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Review Paper on Cloud-Based Emergency ResponseSystem

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Abstract: ***In our rapidly advancing technological landscape, the Cloud-Based Emergency Response System with QR Code Integration emerges as a groundbreaking initiative at the inter- section of technology and emergency management. This project addresses the critical need for swift and efficient access to vital individual information during emergencies, especially in the context of road incidents. Traditional emergency response systems often encounter challenges in the rapid retrieval and dissemination of essential data, prompting the need for a trans- formative solution. At its essence, the project aims to redefine the paradigm of information accessibility during emergencies, offering a comprehensive platform that leverages cloud comput- ing, secure authentication methods, and QR code technology. The primary goal is to enhance the efficiency of emergency response procedures by providing a seamless and secure mechanism for users to input and store their critical information. This, in turn, enables emergency responders and authorized individuals to access this information rapidly and effectively.***
Index Terms: Emergency response, Cloud computing, Secure authentication methods, QR code integration

I. INTRODUCTION

In today's fast-paced world, the safety and well-being of individuals during emergencies are of paramount importance. Accidents on the road, in particular, demand swift and efficientresponse mechanisms to mitigate potential harm and provide necessary assistance. The "Cloud-Based Emergency ResponseSystem with QR Code Integration" aims to address this criticalneed by leveraging modern technologies to streamline theretrieval of vital information in emergency situations. Theproposed system envisions a user-centric approach, allowing individuals to securely store their crucial medical, contact, andidentification information. To facilitate seamless access to thisinformation during emergencies, each user is provided with a unique Quick Response (QR) code. This QR code, securely encrypted with essential user data, is affixed to the user'svehicle. Key technologies employed in this system include serverless computing, serverless databases, QR encryption anddecryption, and Google OAuth for secure user authentication. These technologies synergistically facilitate a streamlined, secure, and efficient emergency response system, safeguarding lives and ensuring timely and appropriate aid during critical moments.

II. LITERATURE REVIEW

The development of cloud-based emergency response sys- tems and the integration of QR codes have garnered significantattention in recent years, aiming to enhance the efficiencyand effectiveness of emergency services. This literature reviewprovides an overview of relevant research and initiatives in thisdomain.

A. Emergency Information Access using QR Code Technologyin Medical Field [1]

This research paper addresses the pressing issue of road safety in India, where one death is reported every four minutesdue to accidents. With the country holding the highest global fatalities from road accidents, the research emphasizes thecritical need for quick access to medical information. Focused on developing an Android application, the project aims toallow individuals to input their medical details for swift retrieval in emergencies, streamlining the treatment process and potentially saving lives. The paper also contrasts the limitations of the existing hospital-centric system with the pro- posed user-centric approach, showcasing the potential impact of this innovative solution.

1) *Techniques Used:* The proposed system leverages mod- ern technologies to address the challenges outlined in the paper. The primary technological focus is on the development of an Android application, which serves as the user interface for the project. The application incorporates a secure login system to authenticate users into their personal accounts, where they can input and manage their medical information. This information is stored in a database, and a QR code is generated, encapsulating the user's essential details. In the event of emergencies, healthcare providers can scan this QR code to swiftly retrieve the stored information from the database. This approach not only streamlines the treatment initiation process but also ensures safe

and secure data storage and retrieval. The integration of Android technology and QR code functionality adds efficiency to the system, ultimately contributing to the project's overarching goal of improving emergency medical response and saving lives.

2) *Result and Discussion:* The implementation of the proposed Android application has shown positive results, sig- nificantly reducing the time to initiate medical treatments during emergencies. However, a notable drawback is the lack of robust security measures, making user data vulnerable to unauthorized access via the QR code. Future improvements should focus on enhancing data security through encryption and authentication measures to ensure the confidentiality of sensitive medical information.

