A Smartphone Application for Multiformat Data Security Using n-bit Reusable Block AES

Publisher: IEEE

Cite This PDF

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Abstract:
Data security has become increasingly crucial, especially for personal information on devices. Mobile passwords and face locks alone are insufficient, as they do not prevent unauthorized access to stored data. Encryption is vital in data security, with AES being particularly effective. We have adapted the AES algorithm to an n-bit format for application-level use, ensuring complete data recovery without filtering, compression, or enhancement. Our reusable block method uses image color-coding features for faster encryption and decryption. We developed an Android application using this method to encrypt text and image data, which is stored securely on the device. Access to this data requires the user-provided key, ensuring the modified data remains unusable to unauthorized users. We use a fixed key and a tagging methodology for improved performance to maintain data accuracy during decryption. This application can be utilized by individuals and institutions, such as medical centers and police stations, for secure storage. Additionally, encrypted data can be transferred and decrypted on other devices using the original key, making it a versatile security protocol.

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Published in: 2025 International Conference on Electrical, Computer and Communication Engineering (EC...

Date of Conference: 13-15 February 2025

DOI: 10.1109/ECCE64574.2025.11013389

Date Added to IEEE *Xplore*: 29 May 2025

Publisher: IEEE

ISBN Information:

Conference Location: Chittagong, Bangladesh

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