Understanding the Basics of Information Security: An Act of Defense

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Abstract : Information security is a broad concept that covers any issues and concerns about the proper access and use of information on the Internet, including measures and procedures to protect intellectual property and private data from illegal access and online theft; the act of hacking; and any defensive technologies that contest such cybercrimes. As more research and commercial activities are conducted online, cybercrimes have increased significantly, putting sensitive information at risk. Information security has become critically important for organizations and private citizens alike. Hackers scan for network vulnerabilities on the Internet and steal data whenever they can. Cybercrimes disrupt our daily life, cause financial losses, and instigate fear in the public. Since the start of the pandemic, most data related cybercrimes targets have been either financial or health information from companies and organizations. Libraries also should have a high interest in understanding and adopting information security methods to protect their patron data and copyrighted materials. But according to information security professionals, higher education and cultural organizations, including their libraries, are the least prepared entities for cyberattacks. One recent example is that of Steven's Institute of Technology in New Jersey in the US, which had its network hacked in 2020, with the hackers demanding a ransom. As a result, the network of the college was down for two months, causing serious financial loss. There are other cases where libraries, colleges, and universities have been targeted for data breaches. In order to build an effective defense, we need to understand the most common types of cybercrimes, including phishing, whaling, social engineering, distributed denial of service (DDoS) attacks, malware and ransomware, and hacker profiles. Our research will focus on each hacking technique and related defense measures; and the social background and reasons/purpose of hacker and hacking. Our research shows that hacking techniques will continue to evolve as new applications, housing information, and data on the Internet continue to be developed. Some cybercrimes can be stopped with effective measures, while others present challenges. It is vital that people understand what they face and the consequences when not prepared.

Keywords : cybercrimes, hacking technologies, higher education, information security, libraries
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