Comments on "Decomposition Method of Determining Maximum Compatibles"

SURESHCHANDER

Abstract—Some comments are made on the above note,[1] to indicate that the decomposition relations used in this technique can be obtained in a much simpler way and to point out that the technique has been mentioned earlier in the literature.

Index Terms—Decomposition relations, distribution table, maximum compatibles, pair chart.

In the above short note,[1] a method has been presented for finding maximum compatibles. The author wishes to make the following points about this technique.

Point 1: The distribution table for determining the decomposition relations is unnecessary. The decomposition relations can be determined straightaway from the "pair chart" Table I. The pair chart is necessary for Step 1 of the above method to determine all the pairwise incompatibles.

Point 2: This decomposition technique has been mentioned earlier by Unger [1, p. 37].

Point 3: This method is essentially similar to the generation of prime implicants using semantic trees [2].

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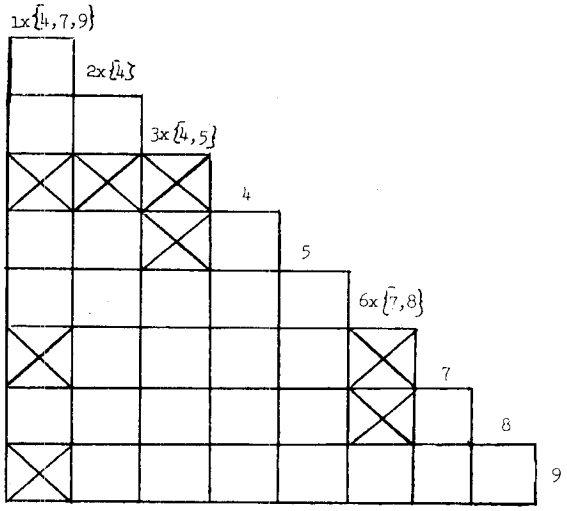
The author is with the Computer Centre, Indian Institute of Technology, New Delhi, India, on leave of absence from G. B. Pant University of Agriculture and Technology, Pantnagar, India.

[1] P. K. Sinha Roy and C. L. Sheng, *IEEE Trans. Comput.* (Short Notes), vol. C-21, pp. 309-312, Mar. 1972.

TABLE I

PAIR CHART FOR THE EXAMPLE[1] (FROM UNGER [1, p. 41])



Note: Decomposition relations are shown for each column.

Authors' Reply[2]

P. K. SINHA ROY AND C. L. SHENG

Prof. Sureshchander's comments do not have much substance. The three points raised by him are answered in the same way as they appear in his comments.

Point 1: Replacing the distribution table (Table II[1]) by the pair chart or compatibility chart does not increase simplicity, for the later process involves some graphical construction. At best they can be called equally simple or complex.

Point 2: The distinction between Unger's [1], [3] method and our method has been clearly mentioned in the Introduction[1] and Prof. Sureshchander has no justification in commenting that "*this* decomposition technique has been mentioned earlier."

Point 3: The "semantic tree" of Slagle *et al.* [2] and our decomposition technique have similarities in so far as both are branching algorithms. But, they are not "essentially similar" as claimed by Prof. Sureshchander for the dissimilarities are too obvious to any careful reader and need not be detailed here. Also, our technique has been developed independently.

Speaking about similarities and the paper by Slagle *et al.* [2], attention is drawn to the correspondence by S. R. Das [4].

[2] Manuscript received October 13, 1972.
The authors are with the Department of Electrical Engineering, University of Ottawa, Ottawa, Ont., Canada.

REFERENCES

[1] S. H. Unger, *Asynchronous Sequential Switching Circuits.* New York: Wiley-Interscience, 1969.
[2] J. R. Slagle, C. L. Chang, and R. C. T. Lee, "A new algorithm for generating prime implicants," *IEEE Trans. Comput.*, vol. C-19, pp. 304-310, Apr. 1970.
[3] M. C. Paull and S. H. Unger, "Minimizing the number of states in incompletely specified sequential switching functions." *IRE Trans. Electron. Comput.*, vol. EC-8, pp. 356-367, Sept. 1959.
[4] S. R. Das, "Comments on 'A new algorithm for generating prime implicant's,'" *IEEE Trans. Comput.* (Corresp.), vol. C-20, pp. 1614-1615, Dec. 1971.