

Research on information security techniques in electronic voting applied to Ha Long High School for the Gifted

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Abstract: This study investigates information security techniques for electronic voting systems, with a specific application to the specialized high school, THPT Chuyên Hạ Long. As educational institutions increasingly adopt digital solutions for internal elections, ensuring the confidentiality, integrity, and authenticity of votes becomes paramount. The research analyzes potential security threats, including vote manipulation, identity spoofing, and data breaches, within the context of a school environment. It proposes a tailored security framework integrating cryptographic protocols, such as homomorphic encryption for vote secrecy and digital signatures for voter authentication, alongside secure access control mechanisms. The feasibility and effectiveness of the proposed techniques are evaluated through system design and simulation, considering the school's existing technological infrastructure. The findings demonstrate that a robust, multi-layered security architecture can effectively mitigate identified risks, providing a reliable foundation for electronic polling. This study contributes to the practical deployment of secure e-voting in educational settings, offering a replicable model for other institutions.

Keywords: Information security, electronic voting, security techniques, school applications