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<tr><th>Step</th><th>Annotated Algorithm: $C := AB + C$ where A is symmetric and stored in lower triangle</th></tr>
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<tr><td>4</td><td>Partition $A \rightarrow \left(\begin{array}{c|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$
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<tr><td>3</td><td>while $m(A_{TL}) < m(A)$ do</td></tr>
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<tr><td>5a</td><td>Repartition
$\left(\begin{array}{c|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c|c|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$
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<tr><td>5b</td><td>Continue with
$\left(\begin{array}{c|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c|c|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$</td></tr>
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<tr><td>1b</td><td>$\left\{ C = AB + \widehat{C} \right\}$</td></tr>
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Algorithm: $C := AB + C$ where A is symmetric and stored in lower triangle

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

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

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

Repartition

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

where α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row

$c_1^T = \widehat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T$

$C_0 = \widehat{C}_0 + a_{10} b_1^T$

Continue with

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

endwhile

Step	**Annotated Algorithm:** $C := AB + C$ where A is symmetric and stored in lower triangle
1a	$\left\{ C = \widehat{C} \right\}$
4	**Partition** $A \rightarrow \left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$ **where** A_{TL} is 0×0, B_T has 0 rows, C_T has 0 rows
2	$\left\{ \left(\begin{array}{c} A_{TL}B_T + A_{BL}^T B_B + C_T = \widehat{C}_T \\ \hline C_B = \widehat{C}_B \end{array}\right) \right\}$
3	**while** $m(A_{TL}) < m(A)$ **do**
2,3	$\left\{ \left(\left(\begin{array}{c} A_{TL}B_T + A_{BL}^T B_B + C_T = \widehat{C}_T \\ \hline C_B = \widehat{C}_B \end{array}\right) \right) \wedge (m(A_{TL}) < m(A)) \right\}$
5a	**Repartition** $\left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$ **where** α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row
6	$\left\{ \left(\begin{array}{c} A_{00}B_0 + a_{10}b_1^T + C_0 = \widehat{C}_0 \\ \hline c_1^T = \widehat{c}_1^T \\ \hline C_2 = \widehat{C}_2 \end{array}\right) \right\}$
8	$c_1^T = \widehat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T$ $C_0 = \widehat{C}_0 + A_{20}^T B_2$
5b	**Continue with** $\left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$
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2	$\left\{ \left(\begin{array}{c} A_{TL}B_T + A_{BL}^T B_B + C_T = \widehat{C}_T \\ \hline C_B = \widehat{C}_B \end{array}\right) \right\}$
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Partition $A \rightarrow \left(\begin{array}{c|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$

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Repartition

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

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$c_1^T = \hat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T$

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Continue with

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

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5b	**Continue with** $\left(\begin{array}{cc} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array} \right) \leftarrow \left(\begin{array}{ccc} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array} \right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array} \right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array} \right)$
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Continue with

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Repartition

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$c_1^T = \widehat{c}_1^T + \alpha_{11} b_1^T + a_{21}^T B_2$

$C_2 = \widehat{C}_2 + a_{21} b_1^T$

Continue with

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

endwhile

Step	**Annotated Algorithm:** C :=A B + C where A is symmetric stored in lower triange
1a	$\left\{ C = \widehat{C} \right\}$
4	**Partition** $A \rightarrow \left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$ **where** A_{TR} is 0×0, B_B has 0 rows, C_B has 0 rows
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right\}$
3	**while** $m(A_{TR}) < m(A)$ **do**
2,3	$\left\{ \left(\left(\begin{array}{c} C_T \\ \hline A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right) \wedge (m(A_{TR}) < m(A)) \right\}$
5a	**Repartition** $\left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$ **where** α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row
6	$\left\{ \left(\begin{array}{c} C_0 = \widehat{C}_0 \\ \hline c_1^T = \widehat{c}_1^T \\ \hline A_{22}B_2 + C_2 = \widehat{C}_2 \end{array}\right) \right\}$
8	$C_2 = \widehat{C}_2 + a_{21}b_1^T$ $c_1^T = \widehat{c}_1^T + \alpha_{11}b_1^T + a_{21}^T B_2$
5b	**Continue with** $\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$
7	$\left\{ \left(\begin{array}{c} C_0 = \widehat{C}_0 \\ \hline \alpha_{11}b_1^T + a_{21}^T B_2 + c_1^T = \widehat{c}_1^T \\ \hline a_{21}b_1^T + A_{22}B_2 + C_2 = \widehat{C}_2 \end{array}\right) \right\}$
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\left(\begin{array}{c} C_T \\ \hline A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right) \wedge \neg (m(A_{TR}) < m(A)) \right\}$
1b	$\left\{ C := AB + \widehat{C} \right\}$

