IN5130 - Oblig 2: Refinement

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Exercise I:

- a) The possible first events in a positive trace would be !open application or !question. Because it is not implied that the interview have to start by opening the application or that the interviewer can ask a question.
- b) The possible last events in a positive trace are ?close or ?answer. Because close is the last action, and answer can be the last action in the loop.

C)



This is a supplement, because I added a trace with veto, which describes a set of negative traces that are inconclusive in interview. The positive traces are exactly the same for each of the diagrams





I made the second alt operand negative, which makes the this part negative. The traces in the first operand is still positive and the inconclusive traces are unchanged. We reduced the set of positive traces by redefining them as negative, and the negative remain negative. Hence this is a narrowing.

Exercise II:

a) [[interview]] = { ({t1, t2, t3, t4, t5, t6, t7, t8, t9, t10, t11, t12, t13, t14, t15}, { }) }

See trace of tree below.





b) [[interview]] = { ({t16, t17, t18, t19, t20, t21, t22, t23, t24, t25, t26, t27, t28, t29, t30} , {t31, t32, t33, t34, t35, t36, t37, t38, t39, t40, t41, t42, t43, t44, t45, t46, t47, t48, t49, t50, t51, t52, t53, t54, t55, t56, t57, t58}) }

See trace of tree below.











c) The alt construct will be a big three with both of the trees on each side so that it is either one of them. The traces would be a lot more, so you would have all the positive traces from the first and second tree and the negative traces. This would have a single interaction obligations with both alternatives, because it combines the alternatives.

Ex:

 $[[interview]] = \{ (\{t1, t2, t3, t4, t5, t6, t7, t8, t9, t10, t11, t12, t13, t14, t15, t16, t17, t18, t19, t20, t21, t22, t23, t24, t25, t26, t27, t28, t29, t30 \}, \{t31, t32, t33, t34, t35, t36, t37, t38, t39, t40, t41, t42, t43, t44, t45, t46, t47, t48, t49, t50, t51, t52, t53, t54, t55, t56, t57, t58 \}) \}$

d) The semantic of the resulting xalt construct is that both alternatives are possible and the system makes the decision. The alternatives does not represent the similar traces which makes it ok to use the xalt. Xalt will result in distinct interaction obligations, because the interaction obligations can be arbitrarily many.

Ex: the first alternative would be one set, and the second alternative would be another set.

 $[[interview]] = \{ (\{t1, t2, t3, t4, t5, t6, t7, t8, t9, t10, t11, t12, t13, t14, t15 \}, \{ \}), \\ (\{ t16, t17, t18, t19, t20, t21, t22, t23, t24, t25, t26, t27, t28, t29, t30 \}, \\ \{ t31, t32, t33, t34, t35, t36, t37, t38, t39, t40, t41, t42, t43, t44, t45, t46, t47, t48, t49, t50, t51, t52, t53, t54, t55, t56, t57, t58 \}) \}$

e) There would be **2** * **N** interaction obligations, where N is the number of iterations. Since the loop may iterate to infinite or a finite number. Which is why there are infinitely many interaction obligations.