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 + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\} $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land m(A_{TL}) < m(A) \right\}$
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	where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows $ \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + \hat{C}_0 \\ \hat{C}_1 \\ \hat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0$ $C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^TB_1 + C_1$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + A_{21}^T B_2 + \widehat{C} \\ \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	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B}\right) \end{array} \right.$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
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		$\left. \right\}$
3	while do	
2,3		$\left. \right\}$
	Determine block size b	
5a		
	where	
6		
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	
7		
5b		
2		$\left. \right\}$
	endwhile	
2,3	$\bigg \bigg\{ \hspace{1cm} \wedge \neg (\hspace{1cm}) \hspace{1cm} \big \hspace{1cm} \hspace{1cm} \big \hspace{1cm} \hspace{1cm} \big \hspace{1cm} \hspace{1cm} \hspace{1cm} \big \hspace{1cm} \big \hspace{1cm} \hspace{1cm} \big \hspace{1cm} \hspace{1cm} \hspace{1cm} \big 1$	$\left. \right\}$
1b	$\{C = AB + \widehat{C}$	

where $ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T \\ \hat{C}_B \end{pmatrix} $ while $ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T \\ \hat{C}_B \end{pmatrix} \wedge $ Determine block size b a $ \begin{pmatrix} C_1 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0 \\ C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{pmatrix} $	Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
$\begin{array}{c} \text{where} \\ C = \left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T \\ \hat{C}_B \end{pmatrix} \right\} \\ C = \left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T \\ \hat{C}_B \end{pmatrix} \right\} \\ C = \left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T \\ \hat{C}_B \end{pmatrix} \right\} \\ C = \left\{ \begin{pmatrix} C_T \\ C_B \end{pmatrix} + A_{DD}^TB_D + A_{DD$	1a	${C = \widehat{C}}$
while do $ \begin{cases} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T}{\hat{C}_B}\right) \land \\ \text{Determine block size } b \end{cases} $ $ C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0 $ $ C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 $	4	where
Determine block size b where $C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right.$
Determine block size b where $C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	3	while do
where $C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B}\right) \wedge \end{array} \right.$
where $C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$		Determine block size b
$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	5a	1
$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$		where (
$C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$	6	
	8	
		(
	7	
b	5b	
$2 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$	2	\ =
endwhile		
$3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg () \right\}$	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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
	Determine block size b
5a	wh one
	where
6	
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
5b	
2	$\left\{ \qquad \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) $
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

