Enhancing Copyright Protection with AES Encryption and Steganography a Comprehensive Approach for E-Books

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Abstract: In the era of big data, our world has undergone a remarkable transformation into the digital epoch. Almost every facet of our daily existence, from photographs and texts to newspapers and books, has embraced the digital age. While these changes have brought convenience, they have also introduced significant security concerns and risks. E-books have risen in prominence due to their numerous benefits, including affordability, ease of replication, and portability. However, one major challenge associated with their widespread use is the protection of copyrights.

This approach presents the development of a web application security system designed specifically for safeguarding the copyrights of PDF e-books. Employing intelligent cryptographic algorithms and advanced AES encryption techniques, the integrity of copyright protection is fortified.The cornerstone of our approach is the AES algorihm. A cryptographic standard known for its strength and reliability. AES encryption transforms the form content into ciphertext, rendering it unreadable without the decryption key. This ensures that the sensitive intellectual property remains confidential, guarding against unauthorized access. Cryptography fortifies our solution by transforming content into a secure, unreadable format using AES.

Additionally, the implementation of steganography, specifically the Least Significant Bit (LSB) method, replacing the least significant bits of the color channels (RGB) with the corresponding bits from the encrypted data for further enhance security. This innovative approach allows for the verification of the original book purchaser, utilizing the possession of comprehensive form field data. Our methodology adopts a multi-faceted approach to safeguard intellectual property by harmonizing cryptography and steganography, we create a dynamic shield against copyright infringement. This synergy ensures both data confidentiality through encryption and covert communication via steganography.