Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \wedge m(L_{BR}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array} \right)$ where λ_{11} is 1×1, b_1 has 1 row
6	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \widehat{b}_1^T \\ L_{22}\widehat{B}_2 \end{array} \right) \right\}$
8	$B_2 := l_{21} b_1^T$ $b_1^T := \lambda_{11} b_1^T$
7	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \lambda_{11}\widehat{b}_1^T \\ l_{21} b_1^T + L_{22}\widehat{B}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{ B = L\widehat{B} \}$

Step	Algorithm: $B = LB$
1a	$\{ \quad \}$
4	where
2	$\left\{ \quad \right\}$
3	while do
2,3	$\left\{ \quad \wedge \quad \right\}$
5a	where
6	$\left\{ \quad \right\}$
8	
7	$\left\{ \quad \right\}$
5b	
2	$\left\{ \quad \right\}$
	endwhile
2,3	$\left\{ \quad \wedge \neg(\quad) \quad \right\}$
1b	$\{ \quad \}$

Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	where
2	$\left\{ \qquad \right\}$
3	while do
2,3	$\left\{ \qquad \wedge \qquad \right\}$
5a	where
6	$\left\{ \qquad \right\}$
8	
7	$\left\{ \qquad \right\}$
5b	
2	$\left\{ \qquad \right\}$
	endwhile
2,3	$\left\{ \qquad \wedge \neg(\qquad) \right\}$
1b	$\{ B = L\widehat{B} \}$

Step	Algorithm: $B = LB$
1a	$\{B = \widehat{B}\}$
4	where
2	$\left\{ \left(\frac{B_T}{B_B}\right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B}\right) \right\}$
3	while do
2,3	$\left\{ \left(\frac{B_T}{B_B}\right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B}\right) \wedge \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \left(\frac{B_T}{B_B}\right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\frac{B_T}{B_B}\right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B}\right) \wedge \neg(\quad) \right\}$
1b	$\{B = L\widehat{B}\}$

Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	where
2	$\left\{ \left(\frac{B_T}{B_B} \right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B} \right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\frac{B_T}{B_B} \right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B} \right) \wedge m(L_{BR}) < m(L) \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \left(\frac{B_T}{B_B} \right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\frac{B_T}{B_B} \right) = \left(\frac{\widehat{B}_T}{L_{BR}\widehat{B}_B} \right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{ B = L\widehat{B} \}$

Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \wedge m(L_{BR}) < m(L) \right\}$
5a	where
6	$\left\{ \quad \right\}$
8	
7	$\left\{ \quad \right\}$
5b	
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{ B = L\widehat{B} \}$

Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge m(L_{BR}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right)$ where λ_{11} is 1×1, b_1 has 1 row
6	$\{ \}$
8	
7	$\{ \}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right)$
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
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4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge m(L_{BR}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right)$ where λ_{11} is 1×1, b_1 has 1 row
6	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \widehat{b}_1^T \\ L_{22}\widehat{B}_2 \end{array}\right) \right\}$
8	
7	$\{ \}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right)$
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	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{B = L\widehat{B}\}$

Step	Algorithm: $B = LB$
1a	$\{ B = \widehat{B} \}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
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5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array} \right)$ where λ_{11} is 1×1, b_1 has 1 row
6	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \widehat{b}_1^T \\ L_{22}\widehat{B}_2 \end{array} \right) \right\}$
8	
7	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \lambda_{11}\widehat{b}_1^T \\ l_{21}b_1^T + L_{22}\widehat{B}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array} \right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array} \right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array} \right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{ B = L\widehat{B} \}$

Step	Algorithm: $B = LB$
1a	$\{B = \widehat{B}\}$
4	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$ where L_{BR} is 0×0, B_B has 0 rows
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \right\}$
3	while $m(L_{BR}) < m(L)$ do
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge m(L_{BR}) < m(L) \right\}$
5a	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right)$ where λ_{11} is 1×1, b_1 has 1 row
6	$\left\{ \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right) = \left(\begin{array}{c} \widehat{B}_0 \\ \hline \widehat{b}_1^T \\ L_{22}\widehat{B}_2 \end{array}\right) \right\}$
8	$B_2 := l_{21} b_1^T$ $b_1^T := \lambda_{11} b_1^T$
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5b	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right)$
2	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) = \left(\begin{array}{c} \widehat{B}_T \\ \hline L_{BR}\widehat{B}_B \end{array}\right) \wedge \neg(m(L_{BR}) < m(L)) \right\}$
1b	$\{B = L\widehat{B}\}$

	Algorithm: $B = LB$
	$L \rightarrow \left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right)$, $B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$ where L_{BR} is 0×0, B_B has 0 rows
	while $m(L_{BR}) < m(L)$ do
	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{cc\|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right)$ where λ_{11} is 1×1, b_1 has 1 row
	$B_2 := l_{21} b_1^T$ $b_1^T := \lambda_{11} b_1^T$
	$\left(\begin{array}{c\|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c\|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right)$, $\left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right)$
	endwhile

Algorithm: $B = LB$

$$L \rightarrow \left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right), \ B \rightarrow \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right)$$

where L_{BR} is 0×0, B_B has 0 rows

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

$$\left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \rightarrow \left(\begin{array}{cc|c} L_{00} & l_{01} & L_{02} \\ l_{10}^T & \lambda_{11} & l_{12}^T \\ \hline L_{20} & l_{21} & L_{22} \end{array}\right), \ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \rightarrow \left(\begin{array}{c} B_0 \\ b_1^T \\ \hline B_2 \end{array}\right)$$

where λ_{11} is 1×1, b_1 has 1 row

$B_2 := l_{21} b_1^T$

$b_1^T := \lambda_{11} b_1^T$

$$\left(\begin{array}{c|c} L_{TL} & L_{TR} \\ \hline L_{BL} & L_{BR} \end{array}\right) \leftarrow \left(\begin{array}{c|cc} L_{00} & l_{01} & L_{02} \\ \hline l_{10}^T & \lambda_{11} & l_{12}^T \\ L_{20} & l_{21} & L_{22} \end{array}\right), \ \left(\begin{array}{c} B_T \\ \hline B_B \end{array}\right) \leftarrow \left(\begin{array}{c} B_0 \\ \hline b_1^T \\ B_2 \end{array}\right)$$

endwhile