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# Borrow Barter Bridge - Hostel Necessities Web Platform

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***Abstract:*** ***We propose the creation of a hostel sharing platform for such necessities in response to the previously described issue of frequent access to necessities in the two aforementioned hostel environments. This platform would fulfill demands ranging from laptops and hair straighteners to belts and kettles, allowing for borrowing and lending of things with a maximum 48-hour return time. In order to begin, each user must first create an account with their personal information, agree to a user policy stating that they are liable for any borrowed stuff, and take pictures of any lent or borrowed objects during the meeting. To penalize offenders, trust points will be awarded for adhering to the policy and banned for breaking it. The number of points taken will increase with each infraction, and offenders will be subject to a justification and fine period after being reinstated. By maximizing resource use and guaranteeing timely meeting of urgent requirements, this platform seeks to promote a culture of accountability and mutual aid while protecting user interests.***
***Keywords: Messaging System, Hostel Necessity Website, Python, Flask, Django.***

## I. INTRODUCTION

In the hectic environment of living in dorms, students sometimes find it challenging to acquire basics. Unexpected demands can arise for things like a laptop to complete homework on time, a kettle to brew tea late at night, or a belt that was left behind for a formal event. When time, money, or availability constraints prevent them from quickly obtaining these things, students feel frustrated and challenged. To address this ongoing issue, we propose to develop the Hostel Necessity Sharing Platform, a web-based platform. Hostel communities would find it simpler to lend and borrow goods from one another with this platform. The Hostel Necessity Sharing Platform cannot succeed unless robust safety protocols and accountability systems are in place to safeguard the rights of all users. Each student must register for a personal account on the platform, provide their identifying information, and agree to terms and conditions that outline their responsibility for items they borrow. Users must furthermore submit photos of the exchanged items to attest to their condition at the time of lending, ensuring transparency and accountability throughout the borrowing process.

## II. LITERATURE REVIEW

The corpus of research on accommodations and management for hostels provides a wide range of studies aimed at enhancing the efficiency, sustainability, and user experience in these kinds of settings. Adetunji et al. (2020) looked into the implementation of a hostel allocation system that went beyond the traditional "first come, first serve" method, emphasizing the need to streamline procedures to meet students' preferences and needs. Kodi (2021), by instituting a hostel reservation system, contributed to this conversation. This approach reduces paperwork while simultaneously making learning easier and more accessible for both administrators and students. Amer (2020) looked studied the sustainability of hostel operations, highlighting shortcomings in meeting environmental standards and suggesting improvements to waste and resource management. Olawuyi (2020) introduced an internet-based online hostel administration system with the goal of improving overall hostel operations efficacy and streamlining administrative tasks. Isinkaye et al. (2022) created a chatbot system for hostel placement and suggestion that is mobile-based to assist students in finding suitable housing options. In addition to technical advancements, Vosloo (2020) provided a critical examination of South Africa's migrant labor hostel system, shedding light on the social and historical elements influencing hostel dynamics. Furthermore, Achine and Charles (2023) evaluated student dorm fire safety measures, emphasizing the value of robust safety protocols and infrastructure to lower risks. Hamid et al. (Year) provided a sustainable approach for college residence halls, stressing the value of effective resource management. Subair and Adeniyi (2021) underlined the need of infrastructure development in their assessment of the hostel facilities at Nigerian institutions in order to meet the growing demands of the student population. Pendke et al. (2021) introduced an instantaneous method for searching for food and shelter in response to the changing needs of urban populations seeking quickly accessible and comfortable living options.

 

When considered collectively, these studies contribute to a comprehensive understanding of hostel management that considers environmental, technological, safety, and accessibility aspects. Consequently, significant insights that will enable policymakers, administrators, and researchers to optimize the dorm experience for students worldwide can be obtained.

## III. TECHNICAL STACK DESCRIPTION

### *A. Python*

High-level and versatile, Python is renowned for its ease of use and readability. It features large libraries for a wide range of applications, supports several paradigms, and speeds up development.

