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College Management System

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Abstract: ***This paper is aimed at developing an Online Application for students and college management. The main theme of the project is to develop an application that enables the students to perform the activities like fee payment, downloading learning materials, and get notifications about the attendance, results, etc; in a mobile application, It provides a simple interface for the maintenance of the student records. In the previous system, all the details have to view in a file or on a website. At the same time while searching for information it takes a long time to get the results. To overcome this an Android Application can be used to make this process much better.***
All the important data such as passwords are securely stored with the help of hashing techniques. The users of this application are students, Faculty, and Admin.
The Faculty can log in to the application and can update the Attendance and Marks of the student. In case of any events or exams in the college, the students will be notified by Admin. As we are college students we know about these problems that we are facing due to the lack of this kind of application.
So we thought of extending and solving some of the problems in our project so that it could be more useful for the students and they can easily use the application which is also very compatible for the teachers and students. The data relating to students is stored in Firebase.
A web-based portal is designed for the faculty to upload the marks, results, and upload materials.
Keywords: Android Application, Firebase, Security, Web Portal

I. INTRODUCTION

The design and implementation of a College Management System are to replace the current paper records. Students can directly access all the information regarding the student such as Attendance, Semester marks, and Fee and Fines, and can download the material uploaded by the faculty for the respective subjects. The system uses user authentication, displaying only information necessary for an individual.
Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is stored securely on firebase servers.
The system provides an easy way to access all the data regarding a student and can easily provide information regarding the events and updates to students that are occurring in a college.
Our project goal is to make an application used for the students and teachers within an organization. We want to make it exclusively for students and teachers within a college. It does not allow any other people outside the organization to access and update the details in the application.
The general problems faced by students are detained due to less attendance that too one or two days less to their requirements because of lack of their attendance preview. Also, the students with backlogs are unable to access all the materials and thus they cannot clear the backlogs. These problems can be solved with the help of our application.

II. LITERATURE SURVEY

[1] The Application has came up with various functionalities for educational institutions to track student progress and managing attendance, marks, and everything related to college.
It helps the students to know about their attendance without consulting the faculty whenever they needed.[2] All data regarding the students are stored in Google Firebase. It Provides multiple features like Cloud Storage, User Authentication, Real-Time Database, and Cloud Messaging. [3] For ease of faculty to upload and update the details of the students a web portal and for easy access of student details for admin, a web based information system is developed.[4]An Android Application to keep track of all activities of Students.

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III. METHODOLOGY

The development system is an Android Application for students where the students will has facility to view all the information and a Website for faculty where the authorized users(Admin, Faculty, and Librarian) can update the information of a particular student. Android Application is developed using Android Studio and the Website is developed using JavaScript and Material UI, HTML, CSS, and Firebase on the backend. The passwords that are stored in the Firebase are securely stored using hashing with a modified version of the Scrypt hashing algorithm.

IV. APPLICATION PROCESSING

A. Students

Students can log in to their accounts using the credentials provided by the college admin. Users can reset the password using the Forgot Password option. On logging into the application the one can find all the details of his/her under different tabs. These include Payments, Student Details, Results, Materials, Library, and Notifications.

From the above sections, the user can find all the information regarding the Notes uploaded by the faculty and can pay fees and fines, and can see the updated notices and the information regarding the books in the library and books taken by him. Students can compare his/her marks with overall class average using bar graph analysis for each subject.

Students can pay the fee and fines within the app using UPI. Students will receive the notifications regarding any events in the college. This can be done with Firebase Notifications. Students can check the list of available books in the library. Students can download the materials from by selecting the required options.

B. Faculty

Upon successful login into their account the faculty can update notes and materials to the classes they are teaching and the material uploaded by the faculty is stored in the firebase. Faculty can update the attendance and marks of the students. Faculty can check the performance of students in the web portal.

C. Library

The librarian can be able to see all the books that are available in the Library and can Add and Update and Remove the books. The librarian can be able to see the books taken by the student.

V. UML ARCHITECTURE

A. Use-Case Diagram

A Use Case diagram focuses on the functionality of a system -i.e, what a system does for the users.

A UML use case diagram is the main form of system requirements for a software program which is under the development.

A Use Case model contains Actors and Use cases and relationship that exists between the actor and use case. An actor is an direct external user of the system.

