Step	Algorithm: $y := Ax + y$ (A symmetric stored in lower triangular part)
1a	$\{ y = \widehat{y} \}$
4	$A \rightarrow \left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where A_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{cc} A_{TL} x_T + & \widehat{y}_T \\ \hline A_{BL} x_T + & \widehat{y}_B \end{array}\right) \right\}$
3	while $m(A_{TL}) < m(A)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{cc} A_{TL} x_T + & \widehat{y}_T \\ \hline A_{BL} x_T + & \widehat{y}_B \end{array}\right) \wedge m(A_{TL}) < m(A) \right\}$
5a	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c\|cc} A_{00} & a_{01} & A_{02} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$ where α_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{cc} A_{00} x_0 + & \widehat{y}_0 \\ a_{10}^T x_0 + & \widehat{\psi}_1 \\ A_{20} x_0 + & \widehat{y}_2 \end{array}\right) \right\}$
8	$y_0 := \chi_1 (a_{10}^T)^T + y_0$ $\psi_1 := \alpha_{11} \chi_1 + \psi_1$ $y_2 := \chi_1 a_{21} + y_2$
7	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{cc} A_{00} x_0 + \chi_1 (a_{10}^T)^T + & \widehat{y}_0 \\ a_{10}^T x_0 + \alpha_{11} \chi_1 + & \widehat{\psi}_1 \\ A_{20} x_0 + \chi_1 a_{21} + & \widehat{y}_2 \end{array}\right) \right\}$
5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc\|c} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{cc} A_{TL} x_T + & \widehat{y}_T \\ \hline A_{BL} x_T + & \widehat{y}_B \end{array}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{cc} A_{TL} x_T + & \widehat{y}_T \\ \hline A_{BL} x_T + & \widehat{y}_B \end{array}\right) \wedge \neg (m(A_{TL}) < m(A)) \right\}$
1b	$\{ y = Ax + \widehat{y} \}$

Step	Algorithm: $y := Ax + y$ (A symmetric stored in lower triangular part)
1a	$\{$ $\}$
4	where
2	$\left\{ \right\}$
3	while do
2,3	$\left\{ \wedge \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \right\}$
	endwhile
2,3	$\left\{ \wedge \neg(\quad) \right\}$
1b	$\{$ $\}$

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8	
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	endwhile
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3	while do
2,3	$\left\{ \begin{pmatrix} y_T \\ \hline y_B \end{pmatrix} = \begin{pmatrix} A_{TL}x_T + \quad \widehat{y}_T \\ \hline A_{BL}x_T + \quad \widehat{y}_B \end{pmatrix} \wedge \right\}$
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8	
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8	
7	$\left\{ \quad \right\}$
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6	$\{ \}$
8	
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5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc\|c} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$
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8	
7	$\{ \quad \}$
5b	$\left(\begin{array}{c\|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc\|c} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$
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<table>
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<tr><td></td><td>endwhile</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} A_{TL} x_T + \widehat{y}_T \\ \hline A_{BL} x_T + \widehat{y}_B \end{array}\right) \wedge \neg (m(A_{TL}) < m(A)) \right\}$</td></tr>
<tr><td>1b</td><td>$\{ y = Ax + \widehat{y} \}$</td></tr>
</table>

Algorithm: $y := Ax + y$ (A symmetric stored in lower triangular part)

$$A \rightarrow \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right), \; x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), \; y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$$

where A_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows

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

$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c|cc} A_{00} & a_{01} & A_{02} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ A_{20} & a_{21} & A_{22} \end{array}\right), \; \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right), \; \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$$

where α_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row

$$y_0 := \chi_1 (a_{10}^T)^T + y_0$$

$$\psi_1 := \alpha_{11}\chi_1 + \psi_1$$

$$y_2 := \chi_1 a_{21} + y_2$$

$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc|c} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \; \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \; \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$$

endwhile

Algorithm: $y := Ax + y$ (A symmetric stored in lower triangular part)

$A \rightarrow \left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$

where A_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows

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

$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c|cc} A_{00} & a_{01} & A_{02} \\ \hline a_{10}^T & \alpha_{11} & a_{12}^T \\ A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$$

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$$\left(\begin{array}{c|c} A_{TL} & A_{TR} \\ \hline A_{BL} & A_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc|c} A_{00} & a_{01} & A_{02} \\ a_{10}^T & \alpha_{11} & a_{12}^T \\ \hline A_{20} & a_{21} & A_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$$

endwhile