### *B. Django Framework*

High-level Python web framework Django encourages efficient development and simple, straightforward design. In addition to having scalability choices and built-in security safeguards, it stresses the DRY (Don't Repeat Yourself) principles.

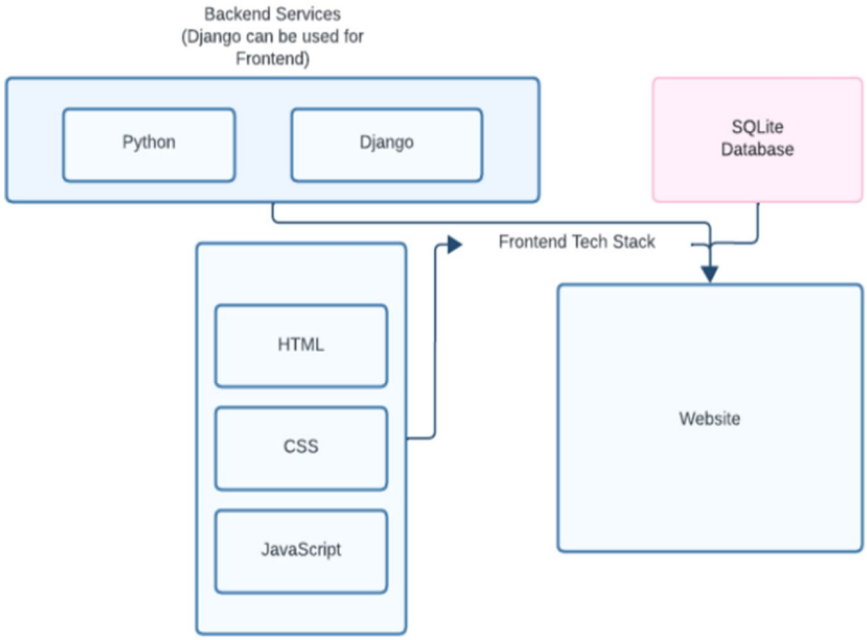


**Figure-1** Tech Stack Block Diagram

### *C. SQLite*

Database SQLite is a self-contained relational database engine that is lightweight and serverless. It is frequently utilized in embedded systems, mobile apps, and small-scale applications, requires minimal setting, and supports ACID transactions.

### *D. Hypertext Markup Language (HTML)*

The common markup language used to create online pages and applications is called HTML (Hypertext Markup Language). It uses tags and attributes to specify the content and structure of web documents. 3.5 Cascading Style Sheets (CSS) A stylesheet language called CSS (Cascading Style Sheets) is used to manage how HTML content are presented and laid out. It specifies web element styles, including fonts, colors, and placement.

### *E. JavaScript*

A high-level, interpreted programming language called JavaScript is used to give web pages dynamic behavior and interactivity. It has the ability to work with web APIs, handle events, and modify HTML text.

 

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## IV. USER FLOW OF WEBSITE

The start screen greets visitors at the application's initial entrance point, marking the beginning of their user journey. The program then determines whether the user has already been authenticated. The user moves on to the primary functionality if they are logged in. In the event that the user is not authorized, they are required to either create an account or log in. The application then checks to see if the user's account is active and correctly authenticated after authentication. The process is guided for users in case verification is needed. The application also searches for any unresolved complaints related to the user's account. Users are instructed to address any outstanding issues on their profile page.

When the preliminary checks are complete, users are directed to the index page, where they can decide whether to lend or borrow commodities or services from the community. Based on their choice, the visitor is directed to the relevant lending or borrowing page. Along with interacting with the community, users can browse through the offerings and demands that are currently accessible and submit their own requests.

