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Cloud Based Bus Pass System

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Abstract: ***The Real-Time Cloud-Based Bus Pass System Project serves as a convenient solution for commuters who are encountering difficulties with the current manual bus pass system. It allows passengers to travel easily with a mobile ticket QR code, which they can display if they lose their ticket during inspections. The QR code can be checked by the Train Ticket Examiner (TTE) and the system administrator to verify its authenticity. The system assigns a unique number to each passenger, preventing duplication. It also extends the validity period and sends timely alerts to the commuters through SMS or email before the expiry of their pass. Renewal or registration can be done using various payment methods, including credit or debit cards. Initially, passengers need to register with the application by submitting their personal details, including their photo and address proof, online. The system will review the information and approve or reject the bus pass application accordingly. Additionally, renewal can be performed using credit card or other payment methods.***
Keywords: Public Transport System; login; Ticketing System; Mobile Computing; QR Code.

I. INTRODUCTION

This project was established with the goal of offering people "secure, dependable, time-saving, effective, comfortable, and cost-effective" services, even though the cost of delivering such a service has been significant. With the mobile ticket's QR code, passengers can travel with ease, and even if they misplace their ticket during the check-in process, they can show the QR code to the TTE. The allotted number for one person cannot be used by another, and the government heavily subsidizes it. Despite being in the red, like most of India's state-run road transport services, this project has made it easier for people to register and renew their bus passes online, which was not available earlier in Tamil Nadu. The old system required people to do everything manually, but this system has made the process a bit faster. Customers can register for the bus pass online and pay for it using a credit card without the need for cash. Therefore, there is a requirement to reform the current system with more advantages and flexibility.

II. DEFINITION

The current conventional method of ticketing is a time-consuming process. With a high volume of commuters, purchasing tickets manually requires a lot of effort, time, and manpower. When there is a significant rush of commuters, this system becomes highly unsuitable, and it often leads to many commuters failing to catch their trains. This not only impacts people's work efficiency but also has a psychological effect on them, as it may result in less respect for co-passengers, staff members, and ultimately, at home

III. PROPOSED SYYSTEM

The commuters of Public Transport can be categorized in to two categories namely: 1. Regular commuters i.e., Office goers, Students & Business Class 2. Short time visitors like tourist and other people visiting the city for their essential works in this era of science and technology maximum numbers of commuters from both categories are equipped with a mobile phone subscription with them. And as this device is equipped with latest advancement of fast communication with high-speed data exchange, we are introducing it in a new way to use for ticketing in Public Transport System. In Mobile Ticketing a commuter will use his or her mobile phone to access the doors at entry and exit of station. It may be done by using either prepaid or post-paid mobile subscription. The fair for distance travelled will be deducted from available balance of prepaid subscriber or will be added in monthly bill of post-paid subscriber. Anyone can avail this service by registering for this value-added service from his or her mobile in a specified registration procedure and can start travelling after activation of service. Using mobile phone for ticketing will help to overcome billing hurdles and its fast and widely available network will suitable for communication and information exchange among entry and exit stations, Transport Service Provider Data Centre and Mobile Service Provider for billing purpose.

IV. REQUIREMENT ANALYSIS

A. Software Requirements

1) Minimum Android version 4.0

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2) Android Studio
3) Android SDK version 19

B. Hardware Requirements
1) RAM: 256 MB
2) Android based smart phone

V. PROPOSED MODEL

Our work introduces a novel method of generating the bus pass through an online platform.
There are several modules:
1) Registration Module
2) Authentication Module
3) Online Payment
4) Generation of Bus Pass
5) Bus Pass Renewal
6) Notification (Message Alert)

The process of maintaining user/client information in the database involves several steps. Firstly, the user needs to register by providing all the necessary information, as specified in the above fields. Once registered, the user can log in by entering their username and password. If the password entered doesn't match the one stored in the database, an error message is displayed. If the user wants to change their password, they have to provide their current password and the new password to confirm the change. The password is stored in an encrypted form. After logging in, the user can apply for the pass by providing the necessary details. The admin can then verify the received applications and issue the pass accordingly. When the user clicks on the submit button, a fixed amount will be deducted from their account, depending on the specified criteria. The information provided by the applicant, including their name, is displayed below.

