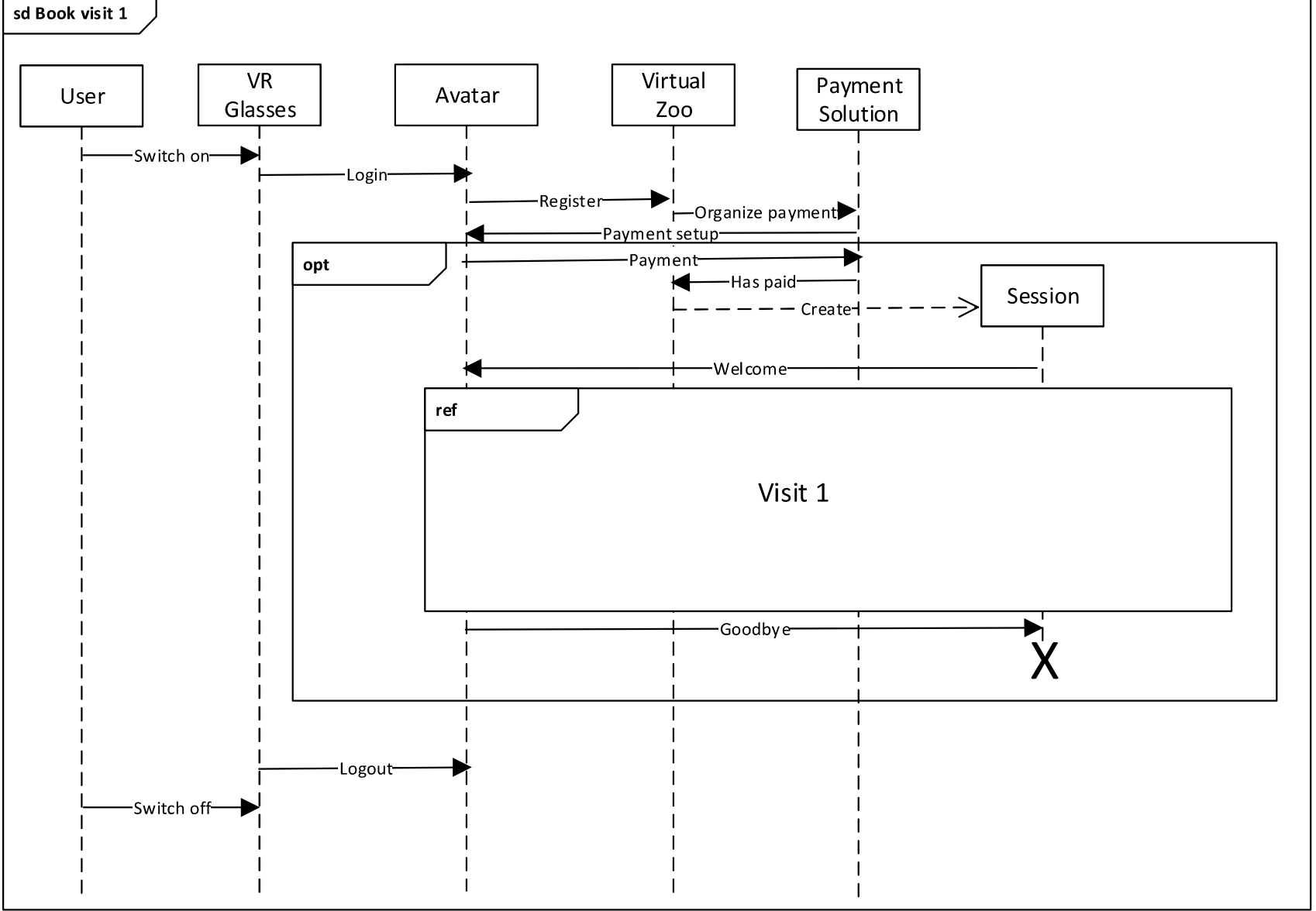
