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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	$\left\{ \right\}$
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1b	$\{$ $\}$

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<tr><td>5a</td><td>$\left(A_L \,\middle\|\, A_R \right) \rightarrow \left(A_0 \,\middle|\, a_1 \,\middle\|\, A_2 \right)$, $\left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
where a_1 has 1 column, γ_{11} is 1×1</td></tr>
<tr><td>6</td><td>$\left\{ \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & A_2^T A_2 + \widehat{C}_{22} \end{array} \right) \right\}$</td></tr>
<tr><td>8</td><td>$c_{12}^T = a_1^T A2 + c_{12}^T$
$\gamma_{11} = a_1^T a1 + \gamma_{11}$</td></tr>
<tr><td>7</td><td>$\left\{ \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & a_1^T a1 + \widehat{\gamma}_{11} & a_1^T A2 + \widehat{c}_{12}^T \\ C_{20} & c_{21} & A_2^T A_2 + \widehat{C}_{22} \end{array} \right) \right\}$</td></tr>
<tr><td>5b</td><td>$\left(A_L \,\middle\|\, A_R \right) \leftarrow \left(A_0 \,\middle\|\, a_1 \,\middle|\, A_2 \right)$, $\left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right)$</td></tr>
<tr><td>2</td><td>$\left\{ \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c|c} \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & A_R^T A_R + \widehat{C}_{BR} \end{array} \right) \right\}$</td></tr>
<tr><td></td><td>endwhile</td></tr>
<tr><td>2,3</td><td>$\left\{ \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c|c} \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & A_R^T A_R + \widehat{C}_{BR} \end{array} \right) \wedge \neg(n(A_R) < n(A)) \right\}$</td></tr>
<tr><td>1b</td><td>$\{[C] = \text{syrk\_ac}(A, \widehat{C})\}$</td></tr>
</table>

Algorithm: $[C] := \text{SYRK\_AC\_UNB\_VAR3}(A, C)$

$A \rightarrow \left(A_L \,\middle|\, A_R \right)$, $C \rightarrow \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$

where A_R has 0 columns, C_{BR} is 0×0

while $n(A_R) < n(A)$ do

$$\left(A_L \,\middle|\, A_R \right) \rightarrow \left(A_0 \,|\, a_1 \,\middle|\, A_2 \right), \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$$

where a_1 has 1 column, γ_{11} is 1×1

$c_{12}^T = a_1^T A2 + c_{12}^T$

$\gamma_{11} = a_1^T a1 + \gamma_{11}$

$$\left(A_L \,\middle|\, A_R \right) \leftarrow \left(A_0 \,\middle|\, a_1 \,|\, A_2 \right), \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right)$$

endwhile

Algorithm: $[C] := \textsc{syrk\_ac\_unb\_var3}(A, C)$

$A \rightarrow \left(A_L \,\Big|\, A_R \right), \; C \rightarrow \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$

where A_R has 0 columns, C_{BR} is 0×0

while $n(A_R) < n(A)$ do

$$\left(A_L \,\Big|\, A_R \right) \rightarrow \left(A_0 \,|\, a_1 \,\Big|\, A_2 \right), \; \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$$

where a_1 has 1 column, γ_{11} is 1×1

$c_{12}^T = a_1^T A2 + c_{12}^T$

$\gamma_{11} = a_1^T a1 + \gamma_{11}$

$$\left(A_L \,\Big|\, A_R \right) \leftarrow \left(A_0 \,\Big|\, a_1 \,|\, A_2 \right), \; \left(\begin{array}{c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right)$$

endwhile