Abstract

This paper seeks to improve the performance of the New Chinese Remainder Theorem (CRT) using the new moduli set \(\{2^{(2n+2)}+3, 2^{(2n+1)}+1, 2^n+1, 2\}\). This optimization is very important in order to minimize the cost of hardware implementation and to improve the reverse conversion speed. The major factor responsible for this high hardware cost and high reverse conversion time is the presence of multipliers in the hardware implementation of the reverse converters. This paper proposes the moduli set \(\{2^{(2n+2)}+3, 2^{(2n+1)}+1, 2^n+1, 2\}\), which is applicable for applications requiring larger dynamic range. The moduli set must be relatively prime integers. The computation of multiplicative inverses can be eliminated. We employ the proposed moduli set to optimize the New CRT-I. This scheme can result in less memory and adder based reverse converters, which is shown to be better than known existing similar state of the art scheme.

References


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**Index Terms**

Computer Science  Information Sciences

**Keywords**

Reverse Conversion, Optimization, Algorithm, Co-prime.