Abstract

In this paper, a novel scheme for detecting overflow in Residue Number System (RNS) is presented. A generalized scheme for RNS overflow detection is introduced, followed by a simplified Operands Examination Method for overflow detection for the moduli set \(\{2^n-1,2^n,2^n+1\}\). The proposed method detects overflow in RNS addition of two numbers without pre-computing their sum. Moreover, when compared with the best known similar state of the art designs, the proposed scheme requires lesser hardware, reduces the operation size and is faster.

References

- K. A. Gbolagade and S. D. Cotofana, "Generalized matrix method for efficient residue to decimal conversion," in Proceeding of the 10th IEEE Asia-Pacific Conference...


Index Terms

Computer Science

Applied Sciences

Keywords

Residue Number System Overflow Detection Reverse Converter Chinese Remainder Theorem

Mixed Radix Conversion