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Automated Medicines Advisory System for Diabetics

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Abstract: The main aim of this application is "To maintain details of employee with diabetics, generating Unique ID, investigations, generating auto medical reports, maintaining patient conditions and total progress and auto locking system in Medical Department of entire Vijayawada division". Finally, this application "Investigation in Diabetic and Auto locking System" includes the complete online technology in the divisional hospital and automatic locking system in diabetic pharmacy regarding medicines issued to the patients. Diabetes is recognized as one of the most severe health problem in the world. It spares no one, attacking men, women, children, and the elderly. Diabetes is the leading cause of kidney failure, blindness in adults, nervous system damage, and amputations. It is a major risk factor for heart disease, stroke, and birth defects. Diabetes is currently one of the most costly diseases in both human and economic terms. Diabetes is a metabolic disorder resulting from insulin deficiency, insulin resistance, or both. The main objective of this article is to discuss in detail recent technical developments in intensive insulin treatment, stressing the existing problems and reviewing the best applied solutions.
Keywords: Diabetic, unique id, pharmacy etc.

I. INTRODUCTION

This paper primarily aims at encouraging students to focus on developing applications that not only they can use but also can help the society in general. This way, students will be able to fulfill their responsibility to developing expertise in their preferred subject. To spread awareness about causes, risks and other related factors of diabetes, the Medical Department of East Coast Railway organized an awareness campaign among the Railway Employees & their spouses followed by a Health Camp at Rail Vihar recently on the eve of "Year of Awareness on Diabetes in India". The Health Camp offered free basic diabetes check-up to all the patients and educated in different aspects of diabetes. The height, weight etc. were also assessed and patients were also counseled and one exhibition on different aspects of food articles was conducted.

II. OVERVIEW OF MEDICINES AUTO INDICATOR IN DIABETIC

The Medicines Auto Indicator in Diabetic application is web application. As information is important for the medical department, a tool for enhancing the performance of the Medical department became necessary. Currently the process is going on manually. Due to this, sometimes they may come across some situations like, unable to find out the current status of the patient. There are many things to be maintained in the medical services such as maintaining the patient details, generating reports to the patients, etc. Issuing of medicines to the patients is to be checked every month. It is very difficult to find out whether when the patient has consulted the doctor and when has the medicines being issued. To overcome all situations computerized these details will help to improve the work faster. Medical department plays a vital role among all the departments in south central railways. The Medical department handles the responsibilities like providing medical checkups to the railway employees, retired railway employees and to their family members.

A. Description

1) *Patient Information:* The patient information class contains various details like provident fund number(PF-No) of the patient, medical number(MD-No) if he/she is a railway relation member and details of the person like name, address, contact details.
2) *Disease History:* The disease history class contains various details like provident fund number (PF-No) of the patient, duration of disease, family history and medical number (MD-No) if he/she is a railway relation member.
3) *Investigation and Transactions:* The class contains about the details like join complaints, investigation date and investigation value based on the provident fund number (PF-No).
4) *Medicines and Reports:* The medicines and reports are generated based on the provident fund number (PF-No) and the medical number(MD-No) of the patient and various operations like billing, and reports contain stock receipts, stock updation, monthly reports, stock on hand and indent preparation.

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5) *Auto Locking:* This process is done based on the date the patient has undergone the medication. Once the patient has been issued the medicines the pharmacist locks the patient profile so that the profile opens only after a period of 30 days. Therefore the medicines cannot be misused.

III. TECHNOLOGIES USED

Java Server Pages (JSP) is a server-side programming technology that enables the creation of dynamic web pages for building Web-based applications. JSP have access to the entire of Java APIs, including the JDBC API to access enterprise databases.