A Use Case is a logical and consistent piece of functionality that a system can provide by interacting with actors.

A key concept of use case modelling is that it helps us design a system from the end user’s perspective.

B. Activity Diagram

An Activity diagram is used to describe the dynamic aspects of the system.

Activity diagram is a flowchart that is used to represent the flow from one activity to another activity. An Activity can be described as the aspect of the system.

The flow of control is drawn from one activity to another. The flow may be sequential, branched, or concurrent. Activity diagram deals with all type of flow control using different elements such as fork and join etc;

It elaborates the important processing steps.

An activity diagram shows the sequence of steps that make up a complex process, such as an algorithm or workflow.

Activity diagrams are most useful during the early stages of designing algorithms and workflows.

Activity diagram is like a traditional flowchart in that it shows the flow of control from step to step.

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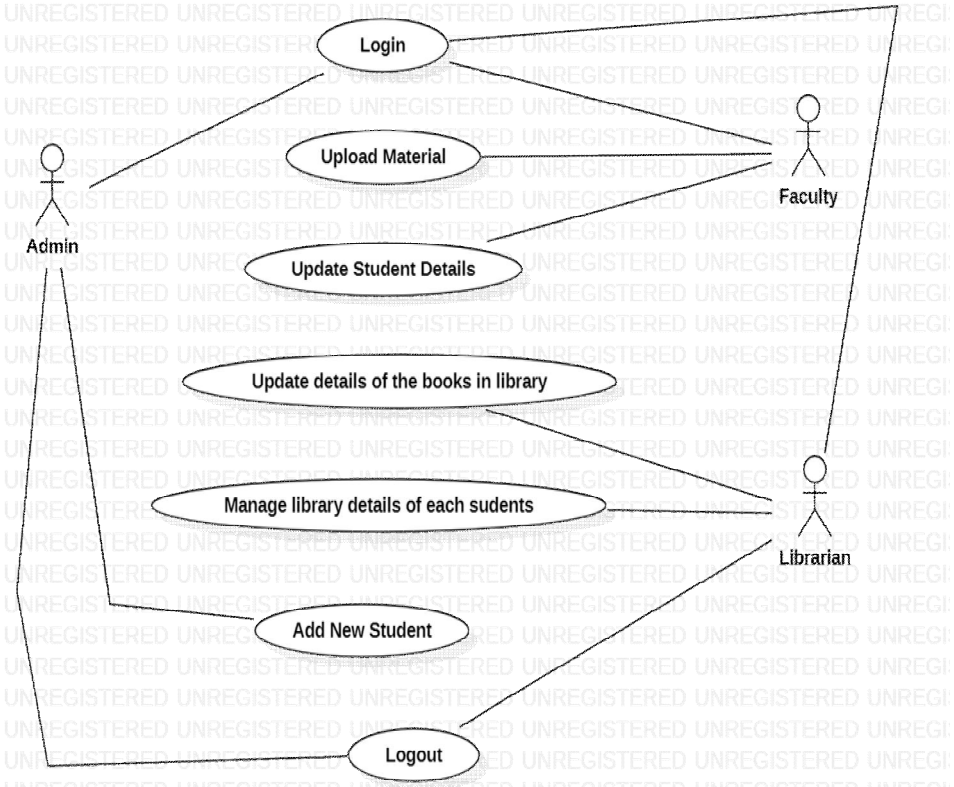
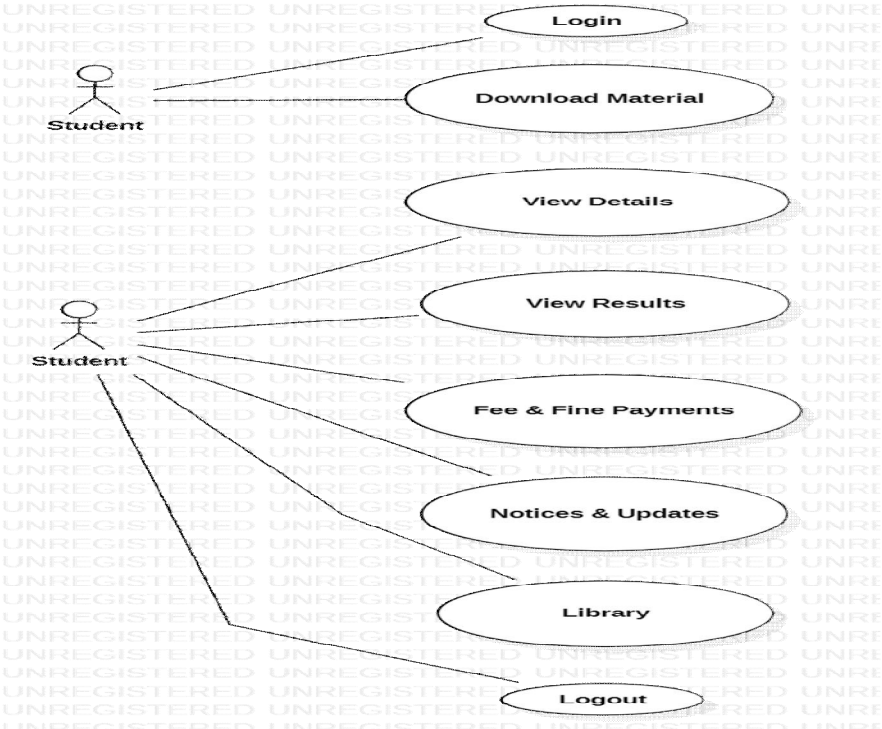
C. Use Case Diagram For Admin



