Step	Algorithm:		
1a			
4			
	where		
2			
3	while do		
2,3		٨	
5a			
	where		
6			
8			
5b			
7			
2			
	endwhile		
2,3		^ ¬(	)
1b			

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \hat{C}_T}{A_{TR}^TB_T + \hat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	Determine block size b
	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ \hline B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ \hline C_2 \end{array}\right) $ where $A$ is $b \times b$ , $B$ , here $b$ revers $C$ , here $b$ revers
6	where $A_{11}$ is $b \times b$ , $B_1$ has $b$ rows, $C_1$ has $b$ rows $ \left(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1^T + A_{02}B_2 + \widehat{C}_0}{A_{01}^T + \widehat{C}_1}\right) \\ \frac{A_{02}^TB_0 + \widehat{C}_2}{A_{02}^TB_0 + \widehat{C}_2} $
8	$C_1 := A_{11}B_1 + A_{12}B_2 + C_1$ $C_2 := A_{12}^T B_1 + C_2$
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right) $
7	$ \left(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1 + A_{02}B_2 + \hat{C}_0}{A_{01}B_0 + A_{11}B_1 + A_{12}B_2 + \hat{C}_1}\right)  A_{02}B_0 + A_{12}B_1 + \hat{C}_2 $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm} \operatorname{lu}(A, B, \widehat{C})$

Algorithm:  $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$ 

$$A \to \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) , B \to \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) , C \to \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$$

where  $A_{TL}$  is  $0 \times 0$ ,  $B_T$  has 0 rows,  $C_T$  has 0 rows

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

Determine block size b

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
0 & A_{BR}
\end{array}\right) \to \left(\begin{array}{c|c}
A_{00} & A_{01} & A_{02} \\
\hline
0 & A_{11} & A_{12} \\
\hline
0 & 0 & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
\hline
B_B
\end{array}\right) \to \left(\begin{array}{c}
B_0 \\
\hline
B_1 \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \to \left(\begin{array}{c}
C_0 \\
\hline
C_1 \\
C_2
\end{array}\right)$$

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

$$C_1 := A_{11}B_1 + A_{12}B_2 + C_1$$

$$C_2 := A_{12}^T B_1 + C_2$$

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
0 & A_{11} & A_{12} \\
\hline
0 & 0 & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
\hline
B_B
\end{array}\right) \leftarrow \left(\begin{array}{c}
B_0 \\
\hline
B_1 \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
\hline
C_B
\end{array}\right) \leftarrow \left(\begin{array}{c}
C_0 \\
\hline
C_1 \\
\hline
C_2
\end{array}\right)$$

