A Systematic Literature Review on Security and Privacy Design Patterns

Authors : Ebtehal Aljedaani, Maha Aljohani

Abstract : Privacy and security patterns are both important for developing software that protects users' data and privacy. Privacy patterns are designed to address common privacy problems, such as unauthorized data collection and disclosure. Security patterns are designed to protect software from attack and ensure reliability and trustworthiness. Using privacy and security patterns, software engineers can implement security and privacy by design principles, which means that security and privacy are considered throughout the software development process. These patterns are available to translate "security & privacy-by-design" into practical advice for software engineering. Previous research on privacy and security patterns has typically focused on one category of patterns at a time. This paper aims to bridge this gap by merging the two categories and identifying their similarities and differences. To do this, the authors conducted a systematic literature review of 25 research papers on privacy and security patterns. The papers were analysed based on the category of the pattern, the classification of the pattern, and the security requirements that the pattern addresses. This paper presents the results of a comprehensive review of privacy and security design patterns. The review is intended to help future IT designers understand the relationship between the two types of patterns and how to use them to design secure and privacy-preserving software. The paper provides a clear classification of privacy and security design patterns, along with examples of each type. The authors found that there is only one widely accepted classification of privacy design patterns, while there are several competing classifications of security design patterns. Three types of security design patterns were found to be the most commonly used.

Keywords : design patterns, security, privacy, classification of patterns, security patterns, privacy patterns

Conference Title : ICCSIS 2023 : International Conference on Cybersecurity and Secure Information Systems

Conference Location : Jeddah, Saudi Arabia

Conference Dates : November 20-21, 2023