A Project Report

on

KeyGuardian: A cybersecurity tool using C++ & Python

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CERTIFICATE

Certified that **Surya Pratap Singh Chauhan** has carried out the Project work presented in this project entitled **"KeyGuardian: A cybersecurity tool using C++ & Python"** for the award of **Bachelor of Technology** from Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow under my supervision. The Project embodies result of original work and studies carried out by Student himself and the contents of the Project do not form the basis for the award of any other degree to the candidate or to anybody else.

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ACKNOWLEDGEMENT

It gives us a great sense of pleasure to present the Report of the Project "KeyGuardian: A cybersecurity tool using C++ & Python" undertaken during B.Tech final Year. First and foremost, We wish to thank to our Project Guide **Mr. Mandeep Singh, Department of Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad,** for his kind blessings to us . He allowed us the freedom to explore, while at the same time provided us with invaluable sight without which this Project would not have been possible.

We also do not like to miss the opportunity to acknowledge the contribution of all faculty members of the Department for their kind assistance and cooperation during the development of our project.

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CERTIFICATE OF PROJECT REPORT SUBMISSION FOR EVALUATION

1. Project Title: KeyGuardian: A cybersecurity tool using C++ & Python

2. Project Preparation Guide was referred for preparing the Report ☐ YES ☐ NO

3. The contents of the Project Report have been organized based on the guidelines. ☐ YES ☐ NO

4. The Report has been prepared without resorting to plagiarism. ☐ YES ☐ NO

5. All sources used have been cited appropriately in Project Report ☐ YES ☐ NO

6. Submitted Two Hard bound copies along with one Pen drive. ☐ YES ☐ NO

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ABSTRACT

Data security has emerged as a pivotal domain in the sphere of digital protection, and the KeyGuardian project addresses this critical need with a state-of-the-art approach. This project signifies a significant venture into the dynamic field of cybersecurity, utilizing advanced techniques to fortify digital identities through robust data management. KeyGuardian employs a sophisticated architecture that ensures the confidentiality and integrity of user credentials.

The primary goal of KeyGuardian is to offer a secure and centralized platform for cybersecurity enthusiasts to encrypt, decrypt, identify, or attempt force-decryption using a wordlist, among other functionalities. The inspiration for this project came during a Capture the Flag Event organized by KPMG, where I had to navigate through multiple tools like "hashid" to identify the type of hash, then an online XORcipher crack tool, followed by "John", "hashcat", etc.

This experience led me to envision a project that could consolidate all these tools into a single platform. KeyGuardian is an innovative cybersecurity project aimed at enhancing digital security through a robust and dynamic data management solution. Developed with a focus on user-friendly accessibility, the project tackles the escalating challenges associated with data protection in an era of increasing cyber threats.

Key features of the project include a user-friendly interface, enabling individuals to store, generate, and retrieve complex passwords effortlessly. The system emphasizes the generation of strong and unique passwords for each account, minimizing the risk of unauthorized access. Through encryption protocols, KeyGuardian ensures that even in the event of a security breach, the compromised data remains indecipherable, safeguarding user privacy and security.

Furthermore, KeyGuardian introduces innovative features such as password strength analysis and expiration reminders. These functionalities empower users to proactively manage their

passwords, encouraging regular updates and adherence to best practices in password hygiene. The system's integration with multi-factor authentication adds an extra layer of security, fortifying the defense against unauthorized access.

The project's architecture is designed to be scalable and adaptable, catering to the evolving landscape of cybersecurity threats. KeyGuardian incorporates machine learning algorithms to detect patterns and anomalies in user behavior, enhancing its ability to identify potential security risks. The platform's compatibility with various devices and operating systems ensures a seamless user experience across different digital environments.

In summary, KeyGuardian stands as a comprehensive solution to the pressing challenges of password security. By combining encryption, password management, and proactive security features, the project provides users with a reliable tool to safeguard their digital identities. As cyber threats continue to evolve, KeyGuardian remains at the forefront of ensuring robust and user-centric protection in the realm of digital security.

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