Step Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular. 1a $\{y = \widehat{y}\}$ $V \to \left(\frac{U_{TL}}{U_{RR}} U_{RR}\right), x \to \left(\frac{x_T}{x_B}\right), y \to \left(\frac{y_T}{y_R}\right)$ where U_{RR} is 0×0 , x_B has 0 rows, y_B has 0 rows 2 $\left\{\left(\frac{y_T}{y_B}\right) = \left(\widehat{y}_T - U_{TR}x_B\right) \times U_{BR}x_B = \widehat{y}_B\right\}$ 3 while $m(U_{RR}) \times m(U)$ do 2.3 $\left\{\left(\frac{y_T}{y_B}\right) = \left(\widehat{y}_T - U_{TR}x_B\right) \times U_{BR}x_B = \widehat{y}_B \times m(U_{BR}) \times m(U)\right\}$ 5a $\left(\frac{U_{TL}}{U_{BR}} U_{RR}\right) \to \left(\frac{U_{00}}{x_R} U_{01} U_{02} \times U_{11} U_{12} \times U_{$	Ston	Algorithm. Solve $U_{x} = u$ everywriting u with x , U is upper triangular
$ \begin{array}{ll} 4 & U \rightarrow \left(\begin{array}{c} U_{TL} & U_{TR} \\ U_{BL} & U_{BR} \\ \end{array} \right), x \rightarrow \left(\begin{array}{c} x_T \\ x_B \\ \end{array} \right), y \rightarrow \left(\begin{array}{c} y_T \\ y_B \\ \end{array} \right) \\ & \text{where } U_{BR}^* \text{ is } 0 \times 0, x_B \text{ has } 0 \text{ rows}, y_B \text{ has } 0 \text{ rows} \\ \\ 2 & \left\{ \left(\begin{array}{c} y_T \\ y_B \\ \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR} x_B \\ x_B \\ \end{array} \right) \wedge U_{BR} x_B = \widehat{y}_B \\ \\ 3 & \text{while } m(U_{BR}) < m(U) \text{ do} \\ \\ 2,3 & \left\{ \left(\begin{array}{c} y_T \\ y_B \\ \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR} x_B \\ x_B \\ \end{array} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \\ \\ 5a & \left(\begin{array}{c} U_{TL} & U_{TR} \\ U_{BL} & U_{BR} \\ \end{array} \right) \rightarrow \left(\begin{array}{c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \\ \end{array} \right), \left(\begin{array}{c} x_T \\ x_B \\ \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ x_1 \\ x_2 \\ \end{array} \right), \left(\begin{array}{c} y_T \\ y_B \\ \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \\ \end{array} \right) \\ \\ 8 & \frac{y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 - \chi_1 u_{01}}{x_2} \\ \chi_1 \\ \chi_2 \\ \end{array} \right) \wedge U_{12} x_2 = \widehat{y}_2 \\ \\ 8 & \frac{y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 - y_0 - \chi_1 u_{01}}{x_2} \\ \chi_1 \\ \chi_2 \\ \end{array} \right) \wedge V_{11} \chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22} \chi_2 = \widehat{y}_2 \\ \\ \\ 5b & \left(\begin{array}{c} U_{TL} & U_{TR} \\ U_{BL} & U_{DR} \\ \end{array} \right) \leftarrow \left(\begin{array}{c} U_{00} & u_{01} & U_{02} \\ U_{20} & u_{21} & U_{22} \\ U_{20} & u_{21} & U_{22} \\ \end{array} \right), \left(\begin{array}{c} x_T \\ \chi_1 \\ U_{22} \chi_2 = \widehat{y}_2 \\ \end{array} \right) \\ \\ 2 & \left\{ \left(\begin{array}{c} y_T \\ y_B \\ \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR} x_B \\ x_B \\ \end{array} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U) \right) \\ \\ \end{array} \right\}$	-	
$ \begin{array}{c} 3 & \text{while } m(U_{BR}) < m(U) \text{ do} \\ \\ 2,3 & \left\{ \begin{array}{c} \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \end{array} \right. \\ \\ 5a & \left(\begin{array}{c} \left(\frac{U_{TL}}{U_{BL}} \middle U_{TR} \right) \\ U_{BL} \middle U_{BR} \right) \rightarrow \left(\begin{array}{c} \left(\frac{U_{00}}{u_{10}} \middle u_{12} \right) \\ U_{20} \middle u_{21} \middle U_{22} \right) \end{array}, \left(\frac{x_T}{x_B} \right) \rightarrow \left(\frac{x_0}{x_1} \right), \left(\frac{y_T}{y_B} \right) \rightarrow \left(\frac{y_0}{y_1} \right) \\ \\ where v_{11} \text{ is } 1 \times 1, \chi_1 \text{ has } 1 \text{ row}, \psi_1 \text{ has } 1 \text{ row} \end{array} \right. \\ 6 & \left\{ \begin{array}{c} \left(y_0 \right) \\ \psi_1 \right) = \left(\widehat{\psi}_0 - U_{02} x_2 \right) \\ \psi_2 \right\} & \times \\ \\ 8 & y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 = y_0 - \chi_1 u_{01} \\ \psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11} \end{array} \right. \\ 7 & \left\{ \begin{array}{c} \left(y_0 \right) \\ \psi_1 \\ y_2 \end{array} \right\} = \left(\begin{array}{c} \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 \\ \chi_1 \\ \chi_2 \end{array} \right) \wedge \left(\begin{array}{c} v_{11} \chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22} x_2 = \widehat{y}_2 \end{array} \right. \\ \\ 5b & \left(\begin{array}{c} \left(y_1 \right) \\ U_{BL} \middle U_{BR} \right) \leftarrow \left(\begin{array}{c} \left(y_{00} \middle u_{01} \middle U_{02} \\ U_{10} \middle v_{11} \middle u_{12} \\ U_{20} \middle u_{21} \middle U_{22} \right), \left(\frac{x_T}{x_B} \right) \leftarrow \left(\frac{x_0}{\chi_1} \right), \left(\frac{y_T}{y_B} \right) \leftarrow \left(\frac{y_0}{\psi_1} \right) \\ \\ \left(\begin{array}{c} \left(y_1 \right) \\ y_2 \end{array} \right) = \left(\begin{array}{c} \left(\widehat{y}_T - U_{TR} x_B \right) \\ x_B \end{array} \right) \wedge U_{BR} x_B = \widehat{y}_B \end{array} \right. \\ & \text{endwhile} \\ \\ 2,3 & \left\{ \left(\begin{array}{c} \left(y_T \right) \\ y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR} x_B \\ x_B \end{array} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \end{array} \right. \end{array}$		$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) , x \to \left(\begin{array}{c c} x_T \\ \hline x_B \end{array}\right) , y \to \left(\begin{array}{c c} y_T \\ \hline y_B \end{array}\right)$
	2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$
$ \begin{array}{lll} 5a & \left(\frac{U_{TL}}{U_{BL}} U_{TR}}{U_{BL}} \right) \rightarrow \left(\frac{U_{00}}{u_{10}} U_{02}}{u_{10}} U_{02}}{u_{12}} u_{12}^T} \right), \left(\frac{x_T}{x_B} \right) \rightarrow \left(\frac{x_0}{x_1}}{x_2} \right), \left(\frac{y_T}{y_B} \right) \rightarrow \left(\frac{y_0}{y_1} \right) \\ & \text{where } v_{11} \text{ is } 1 \times 1, \chi_1 \text{ has } 1 \text{ row}, \psi_1 \text{ has } 1 \text{ row}} \right) \\ 6 & \left\{ \begin{array}{l} \left(\frac{y_0}{y_1} \right) = \left(\frac{\widehat{y}_0 - U_{02}x_2}{\widehat{\psi}_1 - u_{12}^T x_2} \right) \wedge U_{22}x_2 = \widehat{y}_2 \\ x_2 \end{array} \right\} \\ 8 & y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02}x_2 = y_0 - \chi_1 u_{01} \\ & \psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11} \end{array} \right. \\ 7 & \left\{ \begin{array}{l} \left(\frac{y_0}{y_1} \right) = \left(\frac{\widehat{y}_0 - \chi_1 u_{01} - U_{02}x_2}{\chi_1} \right) \wedge v_{11}\chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ & \chi_1 \end{array} \right. \\ & \left\{ \begin{array}{l} \left(\frac{y_0}{y_1} \right) = \left(\frac{\widehat{y}_0 - \chi_1 u_{01} - U_{02}x_2}{\chi_1} \right) \wedge v_{11}\chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ & \chi_2 \end{array} \right. \\ 5b & \left(\frac{U_{TL}}{U_{TR}} \right) \leftarrow \left(\frac{U_{00}}{u_{10}} \frac{u_{01}}{v_{01}} \frac{U_{02}}{u_{21}} \right) , \left(\frac{x_T}{x_B} \right) \leftarrow \left(\frac{x_0}{\chi_1} \right) , \left(\frac{y_T}{y_B} \right) \leftarrow \left(\frac{y_0}{\psi_1} \right) \\ & 2 & \left\{ \frac{y_T}{y_B} \right\} = \left(\frac{\widehat{y}_T - U_{TR}x_B}{x_B} \right) \wedge U_{BR}x_B = \widehat{y}_B \\ & \text{endwhile} \\ 2,3 & \left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR}x_B}{x_B} \right) \wedge U_{BR}x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right. \\ \end{array} \right. $	3	while $m(U_{BR}) < m(U)$ do
