Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{C = \widehat{C}\}$
4	$A \rightarrow \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \rightarrow \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \rightarrow \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ & \widehat{C}_B \end{pmatrix} \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
5a	Determine block size b $ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ B_1 \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$ \left\{ \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + & \widehat{C}_0 \\ \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^T B_1 + C_1$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + & \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + & \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
5b	$ \left(\begin{array}{c c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ \hline A_{20} & A_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ B_1 \\ \hline B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ C_1 \\ \hline C_2 \end{array}\right) $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	{
4	where
2	
3	while do
2,3	
5a	Determine block size b where
6	
8	$A_{00}B_0 + A_{20}^T B_2 + A_{21}^T B_1 + C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
5b	
2	
	endwhile
2,3	$\left\{ \begin{array}{c} \\ \\ \end{array} \right. $
1b	{

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part	
1a	$\{C = \widehat{C}\}$	
4	where	
2		
3	while do	
2,3		
	Determine block size b	
5a		
	where	
6		
8	$A_{00}B_0 + A_{20}^T B_2 + A_{21}^T B_1 + C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	
7		
5b		
2		
	endwhile	
2,3		
1b	$\{C = AB + \widehat{C}\}$	

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part	
1a	${C = \widehat{C}}$	
4	where	
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \right\}$	
3	while do	
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge \end{array} \right.$	
	Determine block size b	
5a		
	where	
C		
6		
	$A_{00}B_0 + A_{20}^T B_2 +$	
8		
	$C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	
7		}
5b		
30		
	$\int C_T A_{TL}B_T + \widehat{C}_T$	
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right.$	}
	endwhile	
2,3	$\left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land \neg () \right\}$	}
1b	$\{C = AB + \widehat{C} $!
		1

1a $\{C = \widehat{C}$ 4 where 2 $\left\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix}\right\}$ 3 while $m(A_{TL}) < m(A)$ do 2,3 $\left\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land m(A_{TL}) < m(A)$ Determine block size b 5a where 6 $\left\{\begin{pmatrix} A_{AB}B_B + & A_{AB}B_B + \\ A_{AB}B_B + & A_{AB}B_B + \\ A_{AB}B_B + & A_{AB}B_B + \\ C_2 := A_{AB}B_B + A_{AB}B_B + A_{AB}B_B + C_2$	t
$ \begin{array}{c c} & \text{where} \\ \hline 2 & \left\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \right. \\ \hline 3 & \text{while } m(A_{TL}) < m(A) \text{ do} \\ \hline 2,3 & \left\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land m(A_{TL}) < m(A) \\ \hline & \text{Determine block size } b \\ \hline 5a & & \\ \hline & & \\ \hline$	}
$ \begin{array}{c c} \hline C_B & \hline \hline S_B & \hline S_B & \hline S_B & \hline \hline S_B & \hline \hline S_B & \hline S_B $	
2,3 $ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \\ \\ \text{Determine block size } b \end{array} \right. $	$\left. \right\}$
Determine block size b $ \begin{array}{c} $	
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
8 $A_{21}^T B_1 +$	
21 *	
$C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	
5b	
$\begin{pmatrix} C_T \end{pmatrix} - \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \end{pmatrix}$	7
	}
endwhile	
$2.3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$	
$1b \{C = AB + \widehat{C} $	}

