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An efficient compression technique using Lempel-Ziv algorithm based on dynamic source encoding scheme

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Abstract: This paper proposes an efficient text compression technique based on dynamic source encoding scheme using Lempel-Ziv algorithms. A statistical analysis is performed to count the occurrence of each character in the original source. Accordingly, each character is replaced by a weighted fixed-length code in lieu of arbitrary codes such as ASCII. This replacement generates an equivalent binary source with two symbols zero and one. Thereafter, the bitwise Lempel-Ziv algorithms can be applied to the n th-order extension binary source that contains $2n$ symbols. As a result, the proposed technique achieves a high compression ratio in comparison with those techniques that use static and arbitrary source encoding schemes. In the decompression process, a header file includes all characters sorted in descending order based on their frequency of occurrences along with the extension order (n) is received. Thus, each character can be restored back based on the code shared between the compression and decompression processes.