$\begin{array}{c} & \left(\begin{array}{c} \left(\begin{array}{c} \left(y_{0}\right) & y_{1} & y_{2} \\ \end{array}\right) \\ & \left(\begin{array}{c} \left(\begin{array}{c} y_{0} \\ \psi_{1} \\ \end{array}\right) = \left(\begin{array}{c} \widehat{y}_{0} - U_{02}x_{2} \\ \widehat{\psi}_{1} - u_{12}^{T}x_{2} \\ \end{array}\right) \wedge U_{22}x_{2} = \widehat{y}_{2} \\ & \left(\begin{array}{c} y_{0} \\ \psi_{1} \\ \end{array}\right) = \left(\begin{array}{c} \widehat{\psi}_{1} - u_{12}^{T}x_{2} \\ x_{2} \end{array}\right) \wedge U_{22}x_{2} = \widehat{y}_{2} \\ & \left(\begin{array}{c} y_{0} \\ \psi_{1} \\ \end{array}\right) = \left(\begin{array}{c} \widehat{\psi}_{1} - u_{12}^{T}x_{2} \right) / v_{11} = \psi_{1} / v_{11} \\ & \left(\begin{array}{c} \left(\begin{array}{c} y_{0} \\ \psi_{1} \\ \end{array}\right) = \left(\begin{array}{c} \widehat{y}_{0} - \chi_{1}u_{01} - U_{02}x_{2} \\ \chi_{1} \\ \chi_{2} \end{array}\right) \wedge \left(\begin{array}{c} v_{11}\chi_{1} + u_{12}^{T}x_{2} = \widehat{\psi}_{1} \\ U_{22}x_{2} = \widehat{y}_{2} \end{array}\right) \\ & \left(\begin{array}{c} \left(\begin{array}{c} U_{TL} \\ U_{DR} \\ \end{array}\right) + \left(\begin{array}{c} \left(\begin{array}{c} U_{00} \\ U_{11} \\ U_{12} \\ U_{20} \\ \end{array}\right) + \left(\begin{array}{c} \left(\begin{array}{c} x_{1} \\ x_{2} \\ \end{array}\right) + \left(\begin{array}{c} \left(\begin{array}{c} y_{1} \\ y_{2} \\ \end{array}\right) + \left(\begin{array}{c} \left(\begin{array}{c} y_{0} \\ \psi_{1} \\ \end{array}\right) \\ & \left(\begin{array}{c} y_{1} \\ y_{2} \\ \end{array}\right) \end{array}\right) \\ & \left(\begin{array}{c} \left(\begin{array}{c} y_{1} \\ y_{2} \\ \end{array}\right) + \left(\begin{array}{c} \left(\begin{array}{$	2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$
$ \begin{cases} \begin{cases} \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - U_{02}x_2 \\ \widehat{\psi}_1 - u_{12}^T x_2 \end{pmatrix} \wedge U_{22}x_2 = \widehat{y}_2 \\ x_2 \end{cases} \end{cases} $ $ \begin{cases} y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02}x_2 = y_0 - \chi_1 u_{01} \\ \psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11} \end{cases} $ $ \begin{cases} \begin{cases} y_0 \\ \psi_1 \\ y_2 \end{cases} = \begin{pmatrix} \widehat{y}_0 - \chi_1 u_{01} - U_{02}x_2 \\ \chi_1 \\ x_2 \end{pmatrix} \wedge \begin{pmatrix} v_{11}\chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22}x_2 = \widehat{y}_2 \end{cases} \end{cases} $ $ \begin{cases} \begin{cases} U_{TL} & U_{TR} \\ U_{BL} & U_{BR} \end{pmatrix} \leftarrow \begin{pmatrix} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{pmatrix}, \begin{pmatrix} x_T \\ x_B \end{pmatrix} \leftarrow \begin{pmatrix} x_0 \\ \chi_1 \\ x_2 \end{pmatrix}, \begin{pmatrix} y_T \\ y_B \end{pmatrix} \leftarrow \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} \end{cases} $ $ \begin{cases} \begin{cases} y_T \\ y_B \end{cases} = \begin{pmatrix} \widehat{y}_T - U_{TR}x_B \\ x_B \end{cases} \wedge U_{BR}x_B = \widehat{y}_B \end{cases} $ $ \begin{cases} \begin{cases} (y_T \\ y_B \end{cases} = \begin{pmatrix} \widehat{y}_T - U_{TR}x_B \\ x_B \end{cases} \wedge U_{BR}x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \end{cases} $ $ \end{cases} $	5a	$\begin{pmatrix} U_{20} & u_{21} & U_{22} \end{pmatrix}$
