Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$ where λ_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{c} x_0 \\ \widehat{\psi}_1 - l_{10}^T x_0 \\ \widehat{y}_2 - L_{20}^T x_0 \end{array}\right) \wedge L_{00} x_0 = \widehat{y}_0 \right\}$
8	$y_2 := \widehat{y}_2 - L_{00} x_0 - \chi_1 l_{21} = y_2 - \psi_1 l_{21}$
7	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{c} x_0 \\ \chi_1 \\ \widehat{y}_2 - L_{00} x_0 - \chi_1 l_{21} \end{array}\right) \wedge \begin{array}{c} L_{00} x_0 = \widehat{y}_0 \\ l_{10}^T x_0 + \chi_1 = \widehat{\psi}_1 \end{array} \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \wedge \neg(m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
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	{ }

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{y = \widehat{y} \quad\quad\quad\quad \}$
4	where
2	$\left\{ \quad\quad \right\}$
3	while do
2,3	$\left\{ \quad\quad \wedge \quad\quad \right\}$
5a	where
6	$\left\{ \quad\quad \right\}$
8	
7	$\left\{ \quad\quad \right\}$
5b	
2	$\left\{ \quad\quad \right\}$
	endwhile
2,3	$\left\{ \quad\quad \wedge \neg(\quad\quad) \quad\quad \right\}$
1b	$\{y = x \wedge Lx = \widehat{y} \quad\quad\quad\quad \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \quad \}$
4	where
2	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T}\right) \wedge L_{TL} x_T = y_T \right\}$
3	while do
2,3	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T}\right) \wedge L_{TL} x_T = y_T \wedge \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T}\right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T}\right) \wedge L_{TL} x_T = y_T \wedge \neg(\quad) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \quad \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	where
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T} \right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T} \right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	where
6	$\{ \}$
8	
7	$\{ \}$
5b	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T} \right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{x_T}{\widehat{y}_B - L_{BL} x_T} \right) \wedge L_{TL} x_T = y_T \wedge \neg(m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right)$ where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	where
6	$\{ \quad \}$
8	
7	$\{ \quad \}$
5b	
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge \neg (m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right)$ where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$ where λ_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \leftarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge \neg (m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right)$ where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$ where λ_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} x_0 \\ \widehat{\psi}_1 - l_{10}^T x_0 \\ \widehat{y}_2 - L_{20}^T x_0 \end{array} \right) \wedge L_{00} x_0 = \widehat{y}_0 \right\}$
8	
7	$\left\{ \quad \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \leftarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge \neg (m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

<table>
<tr><td>Step</td><td>Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.</td></tr>
<tr><td>1a</td><td>$\{ y = \widehat{y} \}$</td></tr>
<tr><td>4</td><td>$L \rightarrow \left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right), x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$
where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows</td></tr>
<tr><td>2</td><td>$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \right\}$</td></tr>
<tr><td>3</td><td>while $m(L_{TL}) < m(L)$ do</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$</td></tr>
<tr><td>5a</td><td>$\left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$
where λ_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row</td></tr>
<tr><td>6</td><td>$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{c} x_0 \\ \widehat{\psi}_1 - l_{10}^T x_0 \\ \widehat{y}_2 - L_{20}^T x_0 \end{array}\right) \wedge L_{00} x_0 = \widehat{y}_0 \right\}$</td></tr>
<tr><td>8</td><td></td></tr>
<tr><td>7</td><td>$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) = \left(\begin{array}{c} x_0 \\ \chi_1 \\ \widehat{y}_2 - L_{00} x_0 - \chi_1 l_{21} \end{array}\right) \wedge \begin{array}{c} L_{00} x_0 = \widehat{y}_0 \\ l_{10}^T x_0 + \chi_1 = \widehat{\psi}_1 \end{array} \right\}$</td></tr>
<tr><td>5b</td><td>$\left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{cc|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$</td></tr>
<tr><td>2</td><td>$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \right\}$</td></tr>
<tr><td></td><td>endwhile</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array}\right) \wedge L_{TL} x_T = y_T \wedge \neg (m(L_{TL}) < m(L)) \right\}$</td></tr>
<tr><td>1b</td><td>$\{ y = x \wedge Lx = \widehat{y} \}$</td></tr>
</table>

Step	Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.
1a	$\{ y = \widehat{y} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right)$ where L_{TL} is 0×0, x_T has 0 rows, y_T has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
3	while $m(L_{TL}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge m(L_{TL}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$ where λ_{11} is 1×1, χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} x_0 \\ \widehat{\psi}_1 - l_{10}^T x_0 \\ \widehat{y}_2 - L_{20}^T x_0 \end{array} \right) \wedge L_{00} x_0 = \widehat{y}_0 \right\}$
8	$y_2 := \widehat{y}_2 - L_{00} x_0 - \chi_1 l_{21} = y_2 - \psi_1 l_{21}$
7	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} x_0 \\ \chi_1 \\ \widehat{y}_2 - L_{00} x_0 - \chi_1 l_{21} \end{array} \right) \wedge \begin{array}{r} L_{00} x_0 = \widehat{y}_0 \\ l_{10}^T x_0 + \chi_1 = \widehat{\psi}_1 \end{array} \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \leftarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} x_T \\ \hline \widehat{y}_B - L_{BL} x_T \end{array} \right) \wedge L_{TL} x_T = y_T \wedge \neg (m(L_{TL}) < m(L)) \right\}$
1b	$\{ y = x \wedge Lx = \widehat{y} \}$

Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.

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

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

while $m(L_{TL}) < m(L)$ do

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

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

$$y_2 := \widehat{y}_2 - L_{00}x_0 - \chi_1 l_{21} = y_2 - \psi_1 l_{21}$$

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

endwhile

Algorithm: Solve $Lx = y$ overwriting y with x. L is unit lower triangular.

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

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

while $m(L_{TL}) < m(L)$ **do**

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

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

$$y_2 := \widehat{y}_2 - L_{00}x_0 - \chi_1 l_{21} = y_2 - \psi_1 l_{21}$$

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

endwhile