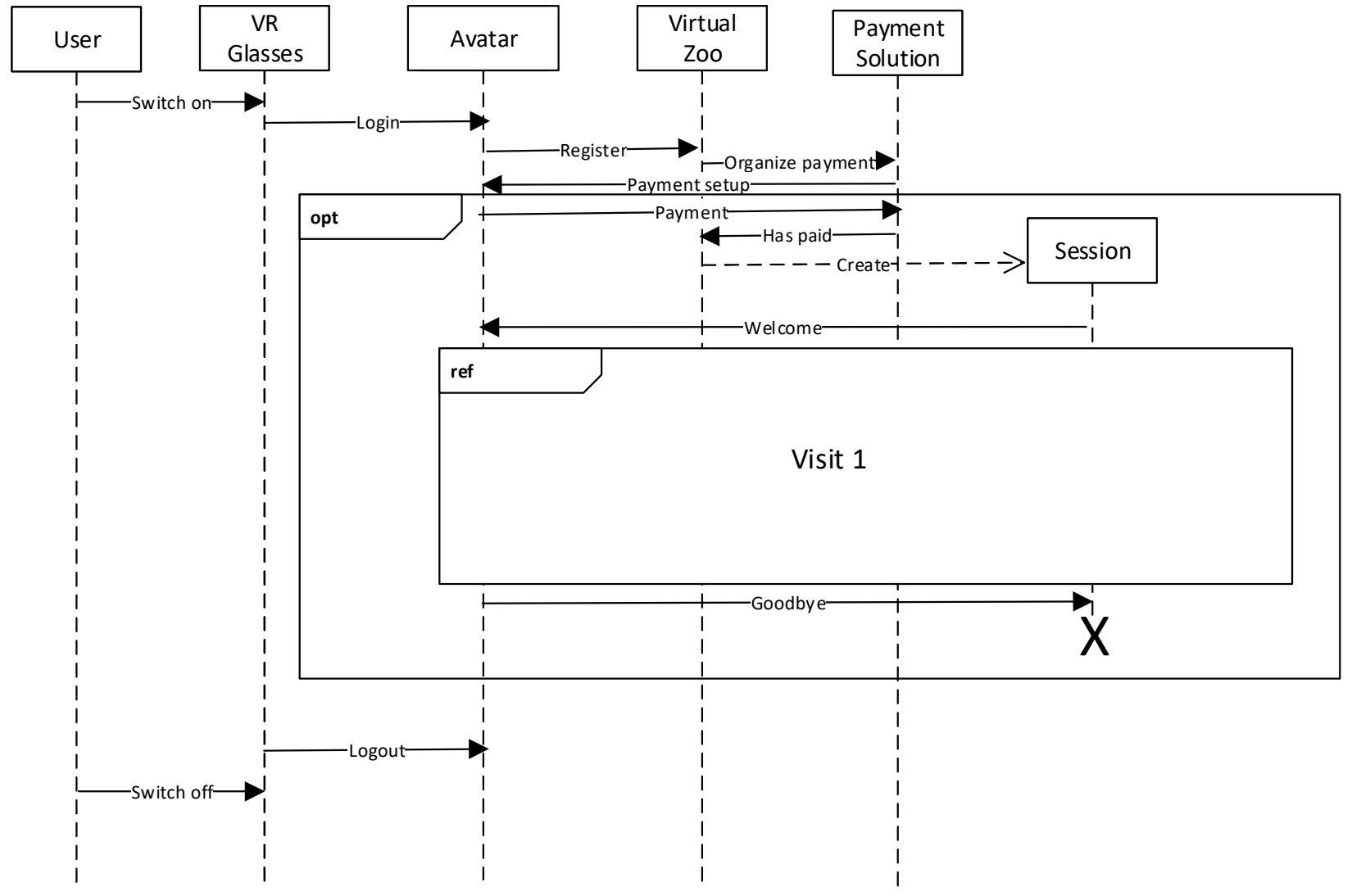




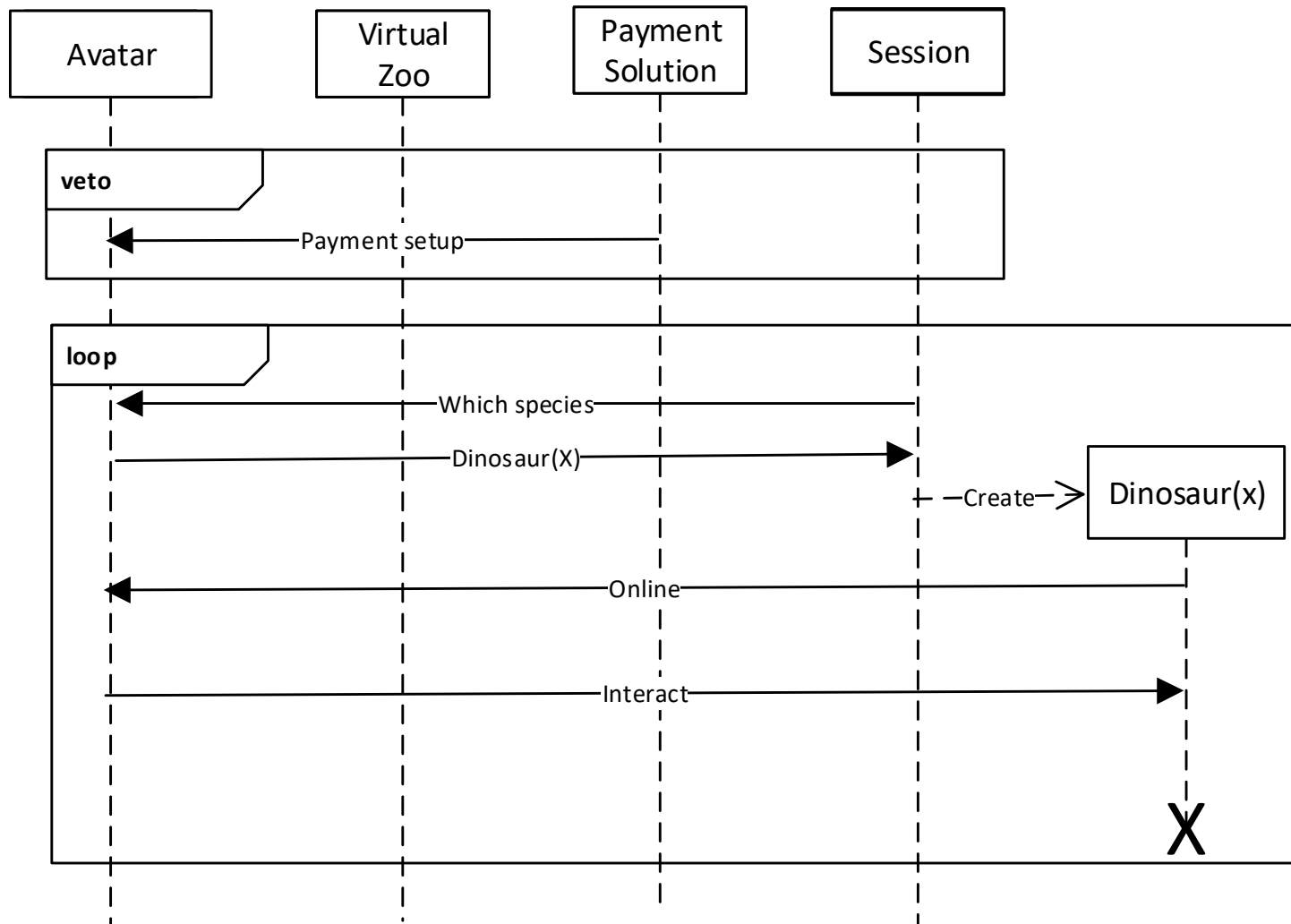
Oblig-II 2023

Question 1

sd Book visit 1



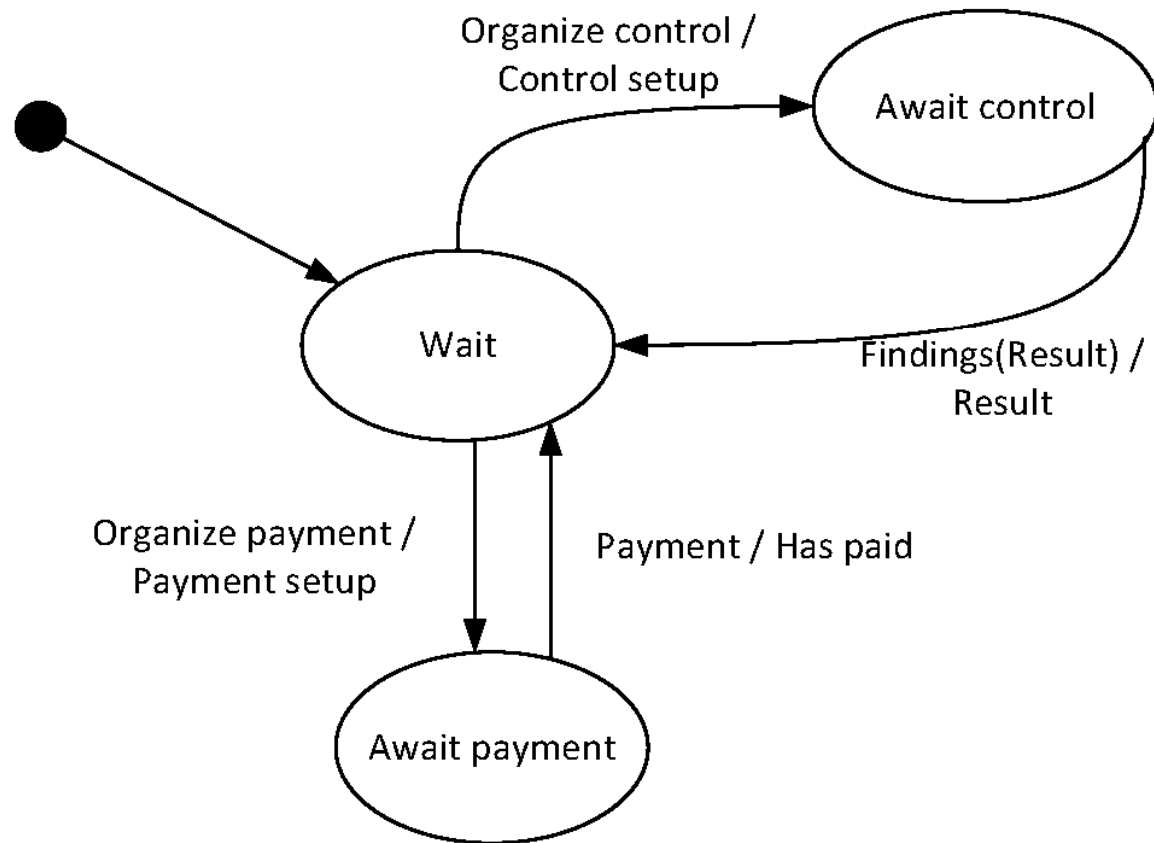
sd Visit 1