A. *Advantages of JSP*

1) In a JSP page visual content and logic are separated.
2) The dynamic part of JSP is written in Java, so it is more powerful and easier to use. Secondly, JSP is platform independent.
3) There is an automatic deployment of a JSP, recompilation is done automatically when changes are made to JSP pages.
4) Usually with JSP, Java Beans and custom tags web application is simplified.
5) By using JSP the system can connect with number of databases including My SQL, Postgre SQL, Oracle, Sybase, Informix, and Microsoft SQL Server.
6) JSP needs no compilation, CLASSPATH setting and packaging.
7) JSP is better because it lets you use servlets instead of a separate program to generate that dynamic part.

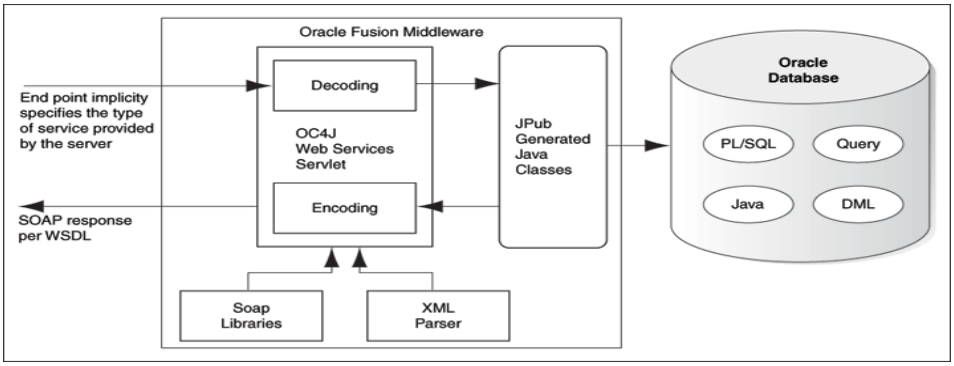

Fig: 3.1 Web Services Call-In to the Database

B. *Features of Servlet*

1) *Better Performance:* Because it creates a thread for each request not process (like CGI).
2) *Portability:* Because it uses java language and java is robust language.
3) *Robust:* Servlet are managed by JVM so no need to worry about memory leak, garbage collection etc.
4) *Secure:* Because it uses java language and java is a secure language. Java have automatic garbage collection mechanism and a lack of pointers protect the servlets from memory management problems.
5) *Inexpensive:* There are number of free web servers available for personal use or for commercial purpose. Mostly web servers are very costly. So by using free web server you can reduce project development price.
6) *Extensibility:* The servlet API is designed in such a way that it can be easily extensible. Servlets being written in Java can be extended and polymorphed into the objects that suits the user requirement.
7) Efficiency Servlets invocation is highly efficient as compared to any CGI programs.
8) Integration Servlets are tightly integrated with the server. Servlet can use the server to translate the file paths, check authorization, perform logging and MIME type mapping etc.
9) *Persistent:* Servlets remain in memory until explicitly destroyed. This helps in serving several incoming requests. Servlets establishes connection only once with the database and can handle several requests on the same database.
10) *Server Independent:* Servlets are compatible with any web server available today.
11) *Protocol Independent:* Servlets can be created to support any protocols like FTP commands, Telnet sessions, NNTP newsgroups, etc. It also provides extended support for the functionality of HTTP protocol.
12) *Fast:* Since servlets are compiled into byte codes, they can execute more quickly as compared to other scripting languages. The byte code compilation feature helps servlets to give much better performance. In addition, it also provides advantage of strong error and type checking.

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IV. PROCESS MODEL

Waterfall model has been chosen because all the requirements were known beforehand and the objective of our software development is the computerization/ automation of an already existing manual working system. In the abstract, here's why waterfall model is always correct. Problems tend to be fractal, i.e. solving them tends to reveal sub problems, and solving them tends to reveal sub-sub-problems, etc. Pretend for a moment that there is such a thing as a simple, atomic problem. In that case, the arguably best sequence to solve it is the waterfall. The reason is that each step provides the most reasonable platform for the waterfall. Simple problems lend well to simple waterfall approximations. Although the WATER-FALL cannot (should not) be used literally as the prescription for building software, it is highly useful for reminding developers of the following:

A. Problems are more easily solved when they are first defined.
B. Large bodies of code will be more tractable if they are structured.
C. Human work should always be verified, if it's important, as there are no infallible humans.