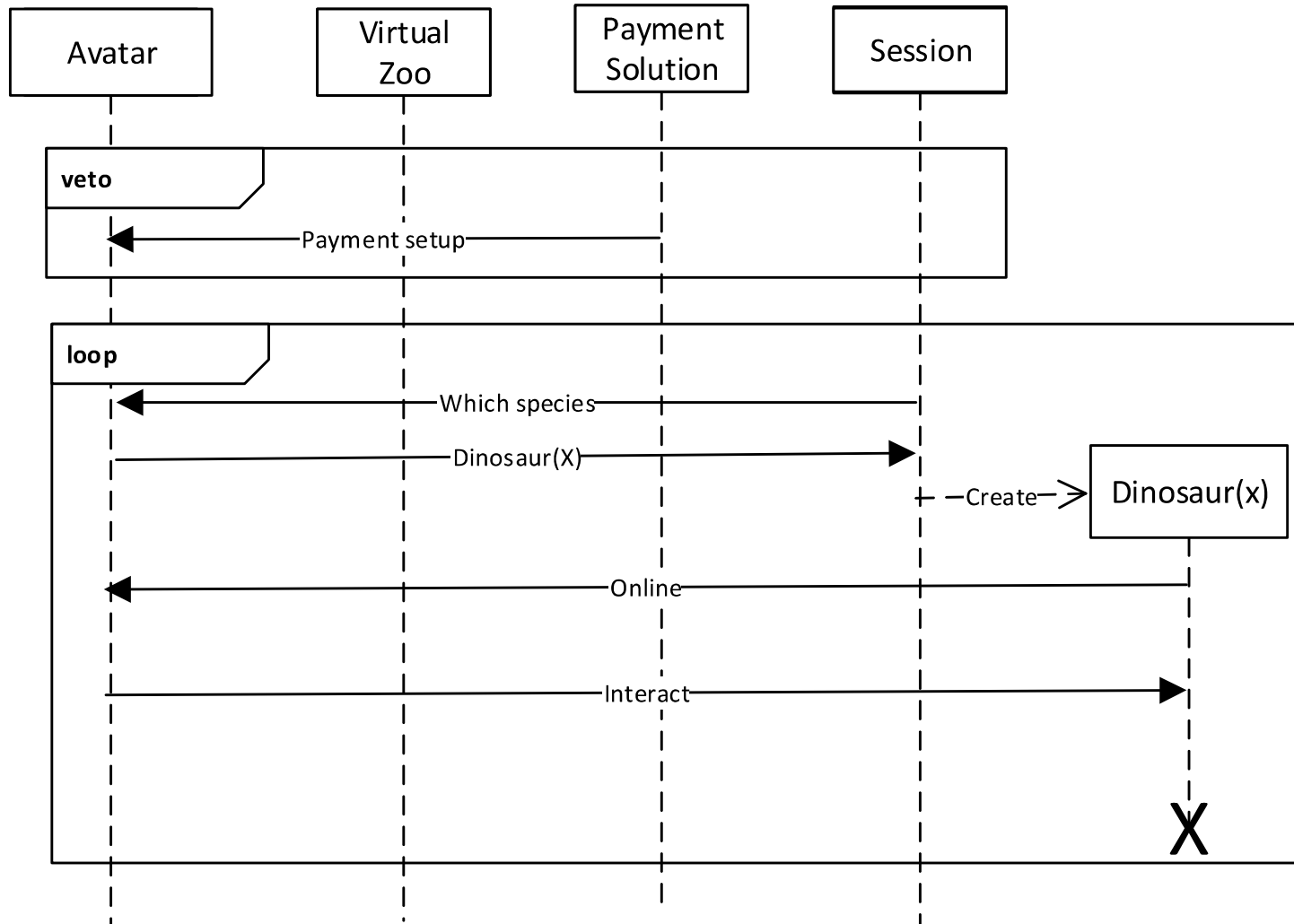