VI. SYSTEM ARCHITECTURE

Architecture of GPS supported city bus tracking & Smart Ticketing system includes:
Architecture of Ticketing System Following figure.1 shows the architecture of Bus ticketing System:

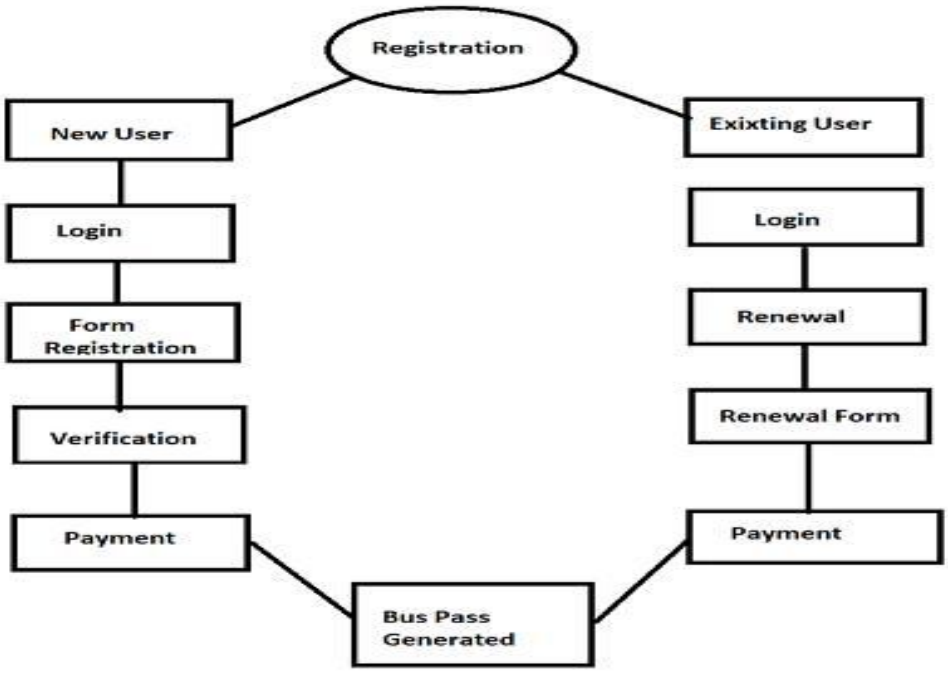


Figure.1

The proposed architecture of the GPS-supported city bus tracking and smart ticketing system consists of various components such as a smart card, GPRS, palm tech machine, and servers located at the main station. When a person boards the bus, they can choose to buy a ticket either by cash or using a smart card. If they opt for a smart card, the conductor will swipe the card, and the customer's data and current route will be tracked. Based on the station associated with the route, the ticket amount will be deducted from the smart card, which has data storage and account storage capacity. All the data will be stored in a centralized database located at the head office server for storage and financial activity purposes. The entire database will be managed centrally for easy access and control.