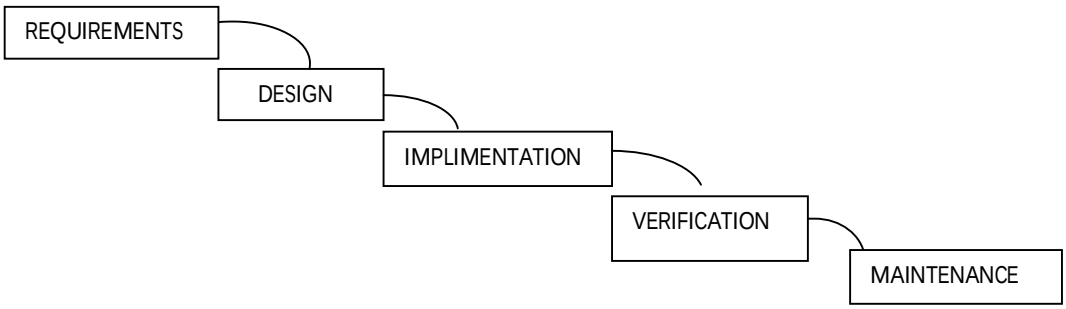
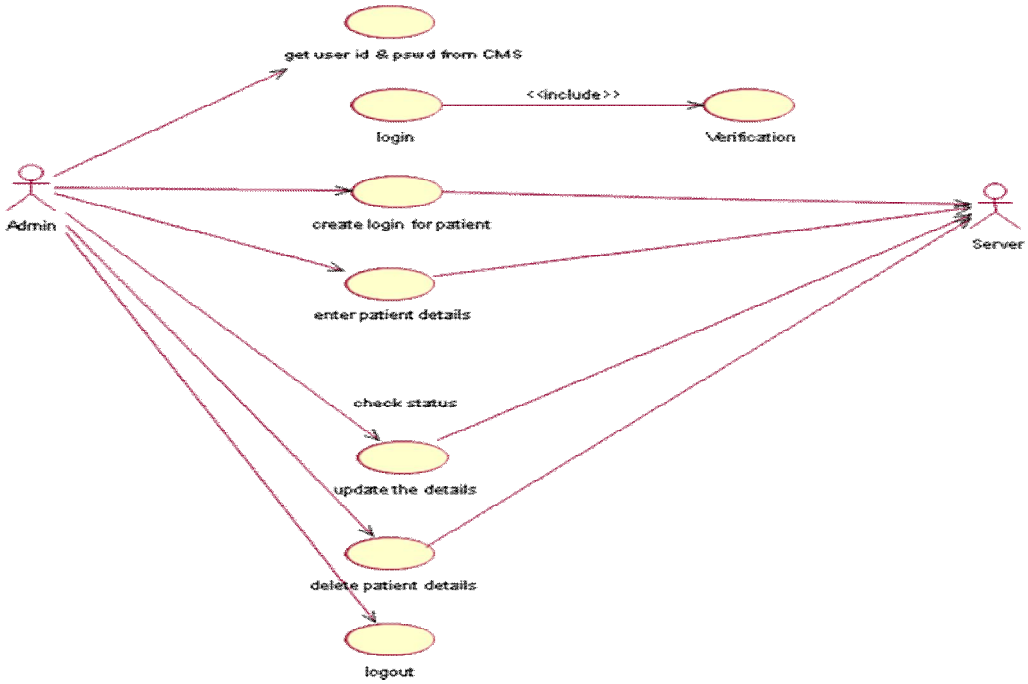


Fig 4.1 Process Model

In addition, although no significantly difficult development can be forced into a simple Waterfall, beginning with the Waterfall is a good way to sketch a plan for the development. It will likely be too simple, but it's a good straw man, and usually a good, durable framework for the real plan.

