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MODULE XJupiterImplCJupiter
We show that XJupiter (XJupiterExtended) implements CJupiter.
EXTENDS XJupiterExtended
Variables for defining refinement mapping from XJupiter to CJupiter.
VARIABLES
    op2ss,   a function from an operation (represented by its Oid)
             to the part of 2D state space produced while the operation is transformed
    c2ssX    c2ssX[c]: redundant (eXtra) 2D state space maintained for client c ∈ Client
varsImpl ≜ ⟨varsEx, op2ss, c2ssX⟩
----------------------------------------------------------------------------
TypeOKImpl ≜
    ∧ TypeOKEx
    ∧ ∀ oid ∈ DOMAIN op2ss : oid ∈ Oid ∧ IsSS(op2ss[oid])
    ∧ ∀ c ∈ Client : IsSS(c2ssX[c])
----------------------------------------------------------------------------
InitImpl ≜
    ∧ InitEx
    ∧ op2ss = ⟨⟩
    ∧ c2ssX = [c ∈ Client ↦ EmptyGraph]

DoImpl(c) ≜
    ∧ DoEx(c)
    ∧ UNCHANGED ⟨op2ss, c2ssX⟩

RevImpl(c) ≜
    ∧   RevEx(c)
    ∧   LET cop ≜ Head(cincoming[c])
        IN  c2ssX' = [c2ssX EXCEPT ![c] = @ ⊕ op2ss[cop.oid]]
    ∧   UNCHANGED op2ss

SRevImpl ≜
    ∧ SRevEx
    ∧ LET cop ≜ Head(sincoming)
          c   ≜ cop.oid.c
          xform ≜ xForm(cop, s2ss[c], ds[Server])   TODO: performance!!!
          ss    ≜ xform[1]
      IN  op2ss' = op2ss @@ (cop.oid :> [node ↦ ss.node, edge ↦ ss.edge])
    ∧ UNCHANGED c2ssX
----------------------------------------------------------------------------
NextImpl ≜
    ∨ ∃ c ∈ Client : DoImpl(c) ∨ RevImpl(c)
    ∨ SRevImpl

FairnessImpl ≜
    ∧ WF_varsImpl(SRevImpl ∨ ∃ c ∈ Client : RevImpl(c))
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$SpecImpl \triangleq InitImpl \land \Box[NextImpl]_{varsImpl}$ $\land\ FairnessImpl$

$CJ \triangleq$ INSTANCE $CJupiter$

WITH $cincoming \leftarrow cincomingCJ,$ *sincoming* needs no substitution

$css \leftarrow [r \in Replica \mapsto$

IF $r = Server$

THEN $SetReduce(\oplus, Range(s2ss), EmptyGraph)$

ELSE $c2ss[r] \oplus c2ssX[r]]$

THEOREM $SpecImpl \Rightarrow CJ!Spec$

* Modification History

* Last modified *Wed Dec* 19 18:52:44 *CST* 2018 by *hengxin*

* Created *Fri Oct* 26 15:00:19 *CST* 2018 by *hengxin*