B. Interaction with medical data using QR-codes [2]

This paper addresses the challenge of managing medical and laboratory results in traditional, paper-based systems, particularly when Electronic Health Records (EHRs) are not readily available. It explores the use of Personal Health Record (PHR) applications, citing examples like Google Health and Microsoft HealthVault. The paper focuses on the rising pop- ularity of smartphone applications for health data storage and management, emphasizing their integration with various medical functions. The proposed solution introduces a method of using QR codes for efficient interaction with laboratory results, enabling users to import data into a mobile application securely.

1) *Techniques Used:* The authors employed several techniques and tools in the development of the labSeq software. The entire software was constructed using the Java program- ming language, with applications for laboratory and doctors created in NetBeans and the mobile application programmed in Eclipse. The AES encryption, a crucial aspect of data security, was implemented using the javax.crypto package. QR code generation utilized the QRGen library, while the ZXing library was employed for QR code reading.

2) *Result and Discussion:* The study introduces QR codes for efficient medical test result exchange. The proposed QR code version, easily decoded by smartphones, accommodates over 1600 Bytes—sufficient for at least 15 labSeq-format results with AES encryption. labSeq supports PC applications for labs and doctors, along with a mobile EHR manager. It enhances patient-professional interaction, allowing export in standard formats. The study suggests extending functionality to electronic glasses but highlights the need for advancements in camera resolution and QR code decryption algorithms for optimal performance in dynamic environments. In conclusion, labSeq proves valuable for organized test result storage and hints at improved patient-professional collaboration with the potential integration of intelligent eyewear.

C. Serverless Architecture - A Revolution in Cloud Computing[3]

In this article, the author explores the significant shift brought about by cloud computing in the field of IT, with a particular focus on the rise of serverless computing. This innovative approach, adopted by major cloud service providers like AWS and Google Cloud, involves them handling the nitty- gritty of managing your server space dynamically. Unlike the traditional method of paying upfront for a set amount of server capacity, serverless computing lets you pay only for what you actually use. The author emphasizes how this not only saves costs but also simplifies the setup process and allows applications to smoothly expand in the cloud environment. Throughout the review, the author takes a closer look at the architecture of serverless computing, conducting experiments with a specific focus on the AWS Lambda system. The paper also identifies and discusses various research areas within the realm of serverless computing, shedding light on its implications for the broader landscape of cloud computing.

1) *Techniques Used:* In this article, the author uses de- scriptive techniques to explain serverless computing concepts and conducts hands-on experiments with AWS Lambda. A comparative analysis evaluates features of top providers, and real-world use cases are presented. The paper's structured organization enhances clarity, combining descriptive, exper- imental, and comparative techniques for a comprehensive exploration of serverless computing.

2) *Result and Discussion:* The article talks about something called serverless computing. Right now, it's a big idea that researchers are thinking about, and companies are trying out. They believe it could make managing computer stuff in the Cloud simpler and cheaper. But here's the thing: these ideas are based on trying it out in small situations, not big ones yet. The article also imagines a future where serverless computing becomes a big deal for all kinds of computer tasks. It even suggests it could be used outside the Cloud in something called 'deviceless edge computing,' which is a fancy way of saying new types of computing without specific devices. The article admits that there are still a lot of challenges to figure out, like making it work smoothly even if the internet isn't perfect and keeping everything secure. The article ends by saying there's a lot more to learn and explore in this area.

D. EMARS: Efficient Management and Allocation of Re- sources in Serverless [4]

This research introduces EMARS, an efficient resource management system for serverless cloud computing, focusing on memory allocation among containers. It builds on Open- Lambda, analyzing AWS Lambda's behavior to propose a pre- dictive model for memory allocation. The paper underscores the importance of efficient memory use in serverless environ- ments, aiming to enhance resource utilization and reduce costsfor users.

