A Study on Web Cryptography Increase the Security of Web Applications with the Expansion of Privacy Issues and Cyberthreats

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Abstract: *Cryptography is essential for safeguarding user identities, sensitive data, financial transactions, and web interactions in today's networked society. Cryptography is more important than ever in preserving security, privacy, and trust as the internet grows and more devices and users depend on it for essential services. Significant progress has been made in cryptography in recent years, particularly with the emergence of technologies like artificial intelligence (AI), post-quantum computing, and the Internet of Things (IoT). Attackers are increasingly encrypting user data and demanding cash to decode it. These threats are lessened by cryptography through: Encryption as defence, backup encryption. Sensitive information is protected with encryption, which makes it unusable without the right keys even if it ends up in the hands of an attacker. Web communications must be protected, and cryptography must be used to prevent unauthorized access to sensitive data. In this paper discussed on numerous online applications, tools and techniques for cryptography. In a time when worries about data privacy and monitoring are growing, this research paper emphasizes cryptography provides tools to protect user confidentiality and anonymity. When we use websites to log in, pay, or share personal information, we depend on the internet to protect that information from hackers and other bad actors. The protocols that make these transactions safe are based on cryptography. Passwords, credit card numbers, and other private information would be susceptible to theft and interception in the absence of cryptography. As privacy concerns and cyber risks increase, new developments in cryptography techniques continue to influence safe online interactions.*

Keywords: Cryptography, encryption, attacker, sensitive