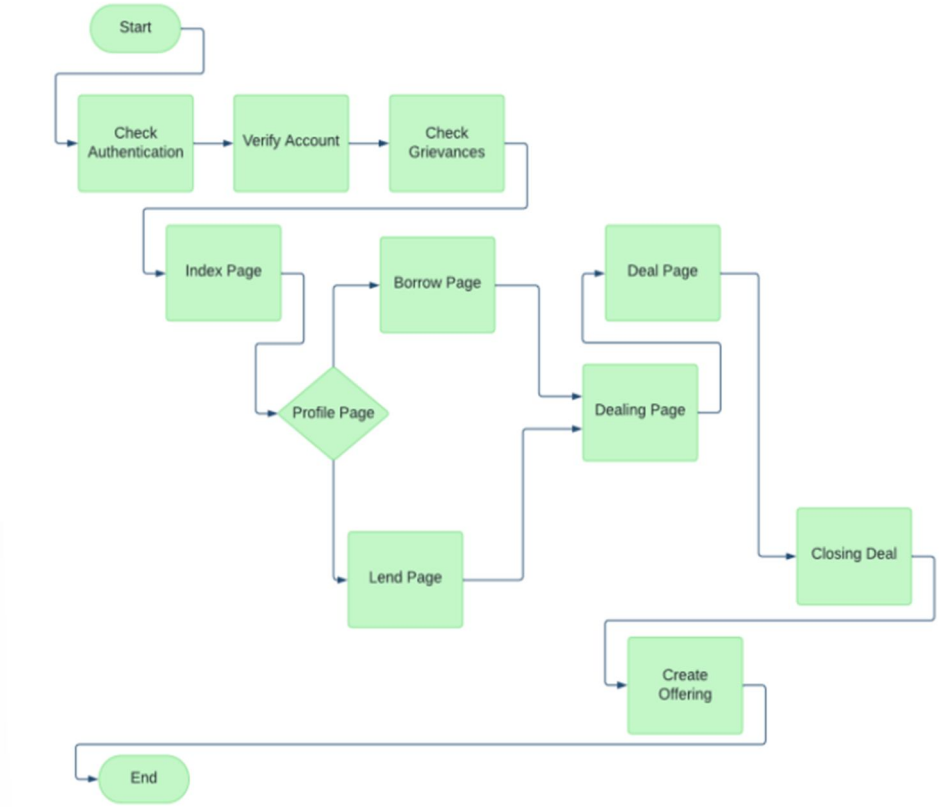


**Figure 2.** User Experience Flow Chart

By browsing to the dealing page for ongoing transactions, individuals can manage their deals and communicate with other participants. If they want more detailed information, users can read the details of a given deal by visiting the deal page. Once an agreement is reached, users can seal deals and finalize transactions, which are then recorded in the application.

## V. METHODOLOGY

### *A. Lending Page Flowchart*

The procedure for lenders on the loan page is shown in this flowchart. Verifying your credentials is the first step, and then you may start a chat to talk with possible borrowers. The lending procedure then comes to a close when the lender chooses the item to lend and moves on to the payment interface to complete the transaction.

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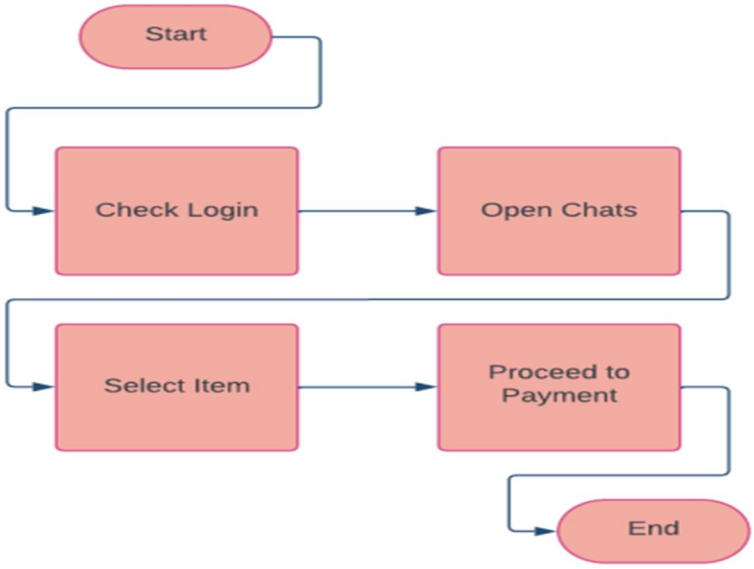


**Figure 3.** Lending Page Flowchart

*B. Borrow Page Flowchart*

The loan procedure is shown in this flowchart. After confirming their login, individuals can access chat rooms to speak with lenders. After deciding whatever object they would like to borrow, they make a request.

