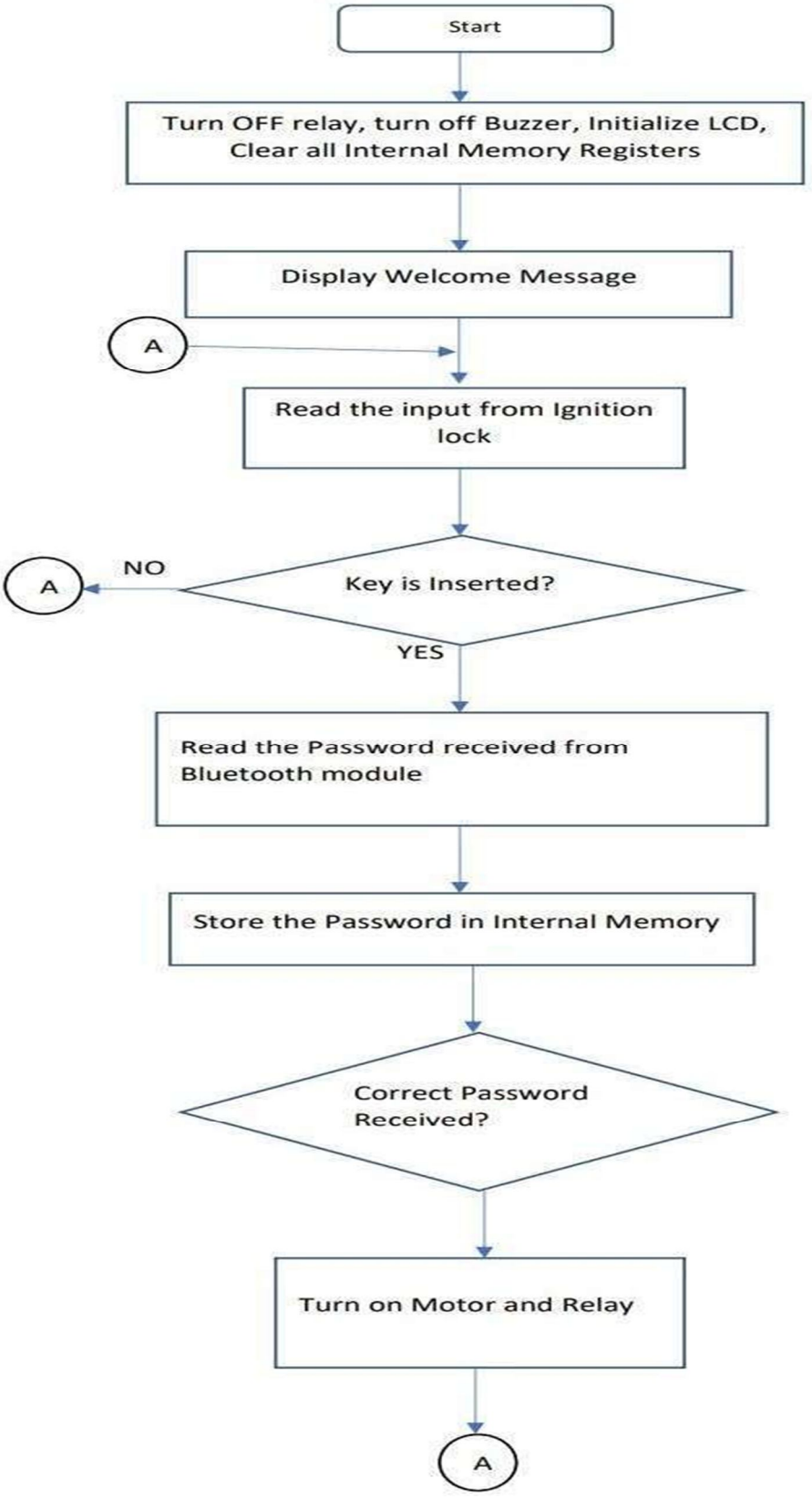