1a $\left\{C = \widehat{C}\right\}$ 4 $A \rightarrow \left(\frac{A_{TL}}{A_{BL}} A_{TR} \right), B \rightarrow \left(\frac{B_T}{B_B}\right), C \rightarrow \left(\frac{C_T}{C_B}\right)$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows 2 $\left\{\left(\frac{C_T}{C_R}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T}{\widehat{C}_B}\right)$ 3 while $m(A_{TL}) < m(A)$ do 2,3 $\left\{\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T}{\widehat{C}_B}\right) \land m(A_{TL}) < m(A)$ Determine block size b 5a where 6 $\left\{\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T}{\widehat{C}_B}\right) \land m(A_{TL}) < m(A)$ 5b 2 $\left\{\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T}{\widehat{C}_B}\right)$ endwhile 2,3 $\left\{\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$ 1b $\left\{C = AB + \widehat{C}\right\}$	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{pmatrix} C_{T} \\ C_{B} \end{pmatrix} = \begin{pmatrix} A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T} \\ \hat{C}_{B} \end{pmatrix} $ 3 while $m(A_{TL}) < m(A)$ do 2.3 $ \begin{pmatrix} C_{T} \\ C_{B} \end{pmatrix} = \begin{pmatrix} A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T} \\ \hat{C}_{B} \end{pmatrix} \land m(A_{TL}) < m(A) $ Determine block size b 5a where $ \begin{pmatrix} C_{CC} = A_{CC}B_{CC} - A_{CC}B_{CC} + A_{CC}B_{CC}$	1a	${C = \widehat{C}}$
3 while $m(A_{TL}) < m(A)$ do 2,3 $\left\{ \begin{array}{c} \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T}{\hat{C}_B} \right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$ Determine block size b 5a where 6 $\left\{ \begin{array}{c} C_1 := A_{11}B_1 + A_{11}^TB_1 + A_{12}^TB_2 + C_1 \\ \\ C_2 := A_{21}B_1 + A_{21}B_1 + A_{22}B_2 + C_2 \end{array} \right.$ 7 $\left\{ \begin{array}{c} C_1 := A_{21}B_1 + A_{21}B_1 + A_{22}B_2 + C_2 \\ \\ \end{array} \right.$ 5b 2 $\left\{ \begin{array}{c} \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T}{\hat{C}_B} \right) \\ \\ \text{endwhile} \end{array} \right.$ 2,3 $\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^TB_B + \hat{C}_T}{\hat{C}_B} \right) \wedge \neg (m(A_{TL}) < m(A)) \right.$	4	where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
	2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
Determine block size b where $ C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0 $ $ C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 $ $ \begin{bmatrix} C_T \\ C_B \end{bmatrix} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B}\right) $ endwhile $ 2.3 \left\{\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $	3	
$\begin{array}{c} 5a \\ \\ & \\ C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{10}^TB_2 + C_0 \\ \\ & \\ C_2 := A_{20}B_0 + A_{10}B_1 + A_{20}B_2 + C_2 \\ \\ 7 \\ & \\ \\ 5b \\ \\ 2 \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\$	2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
where $ \begin{cases} C_{0} := A_{00}B_{0} + A_{10}^{T}B_{1} + A_{20}^{T}B_{2} + C_{0} \\ C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} \left(\frac{C_{T}}{C_{B}}\right) = \left(\frac{A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T}}{\hat{C}_{B}}\right) \\ \text{endwhile} \end{cases} $ $ 2,3 \left\{\left(\frac{C_{T}}{C_{B}}\right) = \left(\frac{A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T}}{\hat{C}_{B}}\right) \land \neg (m(A_{TL}) < m(A)) \end{cases} $		Determine block size b
where $ \begin{cases} C_{0} := A_{00}B_{0} + A_{10}^{T}B_{1} + A_{20}^{T}B_{2} + C_{0} \\ C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2} \end{cases} $ $ \begin{cases} \left(\frac{C_{T}}{C_{B}}\right) = \left(\frac{A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T}}{\hat{C}_{B}}\right) \\ \text{endwhile} \end{cases} $ $ 2,3 \left\{\left(\frac{C_{T}}{C_{B}}\right) = \left(\frac{A_{TL}B_{T} + A_{BL}^{T}B_{B} + \hat{C}_{T}}{\hat{C}_{B}}\right) \land \neg (m(A_{TL}) < m(A)) \end{cases} $	5a	
$ \begin{cases} C_0 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_0 \\ 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 \\ \begin{cases} C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_1 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_2 \\ \begin{cases} C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_1 := A_{00}B_0 + A_{10}^TB_1 + A_{20}^TB_2 + C_2 \\ \end{cases} \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} \end{cases} $ $ \begin{cases} C_4 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_5 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_1 + A_{21}B_1 + A_{22}B_2 + C_2 \end{cases} \end{cases} $ $ \begin{cases} C_7 := A_{20}B_1 + A_{21}B_1 + A_{22}B_2 + C_2 + C_2 + C$		
$C_{0} := A_{00}B_{0} + A_{10}^{T}B_{1} + A_{20}^{T}B_{2} + C_{0}$ $C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2}$ $\begin{bmatrix} C_{1} & C_{2} & C_{3} & C_{3$		where
$C_{0} := A_{00}B_{0} + A_{10}^{T}B_{1} + A_{20}^{T}B_{2} + C_{0}$ $C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2}$ $\begin{bmatrix} C_{1} & C_{2} & C_{3} & C_{3$	6	
8 $C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2}$ 7 $\left\{ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	Ü	
8 $C_{2} := A_{20}B_{0} + A_{21}B_{1} + A_{22}B_{2} + C_{2}$ 7 $\left\{ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$		$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$
$ \begin{cases} $	8	
5b $2 \left\{ \frac{C_T}{C_B} \right\} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right)$ endwhile $2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$		$C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
5b $2 \left\{ \frac{C_T}{C_B} \right\} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right)$ endwhile $2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$	_	
$2 \left\{ \frac{C_T}{C_B} \right\} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right)$ endwhile $2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$	7	
$2 \left\{ \frac{C_T}{C_B} \right\} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right)$ endwhile $2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$		
$2 \left\{ \frac{C_T}{C_B} \right\} = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right)$ endwhile $2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$	5b	
$ \frac{1}{C_B} = \frac{\widehat{C}_B}{\widehat{C}_B} $ endwhile $ 2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\} $		
$ \frac{1}{C_B} = \frac{\widehat{C}_B}{\widehat{C}_B} $ endwhile $ 2,3 \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\} $		$\int \int C_T \left\langle A_{TL}B_T + A_{BL}^TB_B + \widehat{C}_T \right\rangle$
2,3 $\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$	2	\ =
		endwhile
$1b \{C = AB + \widehat{C} $	2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
	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	$A \to \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), B \to \left(\begin{array}{c c} B_T \\ \hline B_B \end{array}\right), C \to \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
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	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
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\{ \qquad \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) $
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
5a	Determine block size b $ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \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) \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 + A_{10}^T B_1 + A_{20}^T B_2 + \hat{C}_0 \\ \hat{C}_1 \\ \hat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	
5b	$A_{20} A_{21} A_{22} A_{21} A_{22} A_{22} A_{21} A_{22}$
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \hat{C}_T}{\hat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$A \to \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), B \to \left(\begin{array}{c c} B_T \\ \hline B_B \end{array}\right), C \to \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
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 + A_{10}^T B_1 + A_{20}^T B_2 + \hat{C}_0 \\ \hat{C}_1 \\ \hat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$ $C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$
7	$ \left\{ \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + A_{21}^T B_2 + \widehat{C} \\ \widehat{C}_2 \end{pmatrix} \right\} $
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	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$A \rightarrow \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \rightarrow \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \rightarrow \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \wedge m(A_{TL}) < m(A) \right\}$
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	$ \begin{cases} \begin{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + \hat{C}_0 \\ \hat{C}_1 \\ \hat{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{pmatrix} C_0 \\ C_1 \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + \widehat{C}_0 \\ A_{10}B_0 + A_{11}B_1 + A_{21}^T B_2 + \widehat{C} \\ \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\{ \qquad \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) $
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + A_{BL}^T B_B + \widehat{C}_T}{\widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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} \\ 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 \\ 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

$$C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^T B_1 + C_1$$

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

endwhile