**Batch: B-1 Roll No.: 16010122104**

**Experiment / assignment / tutorial No. 3**

TITLE : To study and implement Restoring method of division

AIM : The basis of algorithm is based on paper and pencil approach and the operation involves repetitive shifting with addition and subtraction. So the main aim is to depict the usual process in the form of an algorithm.

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Expected OUTCOME of Experiment: (Mention CO /CO’s attained here)

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1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, TataMcGraw-Hill.
2. William Stallings, “Computer Organization and Architecture: Designing for Performance”, Eighth Edition, Pearson.
3. Dr. M. Usha, T. S. Srikanth, “Computer System Architecture and Organization”, First Edition, Wiley-India.

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The Restoring algorithm works with any combination of positive and negative numbers

Flowchart for Restoring of Division:

A diagram of a flowchart

Description automatically generated

Design Steps:

1. Start
2. Initialize A=0, M=Divisor, Q=Dividend and count=n (no of bits)
3. Left shift A, Q
4. If MSB of A and M are same
5. Then A=A-M
6. Else A=A+M
7. If MSB of previous A and present A are same
8. Q0=0 & store present A 9. Else Q0=0 & restore previous A
9. Decrement count.
10. If count=0 go to 11
11. Else go to 3
12. STOP

Example:- (Handwritten solved problems needs to be uploaded)

A paper with writing on it

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Conclusion

We learned division through restoring algorithm.

Post Lab Descriptive Questions

1. What are the advantages of restoring division over non restoring division?

**Ans:**

Restoring division has advantages in terms of simplicity for negative dividends, reduced hardware complexity, and potentially slightly faster operations for positive dividends. However, the choice between restoring and non-restoring division also depends on other factors such as hardware constraints, specific application requirements, and trade-offs between different aspects of the algorithm.

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**Date: 16/08/2023**