

F2F+-decls^{11,40}

F2F+-decls

$$\begin{aligned}
&\equiv_{\text{def}} \text{is_req}:(\mathbb{E} \rightarrow \mathbb{P}) \\
&\quad \times (\text{is_ack}:(\mathbb{E} \rightarrow \mathbb{P}) \\
&\quad \times \text{awaiting}:(\text{Id} \rightarrow \text{Id} \rightarrow \text{Id}) \\
&\quad \times \text{owes_ack}:(\text{Id} \rightarrow \text{Id} \rightarrow \text{Id}) \\
&\quad \times C_sub_Id:(\text{ff}.C \subseteq_r \text{Id}) \\
&\quad \times \text{vbl_locs}:(\forall i, j:\text{ff}.C. @i(\text{awaiting}(i,j):\mathbb{B}) \ \& \ @i(\text{owes_ack}(i,j):\mathbb{B})) \\
&\quad \times R_locs:(\forall i:\text{ff}.C, e:\mathbb{E}. (\text{ff}.R(i,e)) \Rightarrow (\text{loc}(e) = i)) \\
&\quad \times \text{req_dcdr}:(\forall e:\mathbb{E}. \text{Dec}(\text{is_req}(e))) \\
&\quad \times \text{ack_dcdr}:(\forall e:\mathbb{E}. \text{Dec}(\text{is_ack}(e))) \\
&\quad \times R_dcdr:(\forall i:\text{ff}.C, e:\mathbb{E}. \text{Dec}(\text{ff}.R(i,e))) \\
&\quad \times S_dcdr:(\forall i, j:\text{ff}.C, e:\mathbb{E}. \text{Dec}(\text{ff}.S(i,j,e))) \\
&\quad \times S_locs:(\forall i, j:\text{ff}.C, e:\mathbb{E}. (\text{ff}.S(i,j,e)) \Rightarrow (\text{loc}(e) = i)) \\
&\quad \times (\text{disjoint_msgs}:(\forall e:\mathbb{E}, \text{sndr}, \text{rcvr}:\text{ff}.C. \\
&\quad \quad \neg([\text{e: sndr} \dashrightarrow \text{is_req} \rightarrow \text{rcvr}] \ \& \ [\text{e: rcvr} \dashrightarrow \text{is_ack} \rightarrow \text{sndr}])) \\
&\quad \times \text{Top}))
\end{aligned}$$

clarification:

F2F+-decls{i:l}

$$\begin{aligned}
&\quad (es; \text{ff}) \\
&\equiv_{\text{def}} \text{is_req}:(\text{es-}\mathbb{E}(es) \rightarrow \mathbb{P}\{i\}) \\
&\quad \times (\text{is_ack}:(\text{es-}\mathbb{E}(es) \rightarrow \mathbb{P}\{i\}) \\
&\quad \times \text{awaiting}:(\text{Id} \rightarrow \text{Id} \rightarrow \text{Id}) \\
&\quad \times \text{owes_ack}:(\text{Id} \rightarrow \text{Id} \rightarrow \text{Id}) \\
&\quad \times C_sub_Id:(\text{ff}.C \subseteq_r \text{Id}) \\
&\quad \times \text{vbl_locs}:(\forall i:\text{ff}.C, j:\text{ff}.C. \\
&\quad \quad \text{es-dtype}(es;i;\text{awaiting}(i,j);\mathbb{B}) \ \& \ \text{es-dtype}(es;i;\text{owes_ack}(i,j);\mathbb{B})) \\
&\quad \times R_locs:(\forall i:\text{ff}.C, e:\text{es-}\mathbb{E}(es). (\text{ff}.R(i,e)) \Rightarrow (\text{es-loc}(es; e) = i \in \text{Id})) \\
&\quad \times \text{req_dcdr}:(\forall e:\text{es-}\mathbb{E}(es). \text{Dec}(\text{is_req}(e))) \\
&\quad \times \text{ack_dcdr}:(\forall e:\text{es-}\mathbb{E}(es). \text{Dec}(\text{is_ack}(e))) \\
&\quad \times R_dcdr:(\forall i:\text{ff}.C, e:\text{es-}\mathbb{E}(es). \text{Dec}(\text{ff}.R(i,e))) \\
&\quad \times S_dcdr:(\forall i:\text{ff}.C, j:\text{ff}.C, e:\text{es-}\mathbb{E}(es). \text{Dec}(\text{ff}.S(i,j,e))) \\
&\quad \times S_locs:(\forall i:\text{ff}.C, j:\text{ff}.C, e:\text{es-}\mathbb{E}(es). (\text{ff}.S(i,j,e)) \Rightarrow (\text{es-loc}(es; e) = i \in \text{Id})) \\
&\quad \times (\text{disjoint_msgs}:(\forall e:\text{es-}\mathbb{E}(es). \\
&\quad \quad \forall \text{sndr}:\text{ff}.C, \text{rcvr}:\text{ff}.C. \\
&\quad \quad \neg(\text{snd-it}(\text{ff}; \text{is_req}; e; \text{sndr}; \text{rcvr}) \ \& \ \text{snd-it}(\text{ff}; \text{is_ack}; e; \text{rcvr}; \text{sndr}))) \\
&\quad \times \text{Top}))
\end{aligned}$$