D. Use Case Diagram For Student



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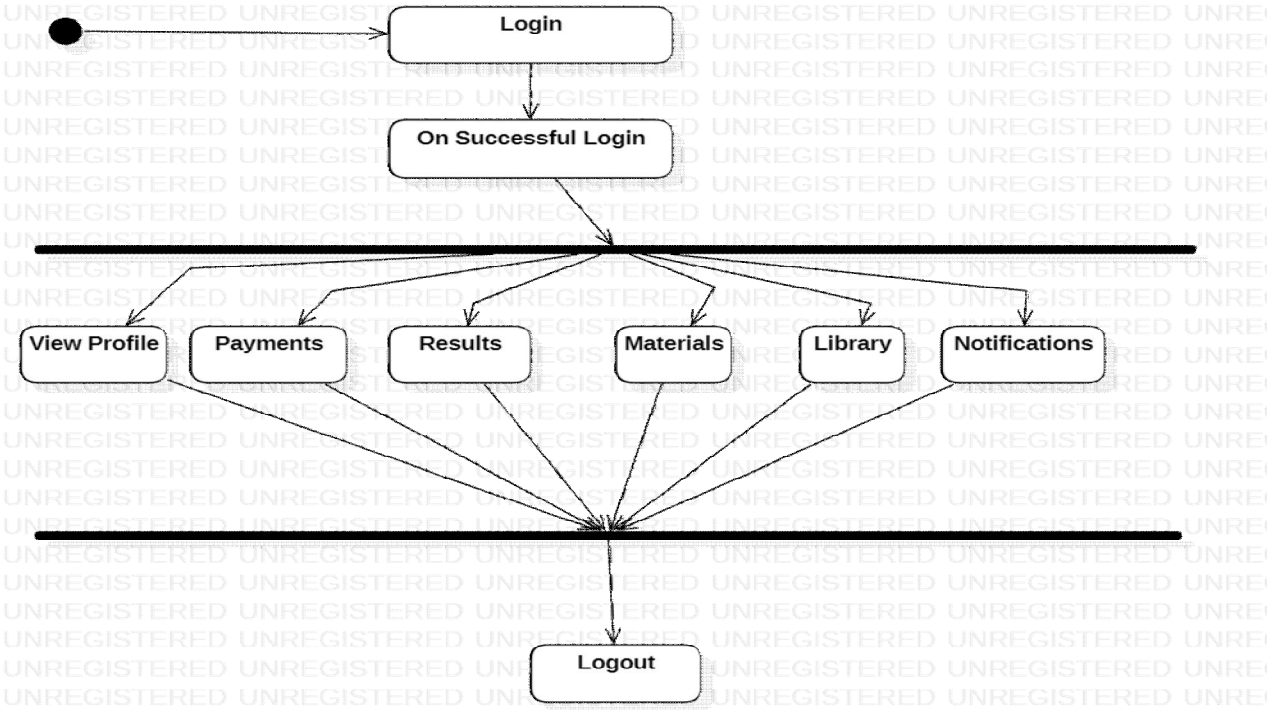
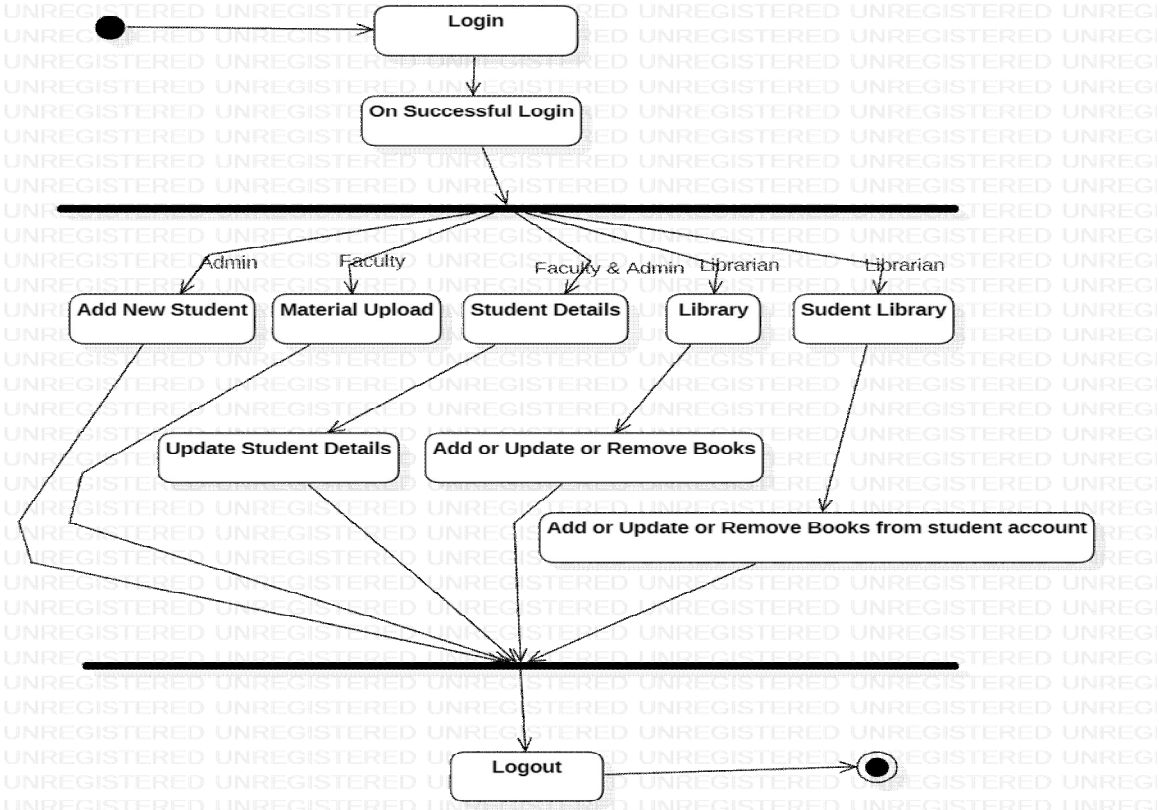
E. Activity Diagram For Student