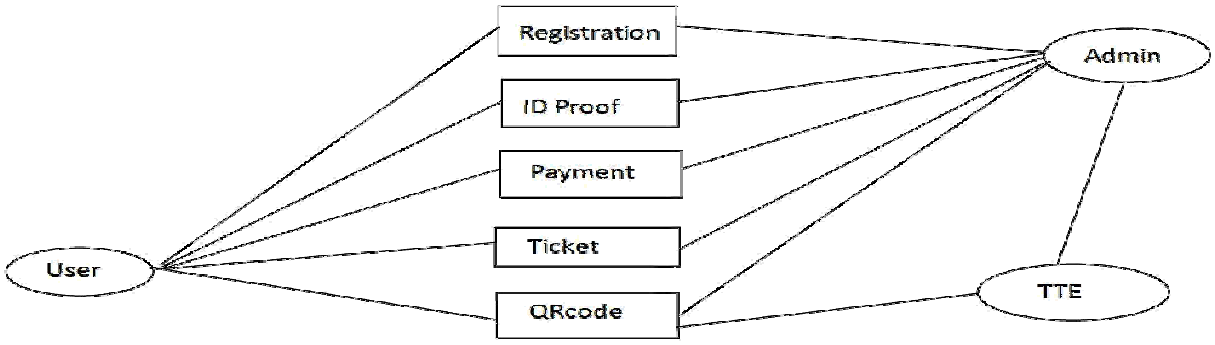
SOURCE CODE:-

```
const expres = require('express');
const app = expres();
const port = 8000;
// Require DataBase
const db = require('./config/mongoose')
app.get('/',(req,res)=>{
    res.send("yeah sever is run")
})
// Using Body Parser for Reading Data
app.use(expres.urlencoded({extended:true})); app.use(expres.json())
// Requires User Authentication API
const authroute = require('./routes/auth.js');
app.use('/user',authroute);
// Requires Bus Bokking API
const busroute = require('./routes/busroute');
app.use('/bus',busroute);
app.listen(port,function(err){
    if(err){
        console.log(err);
    }
    console.log("Server is run on port::",port);
})
// It is a a cloud based Bus Pass Service API's
```

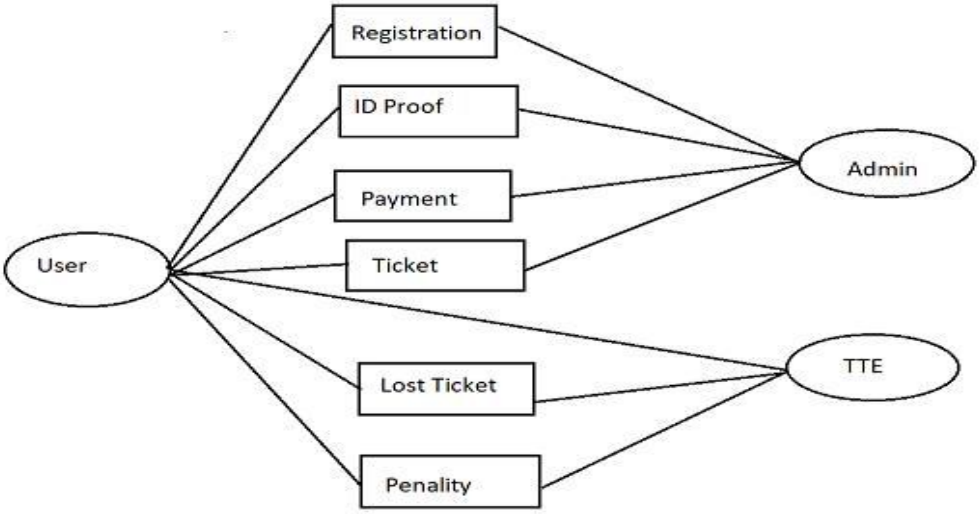
VII. DESIGN

A. Use Case Diagram

Use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well.