Algorithm: C :=A B + C where A is symmetric stored in lower triange

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

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

while $m(A_{TR}) < m(A)$ **do**

Repartition

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

where α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row

$$C_2 = \widehat{C}_2 + a_{21} b_1^T$$
$$c_1^T = \widehat{c}_1^T + \alpha_{11} b_1^T + a_{21}^T B_2$$

Continue with

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

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Step	**Annotated Algorithm:** C :=A B + C where A is symmetric stored in lower triange
1a	$\left\{ C = \widehat{C} \right\}$
4	**Partition** $A \rightarrow \left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$, $C \rightarrow \left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right)$ **where** A_{TR} is 0×0, B_B has 0 rows, C_B has 0 rows
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline A_{BL}B_T + A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right\}$
3	**while** $m(A_{TR}) < m(A)$ **do**
2,3	$\left\{ \left(\left(\begin{array}{c} C_T \\ \hline A_{BL}B_T + A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right) \wedge (m(A_{TR}) < m(A)) \right\}$
5a	**Repartition** $\left(\begin{array}{c\|c} A_{TL} & * \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \rightarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$ **where** α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row
6	$\left\{ \left(\begin{array}{c} C_0 = \widehat{C}_0 \\ \hline c_1^T = \widehat{c}_1^T \\ \hline A_{20}B_0 + a_{21}b_1^T + A_{22}B_2 + C_2 = \widehat{C}_2 \end{array}\right) \right\}$
8	$c_1^T = \widehat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T + a_{21}^T B_2$
5b	**Continue with** $\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|c\|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$
7	$\left\{ \left(\begin{array}{c} C_0 = \widehat{C}_0 \\ \hline a_{10}^T B_0 + \alpha_{11} b_1^T + a_{21}^T B_2 + c_1^T = \widehat{c}_1^T \\ \hline A_2 0 B_0 + a_{21}b_1^T + A_{22}B_2 + C_2 = \widehat{C}_2 \end{array}\right) \right\}$
2	$\left\{ \left(\begin{array}{c} C_T \\ \hline A_{BL}B_T + A_{BR}B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right\}$
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Algorithm: C :=A B + C where A is symmetric stored in lower triange

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

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while $m(A_{TR}) < m(A)$ **do**

Repartition

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

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$c_1^T = \hat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T + a_{21}^T B_2$

Continue with

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

endwhile

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Algorithm: C :=A B + C where A is symmetric stored in lower triange

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

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while $m(A_{TR}) < m(A)$ **do**

Repartition

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$C_0 = \widehat{C}_0 + a_{10}^T B_0$
$c_1^T = \widehat{c}_1^T + \alpha_{11} b_1^T$
$C_2 = \widehat{C}_2 + a_{21}^T B_2$

Continue with

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

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$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c|c|c} A_{00} & * & * \\ \hline a_{10}^T & \alpha_{11} & * \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ \hline B_2 \end{array}\right)$, $\left(\begin{array}{c} C_T \\ \hline C_B \end{array}\right) \leftarrow \left(\begin{array}{c} C_0 \\ \hline c_1^T \\ \hline C_2 \end{array}\right)$</td></tr>
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<tr><td>2</td><td>$\left\{ \left(\begin{array}{c} A_{BL}^T B_B + C_T \\ \hline A_{BL} B_T + A_{BR} B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right\}$</td></tr>
<tr><td></td><td>endwhile</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\left(\begin{array}{c} A_{BL}^T B_B + C_T \\ \hline A_{BL} B_T + A_{BR} B_B + C_B \end{array}\right) = \left(\begin{array}{c} \widehat{C}_T \\ \hline \widehat{C}_B \end{array}\right) \right) \wedge \neg (m(A_{TR}) < m(A)) \right\}$</td></tr>
<tr><td>1b</td><td>$\left\{ C := AB + \widehat{C} \right\}$</td></tr>
</table>

Algorithm: C :=A B + C where A is symmetric stored in lower triange

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

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

while $m(A_{TR}) < m(A)$ **do**

Repartition

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

where α_{11} is 1×1, b_1 has 1 row, c_1 has 1 row

$C_0 = \widehat{C}_0 + a_{10} b_1^T$

$c_1^T = \widehat{c}_1^T + a_{10}^T B_0 + \alpha_{11} b_1^T$

Continue with

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

endwhile