Oblig-2 2023



sd Visit 1



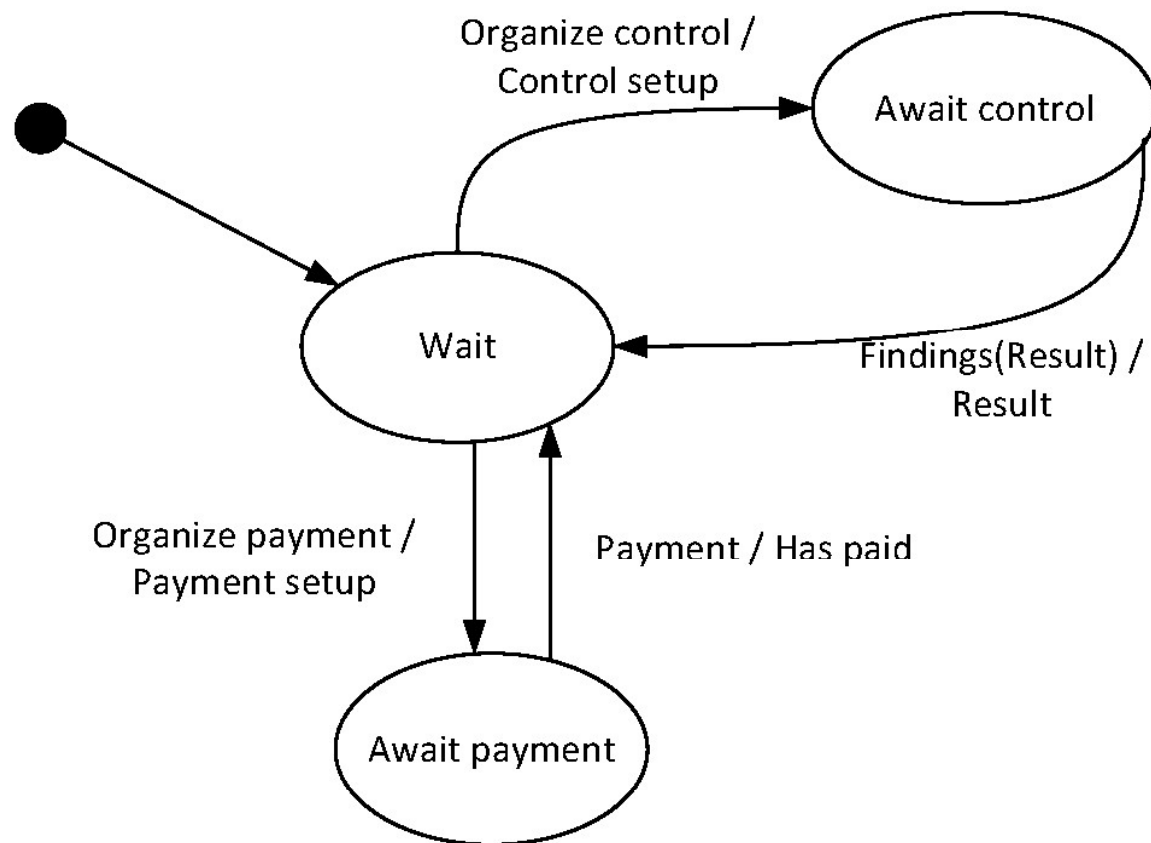
Question 1

- a) Which events may occur as the first event in a positive trace of sd Book visit 1? Explain your answer.
- b) Which events may occur as the first event in a negative trace of sd Book visit 1? Explain your answer.
- c) Which events may occur as the last event in a positive trace of sd Book visit 1? Explain your answer.
- d) What is the length of the shortest negative trace of sd Book visit 1? Explain your answer.