1a $\{C = \widehat{C}\}$ 4 $A \rightarrow \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{RR} \\ A_{BL} & A_{RR} \end{pmatrix}$, $B \rightarrow \begin{pmatrix} B_T \\ B_R \end{pmatrix}$, $C \rightarrow \begin{pmatrix} C_T \\ C_R \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows 2 $\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land m(A_{TL}) < m(A)$ Determine block size b 5a where 6 $\{A_{BL}B_T + & A_{LB}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land m(A_{TL}) < m(A)$ The second $A_{BL}B_T + A_{BL}B_T + A_{BL}B_T + \widehat{C}_T $ 7 $\{A_{BL}B_T + A_{BL}B_T + \widehat{C}_T \} \land \widehat{C}_B \}$ 9 endwhile 2.3 $\{\begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ \widehat{C}_B \end{pmatrix} \land \neg (m(A_{TL}) < m(A))$ 1b $\{C = AB + \widehat{C}\}$	Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
where A_{TL} is 0×0 , B_{T} has 0 rows, C_{T} has 0 rows $ \begin{cases} \begin{pmatrix} C_{T} \\ C_{B} \end{pmatrix} = \begin{pmatrix} A_{TL}B_{T} + & \hat{C}_{T} \\ \hat{C}_{B} \end{pmatrix} $ while $m(A_{TL}) < m(A)$ do $ \begin{cases} \begin{pmatrix} C_{T} \\ C_{B} \end{pmatrix} = \begin{pmatrix} A_{TL}B_{T} + & \hat{C}_{T} \\ \hat{C}_{B} \end{pmatrix} \land m(A_{TL}) < m(A) $ Determine block size b $ \begin{cases} A_{11}B_{11} + & A_{12}B_{11} + A_{12}B$	1a	$\left\{ C = \widehat{C} \right\}$
3 while $m(A_{TL}) < m(A)$ do 2,3 $\left\{ \begin{array}{c} \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right) \land m(A_{TL}) < m(A) \end{array} \right\}$ Determine block size b 5a where 6 $\left\{ \begin{array}{c} A_{10}B_{0} + A_{10}B_{1} + A_{10}B_{2} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{array} \right.$ 7 $\left\{ \begin{array}{c} A_{10}B_{0} + A_{10}B_{1} + A_{22}B_{2} + C_{2} \end{array} \right.$ 5b $2 \left\{ \begin{array}{c} \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right) \\ \text{endwhile} \end{array} \right.$ 2,3 $\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right.$	4	where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
	2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \qquad \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
Determine block size b where $ \begin{cases} A_{01}B_{0} + A_{21}B_{2} + A_{21}B_{1} + A_{22}B_{2} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} C_{1} = A_{21}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} C_{2} = A_{21}B_{0} + A_{21}B_{1} + \hat{C}_{T} \\ \hat{C}_{B} \end{cases} $ endwhile $ \begin{cases} C_{T} \\ C_{B} \end{cases} = \left(\frac{A_{TL}B_{T} + \hat{C}_{T}}{\hat{C}_{B}}\right) \land \neg(m(A_{TL}) < m(A)) $	3	while $m(A_{TL}) < m(A)$ do
$\begin{array}{c} 5a \\ \\ \\ 6 \\ \\ 8 \\ \\ A_{01}B_{0} + \\ \\ A_{21}B_{2} + \\ \\ A_{11}B_{1} + \\ \\ C_{1} = A_{01}B_{0} + A_{11}B_{1} + A_{21}B_{2} + C_{1} \\ \\ 7 \\ \\ \\ 5b \\ \\ 2 \\ \\ \begin{cases} \left(\frac{C_{T}}{C_{B}}\right) = \left(\frac{A_{TL}B_{T} + & \hat{C}_{T}}{\hat{C}_{B}}\right) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
$\begin{cases} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $		Determine block size b
$\begin{cases} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $	5a	
$ \begin{cases} A_{10}B_{0} + A_{20}B_{2} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \\ A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} C_{1} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} C_{1} := A_{20}B_{0} + A_{21}B_{1} + C_{2} \end{cases} $ $ \begin{cases} C_{2} := A_{20}B_{0} + A_{21}B_{1} + C_{2} \end{cases} $ $ \begin{cases} C_{1} := A_{20}B_{0} + A_{21}B_{1} + C_{2} \end{cases} $ $ \begin{cases} C_{2} := A_{20}B_{0} + A_{21}B_{1} + C_{2} \end{cases} $ $ \end{cases} $ $ \begin{cases} C_{1} := A_{20}B_{0} + A_{21}B_{1} + C_{2} \end{cases} $ $ \end{cases} $	Ja	
$\begin{cases} A_{00}B_{0} + A_{20}^{T}B_{2} + A_{21}^{T}B_{1} + C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{3} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{4} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{5} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_$		where
$\begin{cases} A_{00}B_{0} + A_{20}^{T}B_{2} + A_{21}^{T}B_{1} + C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{3} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{4} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{5} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{20}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases}$ $\begin{cases} C_{7} := A_{10}B_{1} + A_{21}B_{1} + A_$		
	6	
$C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2}$ $\begin{bmatrix} 7 & \begin{cases} C_{T} & \\ C_{B} &$	Q	
$ \begin{cases} 5b \end{cases} $ $ 2 \left\{ \frac{C_T}{C_B} = \frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right\} $ endwhile $ 2,3 \left\{ \frac{C_T}{C_B} = \frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \wedge \neg (m(A_{TL}) < m(A)) \right\} $	O	
5b $2 \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B}\right) \\ \text{endwhile} \end{array} \right\}$ $2,3 \left\{ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) \right\}$		
$2 \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \\ \text{endwhile} \\ 2,3 \left\{ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\}$	7	
$2 \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \\ \text{endwhile} \\ 2,3 \left\{ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\}$		
$2 \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \\ \text{endwhile} \\ 2,3 \left\{ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\}$		
$ \begin{array}{c} 2 & \left\{ \begin{array}{c} \overline{C_B} \end{array} \right\} = \left(\begin{array}{c} \overline{\widehat{C}_B} \end{array} \right) \\ \text{endwhile} \\ 2,3 & \left\{ \left(\frac{C_T}{C_B} \right) = \left(\begin{array}{c} A_{TL}B_T + & \widehat{C}_T \\ \overline{\widehat{C}_B} \end{array} \right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\} $	5b	
$ \begin{array}{c} 2 & \left\{ \begin{array}{c} \overline{C_B} \end{array} \right\} = \left(\begin{array}{c} \overline{\widehat{C}_B} \end{array} \right) \\ \text{endwhile} \\ 2,3 & \left\{ \left(\frac{C_T}{C_B} \right) = \left(\begin{array}{c} A_{TL}B_T + & \widehat{C}_T \\ \overline{\widehat{C}_B} \end{array} \right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\} $		
$ \begin{array}{c} 2 & \left\{ \begin{array}{c} \overline{C_B} \end{array} \right\} = \left(\begin{array}{c} \overline{\widehat{C}_B} \end{array} \right) \\ \text{endwhile} \\ 2,3 & \left\{ \left(\frac{C_T}{C_B} \right) = \left(\begin{array}{c} A_{TL}B_T + & \widehat{C}_T \\ \overline{\widehat{C}_B} \end{array} \right) \land \neg (m(A_{TL}) < m(A)) \end{array} \right\} $	2	$\int C_T - A_{TL}B_T + \hat{C}_T$
$2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$		
$ (\overline{C_B}) = \overline{\widehat{C}_B} \wedge \neg (m(A_{TL}) < m(A)) $		endwhile
	2,3	1 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
	1b	