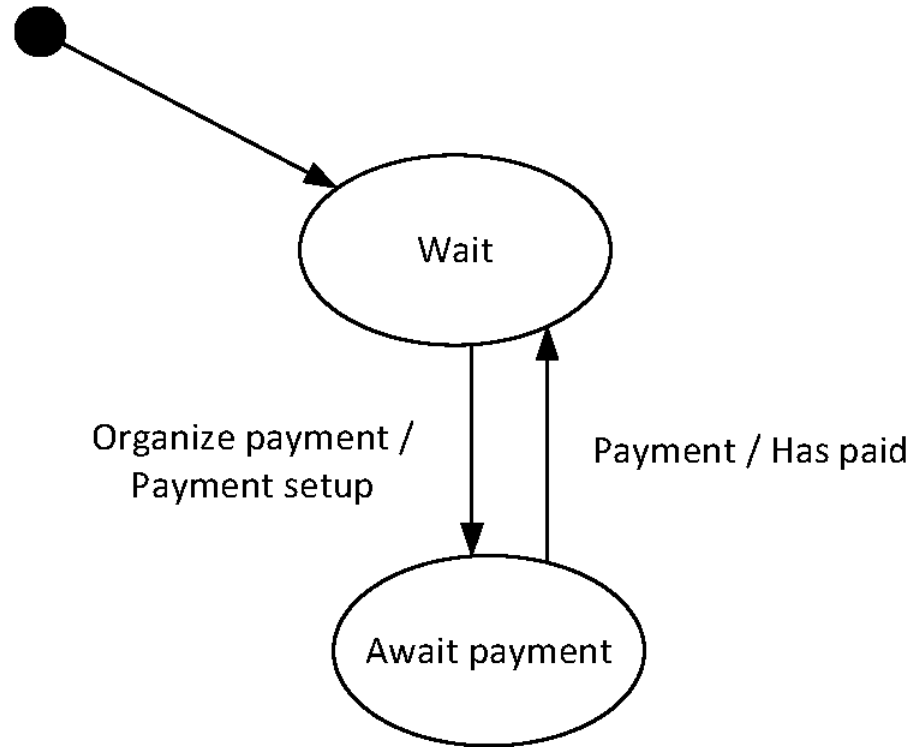
- a) Which events may occur as the first event in a positive trace of sd Book visit 1? Explain your answer.
- b) Which events may occur as the first event in a negative trace of sd Book visit 1? Explain your answer.
- c) Which events may occur as the last event in a positive trace of sd Book visit 1?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

