Step	Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part
1a	$\{ C = \widehat{C} \}$
4	$A \rightarrow \left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right)$ where A_{BR} is 0×0, B_B has 0 rows, C_B has 0 rows
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \right\}$
3	while $m(A_{BR}) < m(A)$ do
2,3	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \wedge m(A_{BR}) < m(A) \right\}$
5a	**Determine block size b** $\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) \rightarrow \left(\begin{array}{cc\|c} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ \hline A_{20} & A_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \rightarrow \left(\begin{array}{c} B_0 \\ B_1 \\ \hline B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \rightarrow \left(\begin{array}{c} C_0 \\ C_1 \\ \hline C_2 \end{array} \right)$ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array} \right) = \left(\begin{array}{c} A_{20}^T B_2 + \widehat{C}_0 \\ A_{21}^T B_2 + \widehat{C}_1 \\ A_{22} B_2 + \widehat{C}_2 \end{array} \right) \right\}$
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	$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array} \right) = \left(\begin{array}{c} A_{10}^T B_1 + A_{20}^T B_2 + \widehat{C}_0 \\ A_{11} B_1 + A_{21}^T B_2 + \widehat{C}_1 \\ A_{21} B_1 + A_{22} B_2 + \widehat{C}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c\|cc} A_{00} & A_{01} & A_{02} \\ \hline A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \wedge \neg (m(A_{BR}) < m(A)) \right\}$
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	$\left\{ \right\}$
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6	$\left\{ \right\}$
8	$A_{00}B_0+$ $A_{20}^TB_2+$ $A_{10}B_0+$ $A_{21}^TB_1+$ $A_{20}B_0+$ $A_{22}B_2+$
7	$\left\{ \right\}$
5b	
2	$\left\{ \right\}$
	endwhile
2,3	$\left\{ \wedge \neg(\quad) \right\}$
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3	while do
2,3	$\left\{ \begin{pmatrix} C_T \\ \hline C_B \end{pmatrix} = \begin{pmatrix} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{pmatrix} \wedge \right\}$
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<table>
<tr><th>Step</th><th>Algorithm: $C := AB + C$ where A is symmetric and stored in the lower triangular part</th></tr>
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<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array}\right) \wedge m(A_{BR}) < m(A) \right\}$</td></tr>
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5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|cc} A_{00} & A_{01} & A_{02} \\ \hline A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array}\right)$
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2,3	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \wedge m(A_{BR}) < m(A) \right\}$
5a	**Determine block size** b $\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) \rightarrow \left(\begin{array}{cc\|c} A_{00} & A_{01} & A_{02} \\ A_{10} & A_{11} & A_{12} \\ \hline A_{20} & A_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \rightarrow \left(\begin{array}{c} B_0 \\ B_1 \\ \hline B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \rightarrow \left(\begin{array}{c} C_0 \\ C_1 \\ \hline C_2 \end{array} \right)$ where A_{11} is $b \times b$, B_1 has b rows, C_1 has b rows
6	$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array} \right) = \left(\begin{array}{c} A_{20}^T B_2 + \widehat{C}_0 \\ A_{21}^T B_2 + \widehat{C}_1 \\ A_{22} B_2 + \widehat{C}_2 \end{array} \right) \right\}$
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	$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array} \right) = \left(\begin{array}{c} A_{10}^T B_1 + A_{20}^T B_2 + \widehat{C}_0 \\ A_{11} B_1 + A_{21}^T B_2 + \widehat{C}_1 \\ A_{21} B_1 + A_{22} B_2 + \widehat{C}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c\|cc} A_{00} & A_{01} & A_{02} \\ \hline A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{c} A_{BL}^T B_B + \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \wedge \neg (m(A_{BR}) < m(A)) \right\}$
1b	$\{ C = AB + \widehat{C} \}$

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

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

where A_{BR} is 0×0, B_B has 0 rows, C_B has 0 rows

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

Determine block size b

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

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

$$\begin{aligned} C_0 &:= A_{00} B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0 \\ C_1 &:= A_{10} B_0 + A_{11} B_1 + A_{21}^T B_1 + C_1 \\ C_2 &:= A_{20} B_0 + A_{21} B_1 + A_{22} B_2 + C_2 \end{aligned}$$

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

endwhile

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

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

where A_{BR} is 0×0, B_B has 0 rows, C_B has 0 rows

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

Determine block size b

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

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

$$\begin{aligned} C_0 &:= A_{10}^T B_1 + C_0 \\ C_1 &:= A_{11} B_1 + C_1 \\ C_2 &:= A_{21} B_1 + C_2 \end{aligned}$$

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

endwhile