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	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) = \left(\begin{array}{r} \widehat{C}_T \\ \hline A_{BR}B_B + \widehat{C}_B \end{array}\right) \right\}$
3	while $m(A_{BR}) < m(A)$ do
2,3	$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) = \left(\begin{array}{r} \widehat{C}_T \\ \hline A_{BR}B_B + \widehat{C}_B \end{array}\right) \wedge m(A_{BR}) < m(A) \right\}$
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	$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array}\right) = \left(\begin{array}{r} \widehat{C}_0 \\ \widehat{C}_1 \\ A_{22}B_2 + \widehat{C}_2 \end{array}\right) \right\}$
8	$C_1 := A_{11}B_1 + A_{21}^T B_1 + C_1$ $C_2 := A_{21}B_1 + C_2$
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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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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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4	where
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<tr><td>8</td><td>$C_0 := A_{00} B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$
$C_1 := A_{10} B_0 + A_{11} B_1 + A_{21}^T B_1 + C_1$
$C_2 := A_{20} B_0 + A_{21} B_1 + A_{22} B_2 + C_2$</td></tr>
<tr><td>7</td><td>$\left\{ \left(\begin{array}{c} C_0 \\ C_1 \\ C_2 \end{array} \right) = \left(\begin{array}{r} \widehat{C}_0 \\ A_{11} B_1 + A_{21}^T B_2 + \widehat{C}_1 \\ A_{21} B_1 + A_{22} B_2 + \widehat{C}_2 \end{array} \right) \right\}$</td></tr>
<tr><td>5b</td><td>$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|cc} A_{00} & A_{01} & A_{02} \\ \hline A_{10} & A_{11} & A_{12} \\ A_{20} & A_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline B_1 \\ B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline C_1 \\ C_2 \end{array} \right)$</td></tr>
<tr><td>2</td><td>$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{r} \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \right\}$</td></tr>
<tr><td></td><td>endwhile</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) = \left(\begin{array}{r} \widehat{C}_T \\ \hline A_{BR} B_B + \widehat{C}_B \end{array} \right) \wedge \neg (m(A_{BR}) < m(A)) \right\}$</td></tr>
<tr><td>1b</td><td>$\{ C = AB + \widehat{C} \}$</td></tr>
</table>

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

$$C_0 := A_{00}B_0 + A_{10}^T B_1 + A_{20}^T B_2 + C_0$$

$$C_1 := A_{10}B_0 + A_{11}B_1 + A_{21}^T B_1 + C_1$$

$$C_2 := A_{20}B_0 + A_{21}B_1 + A_{22}B_2 + C_2$$

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

endwhile

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

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Determine block size b

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

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

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

endwhile