Step	Algorithm:		
1a			
4			
	where		
2			
3	while do		
2,3		٨	
5a			
	where		
6			
8			
5b			
7			
2			
	endwhile		
2,3		^ ¬()
1b			

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to (A_L A_R)$, $B \to (B_L B_R)$ where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	$\begin{pmatrix} A_L A_R \end{pmatrix} \to \begin{pmatrix} A_0 a_1 A_2 \end{pmatrix}, \begin{pmatrix} B_L B_R \end{pmatrix} \to \begin{pmatrix} B_0 b_1 B_2 \end{pmatrix}$ where a_1 has 1 column, b_1 has 1 column
6	$C = A_0 B_0^T + B_0 A_0^T + \widehat{C}$
8	$C := C + a_1 b_1^T + b_1 a_1^T$
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle a_1 \middle A_2\right), \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle b_1 \middle B_2\right)$
7	$C = A_0 B_0^T + B_0 A_0^T + a_1 b_1^T + b_1 a_1^T + \widehat{C}$
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Algorithm:
$$[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$$

$$A \to \left(A_L \middle| A_R\right), B \to \left(B_L \middle| B_R\right)$$
where A_L has 0 columns, B_L has 0 columns
while $n(A_L) < n(A)$ do
$$\left(A_L \middle| A_R\right) \to \left(A_0 \middle| a_1 \middle| A_2\right), \left(B_L \middle| B_R\right) \to \left(B_0 \middle| b_1 \middle| B_2\right)$$
where a_1 has 1 column, b_1 has 1 column
$$C := C + a_1 b_1^T + b_1 a_1^T$$

$$\left(A_L \middle| A_R\right) \leftarrow \left(A_0 \middle| a_1 \middle| A_2\right), \left(B_L \middle| B_R\right) \leftarrow \left(B_0 \middle| b_1 \middle| B_2\right)$$
endwhile

-	
Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	
	where
2	
3	while do
2,3	\wedge
5a	
	where
6	
8	
5b	
7	
2	
	endwhile
2,3	$\wedge \neg ($
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

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Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	
	where
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge$
5a	
	where
6	
8	
5b	
7	
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg () $
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	
	where
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	
	where
6	
8	
5b	
7	
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	$A ightarrow \left(A_L \middle A_R \right) , B ightarrow \left(B_L \middle B_R \right)$
	where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
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	where
6	
8	
5b	
7	
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
1a	$C = \widehat{C}$
4	$A \to \left(A_L \middle A_R\right), B \to \left(B_L \middle B_R\right)$
	where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	$\left(A_L \middle A_R\right) ightarrow \left(A_0 \middle a_1 \middle A_2\right) , \left(B_L \middle B_R\right) ightarrow \left(B_0 \middle b_1 \middle B_2\right)$
	where a_1 has 1 column, b_1 has 1 column
6	
8	
5b	$\left(A_L \middle A_R\right) \leftarrow \left(A_0 \middle a_1 \middle A_2\right), \left(B_L \middle B_R\right) \leftarrow \left(B_0 \middle b_1 \middle B_2\right)$
7	
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
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Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
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	where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	$(A_L A_R) \rightarrow (A_0 a_1 A_2), (B_L B_R) \rightarrow (B_0 b_1 B_2)$
	where a_1 has 1 column, b_1 has 1 column
6	$C = A_0 B_0^T + B_0 A_0^T + \widehat{C}$
8	
5b	$(A_L A_R) \leftarrow (A_0 a_1 A_2), (B_L B_R) \leftarrow (B_0 b_1 B_2)$
7	
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
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	where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	$(A_L A_R) \rightarrow (A_0 a_1 A_2), (B_L B_R) \rightarrow (B_0 b_1 B_2)$
	where a_1 has 1 column, b_1 has 1 column
6	$C = A_0 B_0^T + B_0 A_0^T + \widehat{C}$
8	
5b	$(A_L A_R) \leftarrow (A_0 a_1 A_2), (B_L B_R) \leftarrow (B_0 b_1 B_2)$
7	$C = A_0 B_0^T + B_0 A_0^T + a_1 b_1^T + b_1 a_1^T + \widehat{C}$
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
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1a	$C = \widehat{C}$
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	where A_L has 0 columns, B_L has 0 columns
2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
3	while $n(A_L) < n(A)$ do
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge n(A_L) < n(A)$
5a	$\begin{pmatrix} A_L A_R \end{pmatrix} \rightarrow \begin{pmatrix} A_0 a_1 A_2 \end{pmatrix}, \begin{pmatrix} B_L B_R \end{pmatrix} \rightarrow \begin{pmatrix} B_0 b_1 B_2 \end{pmatrix}$ where a_1 has 1 column, b_1 has 1 column
6	$C = A_0 B_0^T + B_0 A_0^T + \widehat{C}$
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2	$C = A_L B_L^T + B_L A_L^T + \widehat{C}$
	endwhile
2,3	$C = A_L B_L^T + B_L A_L^T + \widehat{C} \wedge \neg (n(A_L) < n(A))$
1b	$[C] = \operatorname{syr}2k(A, B, \widehat{C})$

Step	Algorithm: $[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$
	$A \to (A_L A_R)$, $B \to (B_L B_R)$ where A_L has 0 columns, B_L has 0 columns
	while $n(A_L) < n(A)$ do
	$ \begin{pmatrix} A_L A_R \end{pmatrix} \to \begin{pmatrix} A_0 a_1 A_2 \end{pmatrix}, \begin{pmatrix} B_L B_R \end{pmatrix} \to \begin{pmatrix} B_0 b_1 B_2 \end{pmatrix} \\ \text{where} a_1 \text{ has 1 column}, b_1 \text{ has 1 column} $
	$C := C + a_1 b_1^T + b_1 a_1^T$
	$(A_L A_R) \leftarrow (A_0 a_1 A_2), (B_L B_R) \leftarrow (B_0 b_1 B_2)$
	endwhile

Algorithm:
$$[C] := \text{SYR}2\text{K_UNB_VAR}5(A, B, C)$$

$$A \to \begin{pmatrix} A_L | A_R \end{pmatrix}, B \to \begin{pmatrix} B_L | B_R \end{pmatrix}$$
where A_L has 0 columns, B_L has 0 columns
while $n(A_L) < n(A)$ do
$$\begin{pmatrix} A_L | A_R \end{pmatrix} \to \begin{pmatrix} A_0 | a_1 | A_2 \end{pmatrix}, \begin{pmatrix} B_L | B_R \end{pmatrix} \to \begin{pmatrix} B_0 | b_1 | B_2 \end{pmatrix}$$
where a_1 has 1 column, b_1 has 1 column
$$C := C + a_1 b_1^T + b_1 a_1^T$$

$$\begin{pmatrix} A_L | A_R \end{pmatrix} \leftarrow \begin{pmatrix} A_0 | a_1 | A_2 \end{pmatrix}, \begin{pmatrix} B_L | B_R \end{pmatrix} \leftarrow \begin{pmatrix} B_0 | b_1 | B_2 \end{pmatrix}$$
endwhile