Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{C = \widehat{C}$
4	$A o \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right), B o \left(\begin{array}{c c} B_T \\ \hline B_B \end{array} \right), C o \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right)$
2	where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows $ \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \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_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land m(A_{TL}) < m(A) \right\} $
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 \\ 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 \\ C_1^T \\ C_2 \end{array}\right) $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
6	$ \left\{ \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{20}^T B_2 + \hat{C}_0 \\ a_{21}^T B_2 + \hat{c}_1^T \\ A_{22} B_2 + \hat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + (a_{10}^T)^T b_1^T + A_{20}^T B_2 + C_0$ $c_1^T := a_{10}^T B_0 + \alpha_{11}b_1^T + a_{21}^T B_2 + c_1^T$ $C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$
7	$ \left\{ \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} (a_{10}^T)^T b_1^T + A_{20}^T B_2 + \widehat{C}_0 \\ \alpha_{11} b_1^T + a_{21}^T B_2 + \widehat{c}_1^T \\ a_{21} b_1^T + A_{22} B_2 + \widehat{C}_2 \end{pmatrix} \right\} $
5b	$A_{00} = A_{01} = A_{02} $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$ \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \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	
4	
	where
2	
3	while do
2,3	$\left\{ \begin{array}{c} \wedge \end{array} \right.$
5a	
	where
6	
	$A = D + A^T $
8	$A_{00}B_0 + A_{20}^T B_2 + a_{10}^T B_0 + a_{21}^T B_2 +$
	$A_{20}B_0+$ $A_{22}B_2+$
7	
5b	
2	
_	
	endwhile
2,3	
1b	{ {

Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{C = \widehat{C}$
4	whom
2	where
3	while do
2,3	$\left\{ \begin{array}{c} \wedge \end{array} \right\}$
5a	where
6	
8	$A_{00}B_0 + A_{20}^T B_2 +$ $a_{10}^T B_0 + a_{21}^T B_2 +$ $A_{20}B_0 + A_{22}B_2 +$
7	
5b	
2	
	endwhile
2,3	$\left\{ \qquad \qquad \land \neg (\qquad \qquad) \right.$
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	where
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right\}$
3	while do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \wedge \\ \end{array} \right.$
5a	where
6	
8	$A_{00}B_{0} + A_{20}^{T}B_{2} +$ $a_{10}^{T}B_{0} + a_{21}^{T}B_{2} +$ $A_{20}B_{0} + A_{22}B_{2} +$
7	
5b	
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \hat{C}_T}{A_{BR} B_B + \hat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$ \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg () \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	where
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
5a	where
6	
8	$A_{00}B_0 + A_{20}^T B_2 +$ $a_{10}^T B_0 + a_{21}^T B_2 +$ $A_{20}B_0 + A_{22}B_2 +$
7	
5b	
2	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \\ \end{array} \right\} $
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$A o \left(\begin{array}{c c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), B o \left(\begin{array}{c c} B_T \\ \hline B_B \end{array}\right), C o \left(\begin{array}{c c} C_T \\ \hline C_B \end{array}\right)$ where A_{TL} is 0×0 , B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right.$
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \land m(A_{TL}) < m(A) \end{array} \right. $
5a	
	where
6	
8	$A_{00}B_0+$ $A_{20}^TB_2+$ $a_{10}^TB_0+$ $a_{21}^TB_2+$ $A_{20}B_0+$ $A_{22}B_2+$
7	
5b	
2	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \hat{C}_T}{A_{BR} B_B + \hat{C}_B}\right) \end{array} \right. $
	endwhile
2,3	$ \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right.$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land m(A_{TL}) < m(A) \right.$
5a	$ \begin{pmatrix} A_{TL} & A_{TR} \\ A_{BL} & A_{BR} \end{pmatrix} \rightarrow \begin{pmatrix} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ A_{20} & a_{21} & A_{22} \end{pmatrix}, \begin{pmatrix} B_T \\ B_B \end{pmatrix} \rightarrow \begin{pmatrix} B_0 \\ b_1^T \\ B_2 \end{pmatrix}, \begin{pmatrix} C_T \\ C_B \end{pmatrix} \rightarrow \begin{pmatrix} C_0 \\ C_1^T \\ C_2 \end{pmatrix} $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
6	
	$A_{00}B_0 + A_{20}^T B_2 +$
8	
	$A_{20}B_0+ A_{22}B_2+$
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}^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) \leftarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \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^T \\ \hline C_2 \end{array}\right) $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \end{array} \right.$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \hat{C}_T}{A_{BR} B_B + \hat{C}_B} \right) \land m(A_{TL}) < m(A) \right\}$
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 \\ 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^T \\ 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^T \\ C_2 \end{array}\right) $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
6	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{20}^T B_2 + \widehat{C}_0 \\ a_{21}^T B_2 + \widehat{c}_1^T \\ A_{22} B_2 + \widehat{C}_2 \end{pmatrix} $
8	$A_{00}B_0 + A_{20}^T B_2 +$ $a_{10}^T B_0 + a_{21}^T B_2 +$ $A_{20}B_0 + A_{22}B_2 +$
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}^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) \leftarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \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^T \\ \hline C_2 \end{array}\right) $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \land m(A_{TL}) < m(A) \end{array} \right\} $
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 \\ 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^T \\ 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^T \\ C_2 \end{array}\right) $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
6	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{20}^T B_2 + \widehat{C}_0 \\ a_{21}^T B_2 + \widehat{c}_1^T \\ A_{22} B_2 + \widehat{C}_2 \end{pmatrix} $
8	$A_{00}B_0 + A_{20}^T B_2 +$ $a_{10}^T B_0 + a_{21}^T B_2 +$ $A_{20}B_0 + A_{22}B_2 +$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} (a_{10}^T)^T b_1^T + A_{20}^T B_2 + \widehat{C}_0 \\ \alpha_{11} b_1^T + a_{21}^T B_2 + \widehat{c}_1^T \\ a_{21} b_1^T + A_{22} B_2 + \widehat{C}_2 \end{pmatrix} $
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}^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) \leftarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \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^T \\ C_2 \end{array}\right) $
2	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
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	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \hat{C}_T}{A_{BR} B_B + \hat{C}_B}\right) \land m(A_{TL}) < m(A) \\ \end{array} \right\} $
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 \\ 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 \\ C_1^T \\ C_2 \end{array}\right) $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
6	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{20}^T B_2 + \hat{C}_0 \\ a_{21}^T B_2 + \hat{c}_1^T \\ A_{22} B_2 + \hat{C}_2 \end{pmatrix} $
8	$C_0 := A_{00}B_0 + (a_{10}^T)^T b_1^T + A_{20}^T B_2 + C_0$ $c_1^T := a_{10}^T B_0 + \alpha_{11}b_1^T + a_{21}^T B_2 + c_1^T$ $C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} (a_{10}^T)^T b_1^T + A_{20}^T B_2 + \widehat{C}_0 \\ \alpha_{11} b_1^T + a_{21}^T B_2 + \widehat{c}_1^T \\ a_{21} b_1^T + A_{22} B_2 + \widehat{C}_2 \end{pmatrix} $
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}^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) \leftarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \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^T \\ C_2 \end{array}\right) $
2	$ \left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B}\right) \\ \end{array} \right\} $
	endwhile
2,3	$\left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{BL}^T B_B + \widehat{C}_T}{A_{BR} B_B + \widehat{C}_B} \right) \land \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{C = AB + \widehat{C} $

Т

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
$ \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 \\ A_{20} & a_{21} & 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^T \\ 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^T \\ \hline C_2 \end{array}\right) $ where α_{11} is 1×1 , b_1 has 1 row, c_1 has 1 row
$C_0 := A_{00}B_0 + (a_{10}^T)^T b_1^T + A_{20}^T B_2 + C_0$ $c_1^T := a_{10}^T B_0 + \alpha_{11}b_1^T + a_{21}^T B_2 + c_1^T$ $C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$
$ \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}^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 \\ 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 \\ c_1^T \\ \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

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

where
$$\alpha_{11}$$
 is 1×1 , b_1 has 1 row, c_1 has 1 row
$$C_0 := (a_{10}^T)^T b_1^T + C_0$$

$$c_1^T := \qquad \quad \alpha_{11}b_1^T + \qquad \quad c_1^T$$

$$C_2 := a_{21}b_1^T + C_2$$

$$\frac{C_2 := a_{21}b_1^T + C_2}{\left(\begin{array}{c|c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c|c} A_{00} & a_{01} & A_{02} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right), \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1^T \\ \hline C_2 \end{array}\right)$$

endwhile