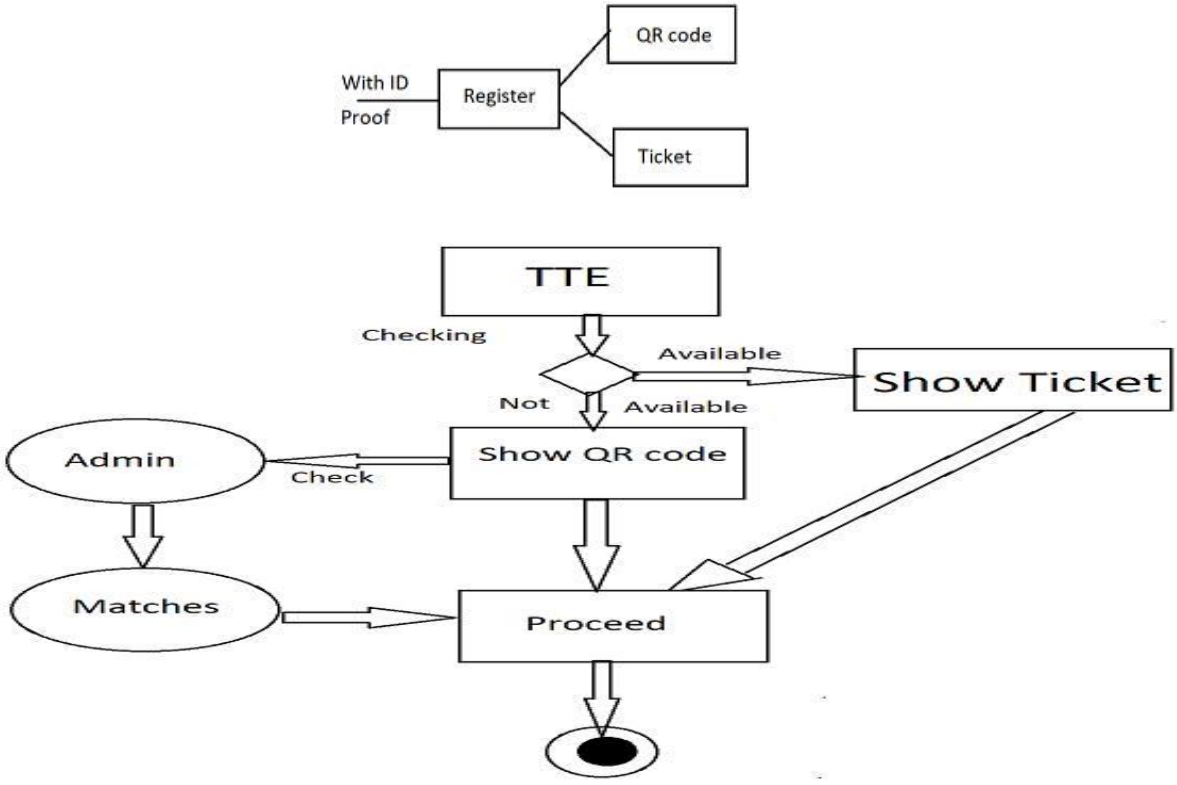
Use case diagram for the Passenger who has QR code



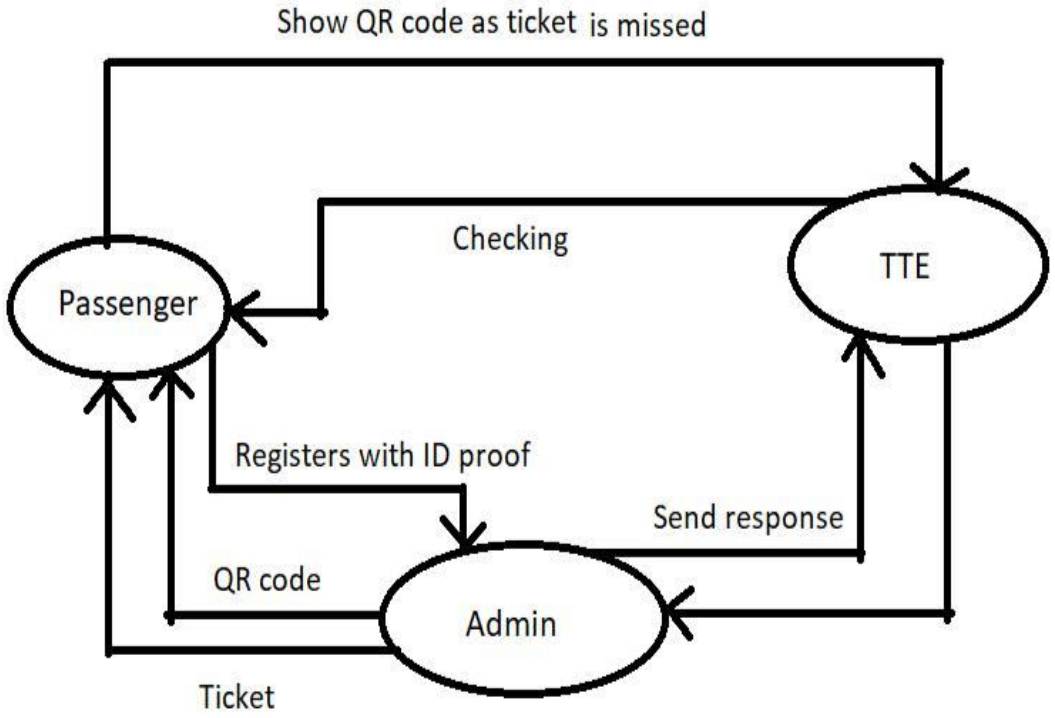
Use Case Diagram for Passenger without QR code

