

ABSTRACT

Explanatory note size – 121 pages, contains 6 illustrations, 26 tables, 12 links and 4 applications.

Topicality. The paper considers the problem of multitenant systems, shows the main features of different types of such systems, their advantages and disadvantages. The need to develop a universal architectural solution for building hybrid multitenant architectures is identified.

The aim of the study is to improve the means and tools for building multitenant architectures, which will allow to achieve high flexibility, scalability and accelerate the development of hybrid systems.

The main task of this work is to create a universal architectural solution for building hybrid multitenant architectures.

The object of research is the processes of developing and implementing architectural solutions that support multitenancy and adapt to the requirements and needs of different users.

The subject of the study is the methods, tools, and instruments for creating and maintaining components of multitenant computing systems that allow different users (tenants) to effectively share common resources while ensuring the flexibility and data isolation of each of them.

To achieve this goal, the **following tasks** were formulated:

- identify the main approaches and technologies for building multi-tenant architectures;
- analyze the existing options for implementing multitenant applications in general;
- analyze modern implementations of hybrid multitenant architecture;
- design an architectural solution for implementations of hybrid multitenant architecture;

- implementing a library that will implement all the necessary tools on the basis of which a full-fledged multitenant architecture will be built;
- evaluating the effectiveness of the developed solution.

The scientific novelty lies in the fact that the approach to building hybrid multitenant architectures has been further developed, which allows to dynamically manage and effectively combine work with a single and isolated databases. The development of a hybrid model that effectively uses both the architecture of shared databases and separate ones for each tenant will play a key role in meeting the needs of business and end users. The use of an architectural solution will allow to effectively manage user identification and restrict access to data of other tenants, thus ensuring a high level of system security.

The practical value is that the result of the work is the implementation of a library that implements the proposed approaches. The developed solution can serve as a basis for creating large-scale web applications or other systems that require flexibility in database management in accordance with customer needs. The approaches put forward in this paper will help other developers avoid common mistakes when creating similar systems and improve the quality of their products.

Relationship with working with scientific programs, plans, topics. The work was carried out at the Department of Computer Science and Software Engineering of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" within the theme "Methods and technologies of high-performance computing and processing of ultra-large data sets". State registration number 0117U000924.

Approbation. The scientific provisions of the dissertation were tested at the V International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies" (SoftTech-2023), December 19-21, 2023 - Kyiv. Kyiv.

KEYWORDS: MULTI-TENANT ARCHITECTURE, SAAS APPLICATIONS,
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