V. SYSTEM ARCHITECTURE



Use case diagram for the Administrator

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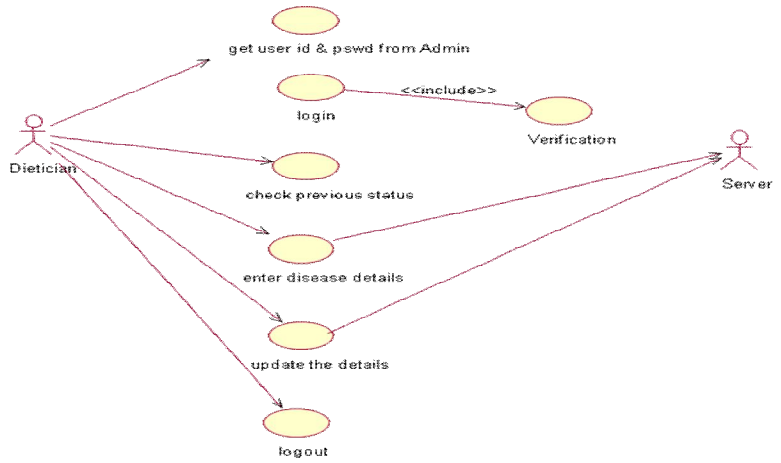
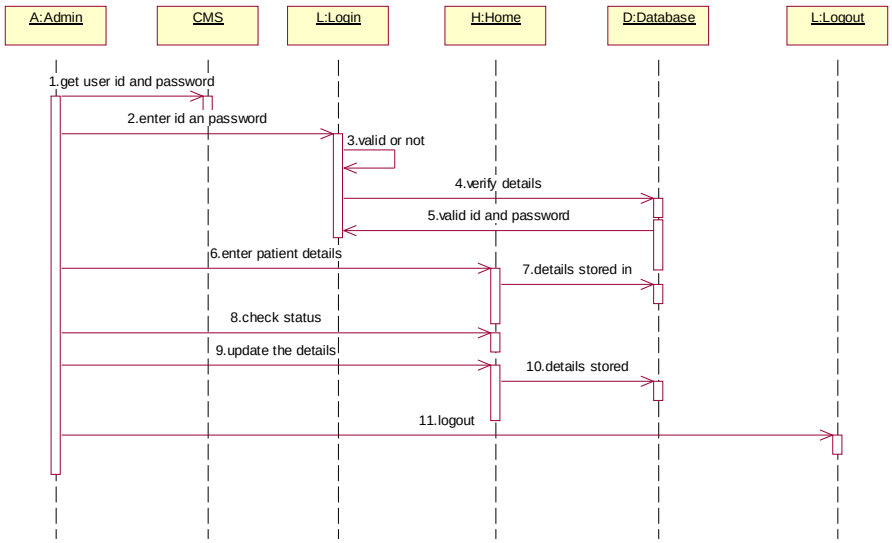