$ \frac{8}{v_{1}} := \chi_{1} = (\widehat{\psi}_{1} - u_{12}^{T} x_{2})/v_{11} = \psi_{1}/v_{11} $ $ 7 \left\{ \begin{pmatrix} y_{0} \\ \psi_{1} \\ y_{2} \end{pmatrix} = \begin{pmatrix} \widehat{y}_{0} - \chi_{1} u_{01} - U_{02} x_{2} \\ \chi_{1} \\ x_{2} \end{pmatrix} \wedge \begin{matrix} v_{11}\chi_{1} + u_{12}^{T} x_{2} = \widehat{\psi}_{1} \\ U_{22}x_{2} = \widehat{y}_{2} \end{matrix} \right\} $ $ 5b \left\{ \begin{pmatrix} U_{TL} & U_{TR} \\ U_{BL} & U_{BR} \end{pmatrix} \leftarrow \begin{pmatrix} U_{00} & u_{01} & U_{02} \\ u_{10}^{T} & v_{11} & u_{12}^{T} \\ U_{20} & u_{21} & U_{22} \end{pmatrix}, \begin{pmatrix} \underline{x}_{T} \\ x_{B} \end{pmatrix} \leftarrow \begin{pmatrix} \underline{x}_{0} \\ \chi_{1} \\ x_{2} \end{pmatrix}, \begin{pmatrix} \underline{y}_{T} \\ y_{B} \end{pmatrix} \leftarrow \begin{pmatrix} \underline{y}_{0} \\ \psi_{1} \\ y_{2} \end{pmatrix} $ $ 2 \left\{ \begin{pmatrix} \underline{y}_{T} \\ y_{B} \end{pmatrix} = \begin{pmatrix} \widehat{y}_{T} - U_{TR} x_{B} \\ x_{B} \end{pmatrix} \wedge U_{BR} x_{B} = \widehat{y}_{B} \right\} $ $ endwhile $ $ 2,3 \left\{ \begin{pmatrix} \underline{y}_{T} \\ y_{B} \end{pmatrix} = \begin{pmatrix} \widehat{y}_{T} - U_{TR} x_{B} \\ x_{B} \end{pmatrix} \wedge U_{BR} x_{B} = \widehat{y}_{B} \wedge \neg (m(U_{BR}) < m(U)) \right\} $	6	
5b $\left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c c} x_0 \\ \hline \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ \hline y_2 \end{array}\right)$ $2 \left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR}x_B \\ \hline x_B \end{array}\right) \wedge U_{BR}x_B = \widehat{y}_B \right.$ endwhile $2,3 \left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR}x_B \\ \hline x_B \end{array}\right) \wedge U_{BR}x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right.$	8	
5b $\left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c c} x_0 \\ \hline \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ \hline y_2 \end{array}\right)$ $2 \left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR}x_B \\ \hline x_B \end{array}\right) \wedge U_{BR}x_B = \widehat{y}_B \right.$ endwhile $2,3 \left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T - U_{TR}x_B \\ \hline x_B \end{array}\right) \wedge U_{BR}x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right.$	7	$ \left\{ \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 \\ \chi_1 \\ \chi_2 \end{pmatrix} \wedge \begin{array}{l} v_{11} \chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22} x_2 = \widehat{y}_2 \end{pmatrix} \right\} $
$ \left\{ \begin{array}{c} \left(\frac{y_T}{y_B}\right) = \left(\frac{\widehat{y}_T - U_{TR}x_B}{x_B}\right) \wedge U_{BR}x_B = \widehat{y}_B \\ \text{endwhile} \\ 2,3 \left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{\widehat{y}_T - U_{TR}x_B}{x_B}\right) \wedge U_{BR}x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \\ \end{array} \right\} $	5b	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \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) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right) $
endwhile $2,3 \left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right\}$	2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$
$1b \{y = x \land Ux = \widehat{y} $	2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right\}$
	1b	$\{y = x \land Ux = \widehat{y} $