1) *Techniques Used:* The techniques employed in this re- search include real-time monitoring of application resource usage. EMARS adopts a pluggable architecture to capturememory needs per function and invocation frequency. It uti- lizes predictive models (workload-based and memory-based) for optimal memory allocation and a reactive approach to dynamically adjust resources based on system load and traffic conditions. The Config Generator thread processes data togenerate function-specific configuration files, guiding resourceallocation at runtime using c group memory parameters.
2) *Result and Discussion:* The study made a way to predict how much memory and work a computer needs in the future. Right now, the computer's memory limits are set by the study's code, but they want to connect it better with a system called OpenLambda. They also want to make the computer smarter in deciding how much memory to use based on what it learned. They're planning to do more tests with different kinds of work and improve how they check if their ideas really work. In the end, they found that choosing the right amount of memory is important for the computer's speed, and they want to explore this more in the future.

III. COMPARATIVE STUDY

Multiple databases and database ORMs have been tested and used for this project. Drizzle and PostgreSQL proved to be first-classmatch for improvement of the project while in comparison with the Prisma and MySQL, SQLite, MongoDB. Drizzle has proven to be 10 to 40 times faster than Prisma, on the other hand PostgreSQL is scalable as compared to other relational and non-relational databases like MySQL, SQLite and MongoDB.

IV. PROPOSED SYSTEM

We aim to create a web based application which can be accessible to everyone who uses the internet. The user will have to login using their google account in order to fill intheir medical information. The information will be securely stored in the database for easy access and a QR code will be generated for the user to download and stick to their vehicleso whenever a tragedy occurs, the victims medical information will be easily available via scanning the QR code. The user will also be able to edit/update their medical information. The medical information we'll be asking for users to enter will consist of their blood type, any allergies they've, if they are diabetic or not, any type of infection they've and other minor information like high blood pressure problems or any additional information users want to link with their QR code. We also respect the privacy of users as medical history is a very crucial information for anyone. When the QR is scanned by someone we'll ask them to login with google for being ableto access the medical information linked with the QR code. And once they login to access the information, we'll send an email to the information owner's email account. The mail willhave the person's name who accessed their QR information. This way the owner will be aware of the people who saw theirQR linked medical information.