Question 2

sm Payment Solution

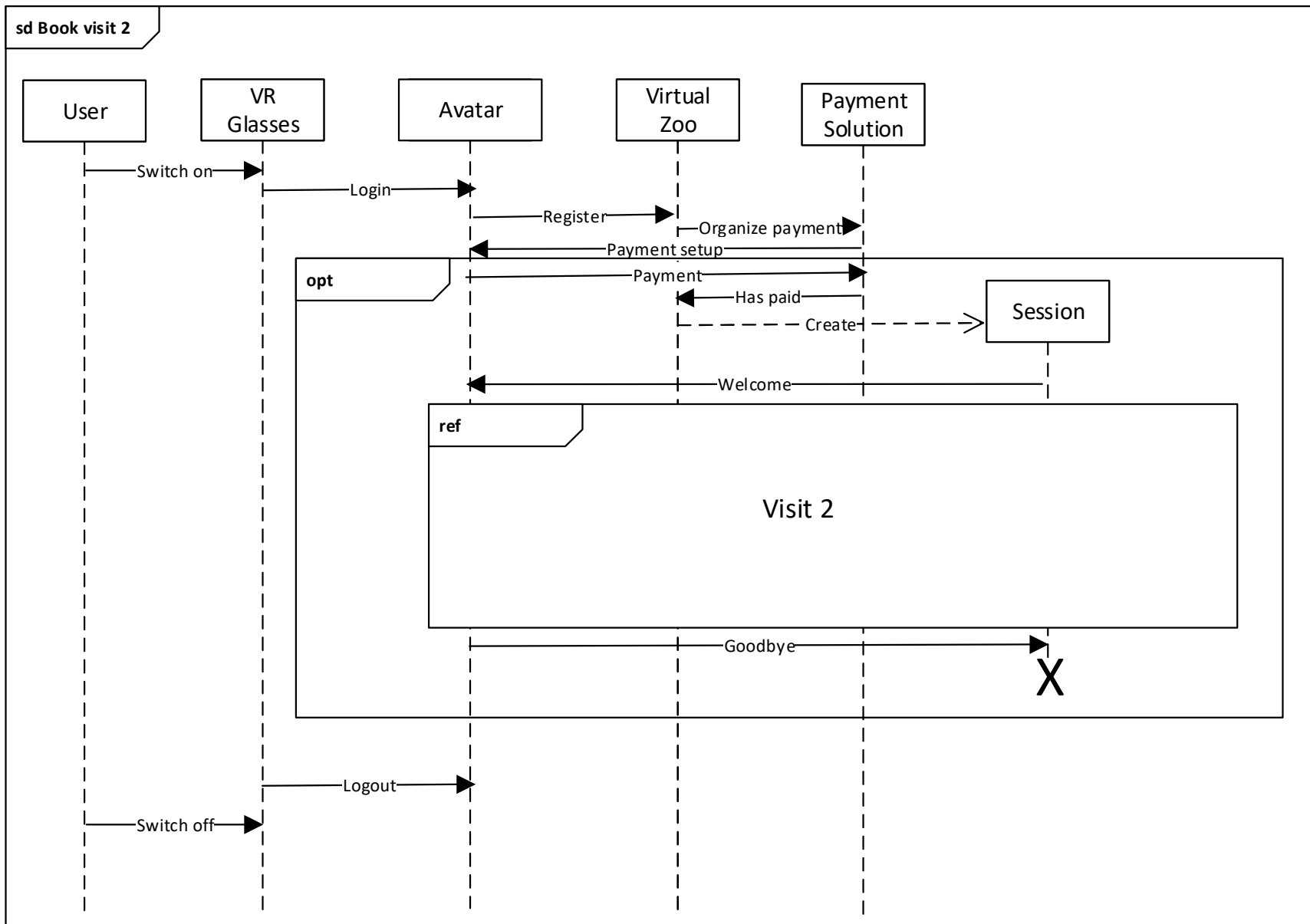


sm Payment Solution - Alt

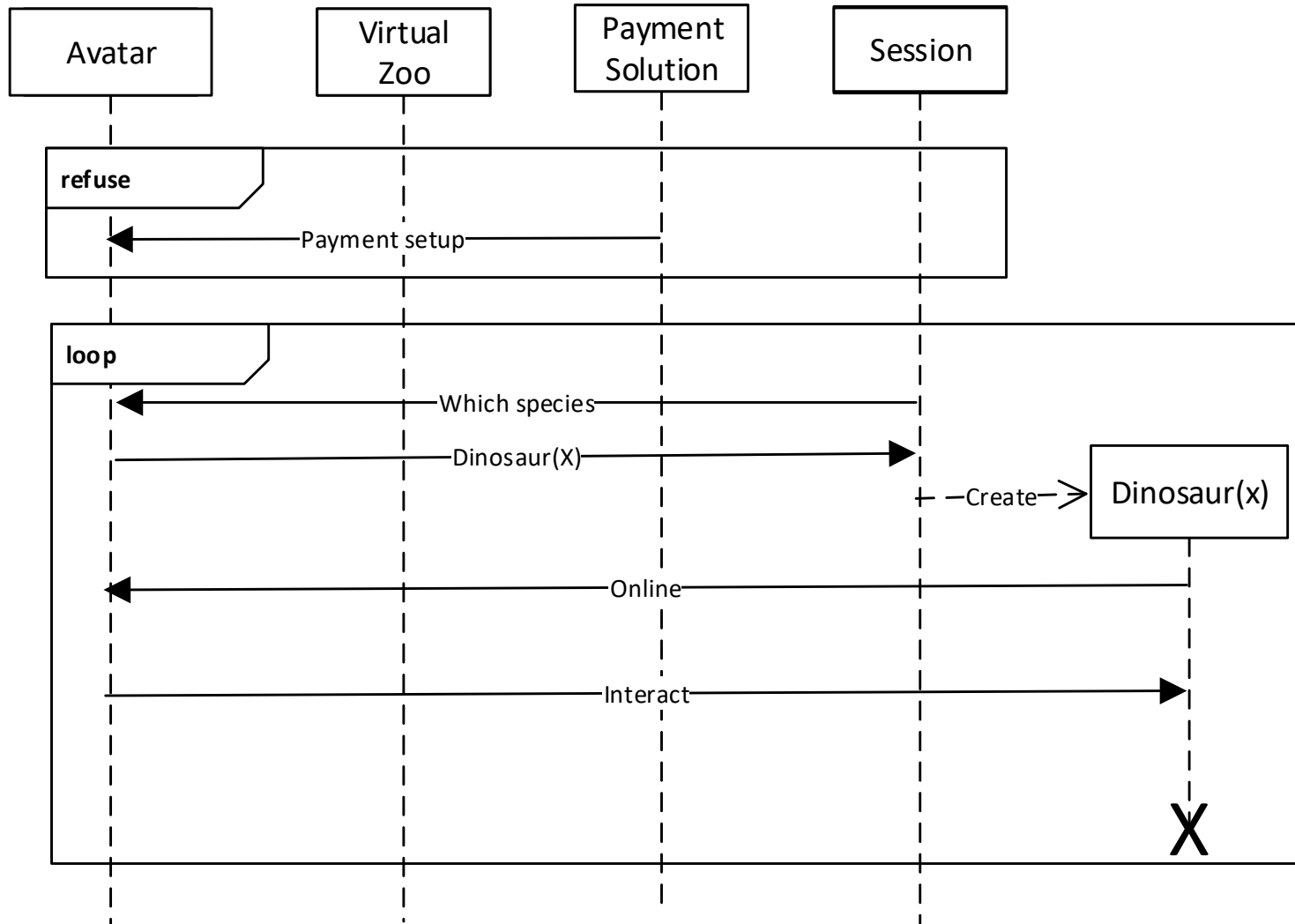


- a) Does sm Payment Solution correctly reflect all traces specified by the lifeline Payment Solution in sd Book visit 1. Explain your answer.
- b) Is sm Payment Solution - Alt a refinement of sm Payment Solution? Explain your answer.