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	{	
4	whove	
2	where	
3	while do	
2,3		
5a	where	
6		
8		
7		
5b		
2		
	endwhile	
2,3	$\left\{ \begin{array}{c} \\ \\ \\ \end{array} \right. $	
1b	{	

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	$\{y = \widehat{y}\}$	
4	where	
2		
3	while do	
2,3		
5a	where	
6		
8		
7		
5b		
2		
	endwhile	
2,3		
1b	$\{y = x \land Ux = \widehat{y}\}$	

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	$\{y=\widehat{y}$	}
4	where	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$	
3	while do	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \right.$	
5a	where	
6		
8		
7		
5b		
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$	$\bigg\}$
	endwhile	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg () \right\}$	
1b	$\{y = x \land Ux = \widehat{y}$	}

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	$\{y=\widehat{y}$	}
4	where	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$	igg
3	while $m(U_{BR}) < m(U)$ do	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \frac{m(U_{BR})}{m(U_{BR})} < m(U) \right\}$	$\left. \right\}$
5a		
	where	_
6		
8		
7		-
5b		
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$	
	endwhile	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \land U_{BR} x_B = \widehat{y}_B \land \neg (m(U_{BR}) < m(U)) \right\}$	
1b	$\{y = x \land Ux = \widehat{y}$	}

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.
1a	$\left\{ y = \widehat{y} \right\}$
4	$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$
3	while $m(U_{BR}) < m(U)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$
5a	where
6	
8	
7	
5b	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right\}$
1b	$\{y = x \land Ux = \widehat{y} $ }

Step	Algorithm: Solve $Ux = y$ overwriting y with x. U is upper triangular.
1a	$\{y = \widehat{y} $
4	$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows
2	$ \left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \land U_{BR} x_B = \widehat{y}_B \right. $
3	while $m(U_{BR}) < m(U)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$
5a	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \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) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right) $ where v_{11} is 1×1 , χ_1 has 1 row, ψ_1 has 1 row
6	
8	
7	
5b	$ \left(\begin{array}{c c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ x_B \end{array}\right) \leftarrow \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) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ \hline y_2 \end{array}\right) $
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \land U_{BR} x_B = \widehat{y}_B \land \neg (m(U_{BR}) < m(U)) \right\}$
1b	$\{y = x \land Ux = \widehat{y} $ }

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.
1a	$\{y = \widehat{y} $
4	$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c c} y_T \\ \hline y_B \end{array}\right)$ where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right\}$
3	while $m(U_{BR}) < m(U)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$
5a	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \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) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right) $ where v_{11} is 1×1 , χ_1 has 1 row, ψ_1 has 1 row
6	$ \left\{ \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - U_{02} x_2 \\ \widehat{\psi}_1 - u_{12}^T x_2 \\ x_2 \end{pmatrix} \land U_{22} x_2 = \widehat{y}_2 \right\} $
8	
7	
5b	$\begin{pmatrix} U_{BL} & U_{BR} \end{pmatrix} \begin{pmatrix} U_{20} & U_{21} & U_{22} \end{pmatrix} \begin{pmatrix} x_B \end{pmatrix} \begin{pmatrix} x_B \end{pmatrix} \begin{pmatrix} y_2 \end{pmatrix}$
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge \neg (m(U_{BR}) < m(U)) \right\}$
1b	$\{y = x \land Ux = \widehat{y} $ }

