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: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BR} \end{vmatrix} \to \left(\frac{A_{00}}{a_{01}} \begin{vmatrix} a_{01} \\ a_{10} \end{vmatrix} \begin{vmatrix} A_{02} \\ a_{11} \end{vmatrix} \right), \left(\frac{B_T}{B_B}\right) \to \left(\frac{B_0}{b_1^T} \\ B_2\right), \left(\frac{C_T}{C_B}\right) \to \left(\frac{C_0}{c_1^T} \\ C_2\right) $
6	where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row $ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + \widehat{C}_0}{\widehat{C}_1^T}\right) = \left(\frac{\widehat{C}_0^T}{\widehat{C}_2}\right) $
8	$C_0 := a_{01}b_1 + C_0$ $c_1^T := a_{01}^T B_0 + \alpha_{11}b_1^T + c_1^T$
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} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ \overline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \overline B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ \overline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \overline C_2 \end{array}\right) $
7	$ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + a_{01}b_1^T + \hat{C}_0}{a_{01}^TB_0 + \alpha_{11}b_1^T + \hat{c}_1^T}\right) $ $ \hat{C}_2 $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm} \operatorname{lu}(A, B, \widehat{C})$

 $\textbf{Algorithm:} \ [C] := \texttt{SYMM\_LU\_UNB\_VAR4}(A,B,C)$ 

$$A o \left( \frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BL} \end{vmatrix} \right) , B o \left( \frac{B_T}{B_B} \right) , C o \left( \frac{C_T}{C_B} \right)$$

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

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

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
A_{BL} & A_{BR}
\end{array}\right) \to \left(\begin{array}{c|c}
A_{00} & a_{01} & A_{02} \\
\hline
a_{10}^T & a_{11} & a_{12}^T \\
\hline
A_{20} & a_{21} & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
B_B
\end{array}\right) \to \left(\begin{array}{c}
B_0 \\
\hline
b_1^T \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \to \left(\begin{array}{c}
C_0 \\
\hline
c_1^T \\
C_2
\end{array}\right)$$

where  $\alpha_{11}$  is  $1 \times 1$ ,  $b_1$  has 1 row,  $c_1$  has 1 row

$$C_0 := a_{01}b_1 + C_0$$

$$c_1^T := a_{01}^T B_0 + \alpha_{11} b_1^T + c_1^T$$

$$\left(\frac{A_{TL} | A_{TR}}{A_{BL} | A_{BR}}\right) \leftarrow \left(\frac{A_{00} | a_{01} | A_{02}}{a_{10}^T | \alpha_{11} | a_{12}^T}\right), \left(\frac{B_T}{B_B}\right) \leftarrow \left(\frac{B_0}{b_1^T}\right), \left(\frac{C_T}{C_B}\right) \leftarrow \left(\frac{C_0}{c_1^T}\right)$$

