

Title: iReport: Title: Pre-Transmission Data Compression on Web API for Faster Data Transfer Using LZ4 Algorithm as Applied on University of Mindanao Broadcasting Network Application

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ABSTRACT

Modern applications widely utilize Application Programming Interface (API) to centralize data and ease maintenance. APIs are commonly used in applications which involves cloud computing or online processes. As the concept of data sharing is progressing, downloading and uploading files through the internet are facing issues in data security and file size. File size plays a vital role in the speed of data transfer. Therefore, the idea of being able to compress data before the process in the API can significantly improve the data's transfer time. However, the challenge is in choosing the algorithm that can encode the data with extreme speed and reasonable compression ratio.

LZ4 is a fast compression algorithm which is under the LZ77 family which exhibits a byte-oriented compression scheme. It performs a reasonable compression ratio with extreme speed of up to 500mb/s per core. This algorithm can be able to compress an API data without significantly adding up to the transfer time. Implementation of the LZ4 compression can also be executed in any programming language.

The University of Mindanao Broadcasting Network would like to enter the mobile market by creating mobile applications for the news (Mindanao Times) and radio streaming (UMBN Radio Stations). These types of mobile applications utilized an API to centralize data for current and future changes in any platforms. Data size can be huge especially on the news application considering the contents of the articles that will be displayed. The LZ4 compression algorithm is implemented using PHP and Python on the server. The decompression process, on the other hand, is using JavaScript (nodeJS) to decode the data from the server. The decompression process will occur on the user's mobile device.

Google Chrome's Developer Tools was used to test the data transfer time. The results show a significant improvement in the transfer time of the data from the UMBN API. Out of all the tests conducted, LZ4 compression is the fastest in most of the test cases used concerning transfer time and download.

With the results, data compression applied on API shows a promising potential because data sizes in the modern era have been continuously expanding.

Keywords: Algorithm, Compression, Web, API, Transmission, LZ4