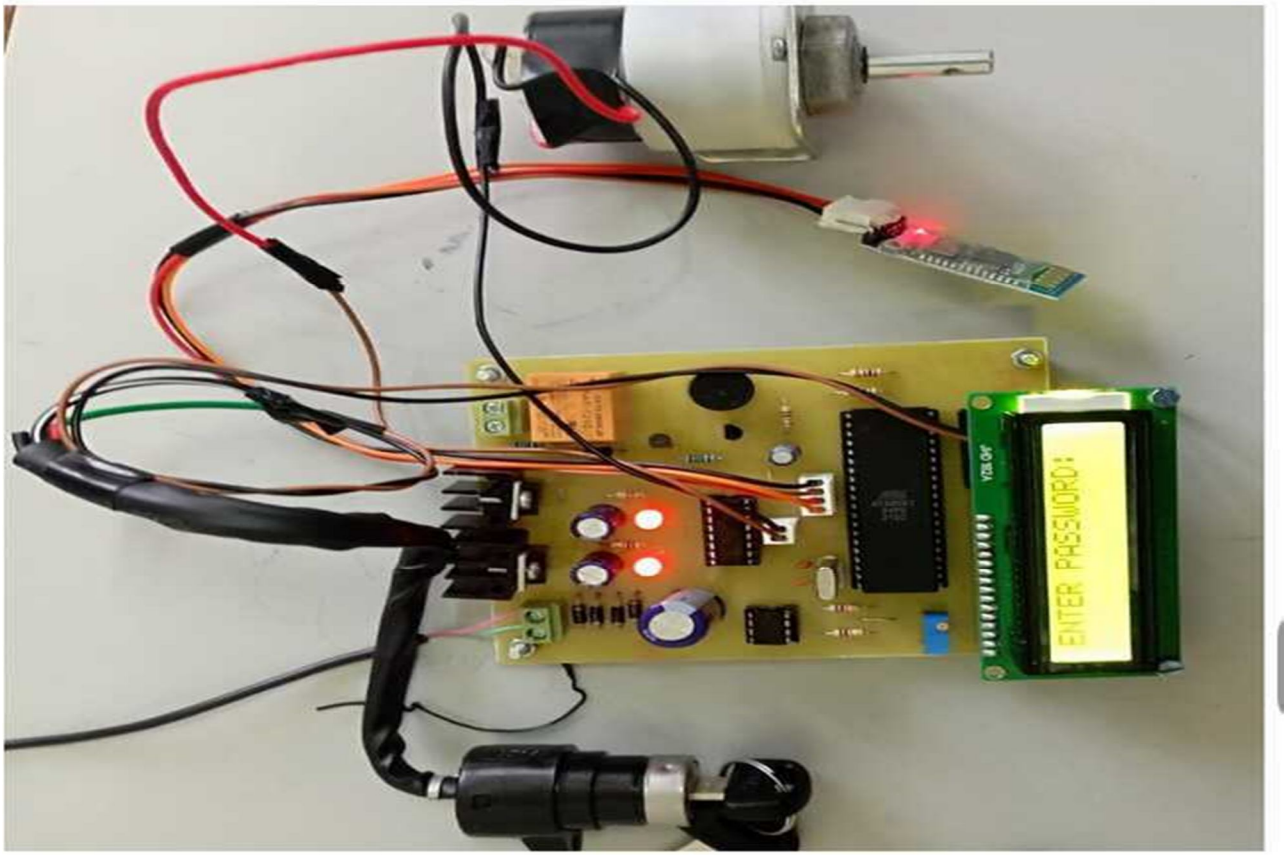


