



## **An Enhanced Bw-Tree Algorithm for Classifying Data in Main Memory**

خوارزمية بي دبليو الشجرية المحسنة لتصنيف البيانات في الذاكرة الرئيسية

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# Abstract

As an improvement to the Bw-Tree algorithm, an enhanced Bw-Tree algorithm has been presented in this study to improve execution time performance, by classifying the records into hot and cold records. The enhanced Bw-tree algorithm identifies the hot records and place them in main memory which decreases the execution time of the system. The classification is based on Bw-tree log file, which contains the record frequency and the time slice. This data is inserted to an exponential smoothing algorithm that will estimate the record access for the next time slice. A threshold for the BW-Tree algorithm will determine which records will be treated as cold and which ones will be treated as hot. The implementation of the enhanced BW-Tree showed high reliability and execution time performance of the system output. The results of the study have shown the following : reading one million hot keys' data was 16.5 times faster than the original algorithm; random data reading was as an average 2 time faster than the original algorithm, on 50 Byte file size, the enhanced algorithm shows much efficiency with larger data file size , this means the bigger the file size is , the faster the algorithm is . Accessing million hot records' key's data with 50 Bytes file size takes 0.2 second while accessing million cold records' key's data takes 3.2 second whereas accessing million hot records' key's data with 7800 Bytes file size takes 0.33 second while accessing million cold records' key's data takes 53.6 seconds which become too much execution time.