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LEVERAGING REDIS CACHING AND OPTIMISTIC UPDATES FOR FASTER WEB APPLICATION PERFORMANCE

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ABSTRACT

The demand for high-performance web applications has grown significantly as users expect seamless, real-time interactions. This paper explores the integration of Redis caching with optimistic update strategies to enhance web application performance. Redis, an in-memory data structure store, provides low-latency data access, making it a popular choice for caching frequently accessed information. Optimistic updates, a concurrency control mechanism, minimize the impact of conflicts by allowing multiple operations to execute without locking, only verifying changes at the end. Combining Redis caching with optimistic updates reduces server load, accelerates data retrieval, and ensures data consistency with minimal delay. This study outlines the architecture, benefits, and challenges of implementing Redis caching with optimistic updates, showcasing its potential to enhance response times, handle high traffic loads, and improve overall user experience. Additionally, real-world case studies and performance benchmarks highlight how this approach helps modern web applications scale efficiently while ensuring data integrity.

KEYWORDS: *Redis Caching, Optimistic Updates, Web Application Performance, In-Memory Data Store, Low-Latency Access, Concurrency Control, Data Consistency, Real-Time Interactions, Scalability, User Experience.*

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