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SMARTCYBER 2021: **[Proceedings of 2nd International Conference on Smart Computing and Cyber Security](#)** pp 194–206

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Two-Factor Authentication for Safe Deposit Box Based on Embedded System

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Conference paper | [First Online: 27 May 2022](#)

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Abstract

Security is one of the most significant needs for people everywhere. Likewise, people usually use a safe deposit box (SDB) to store valuables for the storage of goods. However, traditional SDB is very easy to open or steal from criminals. For this reason, an effective SDB system is needed to secure valuables. This study proposed a two-factor authentication for SDB based on fingerprint and PIN.

The proposed SDB system is secure and more efficient for storage system authentication in embedded system environments. To be able to use the system, the user must register. After being registered in the system, the registered user will perform authentication. The prototype of a safe authentication system provides a basic overview of integrating a fingerprint sensor, Arduino Mega 2560, keypad, and safe deposit box with a simple application. The prototype system that has been designed can be used to solve access control security problems in a safe system. Two alternatives of fingerprint or PIN authentication provide convenience and accuracy for safe authentication systems. It is hoped that this design is an alternative to a cheap SDB and secure to use.

Keywords

Security Safe deposit box Authentication

Embedded system Fingerprint

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References

1. Siswanto A, Katuk N, Ku-Mahamud KR (2016) Biometric fingerprint architecture for home security system

2. Jurcut AD, Ranaweera P, Xu L (2020) Introduction to IoT security. IoT security: advances in authentication, pp 27–64

3. Raj P, Raman AC (2017) The Internet of Things: enabling technologies, platforms, and use cases. CRC Press

4. Puspita H (2020) Detektor proximity sebagai alat pengaman brankas. Jurnal Industri Elektro dan Penerbangan 1(3)

5. Romadhoni MAW, Majdi N, Asri P (2021) Smart safe deposit box based on Internet of Things. Indones J Eng Res 2(1):18–22

6. Warohman SAS (2020) Designing and testing safe-deposit box safety system based on Android

7. Medlik S (2012) Dictionary of travel, tourism and hospitality. Routledge

8. Sajić M, Bundalo D, Bundalo Z, Stojanović R, Sajić L (eds) (2018) Design of digital modular bank safety deposit box using modern information and communication technologies. In: 2018 7th Mediterranean conference on embedded computing (MECO). IEEE

9. Kim H-C (2019) A study medium-based safe file management security system on the cloud environment. *J Converg Inf Technol* 9(1):142–150

10. Kwon D, Yi H, Cho Y, Paek Y (2019) Safe and efficient implementation of a security system on ARM using intra-level privilege separation. *ACM Trans Priv Secur (TOPS)* 22(2):1–30

11. Blessing LT, Chakrabarti A (2009) DRM, a design research methodology. Springer Science & Business Media

12. Tams S (2021) Good management and software design can help older workers thrive with IT-based tasks. LSE Bus Rev

13. Foster EC (2021) Software engineering: a methodical approach. Auerbach Publications

14. Budgen D (2003) Software design. Pearson Education

15. Aurum A, Wohlin C (2005) Requirements engineering: setting the context. In: Aurum A, Wohlin C (eds) Engineering and managing software requirements. Springer Berlin Heidelberg, Berlin, Heidelberg, pp 1–15

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Cite this paper

Siswanto, A., Efendi, A., Hasrin, Z., Arifin, B. (2022). Two-Factor Authentication for Safe Deposit Box Based on Embedded System. In: Pattnaik, P.K., Sain, M., Al-Absi, A.A. (eds) Proceedings of 2nd International Conference on Smart Computing and Cyber Security. SMARTCYBER 2021. Lecture

Notes in Networks and Systems, vol 395. Springer,
Singapore. https://doi.org/10.1007/978-981-16-9480-6_18

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DOI

https://doi.org/10.1007/978-981-16-9480-6_18

Published	Publisher Name	Print ISBN
27 May 2022	Springer, Singapore	978-981-16-9479- 0

Online ISBN	eBook Packages
978-981-16-9480- 6	Intelligent Technologies and Robotics Intelligent Technologies and Robotics (R0)

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