65   Simplify, assuming $i: \Box L$
(a) $i \to L\, i \mid L$
(b) $(L\, i \to i \mid L)\, i$
(c) $L\, [0;..i] \;;\; [x] \;;\; L\, [i+1;..\#L]$

After trying the question, scroll down to the solution.

(a) $i \rightarrow L\,i \mid L$
§ L

(b) $(L\,i \rightarrow i \mid L)\,i$
§ $L\,i$
      Proof:
      $(L\,i \rightarrow i \mid L)i$ use law $(n \rightarrow i \mid L)m$ = **if** $n=m$ **then** i **else** $L\,m$ **fi**
=   **if** $L\,i = i$ **then** i **else** $L\,i$ **fi**   context
=   **if** $L\,i = i$ **then** $L\,i$ **else** $L\,i$ **fi**   case idempotent
= $L\,i$

(c) $L\,[0;..i] \;;\; [x] \;;\; L\,[i+1;..\#L]$
§ $i \rightarrow x \mid L$