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MODULE OT
Specification of OT (Operational Transformation) functions.
EXTENDS Op

OTII(lins, rins) ≜  lins is transformed against rins
    IF lins.pos < rins.pos
     THEN lins
     ELSE IF lins.pos > rins.pos
            THEN [lins EXCEPT !.pos = @ + 1]
            ELSE IF lins.ch = rins.ch
                   THEN Nop
                   ELSE IF lins.pr < rins.pr
                          THEN lins
                          ELSE [lins EXCEPT !.pos = @ + 1]

OTID(ins, del) ≜  ins is transformed against del
    IF ins.pos ≤ del.pos
     THEN ins
     ELSE [ins EXCEPT !.pos = @ − 1]

OTDI(del, ins) ≜  del is transformed against ins
    IF del.pos < ins.pos
     THEN del
     ELSE [del EXCEPT !.pos = @ + 1]

OTDD(ldel, rdel) ≜  ldel is transformed against rdel
    IF ldel.pos < rdel.pos
     THEN ldel
     ELSE IF ldel.pos > rdel.pos
            THEN [ldel EXCEPT !.pos = @ − 1]
            ELSE Nop

OT(lop, rop) ≜  lop is transformed against rop
    CASE lop = Nop ∨ rop = Nop → lop
      □ lop.type = "Ins" ∧ rop.type = "Ins" → OTII(lop, rop)
      □ lop.type = "Ins" ∧ rop.type = "Del" → OTID(lop, rop)
      □ lop.type = "Del" ∧ rop.type = "Ins" → OTDI(lop, rop)
      □ lop.type = "Del" ∧ rop.type = "Del" → OTDD(lop, rop)

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