endwhile

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
1a	$C = \widehat{C}$
4	
1	,
	where
2	
3	while do
2,3	^
_	
5a	
	where
6	
8	
5b	
_	
7	
2	
	endwhile
2,3	$\wedge \neg ($ )
2,9	
1b	$[C] = \operatorname{symm} \operatorname{lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
1a	$C = \widehat{C}$
4	
4	
	where
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
3	while do
2,3	$\left( rac{C_T}{C_B}  ight) = \left( rac{\widehat{C}_T}{\widehat{C}_B}  ight) \wedge$
5a	
	,
	where
6	
8	
5b	
7	
2	$\left(rac{C_T}{C_B} ight) = \left(rac{\widehat{C}_T}{\widehat{C}_B} ight)$
	endwhile
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg ( )  $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
1a	$C = \widehat{C}$
4	zzh oue
2	where $\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	
	where
6	
8	
5b	
7	
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows $ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	
	where
6	
8	
5b	
7	
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	$ \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}^T & \alpha_{11} & a_{12}^T \\ \hline 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 \\ \hline b_1^T \\ B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ C_2 \end{array}\right) $ where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row
	where $\alpha_{11}$ is $1 \times 1$ , $\theta_1$ has 1 fow, $\theta_1$ has 1 fow
6	
8	
5b	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BR} \end{vmatrix} \leftarrow \left(\frac{A_{00}}{a_{01}} \begin{vmatrix} a_{01} \\ a_{10} \end{vmatrix} A_{02} \\ A_{20} \begin{vmatrix} a_{21} \\ A_{22} \end{vmatrix} A_{22} \right), \left(\frac{B_T}{B_B}\right) \leftarrow \left(\frac{B_0}{b_1^T} \\ B_2\right), \left(\frac{C_T}{C_B}\right) \leftarrow \left(\frac{C_0}{c_1^T} \\ C_2\right) $
7	
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BR} \end{vmatrix} \to \left(\frac{A_{00}}{a_{01}} \begin{vmatrix} a_{01} \\ a_{11} \end{vmatrix} a_{12}^{T} \\ A_{20} \begin{vmatrix} a_{21} \\ a_{21} \end{vmatrix} A_{22} \right), \left(\frac{B_{T}}{B_{B}}\right) \to \left(\frac{B_{0}}{b_{1}^{T}} \\ B_{2}\right), \left(\frac{C_{T}}{C_{B}}\right) \to \left(\frac{C_{0}}{c_{1}^{T}} \\ C_{2}\right) $
6	where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row $ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + \widehat{C}_0}{\widehat{C}_1^T}\right) = \left(\frac{\widehat{C}_1^T}{\widehat{C}_2}\right) $
8	
5b	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BR} \end{vmatrix} \leftarrow \left(\frac{A_{00}}{a_{01}^T} \begin{vmatrix} a_{01} \\ a_{11} \end{vmatrix} a_{12}^T \\ A_{20} \begin{vmatrix} a_{21} \\ A_{22} \end{vmatrix} A_{22} \right), \left(\frac{B_T}{B_B}\right) \leftarrow \left(\frac{B_0}{b_1^T} \\ B_2\right), \left(\frac{C_T}{C_B}\right) \leftarrow \left(\frac{C_0}{c_1^T} \\ C_2\right) $
7	
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BL} \end{vmatrix} A_{BR}\right) \to \left(\frac{A_{00}}{a_{01}} \begin{vmatrix} a_{01} \\ a_{11} \end{vmatrix} a_{12} \\ A_{20} \begin{vmatrix} a_{21} \\ a_{21} \end{vmatrix} A_{22}\right), \left(\frac{B_T}{B_B}\right) \to \left(\frac{B_0}{b_1^T} \\ B_2\right), \left(\frac{C_T}{C_B}\right) \to \left(\frac{C_0}{c_1^T} \\ C_2\right) $
6	where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row $ \begin{pmatrix} C_0 \\ \overline{c_1^T} \\ \overline{C_2} \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + \widehat{C}_0 \\ \overline{\widehat{c}_1^T} \\ \overline{\widehat{C}_2} \end{pmatrix} $
8	
5b	$ \left(\frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BR} \end{vmatrix} \leftarrow \left(\frac{A_{00}}{a_{01}} \begin{vmatrix} a_{01} \\ a_{10} \end{vmatrix} A_{01} \begin{vmatrix} a_{12} \\ A_{20} \end{vmatrix}, \left(\frac{B_T}{B_B}\right) \leftarrow \left(\frac{B_0}{b_1^T} \right), \left(\frac{C_T}{C_B}\right) \leftarrow \left(\frac{C_0}{c_1^T} \right) $
7	$ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + a_{01}b_1^T + \hat{C}_0}{a_{01}^TB_0 + \alpha_{11}b_1^T + \hat{c}_1^T}\right) \\ \frac{\hat{C}_2}{\hat{C}_2} $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A)) $ [C] surproper by $(A, B, \widehat{C})$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
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 $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
2	$ \left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A)$
5a	$ \left(\frac{A_{TL} A_{TR}}{A_{BL} A_{BR}}\right) \to \left(\frac{A_{00} a_{01} A_{02}}{a_{10}^T \alpha_{11} a_{12}^T}\right), \left(\frac{B_T}{B_B}\right) \to \left(\frac{B_0}{b_1^T}\right), \left(\frac{C_T}{C_B}\right) \to \left(\frac{C_0}{c_1^T}\right) $
6	where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row $ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + \widehat{C}_0}{\widehat{C}_1^T}\right) = \left(\frac{\widehat{C}_0}{\widehat{C}_2}\right) $
8	$C_0 := a_{01}b_1 + C_0$ $c_1^T := a_{01}^T B_0 + \alpha_{11}b_1^T + c_1^T$
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} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ \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 \\ \hline b_1^T \\ \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^T \\ \hline C_2 \end{array}\right) $
7	$ \left(\frac{C_0}{c_1^T}\right) = \left(\frac{A_{00}B_0 + a_{01}b_1^T + \hat{C}_0}{a_{01}^TB_0 + \alpha_{11}b_1^T + \hat{c}_1^T}\right) \\ \frac{\hat{C}_2}{\hat{C}_2} $
2	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right)$
	endwhile
2,3	$\left(\frac{C_T}{C_B}\right) = \left(\frac{\widehat{C}_T}{\widehat{C}_B}\right) \land \neg (m(A_{TL}) < m(A))$
1b	$[C] = \operatorname{symm\_lu}(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYMM\_LU\_UNB\_VAR4}(A, B, C)$
	$A \to \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix}, B \to \begin{pmatrix} B_T \\ B_B \end{pmatrix}, C \to \begin{pmatrix} C_T \\ C_B \end{pmatrix}$ where $A_{TL}$ is $0 \times 0$ , $B_T$ has 0 rows, $C_T$ has 0 rows
	while $m(A_{TL}) < m(A)$ do
	$ \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}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c}B_T \\ \overline{B_B}\end{array}\right) \rightarrow \left(\begin{array}{c}B_0 \\ \overline{b_1}^T \\ \overline{B_2}\end{array}\right), \left(\begin{array}{c}C_T \\ \overline{C_B}\end{array}\right) \rightarrow \left(\begin{array}{c}C_0 \\ \overline{c_1}^T \\ \overline{C_2}\end{array}\right) $ where $\alpha_{11}$ is $1 \times 1$ , $b_1$ has 1 row, $c_1$ has 1 row
	$C_0 := a_{01}b_1 + C_0$ $c_1^T := a_{01}^T B_0 + \alpha_{11}b_1^T + c_1^T$
	$ \left(\frac{A_{TL} A_{TR}}{A_{BL} A_{BR}}\right) \leftarrow \left(\frac{A_{00} a_{01} A_{02}}{a_{10}^{T} \alpha_{11} a_{12}^{T}}\right), \left(\frac{B_{T}}{B_{B}}\right) \leftarrow \left(\frac{B_{0}}{b_{1}^{T}}\right), \left(\frac{C_{T}}{C_{B}}\right) \leftarrow \left(\frac{C_{0}}{c_{1}^{T}}\right) $
	endwhile

