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BUILDING SCALABLE E-COMMERCE PLATFORMS: INTEGRATING PAYMENT GATEWAYS AND USER AUTHENTICATION

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ABSTRACT

The rapid growth of e-commerce has necessitated the development of scalable platforms that can efficiently handle increasing traffic, ensure seamless payment processing, and provide robust user authentication. This study explores the integration of payment gateways and authentication systems to enhance the functionality and security of e-commerce platforms. Scalability is addressed through modular architectures and cloud solutions that enable platforms to manage fluctuating demand and expanding user bases. Payment gateway integration ensures a smooth checkout experience with support for multiple payment methods, while user authentication mechanisms like multi-factor authentication (MFA) and OAuth enhance security without compromising usability. The research also examines the challenges of balancing security, performance, and scalability, and proposes best practices for optimizing the integration of these critical components. With the shift toward microservices and cloud-native architectures, the paper emphasizes the importance of adopting flexible, future-proof solutions that can adapt to technological changes and consumer expectations.

KEYWORDS: *Scalable E-Commerce Platforms, Payment Gateway Integration, User Authentication, Multi-Factor Authentication (MFA), OAuth, Microservices Architecture, Cloud-Native Solutions, Secure Transactions, Performance Optimization, Modular Design*

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