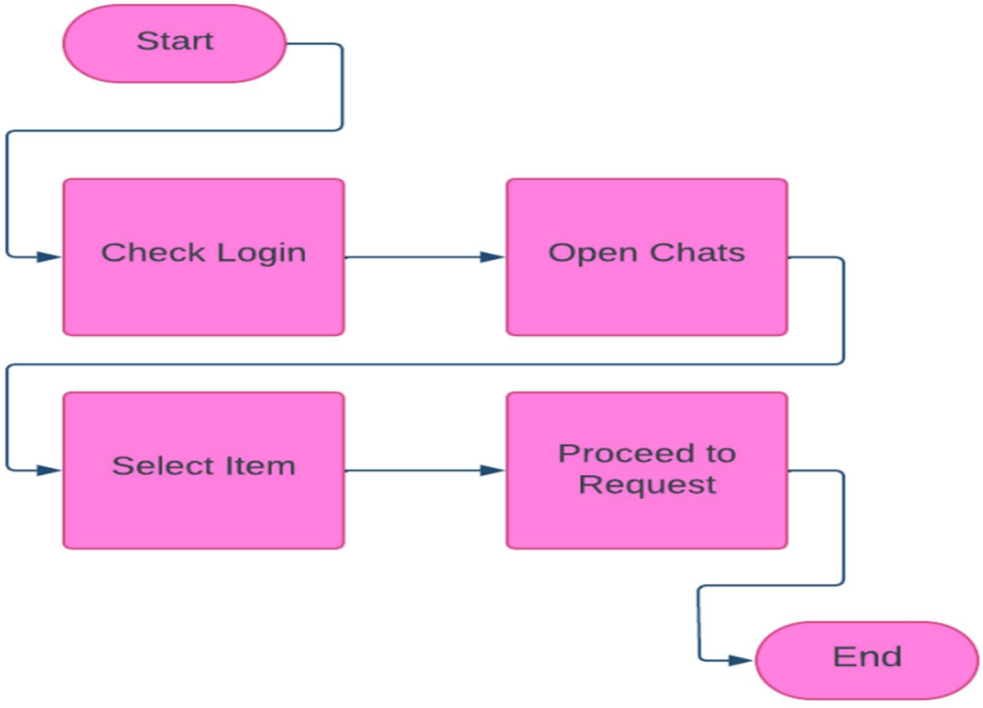


**Figure 4.** Borrow Page Flowchart

To lend money, a lender must first verify their identity, then speak with potential borrowers, select the item to lend, and finish the transaction using the payment interface. Enabling safe and simple lending transactions between platform users requires the completion of each step. is accepted, the process ends, making it easier to borrow items within the system.

*C. Chat System using WebSocket*

The provided code creates a chat system using Django Channels, which allows real-time bidirectional communication using WebSocket between clients and servers. It functions as follows:

This chat system, which is built on Django Channels, allows clients and servers to communicate in real time over WebSockets. Instant message delivery and responsiveness improve user experience.

