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

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**Index Terms**

Computer Science

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**Keywords**

Residue Number System  Overflow Detection  Reverse Converter  Chinese Remainder Theorem

Mixed Radix Conversion