Extended LZCode Algorithm for the fast Binary Code Decompression in Mobile Devices

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Abstract

Embedded devices such as mobile phones use NAND Flash Memory for cost reduction. Space saving and booting time reduction can also be expected by compressing program code and storing it in NAND Flash Memory. Before Program codes are executed essentially it is loaded on main memory. At that point, loading time is to be sum of time about compression and decompression data read from NAND Flash Memory.

Binary Code means general system data and such Binary Code is sometimes loaded on main memory and executed or utilized as important data.

When an embedded device that uses compression algorithm reads data from NAND Flash Memory into main memory, a compressor is triggered to compress or decompress data in reading or writing from or onto NAND Flash Memory.

Using a compressor allows more efficient utilization of NAND Flash Memory space, and the booting time will be the sum of the time to read in compressed data from NAND Flash Memory and the time to decompress those data. In conclusion, a more efficient algorithm can be used by comparing the time to read original data as it is and the sum of time to read in compressed data and decompress it. This will allow selecting and using an optimized compression algorithm for fast booting speed and efficient memory space saving as well.

Therefore faster compression and decompression speed is to be important factor on the embedded device. Generally, in case of mobile device, in contrast with desk top because of fewer battery capacity, limited processor and NAND Flash Memory size saving program, it didn't show optimized performance.

In this paper, we progress our research about lossless compression algorithm and present one half improved algorithm for decompression speed comparing with LZCode suitable for mobile system. We increased compression speed by eliminating the table and relational operators utilized by LZCode and replacing with an algorithm corresponding to such eliminated data.

Key Words: NAND Flash Memory, Compression, Decompression, Compressor, Embedded devices, Mobile devices

References


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