MODULE *pluscal_equation*

EXTENDS *TLC*, *Integers*, *Naturals*, *Reals*

CONSTANTS $a0$, $b0$, $c0$

```
--algorithm resolution{
variables a = a0, b = b0, c = c0, determinant ;
{
  l0: determinant := b * b − 4 * a * c ;
  if ( determinant > 0 )
  {
      l1: print ⟨"Two Roots are:"⟩ ;
   }
  else if ( determinant = 0 )
  {
    l2: print ⟨"One Double roots are:"⟩ ;
   }
  else
  {
    l3: print ⟨"Two complex Roots are:"⟩ ;
   }
   }
 }
```

BEGIN TRANSLATION

CONSTANT *defaultInitValue*

VARIABLES a, b, c, *determinant*, pc

$vars \triangleq \langle a, b, c, determinant, pc \rangle$

$Init \triangleq$ Global variables
$\land a = a0$
$\land b = b0$
$\land c = c0$
$\land determinant = defaultInitValue$
$\land pc =$ "l0"

$l0 \triangleq \land pc =$ "l0"
$\land determinant' = b * b - 4 * a * c$
$\land$ IF $determinant' > 0$
THEN $\land pc' =$ "l1"
ELSE $\land$ IF $determinant' = 0$
THEN $\land pc' =$ "l2"
ELSE $\land pc' =$ "l3"
$\land$ UNCHANGED $\langle a, b, c \rangle$

$l1 \triangleq \land pc = \text{"l1"}$
$\land PrintT(\langle \text{"Two Roots are:"} \rangle)$
$\land pc' = \text{"Done"}$
$\land \text{UNCHANGED } \langle a,\ b,\ c,\ determinant \rangle$

$l2 \triangleq \land pc = \text{"l2"}$
$\land PrintT(\langle \text{"One Double roots are:"} \rangle)$
$\land pc' = \text{"Done"}$
$\land \text{UNCHANGED } \langle a,\ b,\ c,\ determinant \rangle$

$l3 \triangleq \land pc = \text{"l3"}$
$\land PrintT(\langle \text{"Two complex Roots are:"} \rangle)$
$\land pc' = \text{"Done"}$
$\land \text{UNCHANGED } \langle a,\ b,\ c,\ determinant \rangle$

$Next \triangleq l0 \lor l1 \lor l2 \lor l3$
$\lor$ Disjunct to prevent deadlock on termination
$(pc = \text{"Done"} \land \text{UNCHANGED } vars)$

$Spec \triangleq Init \land \Box[Next]_{vars}$

$Termination \triangleq \Diamond(pc = \text{"Done"})$

END TRANSLATION

\ * Modification History
\ * Last modified *Fri Mar* 23 14:44:05 *CET* 2018 by *mery*
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