F. Activity Diagram For Admin



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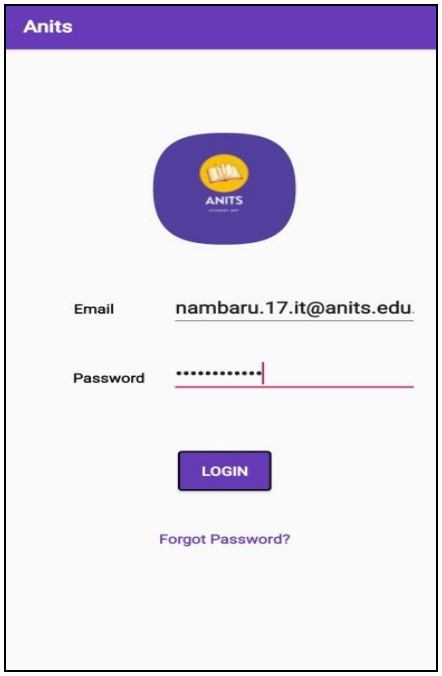
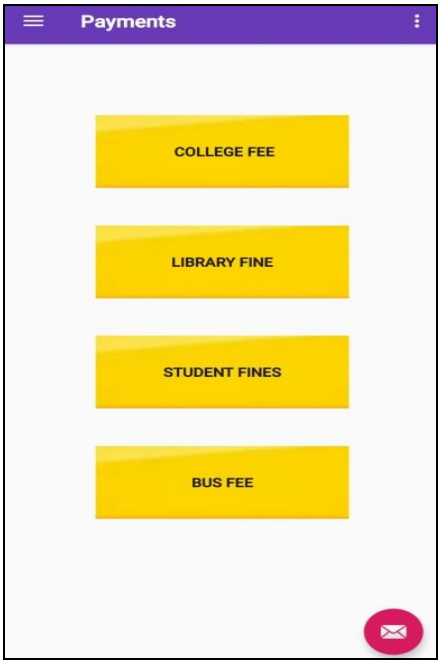
VI. RESULTS

