



1) Calculate the semantics of Ex1, Ex2, Ex3

Let

$t1 = \langle !a, ?a, !b, ?b, !c, ?c \rangle$

$t2 = \langle !a, !b, ?a, ?b, !c, ?c \rangle$

$t3 = \langle !a, ?a, !c, ?c \rangle$

$t4 = \langle !a, ?a, !b, ?b, !d, ?d, !c, ?c \rangle$

$t5 = \langle !a, !b, ?a, ?b, !d, ?d, !c, ?c \rangle$

$t6 = \langle !a, ?a, !b, ?b, !d, !c, ?d, ?c \rangle$

$t7 = \langle !a, !b, ?a, ?b, !d, !c, ?d, ?c \rangle$

$[[Ex1]] = \{ (\{t1, t2\}, \emptyset) \}$

$[[Ex2]] = \{ (\{t3\}, \{t1, t2\}) \}$

$[[Ex3]] = \{ (\{t1, t2\}, \{t4, t5, t6, t7\}) \}$



2) Answer the following

a. Is Ex2 a refinement of Ex1?

Yes; t1 and t2 have been moved from the positive to the negative (narrowing), while t3 has been moved from the inconclusive to the positive (supplementing).

b. Is Ex1 a refinement of Ex2?

No; t1 and t2 have been moved from the negative to the positive, while t3 has been moved from the positive to the inconclusive.

c. Is Ex3 a refinement of Ex1?

Yes; The positive traces of Ex1 remain positive, while the traces t4,t5,t6 and t7 have been moved from the inconclusive to the negative (supplementing)

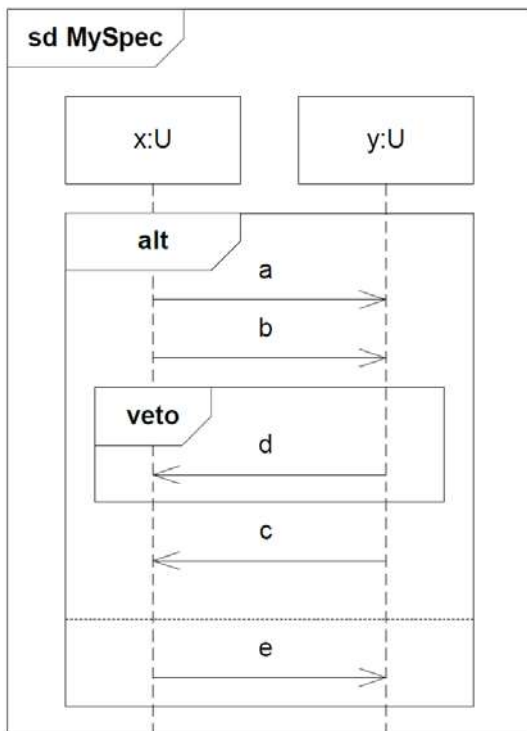
d. Is Ex1 a refinement of Ex3?

No; t4,t5,t6 and t7 have been moved from the negative to the inconclusive.



3) Make MySpec that refines Ex3

This can of course be solved in many ways; below is one suggestion. A new positive trace $t8 = \langle !e, ?e \rangle$ has been added (supplementing).





3) Continued

a. Is Ex1 a refinement of MySpec?

No; the traces t4,t5,t6,t7 and t8 are inconclusive in Ex1, but not in MySpec.

b. Is MySpec a refinement of Ex1?

Yes; The traces that are positive in Ex1 remain positive in MySpec, while new traces that were inconclusive in Ex1 have become either positive (t8) or negative (t4,t5,t6,t7) in MySpec (supplementing).