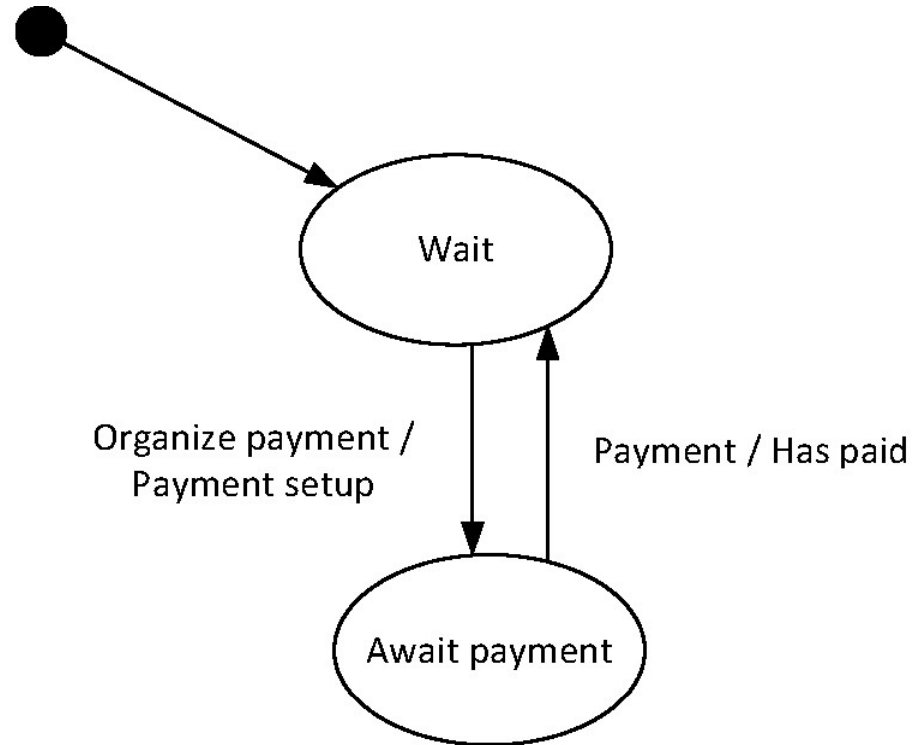
Question 1 answers

- a) !Switch on
- b) !Switch on
- c) ?Switch off, ?Logout, ?Goodbye, ?Interact
- d) 26