Once the user enters the correct login details he/she can enter them into the application. Then they can make payments digitally with the help of the UPI Application. The Students can see the Available Books and so they can visit the library if their desired book is available in the Library. The students can also Download Materials, see their performance in an easier way. They can also get the Notifications regarding the Circulars, Events and Holidays.

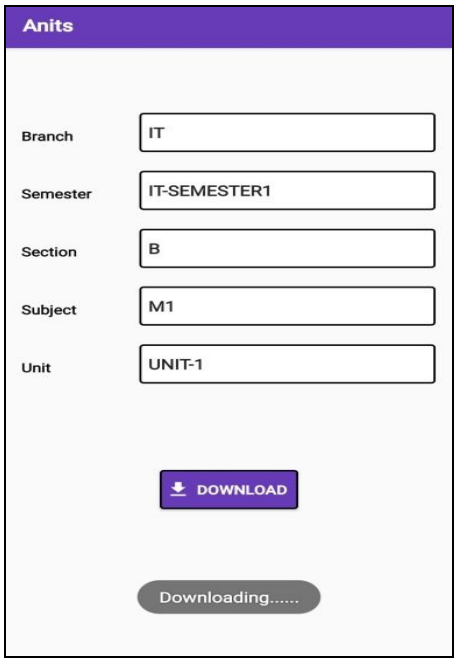


Login



Payments

Student Profile



Materials

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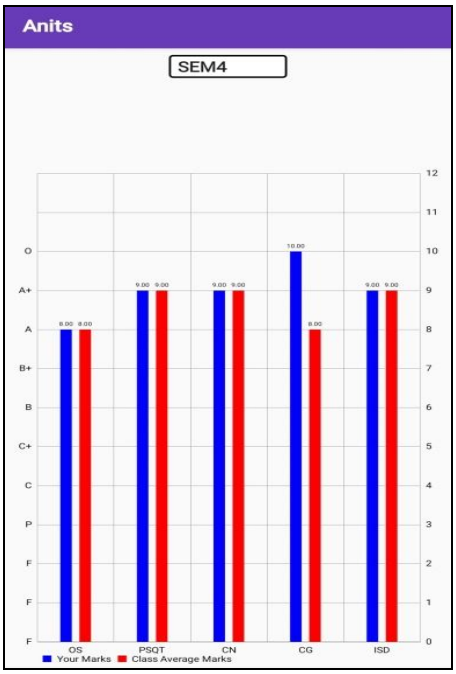
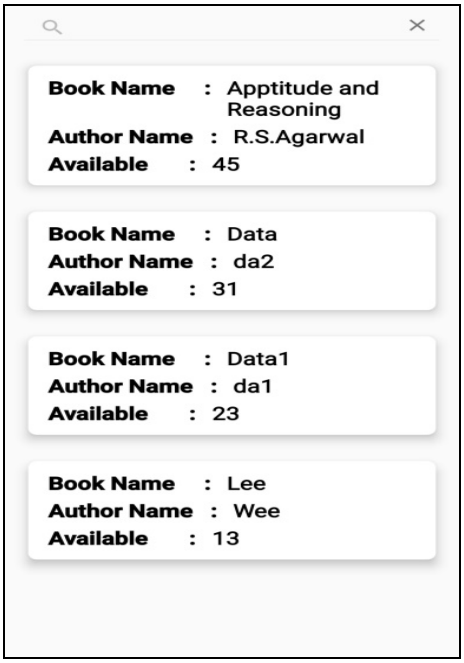


Marks Analysis



Library

VII. CONCLUSION&FUTURE SCOPE

This paper assists in automating the paperwork. The System offers reliability and easy control. The entire process can be done remotely. The data stored can be accessed at any time. All the users(Students, Admin, Faculty) can get the required information without any delay. With the help of this Application, the man power can be reduced. This will be helpful to digitize the system. In the future, we want to change this Application according to the Student and College by adding more features according to their needs. By building such websites or applications it can be very useful during tough situations and also it is very helpful for better education.

