

Oblig 2

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Exercise 1

a)

First events: !open_application and !question

The first event in the diagram needs to be 1) a send event and 2) occur as the first event on a lifeline.

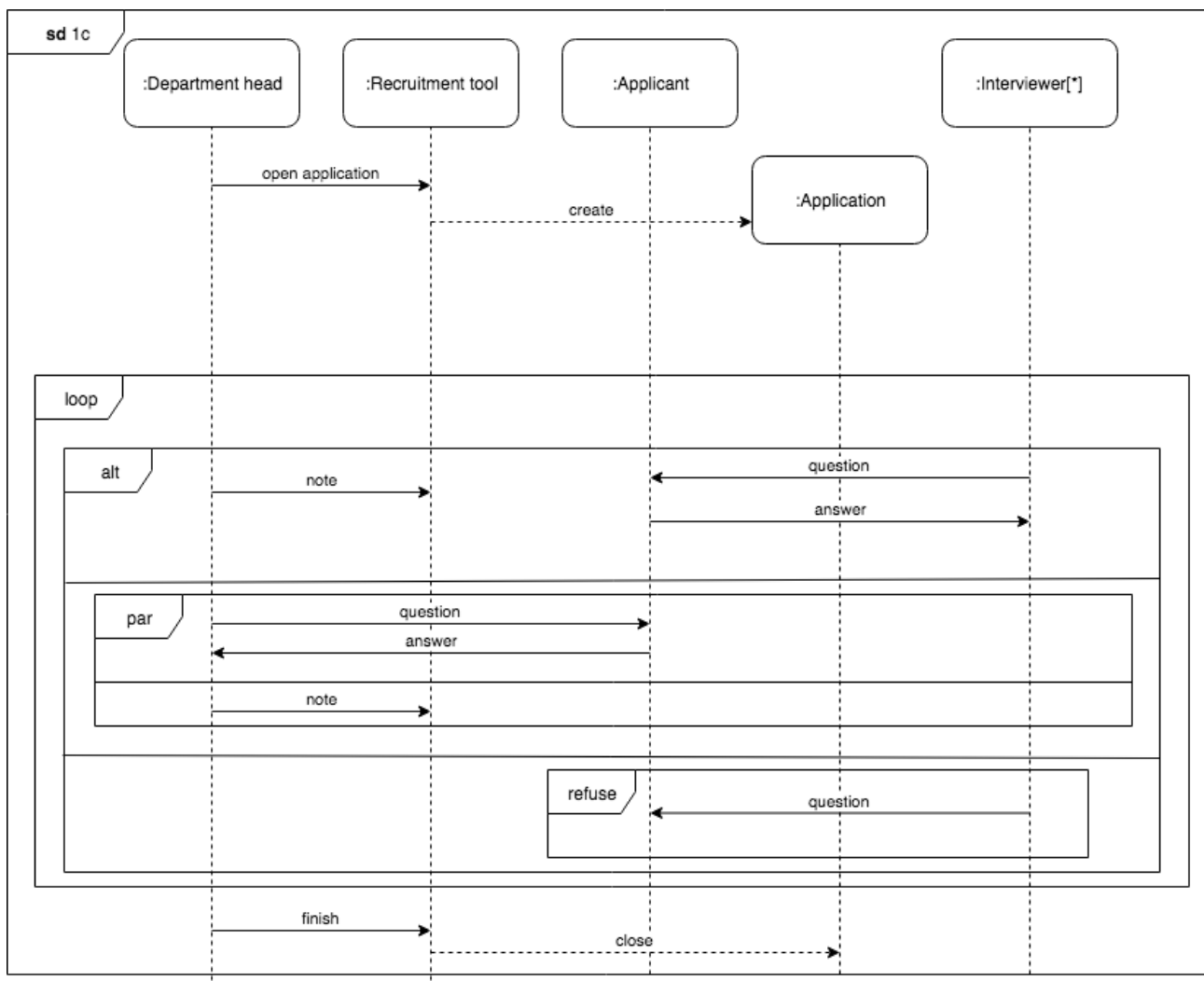
b)

Last events: ?close and ?answer (from Interviewer)

The last event in the diagram needs to be 1) a receive event and 2) the last event on a lifeline.

c)

The diagram below adds a third alternative with a *refuse*. The diagram supplements the original diagram with a negative trace in which the applicant does not answer the question from the interviewer.



d)

The diagram below has an *xalt*, which is both supplementing and narrowing the original diagram.

