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CYBERSECURITY IN MODERN INFORMATION SYSTEMS

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Анотація

У публікації розглядається роль кібербезпеки у сучасних інформаційних системах. Проаналізовано основні загрози для програмного забезпечення та комп'ютерних мереж, а також сучасні методи захисту даних. Особливу увагу приділено використанню шифрування, багатофакторної автентифікації та систем виявлення атак для забезпечення безпеки інформації..

Ключові слова: кібербезпека, інформаційні системи, захист даних, шифрування, мережеві атаки.

Abstract

This paper examines the role of cybersecurity in modern information systems. The main threats to software and computer networks are analysed, as well as modern methods of data protection. Special attention is paid to the use of encryption, multi-factor authentication, and attack detection systems to ensure information security.

Key words: cybersecurity, information systems, data protection, encryption, network attacks.

Introduction

In the digital era, cybersecurity has become one of the most important aspects of information technology. Modern organizations store large amounts of sensitive information in digital form, which makes computer systems attractive targets for cybercriminals. As a result, the protection of data and information systems is essential for businesses, governments, and individuals.

Cyber threats continue to evolve rapidly. Hackers use malware, phishing attacks, ransomware, and network intrusions to steal information or damage systems. Therefore, modern software development and IT infrastructure require advanced security technologies and effective protection strategies.

Research results

One of the main methods of cybersecurity is data encryption. Encryption technologies protect sensitive information by converting it into unreadable code that can only be accessed with a special key. This method is widely used in online banking, cloud services, and communication systems. [1]

Another important aspect of cybersecurity is authentication. Multi-factor authentication (MFA) increases system security by requiring users to verify their identity through multiple methods, such as passwords, mobile codes, or biometric data. This significantly reduces the risk of unauthorized access. [2]

Modern cybersecurity systems also use artificial intelligence and machine learning to detect cyberattacks. Intelligent systems can analyze network activity, identify suspicious behavior, and respond to threats in real time. This improves the speed and accuracy of threat detection. [3]

In addition, cybersecurity awareness among users plays an important role in protecting information systems. Many cyberattacks are successful because users do not recognize phishing emails or weak passwords. Therefore, cybersecurity education and training are necessary components of modern IT security strategies. [4]

Conclusion

Cybersecurity is a critical element of modern information systems. Advanced security technologies [5-11] help protect data, prevent cyberattacks, and improve the reliability of software and networks. Encryption, multi-factor authentication, and AI-based security systems are widely used to ensure information safety.

As cyber threats continue to develop, the importance of cybersecurity in software engineering and information technology will continue [12-15] to grow in the future.

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