

---

MODULE *OT*

---

Specification of *OT* (Operational Transformation) functions.

---

EXTENDS *Op*

---

$OTII(lins, rins) \triangleq$  *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]

$OTID(ins, del) \triangleq$  *ins* is transformed against *del*  
 IF *ins.pos* ≤ *del.pos*  
 THEN *ins*  
 ELSE [*ins* EXCEPT !.*pos* = @ - 1]

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

$OTDD(ldel, rdel) \triangleq$  *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*

$OT(lop, rop) \triangleq$  *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*)

---

\ \* Modification History  
 \ \* Last modified Sun Jan 13 10:41:55 CST 2019 by anonymous  
 \ \* Created Sun Jun 24 15:57:48 CST 2018 by anonymous