https://www.chegg.com/homework-help/questions-and-answers/question-based-strassen-s-matrix-multplication-algorithm-got-answer-wrong-answer-apparentl-q27035906

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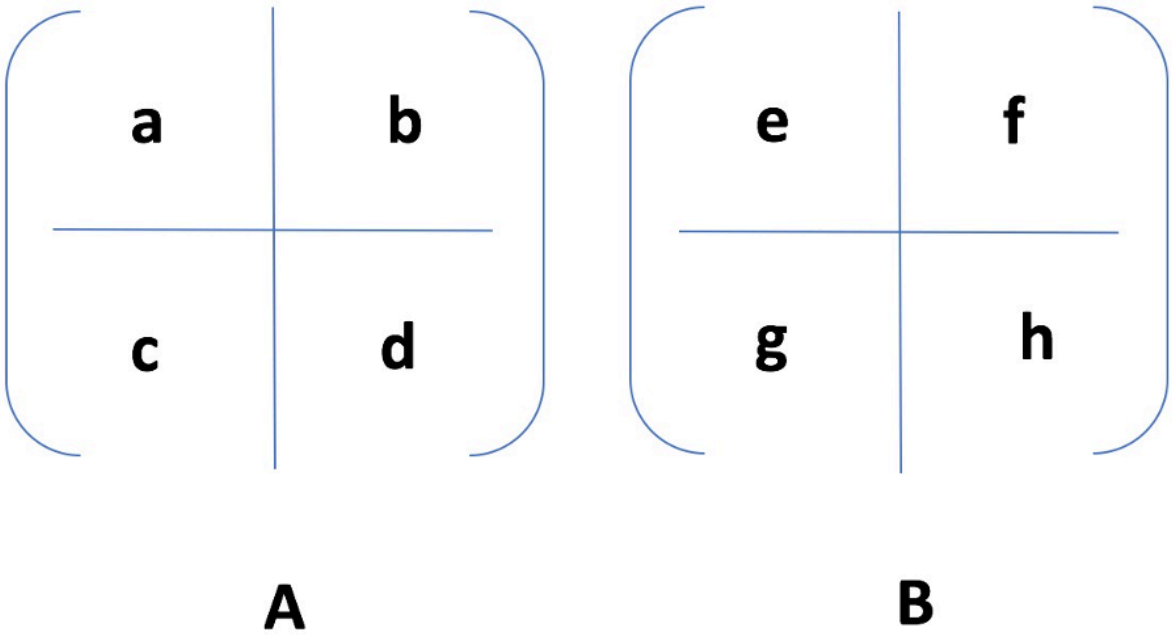
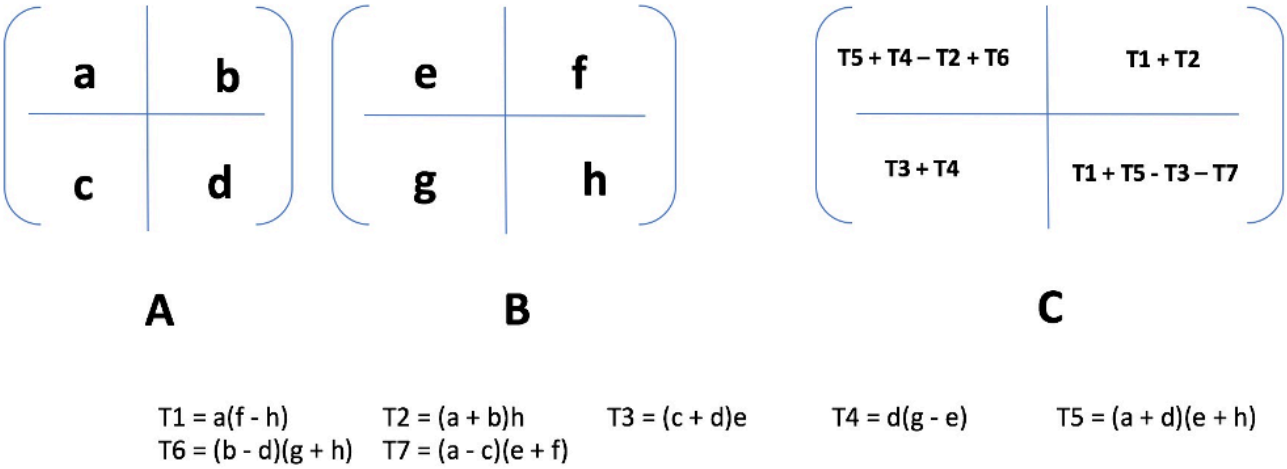
Divide and Conquer technique is used in Strassen Matrix multiplication. In which, the matrices (N x N) is divided into 4 submatrices of size (N/2 x N/2).
Suppose we have 2 matrix of size (N x N) as A and B. Divide both of them into sub matrices as A(a,b,c,d) and B(e,f,g,h)
like this



In traditional divide and conquer method, at every recursive call there are 8 multliplications and 4 additions, but in Strassen it is reduced to 7 multipication at every step.



So as you can see from above diagram, we can see the recursive call equation is: **$P(N) = 7P(N/2) + O(N^2)$**

So at every recursive we are mutliplying matrices 7 times instead of 8 times.

When N=2, there will be 7 mulitplications of (1 x 1) matrices and every (1 x 1) matrix takes only one operations. = 7 multiplications

when N=4, there will be 7 multiplications of (2 x 2) matrices and every (2 x 2) matrix takes 7 multiplications so total number of multliplications = 49.

when N=8, there will be 7 multiplications of (4 x 4) matrices and every (4 x 4) matrix takes 49 multiplications so total number of multliplications = 7 * 49 = 343.

when N=16, there will be 7 multiplications of (8 x 8) matrices and every (8 x 8) matrix takes 343 multiplications so total number of multliplications = 7 * 343 = 2401

Hence the total number of multiplications are 2401 for 16 x 16 matrix.