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	$\{y=\widehat{y}$	}
4	$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c c} y_T \\ \hline y_B \end{array}\right)$	
2	where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows $ \left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right. $	
3	while $m(U_{BR}) < m(U)$ do	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$	igg
5a	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) $ where v_{11} is 1×1 , χ_1 has 1 row, ψ_1 has 1 row	
6	$\begin{cases} \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - U_{02} x_2 \\ \widehat{\psi}_1 - u_{12}^T x_2 \\ x_2 \end{pmatrix} \land U_{22} x_2 = \widehat{y}_2 \end{cases}$	$\left. \right $
8		
7	$ \begin{cases} \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 \\ \chi_1 \\ \chi_2 \end{pmatrix} \land \begin{array}{c} v_{11} \chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22} x_2 = \widehat{y}_2 \end{cases} $	$\left. \begin{array}{c} \\ \end{array} \right\}$
5b	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) $	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$	igg
	endwhile	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \land U_{BR} x_B = \widehat{y}_B \land \neg (m(U_{BR}) < m(U)) \right\}$	$\left. \right\}$
1b	$y = x \wedge Ux = \hat{y}$	}

Step	Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
1a	$\{y=\widehat{y}$	}
4	$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c c} y_T \\ \hline y_B \end{array}\right)$	
2	where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows $ \left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right. $	
3	while $m(U_{BR}) < m(U)$ do	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \wedge m(U_{BR}) < m(U) \right\}$	igg
5a	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array}\right) $ where v_{11} is 1×1 , χ_1 has 1 row, ψ_1 has 1 row	
6	$ \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - U_{02}x_2 \\ \widehat{\psi}_1 - u_{12}^T x_2 \\ x_2 \end{pmatrix} \wedge U_{22}x_2 = \widehat{y}_2 $	$\left. \begin{array}{c} \\ \end{array} \right\}$
8	$y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 = y_0 - \chi_1 u_{01}$ $\psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11}$	
7	$ \begin{cases} \begin{pmatrix} y_0 \\ \psi_1 \\ y_2 \end{pmatrix} = \begin{pmatrix} \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 \\ \chi_1 \\ \chi_2 \end{pmatrix} \land \begin{array}{c} v_{11} \chi_1 + u_{12}^T x_2 = \widehat{\psi}_1 \\ U_{22} x_2 = \widehat{y}_2 \end{cases} $	$\left. \begin{array}{c} \\ \end{array} \right\}$
5b	$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \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 \\ \hline \psi_1 \\ \hline y_2 \end{array}\right) $	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \wedge U_{BR} x_B = \widehat{y}_B \right.$	igg
	endwhile	
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T - U_{TR} x_B}{x_B} \right) \land U_{BR} x_B = \widehat{y}_B \land \neg (m(U_{BR}) < m(U)) \right\}$	$\left. \right\}$
1b	$y = x \wedge Ux = \hat{y}$	}

Algorithm: Solve $Ux = y$ overwriting y with x . U is upper triangular.	
$U \to \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right), x \to \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), y \to \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows	
while $m(U_{BR}) < m(U)$ do	
$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array}\right), \left(\begin{array}{c} x_T \\ x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \left(\begin{array}{c} y_T \\ y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right) $ where v_{11} is 1×1 , χ_1 has 1 row, ψ_1 has 1 row	
$y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 = y_0 - \chi_1 u_{01}$ $\psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11}$	
$ \left(\begin{array}{c c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ U_{20} & u_{21} & U_{22} \end{array} \right) , \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \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) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ \hline y_2 \end{array} \right) $	
endwhile	

Algorithm: Solve Ux = y overwriting y with x. U is upper triangular.

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

where U_{BR} is 0×0 , x_B has 0 rows, y_B has 0 rows

while $m(U_{BR}) < m(U)$ do

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

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

$$y_0 := \widehat{y}_0 - \chi_1 u_{01} - U_{02} x_2 = y_0 - \chi_1 u_{01}$$

$$\psi_1 := \chi_1 = (\widehat{\psi}_1 - u_{12}^T x_2) / v_{11} = \psi_1 / v_{11}$$

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

endwhile