1 ─────────────────── MODULE $Client$ ───────────────────

Clients send transaction proposal to Peers, collect endorsement from them, send them to the
$Orderer$. They also query $Peer$'s state to one of the Peers.

7 EXTENDS $FiniteSets$, $TLC$

9 CONSTANTS $Transaction$,    Transactions, given by the $Fabric.tla$
10            $Id$   $Id$ of the client, given by the $Fabric.tla$

12 VARIABLES $msgs$
13 $vars \triangleq \langle msgs \rangle$

typedefs

20 utilities and transitions        LOCAL $Send(m) \triangleq msgs' = msgs \cup \{m\}$

22 $Invoke(tx) \triangleq$
23      $\wedge\, tx \in Transaction$
24      $\wedge\, PrintT(\text{"try to invoke..."})$
25      $\wedge\, Send([type \mapsto \text{"invoke"}, from \mapsto Id, tx \mapsto tx])$

27 $Query(tx) \triangleq$
28      $\wedge\, tx \in Transaction$
29      $\wedge\, PrintT(\text{"try to query..."})$
30      $\wedge\, Send([type \mapsto \text{"query"}, from \mapsto Id, tx \mapsto tx])$

* spec template

36 $Init \;\triangleq\; msgs = \{\}$
37 $Next \;\triangleq\; \exists\, tx \in Transaction : Invoke(tx) \vee Query(tx)$
38 $FAIRNESS \;\triangleq\; \mathrm{WF}_{vars}(Next)$
39 $Spec \;\triangleq\; Init \wedge \Box[Next]_{vars} \wedge FAIRNESS$

* Correctness properties (Safety, Liveness, . . . )

45 $SampleLiveness \;\triangleq\; \Diamond(\, \wedge\, (\exists\, m \in msgs : m.type = \text{"invoke"})$
46                            $\wedge\, (\exists\, m \in msgs : m.type = \text{"query"}))$
47 $SampleLiveness2 \;\triangleq\; \Diamond(\, \wedge\, (\forall\, m \in msgs : m.type = \text{"invoke"}))$
48 $SampleInvariant \;\triangleq\; \Box(\forall\, m \in msgs : m.type = \text{"invoke"})$
49 ────────────────────────────────────────────────────────