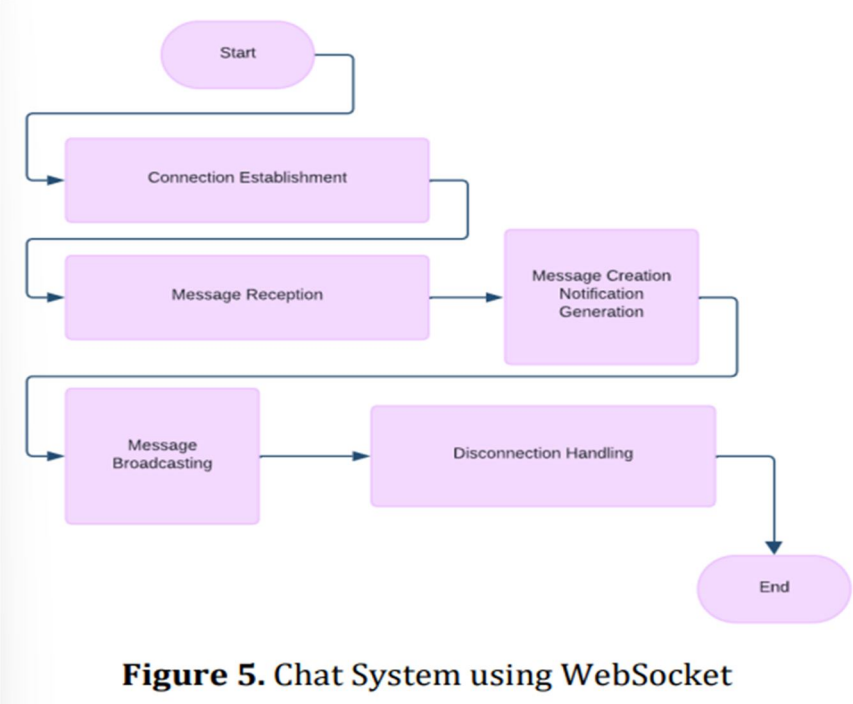


**Figure 5.** Chat System using WebSocket

1) *Connection Establishment:* When a user connects to the chat system, the connect method is triggered. The user is added to the appropriate group, their authentication is validated, and the sender and recipient are identified by the room name they entered.
2) *Reception of Messages:* The offering ID, notification receiver ID, and message content are all retrieved by the server when it receives a message from a client. Next, it creates an asynchronous chat message object and notification object in the database and associates them with the applicable sender, receiver, and offering.
3) *Handling Disconnections:* The disconnect method is triggered when a person logs out of the chat system, eliminating them from the group.

## VI. WEBSITE SCALABILITY AND DATABASES

The ability of a system to effectively manage growth or an increase in burden is known as scalability. In software development, scalability ensures that a system can function and run even when user demand grows. Enhancing current resources is known as vertical scalability, while adding new resources—such as servers— to split the workload is known as horizontal scalability. This project is highly scalable for number of users connecting on the websites.

Mobile apps, embedded systems, and small-scale applications commonly use SQLite, a lightweight, serverless relational database engine. It takes little administration or setup and is easy to incorporate into projects. SQLite supports standard SQL syntax, transactions, and ACID characteristics, ensuring data integrity and reliability. However, due to its file-based, single-user architecture and absence of a client-server interface, SQLite may not be suitable for large-scale or high-concurrency uses. It works effectively in scenarios where portability, user-friendliness, and low resource consumption are essential.

## VII. RESULTS

A projected hostel necessity sharing platform called Borrow Barter Bridge (B3) web based platform.Thanks to the construction of this web-based platform, students will have access to a system where they may lend and borrow various items inside their hostel communities, like computers and kettles, with a maximum 48-hour return time.

The primary objective is to simplify the lending and borrowing procedure while upholding user protection and accountability, resource optimization, and a culture of mutual aid.

Sturdy accountability frameworks and safety rules are critical elements that ensure the platform's effectiveness. Each user must first register for a personal account, provide identification, and agree to terms and conditions outlining their responsibilities before they can borrow anything. Users are required to provide photographs of the returned goods to attest to their condition during the lending process in order to promote accountability and transparency.

The platform navigation, transaction management, and authentication comprise the website's user flow. Users are given instructions on how to sign in, use the major features, browse offers and requests, handle deals, and finish transactions. Users can engage in instantaneous negotiation and communication by chatting with one other in real time over a WebSocket-based chat system.

## VIII. CONCLUSION

In conclusion, the Borrow Barter Bridge (B3) initiative provides a solution to the ongoing issue of students residing in dorms being unable to acquire necessities. The project intends to facilitate lending and borrowing within hostel communities by creating a Hostel Necessity Sharing Platform. In order to demonstrate transparency, users must register on the platform, agree to the terms of service, and submit pictures of the traded products.