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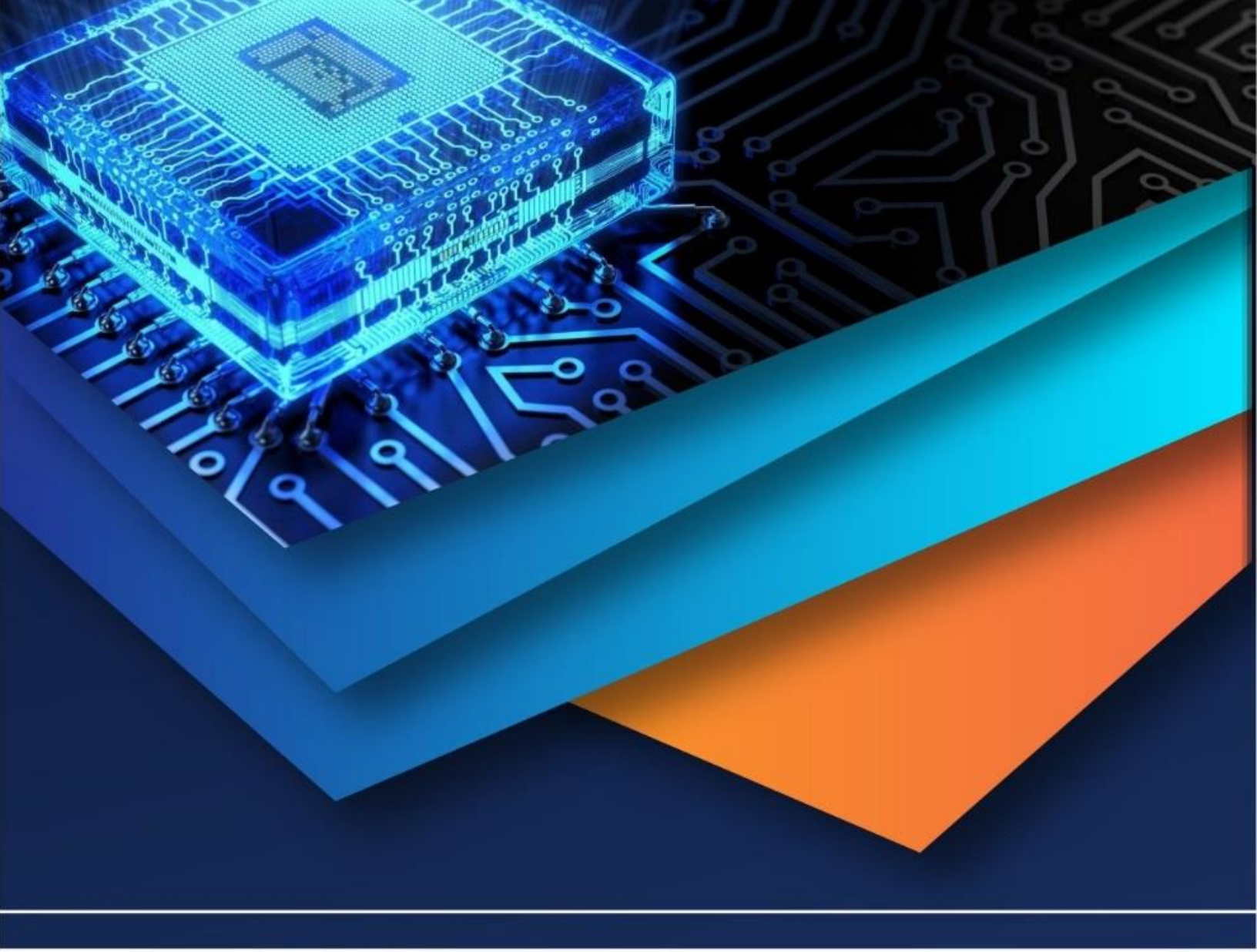

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