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Elevating Database Performance: Current Caching and Prefetching Strategies for Online Databases in Nigeria (2024) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 14322 LNCS, pp. 314-327.

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Abstract

This study investigated caching and prefetching techniques to improve data access performance in online databases, considering factors like data popularity, access patterns, and cache coherence. The research design adopted for this study was the descriptive survey. The population comprised of 1387 undergraduates computer science students in public tertiary institutions in Ekiti State. Simple random sampling technique was adopted to select 150 computer science students from three public tertiary institutions in the study area. The instrument used for data collection was a structured 4 Likert type questionnaire. The questionnaire was distributed to the respondents to find out the effectiveness of caching and prefetching techniques on online database. The instrument was both face and content validated by two experts from department of computer science in Bamidele Olumilua University of Education Science and Technology, Ikere-Ekiti, Ekiti State. The reliability of the instrument was ensured using Pearson Product Moment Correlation formula which yielded a coefficient of 0.97. The data collected were analyzed using descriptive statistics such as mean and standard deviation. The result showed that the current caching and prefetching techniques employed in online databases are highly effective; the different access patterns have effect on the effectiveness of caching and prefetching techniques in online databases and there are impacts of cache coherence mechanisms on the efficiency of caching and prefetching techniques in online databases. It was therefore recommended that the inclusion of caching and prefetching in curriculum is important across all educational level in Nigeria. In addition, caching and prefetching has come under fire for focusing mostly on computer science. © The Author(s), under exclusive license to Springer Nature Singapore Pte Ltd. 2024.

Author Keywords

Caching; Online Database; Online Database Performance; Prefetching

Index Keywords

Cache memory, Database systems, Education computing, Students; 'current, Caching, Caching and prefetching, Caching technique, Database performance, Online database, Online database performance, Prefetching, Prefetching techniques; Engineering education

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