 $\textbf{Algorithm:} \ [C] := \texttt{SYMM\_LU\_UNB\_VAR4}(A,B,C)$ 

$$A o \left( \frac{A_{TL}}{A_{BL}} \begin{vmatrix} A_{TR} \\ A_{BL} \end{vmatrix} \right) , B o \left( \frac{B_T}{B_B} \right) , C o \left( \frac{C_T}{C_B} \right)$$

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

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

$$\left(\begin{array}{c|c}
A_{TL} & A_{TR} \\
\hline
A_{BL} & A_{BR}
\end{array}\right) \to \left(\begin{array}{c|c}
A_{00} & a_{01} & A_{02} \\
\hline
a_{10}^T & a_{11} & a_{12}^T \\
\hline
A_{20} & a_{21} & A_{22}
\end{array}\right), \left(\begin{array}{c}
B_T \\
B_B
\end{array}\right) \to \left(\begin{array}{c}
B_0 \\
\hline
b_1^T \\
B_2
\end{array}\right), \left(\begin{array}{c}
C_T \\
C_B
\end{array}\right) \to \left(\begin{array}{c}
C_0 \\
\hline
c_1^T \\
C_2
\end{array}\right)$$

where  $\alpha_{11}$  is  $1 \times 1$ ,  $b_1$  has 1 row,  $c_1$  has 1 row

$$C_0 := a_{01}b_1 + C_0$$

$$c_1^T := a_{01}^T B_0 + \alpha_{11} b_1^T + c_1^T$$

$$\left(\frac{A_{TL} | A_{TR}}{A_{BL} | A_{BR}}\right) \leftarrow \left(\frac{A_{00} | a_{01} | A_{02}}{a_{10}^T | \alpha_{11} | a_{12}^T}\right), \left(\frac{B_T}{B_B}\right) \leftarrow \left(\frac{B_0}{b_1^T}\right), \left(\frac{C_T}{C_B}\right) \leftarrow \left(\frac{C_0}{c_1^T}\right)$$

endwhile