Use case diagram for Dietician



Sequence diagram for Administrator

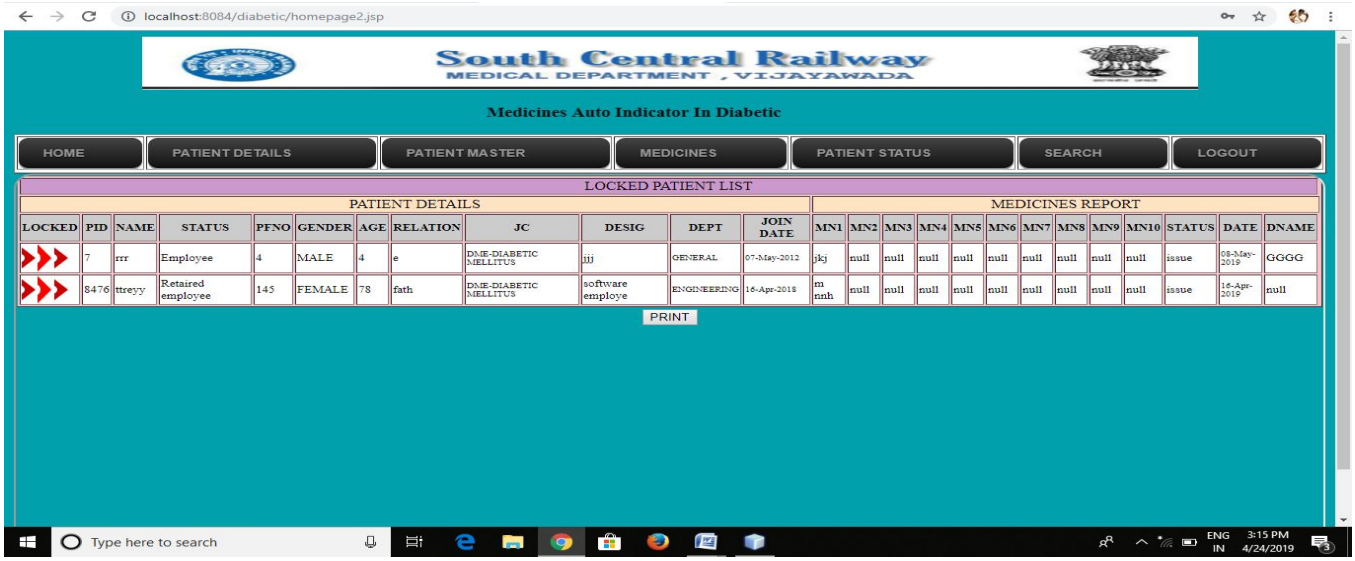


Fig: 4.2 Locked Patient List

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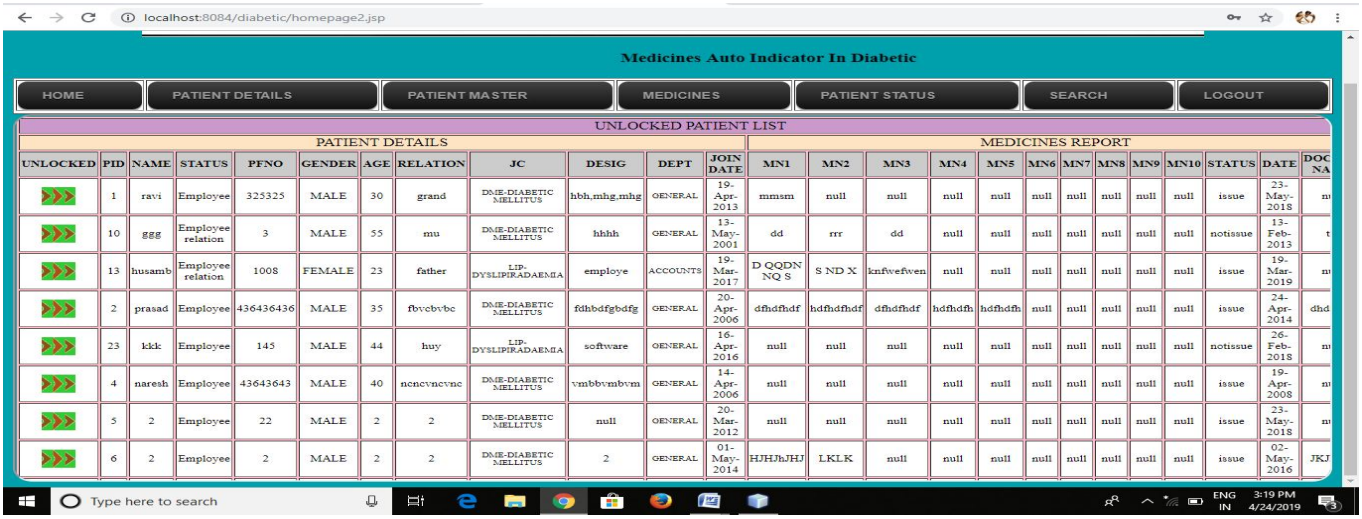