B. Activity Diagram

Activity diagrams are a type of diagram used in the Unified Modelling Language (UML) to represent the flow of activities or processes within a system. They depict workflows of stepwise activities and actions, with the ability to incorporate decision points, loops, and parallel processing. The main purpose of activity diagrams is to model both computational and organizational workflows, which can include various types of activities such as data processing, decision-making, and communication. By representing the overall flow of control in a visual manner, activity diagrams can help developers, designers, and stakeholders to understand the system's functionality, identify potential issues, and improve the efficiency of the process being modeled.



C. Data Flow Diagram



VIII. SUMMARY

The main objective of the project is to develop software that is of good quality, can be completed in a reasonable time and at a reasonable cost. To achieve this, a mature process needs to be adopted to determine the time and cost required to produce the project. The software development life cycle (SDLC) is a key component of any software development process, which includes various phases like requirement phase, design phase, implementation phase, test phase, installation and check out phase, operation and maintenance phase, and sometimes retirement phase. The Spiral Model has been selected for this project because it includes risk management along with other phases used in traditional software development. Each phase of the Spiral Model includes planning, risk analysis, development, and assessment sectors. However, one of the problems with this model is the lack of explicit process guidance in determining objectives and constraints, which may require expertise in risk management.

Requirement analysis and feasibility study are crucial activities in software development as they help in ensuring that the project will meet the customer's needs and is feasible to develop. Requirement analysis involves gathering and documenting the requirements of the project from the customer and other stakeholders. It is important to ensure that the requirements are clear, complete, unambiguous, and consistent to avoid misunderstandings and conflicts later in the development process. The requirement analysis process involves various techniques such as interviews, surveys, workshops, and observation.

After gathering the requirements, it is necessary to refine them to ensure that they are consistent and unambiguous. This involves clarifying any ambiguities and resolving any conflicts that may arise between different requirements. The refined requirements serve as the basis for designing and developing the software.

Feasibility study, on the other hand, involves assessing whether the project is technically and economically feasible to develop. It is important to ensure that the project can be completed within the given time and budget constraints. The feasibility study process involves analyzing various aspects such as technical feasibility, operational feasibility, economic feasibility, and legal feasibility. This helps in identifying any potential risks and constraints that may affect the success of the project.

By conducting a thorough requirement analysis and feasibility study, software development teams can ensure that the project meets the customer's needs and is feasible to develop. This helps in reducing the risk of project failure and ensuring that the project is completed within the given time and budget constraints.

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IX. CONCLUSION

To enhance the system. This will provide more options and choices to the passengers and will increase their satisfaction. Additionally, the system can also be integrated with GPS tracking to provide real-time information about the bus location and expected arrival time. This will help the passengers to plan their travel accordingly and reduce waiting time.

Moreover, the system can also be integrated with online payment systems like PayPal or Stripe to provide more payment options to the passengers. This will make the payment process more convenient and secure. Overall, the system will provide a more efficient, convenient and secure way for passengers to travel with the help of modern technology.