endwhile

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \hat{C}$
4	where
2	
3	while do
2,3	$\wedge$
5a	Determine block size
	where
6	
U	
8	
5b	
7	
·	
2	
۷	
	endwhile
2,3	$\wedge \neg ( \hspace{1cm} )$
1b	$[C] = \operatorname{symm} \operatorname{lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	
	where
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) $
3	while do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge $
5a	Determine block size
	where
	where
6	
8	
5b	
7	
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^T B_T + \widehat{C}_B}\right) $
	endwhile
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \land \neg ( $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \hat{C}$
4	where
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^T B_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) $
5a	Determine block size
	where
6	
8	
5b	
7	
	$\langle C \rangle \langle A \rangle \langle B \rangle \langle A \rangle \langle B \rangle \langle \hat{C} \rangle$
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^T B_T + \widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^T B_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) $
5a	Determine block size
	where
6	
8	
5b	
7	
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) $
	endwhile
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \hat{C}_T}{A_{TR}^TB_T + \hat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	Determine block size b
	$ \begin{pmatrix} A_{TL}   A_{TR} \\ 0   A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00}   A_{01}   A_{02} \\ 0   A_{11}   A_{12} \\ 0   0   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	
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline 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) $
7	
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) $
	endwhile
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \hat{C}_T}{A_{TR}^TB_T + \hat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) $
5a	Determine block size b
	$ \begin{pmatrix} A_{TL}   A_{TR} \\ 0   A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00}   A_{01}   A_{02} \\ 0   A_{11}   A_{12} \\ 0   0   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	$ \frac{\left(\frac{C_0}{C_1}\right)}{\left(\frac{C_1}{C_2}\right)} = \left(\frac{\frac{A_{00}B_0 + A_{01}B_1^T + A_{02}B_2 + \hat{C}_0}{A_{01}^T + \hat{C}_1}}{A_{02}^T B_0 + \hat{C}_2}\right) $
8	
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right) $
7	
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^T B_T + \widehat{C}_B}\right) $
	endwhile
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \hat{C}_T}{A_{TR}^TB_T + \hat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) $
5a	Determine block size b
	$ \begin{pmatrix} A_{TL}   A_{TR} \\ 0   A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00}   A_{01}   A_{02} \\ 0   A_{11}   A_{12} \\ 0   0   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(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1^T + A_{02}B_2 + \hat{C}_0}{A_{01}^T + \hat{C}_1}\right) \\ \frac{A_{02}^T B_0 + \hat{C}_2}{A_{02}^T B_0 + \hat{C}_2}\right) $
8	
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right) $
7	$ \left(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1 + A_{02}B_2 + \hat{C}_0}{A_{01}B_0 + A_{11}B_1 + A_{12}B_2 + \hat{C}_1} - \frac{A_{02}B_0 + A_{12}B_1 + \hat{C}_2}{A_{02}B_0 + A_{12}B_1 + \hat{C}_2}\right) $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right)$
	endwhile
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge \neg (m(A_{TL}) < m(A)) $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \hat{C}_T}{A_{TR}^TB_T + \hat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) $
5a	Determine block size b
	$ \begin{pmatrix} A_{TL}   A_{TR} \\ 0   A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00}   A_{01}   A_{02} \\ 0   A_{11}   A_{12} \\ 0   0   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(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1^T + A_{02}B_2 + \widehat{C}_0}{A_{01}^T + \widehat{C}_1}\right) $ $ \left(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1^T + A_{02}B_2 + \widehat{C}_0}{A_{02}^T + \widehat{C}_1}\right) $
8	$C_1 := A_{11}B_1 + A_{12}B_2 + C_1$ $C_2 := A_{12}^T B_1 + C_2$
5b	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right) $
7	$ \left(\frac{C_0}{C_1}\right) = \left(\frac{A_{00}B_0 + A_{01}B_1 + A_{02}B_2 + \hat{C}_0}{A_{01}B_0 + A_{11}B_1 + A_{12}B_2 + \hat{C}_1} - \frac{A_{02}B_0 + A_{12}B_1 + \hat{C}_2}{A_{02}B_0 + A_{12}B_1 + \hat{C}_2}\right) $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + A_{TR}B_B + \widehat{C}_T}{A_{TR}^TB_T + \widehat{C}_B}\right) \wedge \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$
	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ 0 & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ 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} \\ 0 & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & A_{01} & A_{02} \\ 0 & A_{11} & A_{12} \\ 0 & 0 & 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
	$C_1 := A_{11}B_1 + A_{12}B_2 + C_1$ $C_2 := A_{12}^T B_1 + C_2$
	$ \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} A_{00} & A_{01} & A_{02} \\ \hline 0 & A_{11} & A_{12} \\ \hline 0 & 0 & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right) $
	endwhile

Algorithm:  $[C] := \text{SYMM\_LU\_BLK\_VAR1}(A, B, C)$ 

$$A \to \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline 0 & A_{BR} \end{array}\right) , B \to \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) , C \to \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$$

where  $A_{TL}$  is  $0 \times 0$ ,  $B_T$  has 0 rows,  $C_T$  has 0 rows

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

Determine block size b

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
0 & A_{BR}
\end{array}\right) \to \left(\begin{array}{c|c}
A_{00} & A_{01} & A_{02} \\
\hline
0 & A_{11} & A_{12} \\
\hline
0 & 0 & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
\hline
B_B
\end{array}\right) \to \left(\begin{array}{c}
B_0 \\
\hline
B_1 \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \to \left(\begin{array}{c}
C_0 \\
\hline
C_1 \\
C_2
\end{array}\right)$$

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

$$C_1 := A_{11}B_1 + A_{12}B_2 + C_1$$

$$C_2 := A_{12}^T B_1 + C_2$$

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
0 & A_{11} & A_{12} \\
\hline
0 & 0 & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
\hline
B_B
\end{array}\right) \leftarrow \left(\begin{array}{c}
B_0 \\
\hline
B_1 \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
\hline
C_B
\end{array}\right) \leftarrow \left(\begin{array}{c}
C_0 \\
\hline
C_1 \\
\hline
C_2
\end{array}\right)$$

endwhile