

EOrderAxioms^{11,40}

EOrderAxioms($E; pred?; info$)

$$\begin{aligned}
&\equiv_{\text{def}} (\forall e:E, l:\text{IdLnk}. \\
&\quad \exists e':E \\
&\quad (\forall e'':E. \\
&\quad (\uparrow\text{rcv?}(e'')) \\
&\quad \Rightarrow (\text{sender}(e'') = e) \\
&\quad \Rightarrow (\text{link}(e'') = l) \\
&\quad \Rightarrow (((e'' = e') \vee e'' < e') \wedge (\text{loc}(e') = \text{destination}(l)))) \\
&\wedge (\forall e, e':E. (\text{loc}(e) = \text{loc}(e')) \Rightarrow (pred?(e) = pred?(e')) \Rightarrow (e = e')) \\
&\wedge \text{SWellFounded}(\text{pred!}(e; e')) \\
&\wedge (\forall e:E. (\neg(\uparrow\text{first}(e))) \Rightarrow (\text{loc}(\text{pred}(e)) = \text{loc}(e))) \\
&\wedge (\forall e:E. (\uparrow\text{rcv?}(e)) \Rightarrow (\text{loc}(\text{sender}(e)) = \text{source}(\text{link}(e)))) \\
&\wedge (\forall e, e':E. \\
&\quad (\uparrow\text{rcv?}(e)) \\
&\quad \Rightarrow (\uparrow\text{rcv?}(e')) \\
&\quad \Rightarrow (\text{link}(e) = \text{link}(e')) \\
&\quad \Rightarrow \text{sender}(e) < \text{sender}(e') \\
&\quad \Rightarrow e < e')
\end{aligned}$$

clarification:

EOrderAxioms{i:l}

($E; pred?; info$)

$$\begin{aligned}
&\equiv_{\text{def}} (\forall e:E, l:\text{IdLnk}. \\
&\quad \exists e':E \\
&\quad (\forall e'':E. \\
&\quad (\uparrow\text{rcv?}(info; e'')) \\
&\quad \Rightarrow (\text{sender}(info; e'') = e \in E) \\
&\quad \Rightarrow (\text{link}(info; e'') = l \in \text{IdLnk}) \\
&\quad \Rightarrow (((e'' = e' \in E) \vee \text{class}(E; pred?; info; e''; e')) \\
&\quad \quad \wedge (\text{loc}(info; e') = \text{destination}(l) \in \text{Id}))) \\
&\wedge (\forall e:E, e':E. \\
&\quad (\text{loc}(info; e) = \text{loc}(info; e') \in \text{Id}) \\
&\quad \Rightarrow (pred?(e) = pred?(e') \in (E + \text{Unit})) \\
&\quad \Rightarrow (e = e' \in E)) \\
&\wedge \text{strongwellfounded}(E; e, e'. \text{pred!}(E; pred?; info; e; e')) \\
&\wedge (\forall e:E. (\neg(\uparrow\text{first}(pred?; e))) \Rightarrow (\text{loc}(info; \text{pred}(pred?; e)) = \text{loc}(info; e) \in \text{Id})) \\
&\wedge (\forall e:E. (\uparrow\text{rcv?}(info; e)) \Rightarrow (\text{loc}(info; \text{sender}(info; e)) = \text{source}(\text{link}(info; e)) \in \text{Id})) \\
&\wedge (\forall e:E, e':E. \\
&\quad (\uparrow\text{rcv?}(info; e)) \\
&\quad \Rightarrow (\uparrow\text{rcv?}(info; e')) \\
&\quad \Rightarrow (\text{link}(info; e) = \text{link}(info; e') \in \text{IdLnk}))
\end{aligned}$$

$\Rightarrow \text{class}(E; \text{pred?}; \text{info}; \text{sender}(\text{info}; e); \text{sender}(\text{info}; e'))$
 $\Rightarrow \text{class}(E; \text{pred?}; \text{info}; e; e')$