The technological implementation makes use of Python, Django, SQLite, HTML, CSS, and JavaScript to provide a dependable and efficient system. The user flow includes authentication, transaction management, and platform navigation. Moreover, real-time communication between users is possible with a WebSocket-based chat system.

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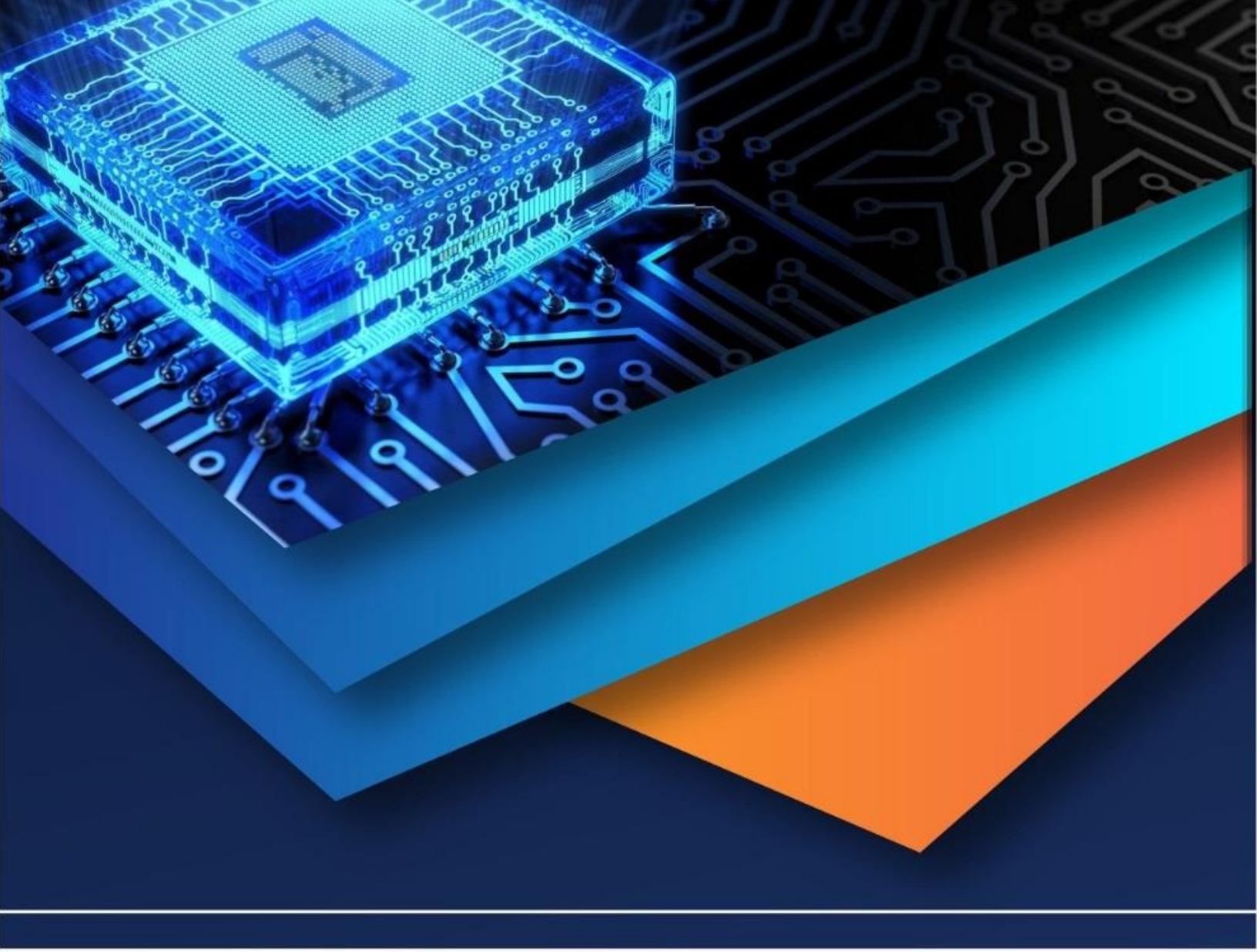

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