sm Payment Solution



sm Payment Solution - Alt

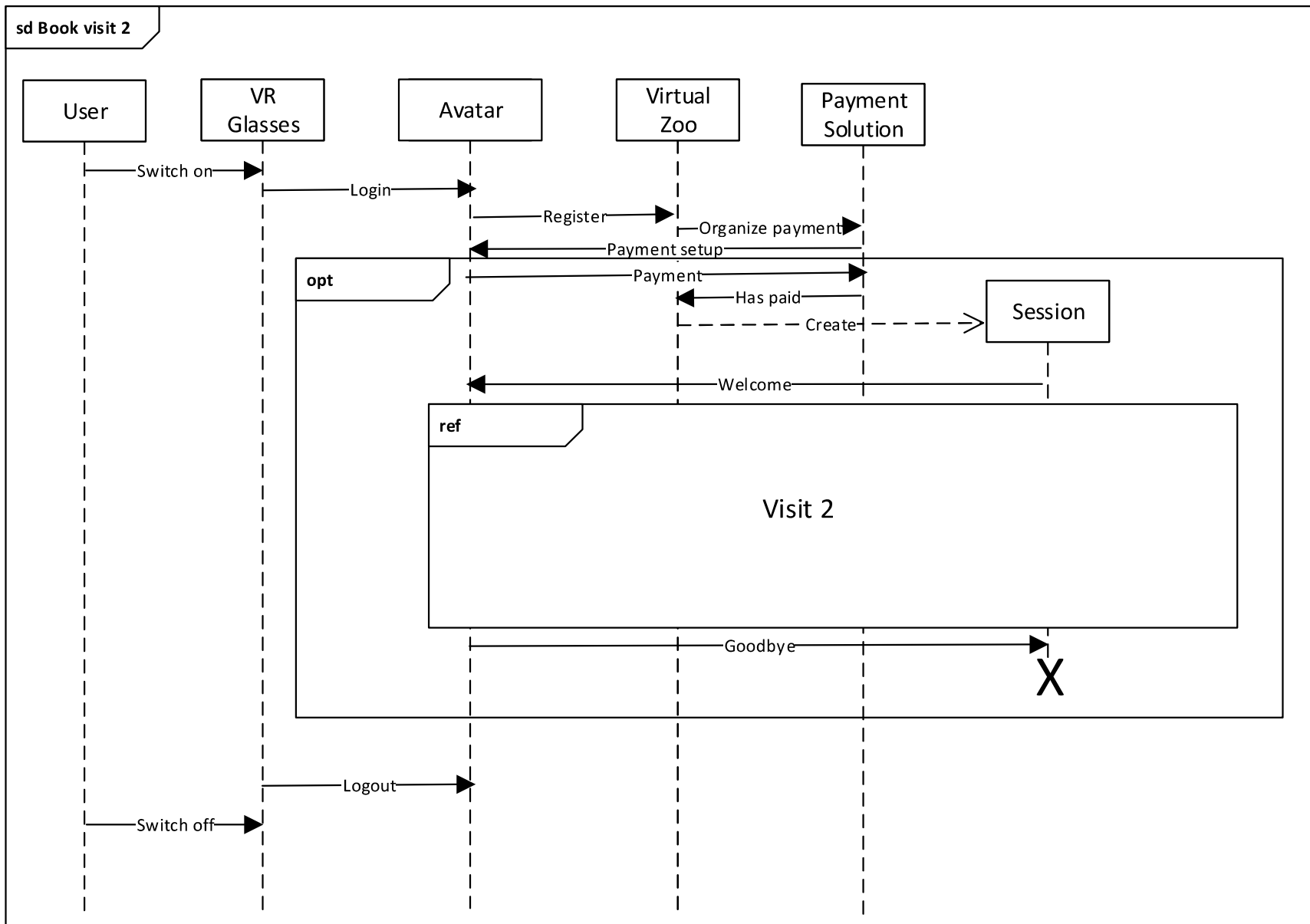


Question 2

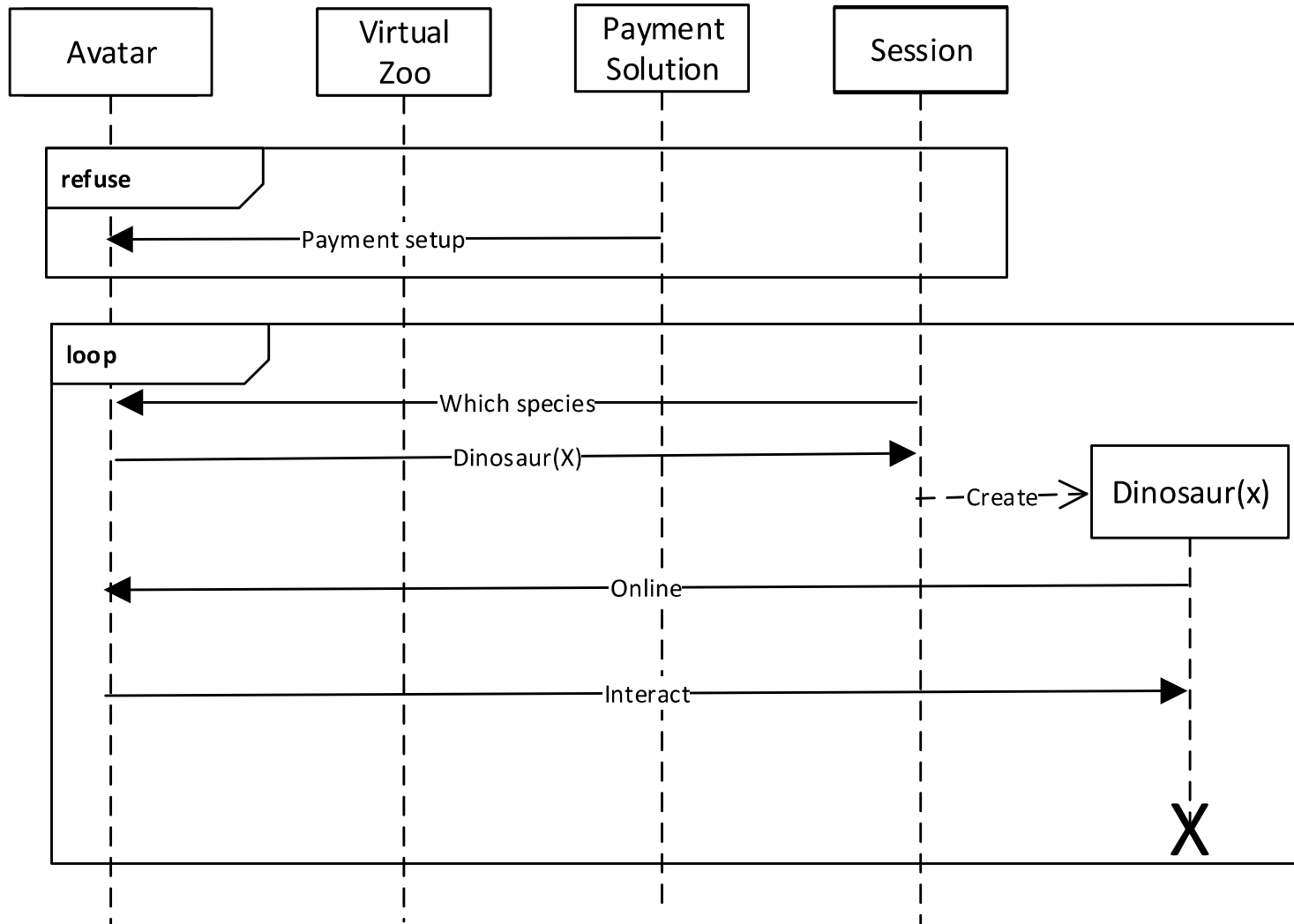
- a) Does sm Payment Solution correctly reflect all traces specified by the lifeline Payment Solution in sd Book visit 1. Explain your answer.
- b) Is sm Payment Solution - Alt a refinement of sm Payment Solution? Explain your answer.

Question 2 answers

- a) Yes. The positive are allowed; the negative are not allowed.
- b) No. Any behavior involving sending a message after receiving Organize control or Findings(Result) are negative in Payment solution – Alt. However, we get an implicit transition from Wait to itself for Organize control. This is positive behavior that was negative.



sd Visit 2



Question 3

- a) Describe two different positive traces of sd Book visit 2 in full. Use the style $\langle e_1, e_2, \dots, e_N \rangle$ where $e_1, e_2, \dots, e_N$ are events.
- b) To what extent can sd Book visit 1 and sd Book visit 2 be related by supplementing, narrowing or a combination in one way or another? Explain your answer.
- c) To what extent can sd Book visit 1 and sd Book visit 2 be related by general refinement or limited refinement in one way or another? Explain your answer.

Question 3 answers

a)

<!Switch on, ?Switch on, !Login, ?Login, !Register, ?Register, !Organize payment, ?Organize payment, !Payment setup, ?Payment setup! Logout, ?Logout, !Switch off, ?Switch off>

<!Switch on, ?Switch on, !Login, ?Login, !Register, ?Register, !Organize payment, ?Organize payment, !Payment setup, ?Payment setup! Logout, !Switch off, ?Logout, ?Switch off>

b) Visit 1 supplements Visit 2 in which case Book visit 1 supplements Book visit 2. No other relation holds.

c) Limited refinement and general refinement degenerates to ordinary refinement for specifications without xalt. Hence, Book visit 1 is both a general and a limited refinement of Book visit 2.