Supplement: The previously inconclusive trace

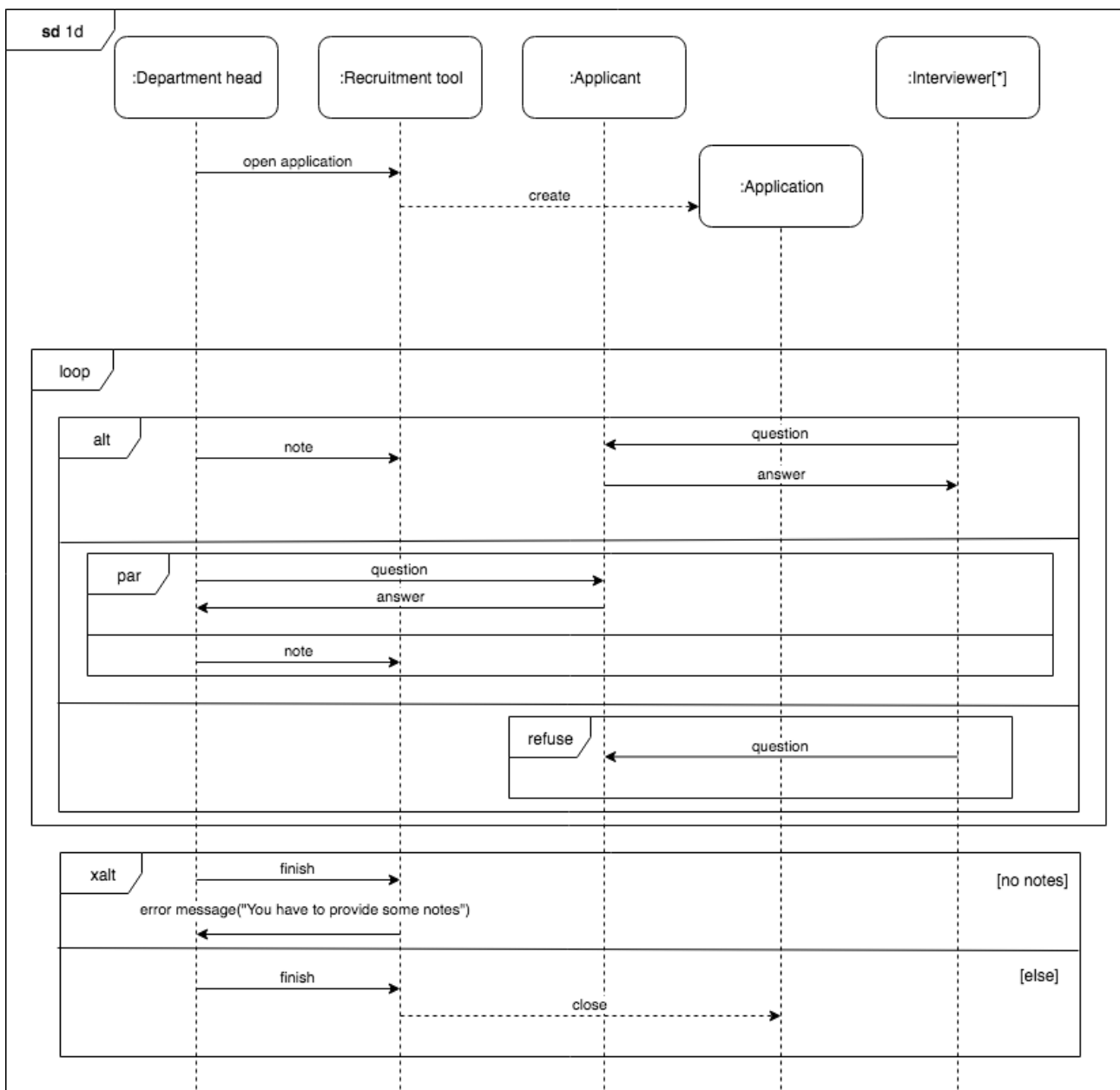
$\langle !finish, ?finish, !errorMsg, ?errorMsg \rangle$

is now added as both a positive and negative trace (depending on whether the condition of the guard is true or false).

Narrowing: The previously positive trace

$\langle !finish, ?finish, !close, ?close \rangle$

becomes negative when the *else* guard is false, i.e. when there are no notes about the applicant.



Exercise 2

a)

The traces t_1, t_2, \dots, t_{15} are defined in the diagram below. Trace t_1 is for instance specified as $\langle !q, ?q, !a, ?a, !n, ?n \rangle$. The interaction obligation representing the second operand of the *alt* construct is given as:

$$\begin{aligned} [[2nd_alt]] &= \{(p, n)\} \\ &= \{(t_1, t_2, \dots, t_{15}), \{\}\} \end{aligned}$$

t1	!q	?q	!a	?a	!n	?n
t2	!q	?q	!a	!n	?a	?n
t3	!q	?q	!n	!a	?a	?n
t4	!q	!n	?q	!a	?a	?n
t5	!n	!q	?q	!a	?a	?n
t6	!q	?q	!a	!n	?n	?a
t7	!q	?q	!n	!a	?n	?a
t8	!q	!n	?q	!a	?n	?a
t9	!n	!q	?q	!a	?n	?a
t10	!q	?q	!n	?n	!a	?a
t11	!q	!n	?q	?n	!a	?a
t12	!n	!q	?q	?n	!a	?a
t13	!q	!n	?n	?q	!a	?a
t14	!n	!q	?n	?q	!a	?a
t15	!n	?n	!q	?q	!a	?a

b)

