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Web Based Application for Delivering a Secure Password Cracking and Strength Analysis Tool

A Graduate Project Submitted to the department of Information Security of the College of Information Technology, University of Babylon, in Partial Fulfillment of the Requirements for the Bachelor's degree in the Information Security of Information Technology.

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Abstract

In today's digital landscape, the proliferation of cyber threats poses significant challenges to individuals and organizations alike. Weak passwords remain one of the most common vulnerabilities, leading to a multitude of hacks and security breaches. To address this pressing issue, this research presents a web-based application aimed at evaluating password strength and offering secure password suggestions to users. The primary objective of this application is to empower users to protect their digital assets by assessing the strength of their passwords before use. By analyzing passwords entered by clients or users, the system utilizes a combination of Trigraph entropy, Shannon entropy, and password length to calculate the overall strength of the password. This comprehensive approach ensures that various aspects of password complexity, including the diversity of letters, symbols, and numbers, are taken into account. Furthermore, the application incorporates a curated list of common passwords to discourage their repeated use or the adoption of similar patterns, thereby enhancing password security across the board. Users are provided with real-time feedback on the strength of their passwords and are guided towards creating stronger and more resilient alternatives. By leveraging the capabilities of this web-based tool, individuals and organizations can proactively mitigate the risk of unauthorized access and potential security breaches. By adopting strong password practices, users can safeguard their important accounts and devices against malicious actors and cyber threats.