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{C=\widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \hat{C}_T}{\hat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
5a	Determine block size b $ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ B_1 \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	
8	$A_{00}B_0 + A_{20}^T B_2 + A_{21}^T B_1 + C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ \hline A_{20} & A_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ B_1 \\ \hline B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ C_1 \\ \hline C_2 \end{array}\right) $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	${C = \widehat{C}}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ & \widehat{C}_B \end{pmatrix} \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
5a	Determine block size b $ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ B_1 \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$ \left\{ \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + & \widehat{C}_0 \\ \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
8	$A_{00}B_0 + A_{20}^T B_2 + A_{21}^T B_1 + C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
5b	$A_{20} A_{21} A_{22} $ $B_{2} $ $B_{2} $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\left\{ C = AB + \widehat{C} \right\}$

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	${C = \widehat{C}}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ & \widehat{C}_B \end{pmatrix} \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
5a	Determine block size b $ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array}\right) $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + & \widehat{C}_0 \\ & \widehat{C}_1 \\ & \widehat{C}_2 \end{pmatrix} $
8	$A_{00}B_0 + A_{20}^T B_2 + A_{21}^T B_1 + C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + & \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + & \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
5b	$\left(\begin{array}{c c} A_{BL} & A_{BR} \end{array}\right) \left(\begin{array}{c c} A_{20} & A_{21} & A_{22} \end{array}\right) \left(\begin{array}{c} B_B \end{array}\right) \left(\begin{array}{c} C_B \end{array}\right) \left(\begin{array}{c} C_D \end{array}\right)$
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ & \widehat{C}_B \end{pmatrix} \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
5a	Determine block size b $ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ B_1 \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$ \left\{ \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + & \widehat{C}_0 \\ \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^T B_1 + C_1$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + & \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + & \widehat{C}_1 \\ \widehat{C}_2 \end{pmatrix} $
5b	$\left(\begin{array}{c c} A_{BL} & A_{BR} \end{array}\right) \left(\begin{array}{c c} A_{20} & A_{21} & A_{22} \end{array}\right) \left(\begin{array}{c c} B_B \end{array}\right) \left(\begin{array}{c} C_B \end{array}\right) \left(\begin{array}{c} C_B \end{array}\right)$
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
while $m(A_{TL}) < m(A)$ do
Determine block size b $ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ B_1 \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} $ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^T B_1 + C_1$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
$ \left(\begin{array}{c c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline A_{10} & A_{11} & A_{12} \\ \hline A_{20} & A_{21} & A_{22} \end{array}\right) , \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ B_1 \\ \hline B_2 \end{array}\right) , \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ \hline C_2 \end{array}\right) $
endwhile

Algorithm: C := AB + C where A is symmetric and stored in the lower triangular part

$$A o \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) , B o \left(\begin{array}{c|c} B_T \\ \hline B_B \end{array} \right) , C o \left(\begin{array}{c|c} C_T \\ \hline C_B \end{array} \right)$$

where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows

while $m(A_{TL}) < m(A)$ do

Determine block size b

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
A_{BL} & A_{BR}
\end{array}\right) \to \left(\begin{array}{c|c}
A_{00} & A_{01} & A_{02} \\
\hline
A_{10} & A_{11} & A_{12} \\
A_{20} & A_{21} & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
B_B
\end{array}\right) \to \left(\begin{array}{c}
B_0 \\
B_1 \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \to \left(\begin{array}{c}
C_0 \\
C_1 \\
C_2
\end{array}\right)$$

where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows

$$C_0 := A_{10}^T B_1 + C_0$$

$$C_1 := A_{10}B_0 + A_{11}B_1 + C_1$$

$$\left(\begin{array}{c|c|c}
A_{TL} & A_{TR} \\
\hline
A_{BL} & A_{BR}
\end{array}\right) \leftarrow \left(\begin{array}{c|c}
A_{00} & A_{01} & A_{02} \\
A_{10} & A_{11} & A_{12} \\
\hline
A_{20} & A_{21} & A_{22}
\end{array}\right), \left(\begin{array}{c|c}
B_T \\
\hline
B_B
\end{array}\right) \leftarrow \left(\begin{array}{c|c}
B_0 \\
B_1 \\
\hline
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \leftarrow \left(\begin{array}{c}
C_0 \\
C_1 \\
\hline
C_2
\end{array}\right)$$

endwhile