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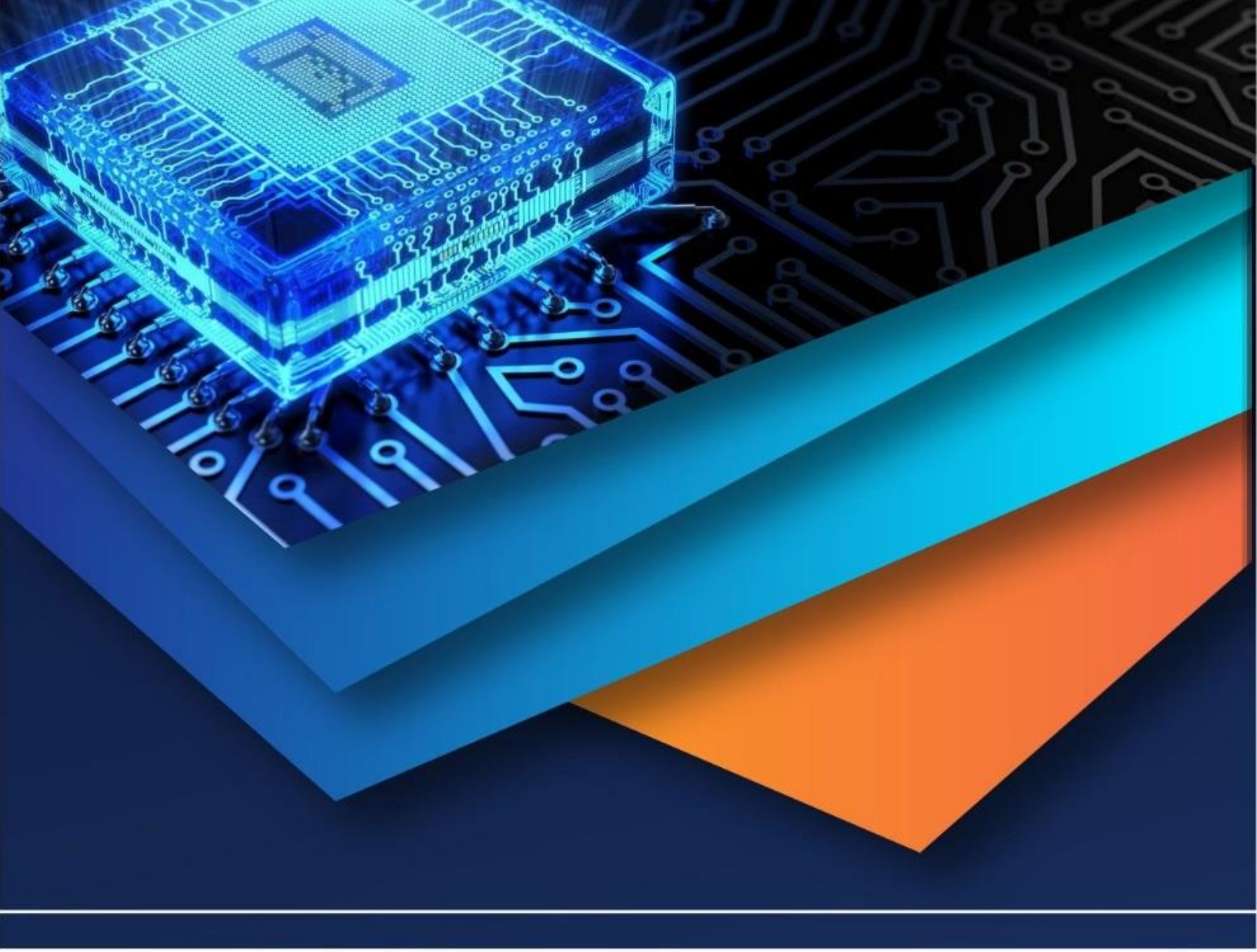

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