The negative traces n_1, n_2, \dots, n_{55} are defined in the attachment «2b_traces». The positive traces t_1, t_2, \dots, t_{15} are the same as in exercise 2a. The interaction obligation of the first operand of the *alt* construct is given as:

$$\begin{aligned} [[1st_alt]] &= \{(p, n)\} \\ &= \{(\{t_1, t_2, \dots, t_{15}\}, \{n_1, n_2, \dots, n_{55}\})\} \end{aligned}$$

c)

The interaction obligation representing the *alt* construct is defined as

$$[[alt]] = \{(\{t_1, t_2, \dots, t_{15}\}, \{n_1, n_2, \dots, n_{55}\})\}$$

d)

The interaction obligation representing the *xalt* construct is defined as

$$\begin{aligned} [[xalt]] &= \{(p1, n1), (p2, n2)\} \\ &= \{(\{t_1, t_2, \dots, t_{15}\}, \{\}), (\{t_1, t_2, \dots, t_{15}\}, \{n_1, n_2, \dots, n_{55}\})\} \end{aligned}$$

e)

There will be an infinite number of interaction obligations in the resulting sequence diagram, seeing that the loop can iterate from 0 to infinite number of times.

Traces for 2b)

n1	!q	?q	!a	?a	!n	?n	!fn	?fn
n2	!q	?q	!a	!n	?a	?n	!fn	?fn
n3	!q	?q	!n	!a	?a	?n	!fn	?fn
n4	!q	!n	?q	!a	?a	?n	!fn	?fn
n5	!n	!q	?q	!a	?a	?n	!fn	?fn
n6	!q	?q	!a	!n	?n	?a	!fn	?fn
n7	!q	?q	!n	!a	?n	?a	!fn	?fn
n8	!q	!n	?q	!a	?n	?a	!fn	?fn
n9	!n	!q	?q	!a	?n	?a	!fn	?fn
n10	!q	?q	!n	?n	!a	?a	!fn	?fn
n11	!q	!n	?q	?n	!a	?a	!fn	?fn
n12	!n	!q	?q	?n	!a	?a	!fn	?fn
n13	!q	!n	?n	?q	!a	?a	!fn	?fn
n14	!n	!q	?n	?q	!a	?a	!fn	?fn
n15	!n	?n	!q	?q	!a	?a	!fn	?fn
n16	!q	?q	!a	!n	?n	!fn	?a	?fn
n17	!q	?q	!a	!n	?n	!fn	?fn	?a
n18	!q	?q	!n	!a	?n	!fn	?a	?fn
n19	!q	?q	!n	!a	?n	!fn	?fn	?a
n20	!q	!n	?q	!a	?n	!fn	?a	?fn
n21	!q	!n	?q	!a	?n	!fn	?fn	?a

n22	!n	!q	?q	!a	?n	!fn	?a	?fn
n23	!n	!q	?q	!a	?n	!fn	?fn	?a
n24	!q	?q	!n	?n	!a	!fn	?a	?fn
n25	!q	?q	!n	?n	!a	!fn	?fn	?a
n26	!q	?q	!n	?n	!fn	!a	?a	?fn
n27	!q	?q	!n	?n	!fn	!a	?fn	?a
n28	!q	!n	?q	?n	!a	!fn	?a	?fn
n29	!q	!n	?q	?n	!a	!fn	?fn	?a
n30	!q	!n	?q	?n	!fn	!a	?a	?fn
n31	!q	!n	?q	?n	!fn	!a	?fn	?a
n32	!n	!q	?q	?n	!a	!fn	?a	?fn
n33	!n	!q	?q	?n	!a	!fn	?fn	?a
n34	!n	!q	?q	?n	!fn	!a	?a	?fn
n35	!n	!q	?q	?n	!fn	!a	?fn	?a
n36	!q	!n	?n	?q	!a	!fn	?a	?fn
n37	!q	!n	?n	?q	!a	!fn	?fn	?a
n38	!q	!n	?n	?q	!fn	!a	?a	?fn
n39	!q	!n	?n	?q	!fn	!a	?fn	?a
n40	!q	!n	?n	!fn	?q	!a	?a	?fn
n41	!q	!n	?n	!fn	?q	!a	?fn	?a
n42	!n	!q	?n	?q	!a	!fn	?a	?fn
n43	!n	!q	?n	?q	!a	!fn	?fn	?a

n44	!n	!q	?n	?q	!fn	!a	?a	?fn
n45	!n	!q	?n	?q	!fn	!a	?fn	?a
n46	!n	!q	?n	!fn	?q	!a	?a	?fn
n47	!n	!q	?n	!fn	?q	!a	?fn	?a
n48	!n	?n	!q	?q	!a	!fn	?a	?fn
n49	!n	?n	!q	?q	!a	!fn	?fn	?a
n50	!n	?n	!q	?q	!fn	!a	?a	?fn
n51	!n	?n	!q	?q	!fn	!a	?fn	?a
n52	!n	?n	!q	!fn	?q	!a	?a	?fn
n53	!n	?n	!q	!fn	?q	!a	?fn	?a
n54	!n	?n	!fn	!q	?q	!a	?a	?fn
n55	!n	?n	!fn	!q	?q	!a	?fn	?a