

Solution to CS473 Homework 7 Part 1
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Step 1)

$S \rightarrow \{(f(A, g(B, C, h(D))), f(g(C, B, C), A))\}$
 pick pair $(f(A, g(B, C, h(D))), f(g(C, B, C), A))$
 Decompose: $(A, g(B, C, h(D))), (g(C, B, C), A)$
 $S \rightarrow \{(A, g(B, C, h(D))), (g(C, B, C), A)\}$

Step 2)

pick pair $(A, g(B, C, h(D)))$
 Substitute: $\{A \mid \rightarrow g(B, C, h(D))\}$
 $S \rightarrow \{(g(C, B, C), g(B, C, h(D)))\}$
 with $\{A \mid \rightarrow g(B, C, h(D))\}$

Step 3)

pick pair: $(g(C, B, C), g(B, C, h(D)))$
 Decompose: $\{(C, B), (B, C), (C, h(D))\}$
 $S \rightarrow \{(C, B), (B, C), (C, h(D))\}$
 with $\{A \mid \rightarrow g(B, C, h(D))\}$

Step 4)

pick pair: $(C, h(D))$
 Eliminate: $(C, h(D))$
 $S \rightarrow \{(C, B), (B, C)\}$
 with $\{A \mid \rightarrow \{C \mid \rightarrow h(D)\} (g, B, C, h(D))\} \circ \{C \mid \rightarrow h(D)\}$

Step 5)

pick pair: (B, C)
 Substitute $\{B \mid \rightarrow C\}$
 $S \rightarrow \{(C, C)\}$
 with $\{A \mid \rightarrow \{C \mid \rightarrow \{B \mid \rightarrow C\} (h(D))\} (g(B, C, h(D)))\} \circ \{C \mid \rightarrow h(D)\} \circ \{B \mid \rightarrow C\}$

Step 6)

pick pair: (C, C)
 Delete..
 $S \rightarrow \{\}$

$f(A, g(B, C, h(D))) = f(g(C, B, C), A)$ Solved with
 $\{A \mid \rightarrow \{C \mid \rightarrow \{B \mid \rightarrow C\} (h(D))\} (g(B, C, h(D)))\} \circ \{C \mid \rightarrow h(D)\} \circ \{B \mid \rightarrow C\}$