Fig.3 Flow chart

V. HARDWARE



VI. CONCLUSION

We can improve the quality of our lives by learning new "Electronics" techniques. Electronics are employed in "Password based Bike Lock" as one such example.The project's goal of creating a "Password based Bike Lock" that satisfies user demands and criteria was realised because to the new approach we used, which is described in this project report.This project's development has demonstrated just how much effort goes into building a system. A microcontroller-based device called "Password based Bike Lock" minimised the amount of hardware needed.

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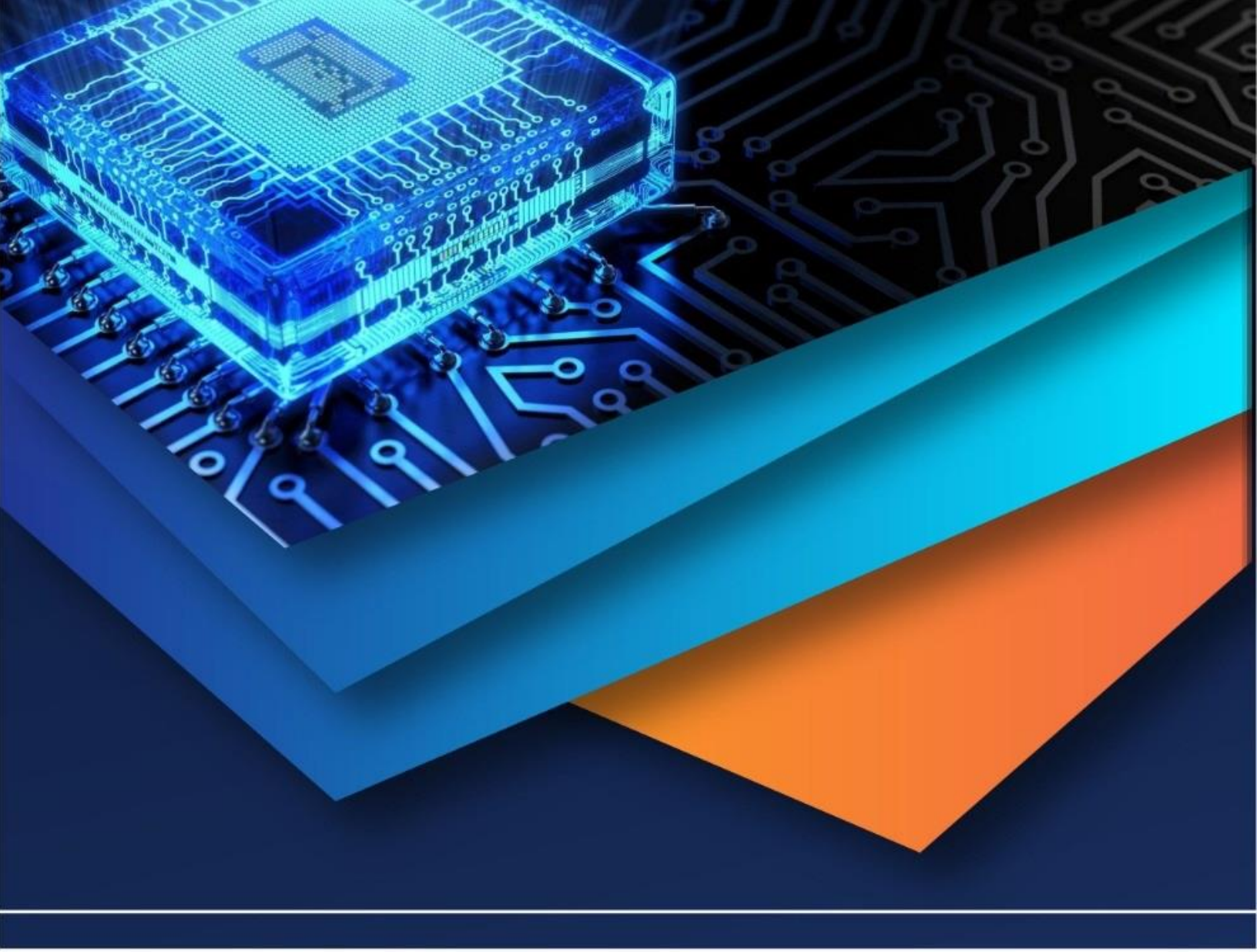

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