UNLOCKED	PID	NAME	STATUS	PFNO	GENDER	AGE	RELATION	JC	DESIG	DEPT	JOIN DATE	MN1	MN2	MN3	MN4	MN5	MN6	MN7	MN8	MN9	MN10	STATUS	DATE	DOC NA
>>>	1	ravi	Employee	325325	MALE	30	grand	DME-DIABETIC MELLITUS	hbh,mhg,mhg	GENERAL	19-Apr-2013	mmsm	null	null	null	null	null	null	null	null	null	issue	23-May-2018	m
>>>	10	ggg	Employee relation	3	MALE	55	mu	DME-DIABETIC MELLITUS	hhhh	GENERAL	13-May-2001	dd	rrr	dd	null	null	null	null	null	null	null	notissue	13-Feb-2013	t
>>>	13	husamb	Employee relation	1008	FEMALE	23	father	LIP-DYSLIPIRADAEMIA	employe	ACCOUNTS	19-Mar-2017	D QQDN NQ S	S ND X	knfwefwen	null	null	null	null	null	null	null	issue	19-Mar-2019	m
>>>	2	prasad	Employee	436436436	MALE	35	fbvcbvbc	DME-DIABETIC MELLITUS	fdhbdfgbdfg	GENERAL	20-Apr-2006	dfhdfhdf	hdfhdfhdf	dfhdfhdf	hdfhdfh	hdfhdfh	null	null	null	null	null	issue	24-Apr-2014	dhd
>>>	23	kkk	Employee	145	MALE	44	huy	LIP-DYSLIPIRADAEMIA	software	GENERAL	16-Apr-2016	null	null	null	null	null	null	null	null	null	null	notissue	26-Feb-2018	m
>>>	4	naresh	Employee	43643643	MALE	40	ncncvncvnc	DME-DIABETIC MELLITUS	vmbbvmbvm	GENERAL	14-Apr-2006	null	null	null	null	null	null	null	null	null	null	issue	19-Apr-2008	m
>>>	5	2	Employee	22	MALE	2	2	DME-DIABETIC MELLITUS	null	GENERAL	20-Mar-2012	null	null	null	null	null	null	null	null	null	null	issue	23-May-2018	m
>>>	6	2	Employee	2	MALE	2	2	DME-DIABETIC MELLITUS	2	GENERAL	01-May-2014	HJHJhJHJ	LKLK	null	null	null	null	null	null	null	null	issue	02-May-2016	JKJ

Fig: 4.3 Unlocked Patient List

VI. CONCLUSION AND FUTUREWORK

"INVESTIGATION IN DIABETIC AND AUTO LOCKING SYSTEM" has user to work on as it is developed for Personnel use of staff in Medical Department and also to improve the performance by reducing the manual work done at present in maintaining the record of Medical department. The enhancements in the application has been successfully done is Bound to satisfy all of the requirements of users in medical department. Pain taking efforts have been taken to make the application impeccable and up gradable. New set of features have been created and added in the application so that staff of medical department can easily access information. Query level enhancements are successfully done to make the reports more flexible and easy to use for analysis. Model level changes are successfully implemented to incorporate new fields in the existing reports to make the analysis of the medical information more detailed and effective. The enhancements in the application have been successfully deployed in the live environment and are being appreciated by the users in the medical department.

Some enhancements have to be implemented to make the system used in the organization full-pledged.

Some of the future enhancements are:

A. Time can be further reduced by doing the automation process.
B. Users are provided with the option to view all the records at a time.
C. Database will be enhanced to store more details of the user
D. More security has to provide for protection of the system.

The investigation in diabetic and auto locking system has the flexibility to extend many more features like, to place the project in the main server of the South Central Railway and can enhance these features to each and every department of the division. This investigation in diabetic and auto locking has also the scope to develop a mail application. This system is useful for the employees of Medical Department to know the details of particular patient his status, medication, complications and reports. Finally this application has maximum scope to emphasize their features in the future also and more over we can implement new technologies over it.

