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_{TL}B_T + \widehat{C}_T}{\widehat{C}_B} \right) \right\} $
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \wedge m(A_{TL}) < m(A) \end{array} \right\}$
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	$ \left\{ \begin{array}{c} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + & \widehat{C}_0 \\ & \widehat{c}_1^T \\ & \widehat{C}_2 \end{pmatrix} \\ \end{array} \right\} $
8	$C_0 := A_{00}B_0 + (a_{10}^T)^T b_1^T + A_{02}B_2 + C_0$ $c_1^T := a_{10}^T B_0 + \alpha_{11}b_1^T + a_{12}^T B_2 + c_1^T$ $C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$
7	$ \begin{cases} \begin{pmatrix} C_0 \\ c_1^T \\ C_2 \end{pmatrix} = \begin{pmatrix} A_{00}B_0 + (a_{10}^T)^T b_1^T + & \widehat{C}_0 \\ a_{10}^T B_0 + \alpha_{11} b_1^T + & \widehat{c}_1^T \\ \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}^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	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B}\right) \end{array} \right\}$
	endwhile
2,3	$ \left\{ \left(\frac{C_T}{C_B} \right) = \left(\frac{A_{TL}B_T + \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	
	where
6	
8	$A_{00}B_0 + A_{02}B_2 + a_{12}^T B_2 +$
	$C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$
7	
5b	
0.0	
2	
	endwhile
2,3	$\left\{ \begin{array}{ccc} & & & \\ & & & \\ & & & \end{array} \right.$
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		
5a		
	where	1
6		
	$A_{00}B_0+ A_{02}B_2+$	
8	$a_{12}^T B_2 + C_2 := A_{20} B_0 + a_{21} b_1^T + A_{22} B_2 + C_2$	
	$C_2 = \Omega_{20}D_0 + \alpha_{21}v_1 + \Omega_{22}D_2 + C_2$	1
7		
5b		
2		
	endwhile	1
	endwinie	ı
2,3		$\left. \right $
2,3 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	where	
2	$\left\{ \begin{pmatrix} C_T \\ \overline{C_B} \end{pmatrix} = \begin{pmatrix} A_{TL}B_T + & \widehat{C}_T \\ & \widehat{C}_B \end{pmatrix} \right\}$	}
3	while do	
2,3	$\left\{ \begin{array}{c} \left(\frac{C_T}{C_B}\right) = \left(\frac{A_{TL}B_T + \qquad \widehat{C}_T}{\widehat{C}_B}\right) \wedge \\ \end{array} \right.$	
5a	where	
6		}
8	$A_{00}B_0 + A_{02}B_2 +$ $a_{12}^T B_2 +$ $C_2 := A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2$	
7		}
5b		
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 + \qquad \widehat{C}_T}{\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	$\int \int C_T \int dA_{TL}B_T + \hat{C}_T$
	(C_B)
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	
	where
	where
6	
8	
7	
5b	
0	$\int C_T - A_{TL}B_T + \hat{C}_T$
2	$\left\{ \begin{array}{c} \overline{C_B} \end{array} \right\} = \left(\begin{array}{c} \overline{\widehat{C}_B} \end{array} \right)$
	endwhile
2,3	$\left\{ \left(rac{C_T}{C_B} ight) = \left(rac{A_{TL}B_T + \widehat{C}_T}{\widehat{C}_B} ight) \wedge \neg (m(A_{TL}) < m(A))$
1b	$\{C = AB + \widehat{C}$

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

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

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

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

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

$$C_0 := (a_{10}^T)^T b_1^T + C_0$$

$$c_1^T := a_{10}^T B_0 + \alpha_{11} b_1^T + c_1^T$$

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

endwhile