

retrace^{11,40}

$$\begin{aligned}
& \text{retrace}(es; Q; X) \\
& \equiv_{\text{def}} (\forall e, e': \mathbf{E}. (Q(e, e') \Rightarrow ((\uparrow(e \in_b X)) \& (\uparrow(e' \in_b X)))) \\
& \quad \& (\forall e, e': \mathbf{E}(X). (Q(e, e') \vee (e = e') \vee (Q(e', e))) \\
& \quad \& (\forall e': \mathbf{E}. \\
& \quad \quad \exists L: \mathbf{E} \text{ List} \\
& \quad \quad ((\forall e: \mathbf{E}. (e \in L) \iff (Q(e, e'))) \& (\forall e_1, e_2: \mathbf{E}. e_1 \text{ before } e_2 \in L \Rightarrow (Q(e_1, e_2)))))
\end{aligned}$$

clarification:

$$\begin{aligned}
& \text{retrace}(es; Q; X) \\
& \equiv_{\text{def}} (\forall e: \text{es-E}(es), e': \text{es-E}(es). (Q(e, e') \Rightarrow ((\uparrow(e \in_b X)) \& (\uparrow(e' \in_b X)))) \\
& \quad \& (\forall e: \text{es-E-interface}(es; X), e': \text{es-E-interface}(es; X). \\
& \quad \quad (Q(e, e') \vee (e = e' \in \text{es-E}(es)) \vee (Q(e', e))) \\
& \quad \& (\forall e': \text{es-E}(es). \\
& \quad \quad \exists L: \text{es-E}(es) \text{ List} \\
& \quad \quad ((\forall e: \text{es-E}(es). (e \in L \in \text{es-E}(es)) \iff (Q(e, e'))) \\
& \quad \quad \& (\forall e_1: \text{es-E}(es), e_2: \text{es-E}(es). e_1 \text{ before } e_2 \in L \in \text{es-E}(es) \Rightarrow (Q(e_1, e_2)))))
\end{aligned}$$