Question 3



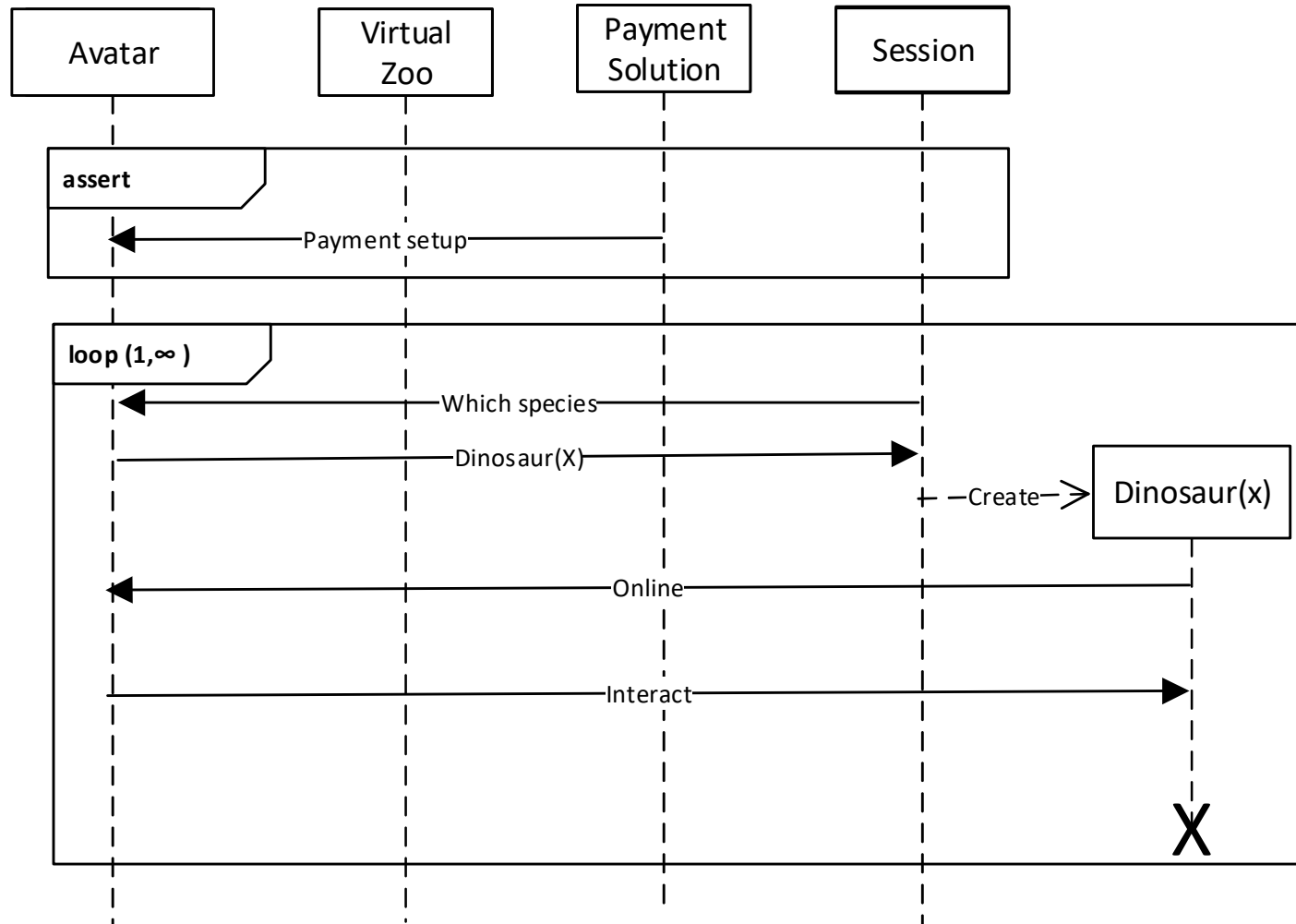
sd Visit 2



- 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 4

sd Visit 3



- a) Which events may occur as the first event in a negative trace of sd Visit 3. Explain your answer. Note that $\text{loop}(1, \infty)$ means that the loop may iterate any number of times between 1 and ∞ .
- b) Which events may occur as the last event in a negative trace of sd Visit 3? Explain your answer.
- c) How many traces are inconclusive with respect to sd Visit 3. Explain your answer.