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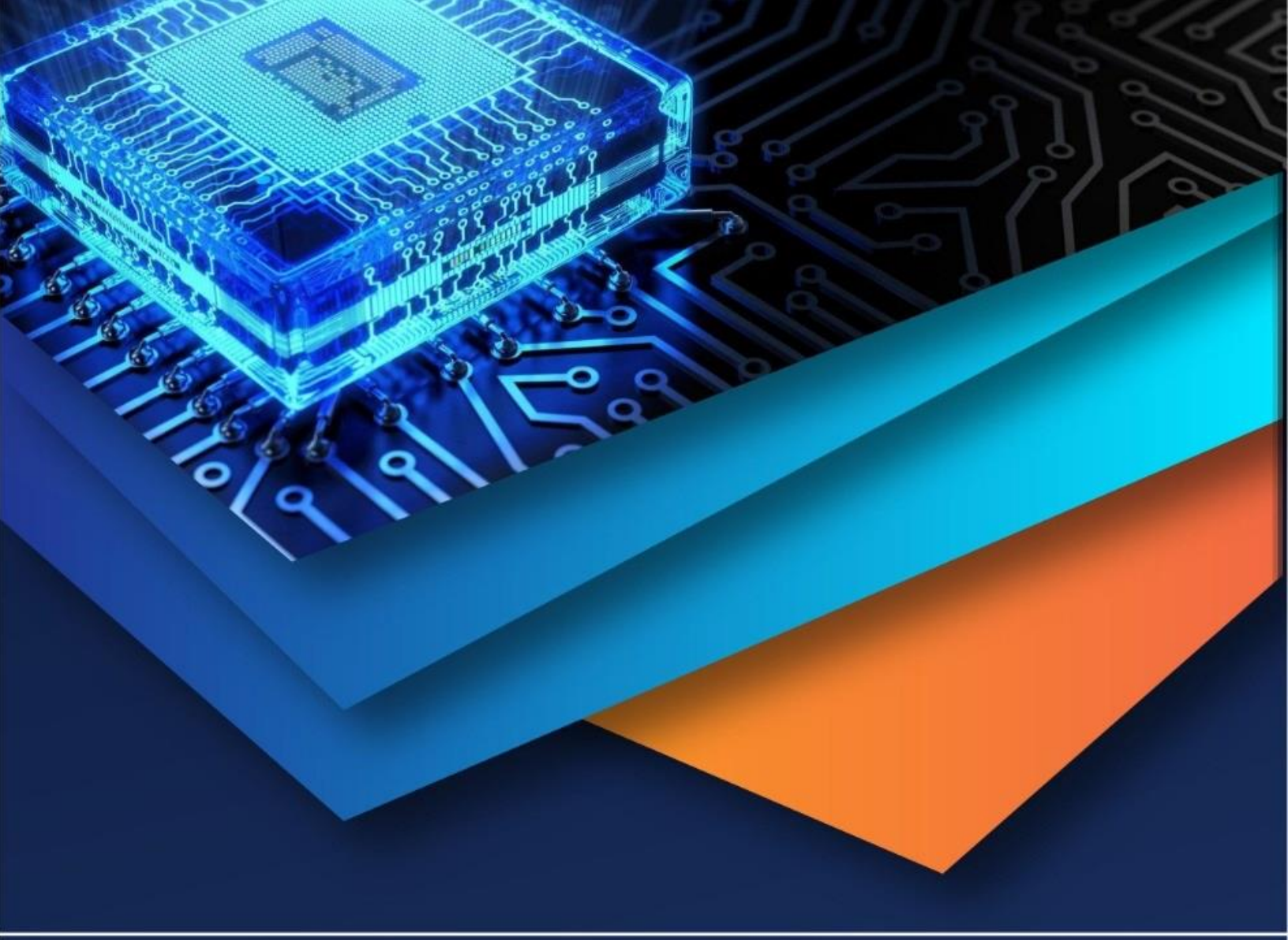

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