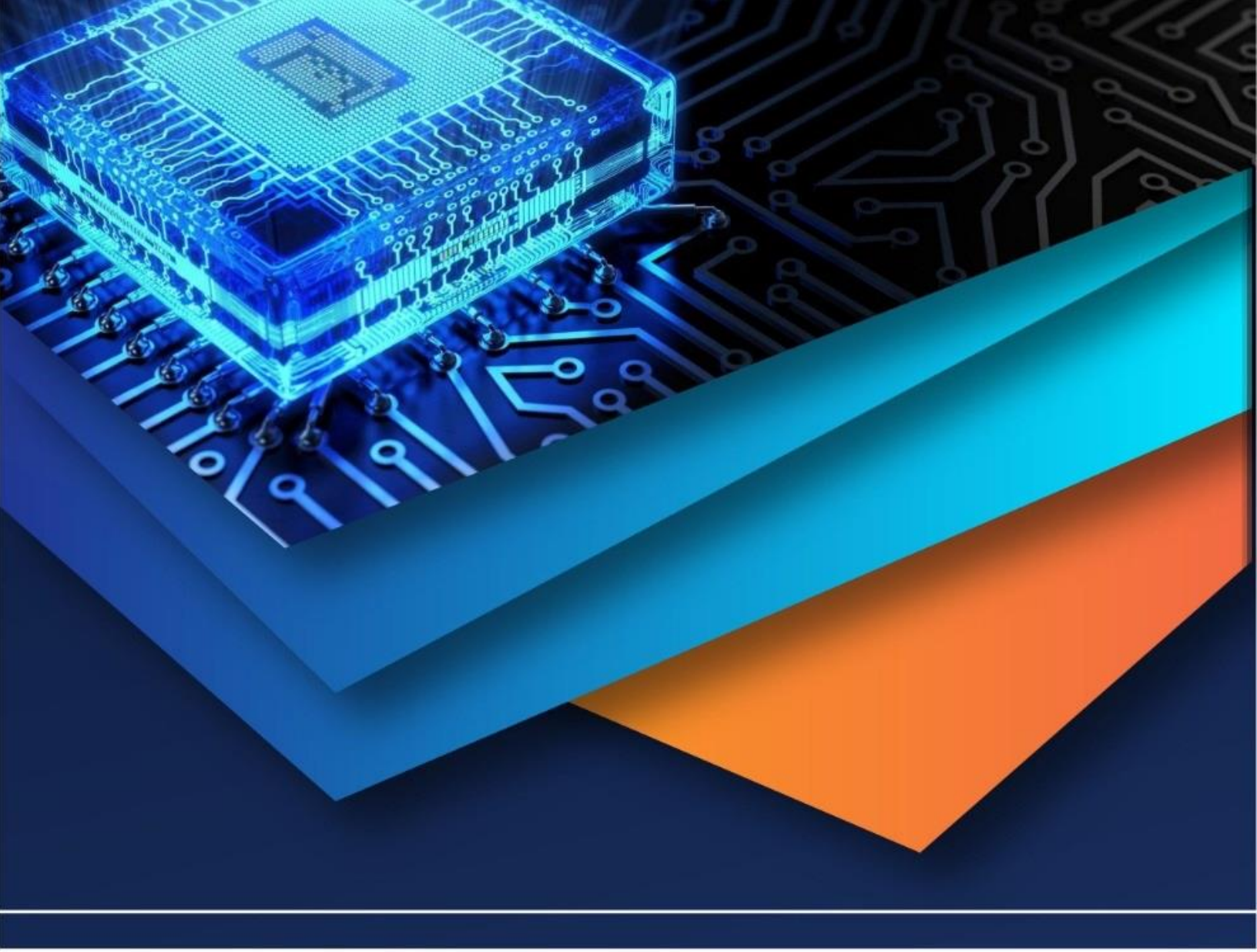
V. CONCLUSION

Cloud-Based Emergency Response System with QR Code Integration offers a user-centric solution for swift and secure access to vital medical information during emergencies. Users log in with their Google account to input and manage their data, generating a QR code for quick access. The system ensures privacy, employs advanced technologies, and notifies users via email when their QR code is scanned, enhancing accountability and overall emergency response effectiveness.

REFERENCES

[1] P. Deepika, Sushanth. B , Tarun Kumar. S. P, Vignesh. M, "Emergency Information Access using QR Code Technology in Medical Field", International Journal of Scientific Research in Computer Science, Engi- neering and Information Technology (IJSRCSEIT), ISSN : 2456-3307, Volume 1, Issue 1, pp.40-43, July-August-2016.
[2] K. Czuszynski and J. Ruminski, "Interaction with medical data using QR-codes," 2014 7th International Conference on Human System In- teractions (HSI), Costa da Caparica, Portugal, 2014, pp. 182-187, doi: 10.1109/HSI.2014.6860471..
[3] R. A. P. Rajan, "Serverless Architecture - A Revolution in Cloud Computing," 2018 Tenth International Conference on Ad- vanced Computing (ICoAC), Chennai, India, 2018, pp. 88-93, doi: 10.1109/ICoAC44903.2018.8939081.

[4] A. Saha and S. Jindal, "EMARS: Efficient Management and Allocation of Resources in Serverless," 2018 IEEE 11th International Conference on Cloud Computing (CLOUD), San Francisco, CA, USA, 2018, pp. 827-830, doi: 10.1109/CLOUD.2018.00113.
[5] "Web based emergency health card using Quick Response Code", International Journal of Emerging Technologies and Innovative Re-search (www.jetir.org — UGC and issn Approved), ISSN:2349- 5162, Vol.5, Issue 5, page no. pp413-415, May-2018, Available at : http://www.jetir.org/papers/JETIR1805262.pdf
[6] Divya Sharma, "A Review of QR code Structure for Encryption and Decryption Process", International Journal of Innovative Science and Research Technology, Volume 2, Issue 2,ISSN No: - 2456- 2165, , February – 2017.



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